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(54) **APPARATUS INCLUDES HOUSING ASSEMBLY, MOUNTABLE TO PRINTING MACHINE CYLINDER, FOR SUPPORTING DOCTOR BLADE AND IMPRESSION ROLLER**

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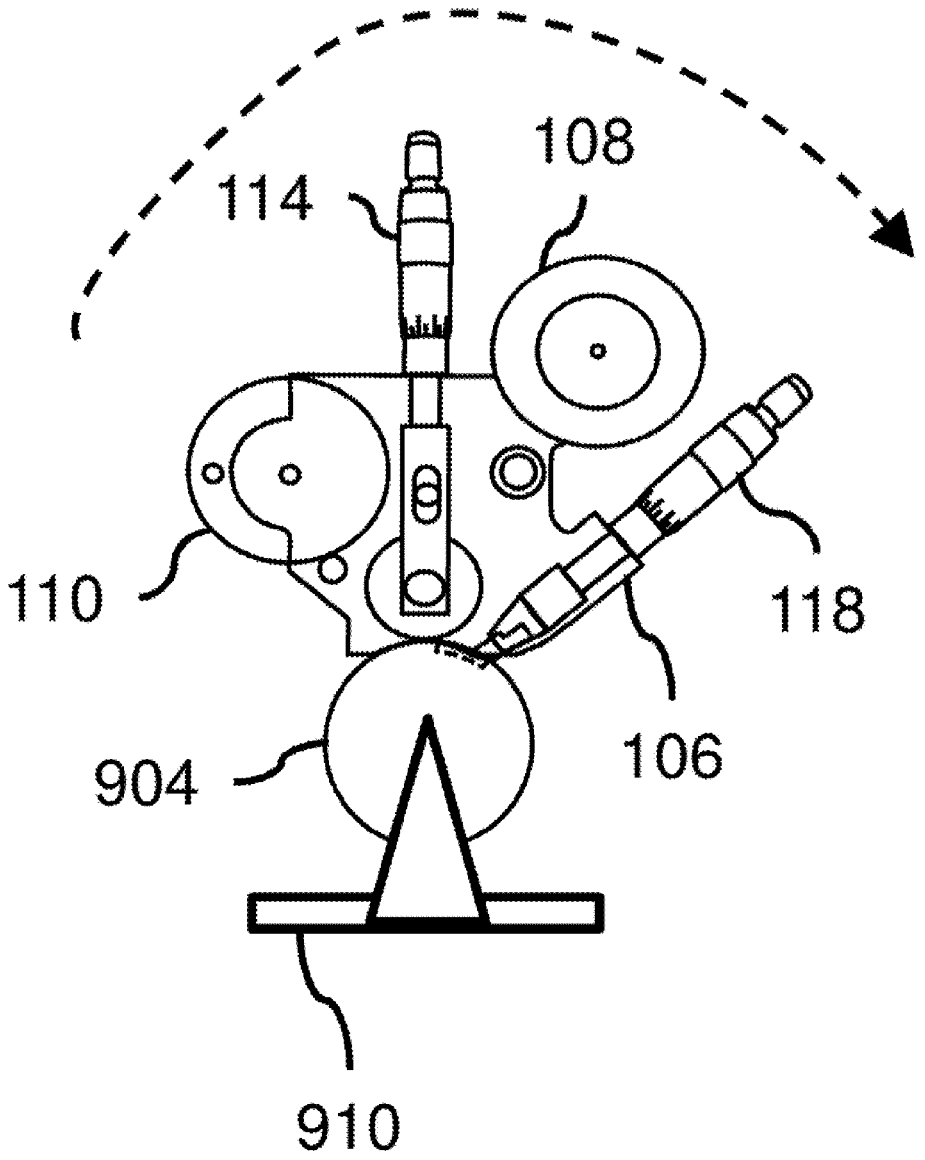
(57) **ABSTRACT**

An apparatus includes a doctor blade, an impression roller, and a housing assembly configured to be selectively securely mounted to a stationary-mounted printing machine cylinder. The housing assembly is also configured to support, in use, the doctor blade and the impression roller relative to an engraving area of the stationary-mounted printing machine cylinder once the housing assembly is selectively securely mounted to the stationary-mounted printing machine cylinder.



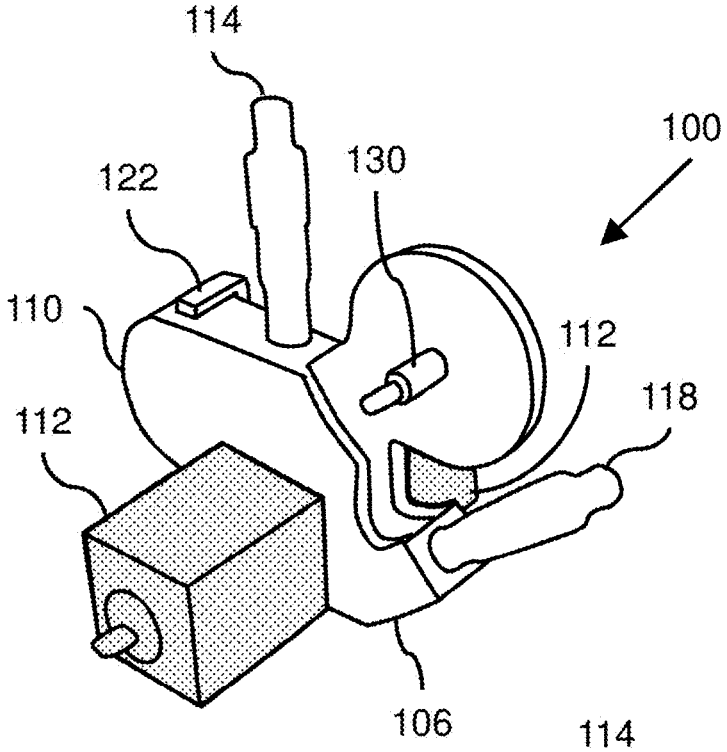

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FIG. 1

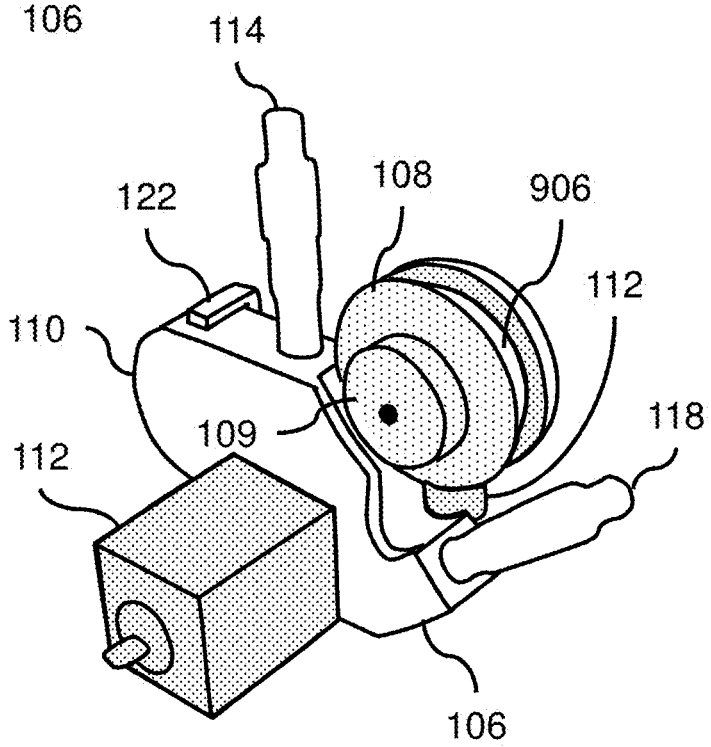
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FIG. 2

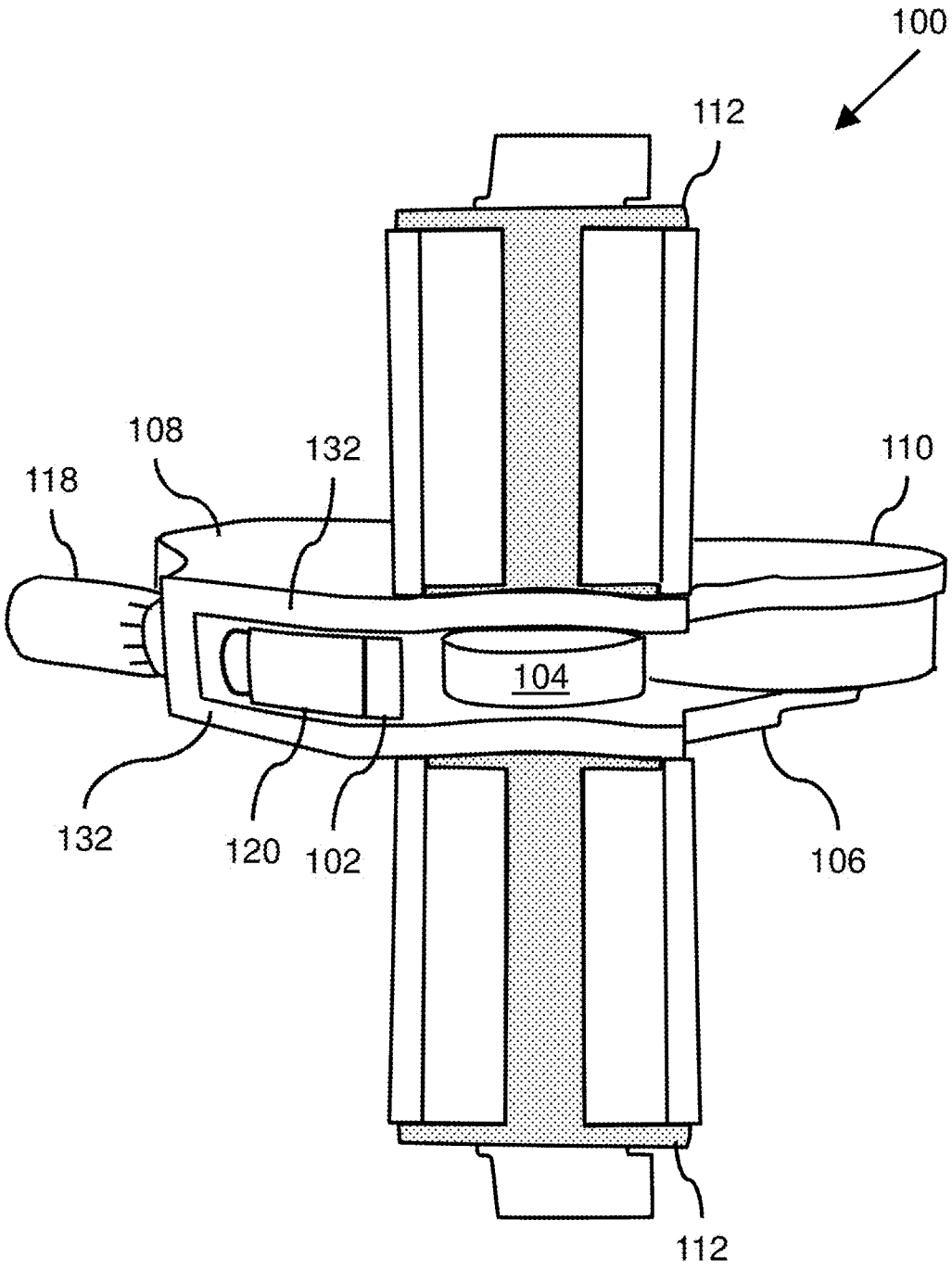

FIG. 3

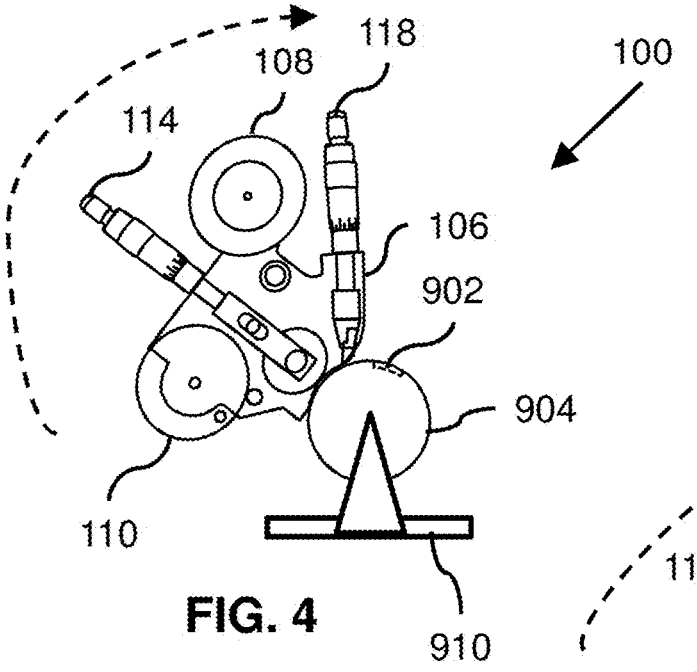

FIG. 4

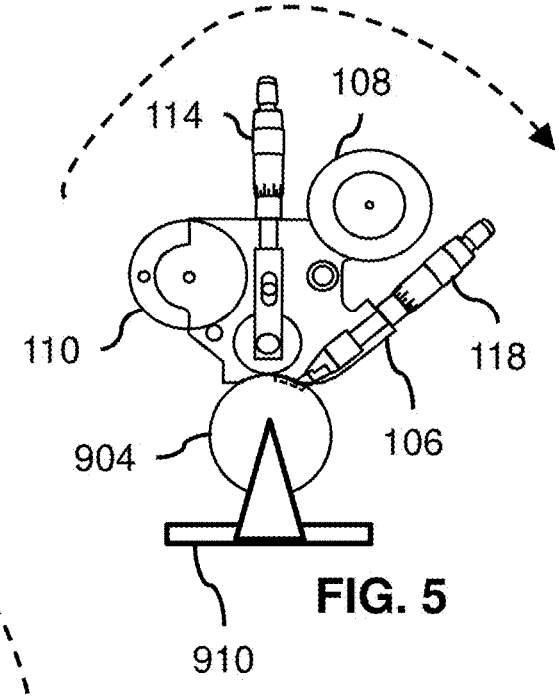

FIG. 5

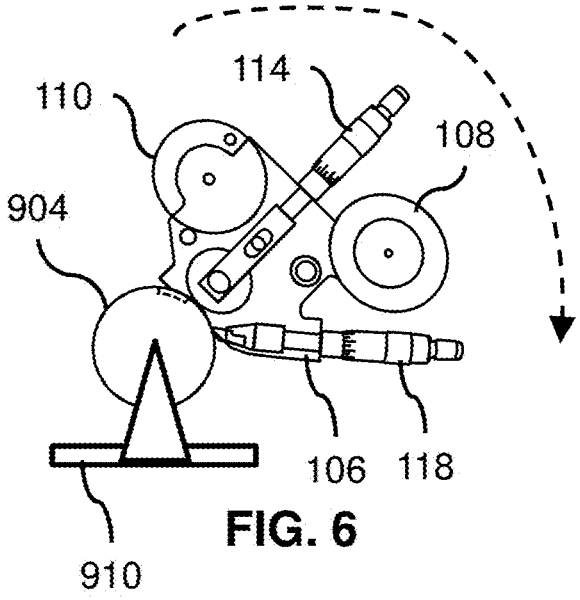

FIG. 6

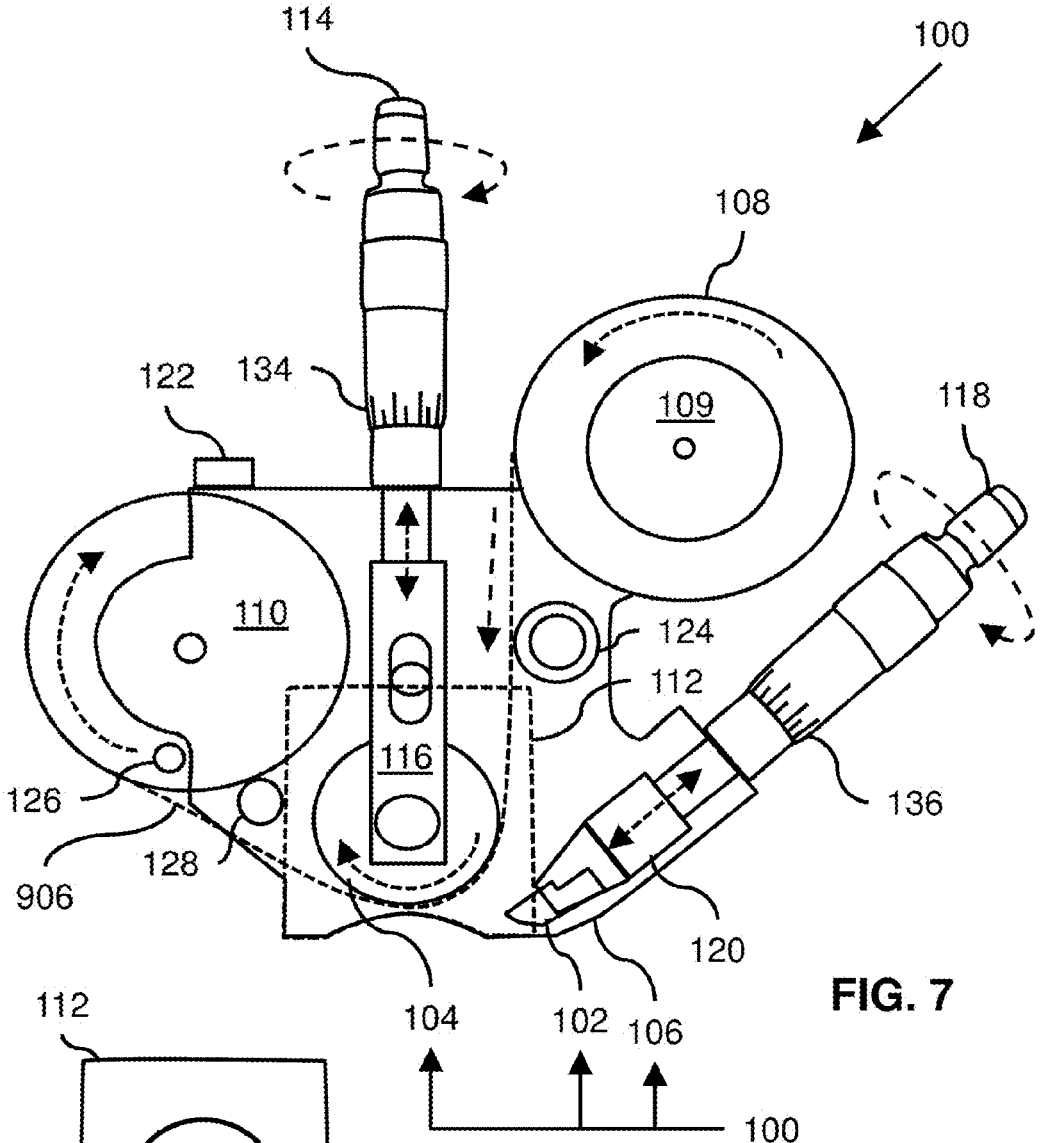
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FIG. 7

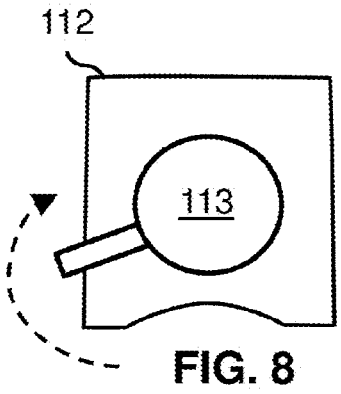
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FIG. 8

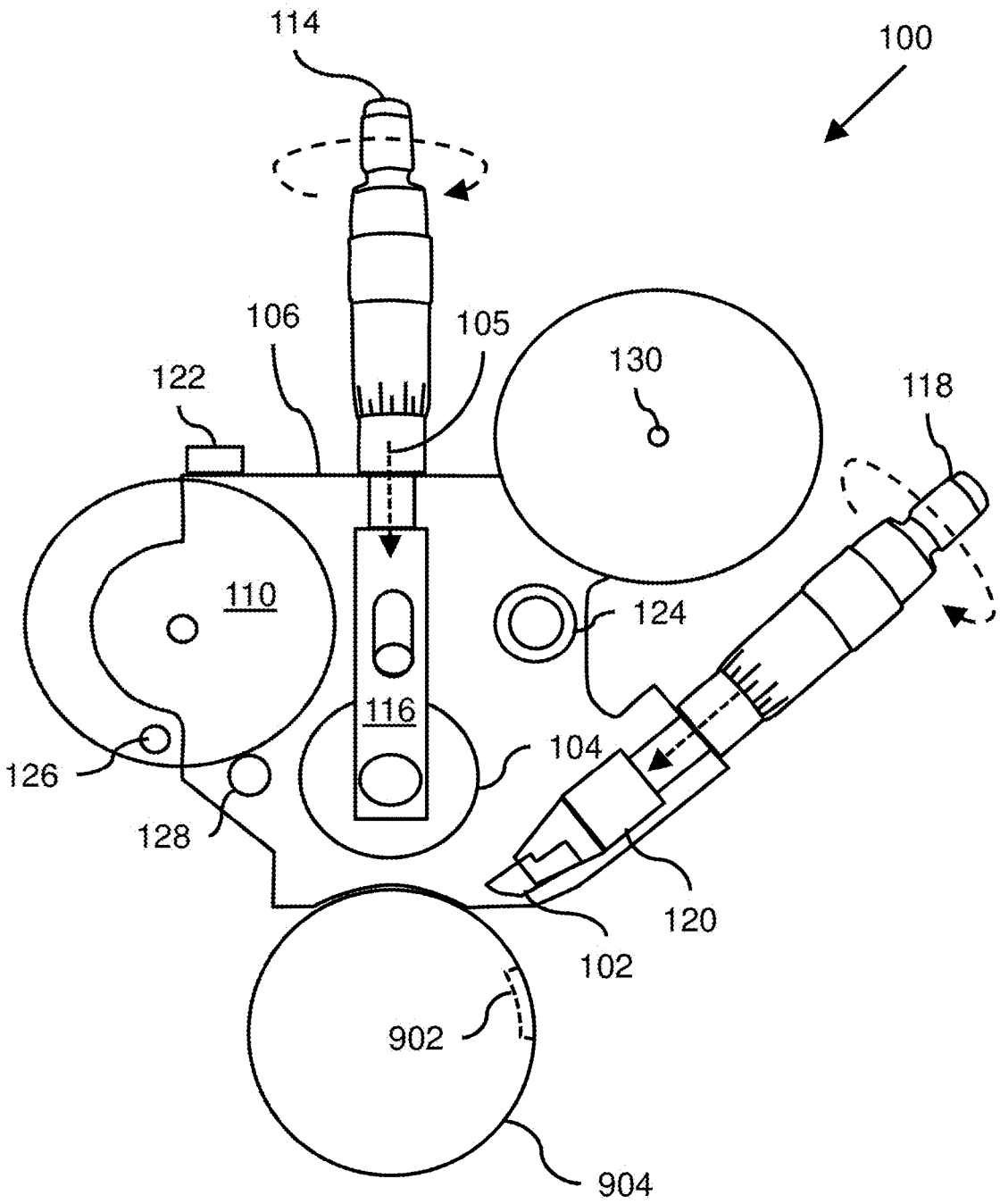
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FIG. 9

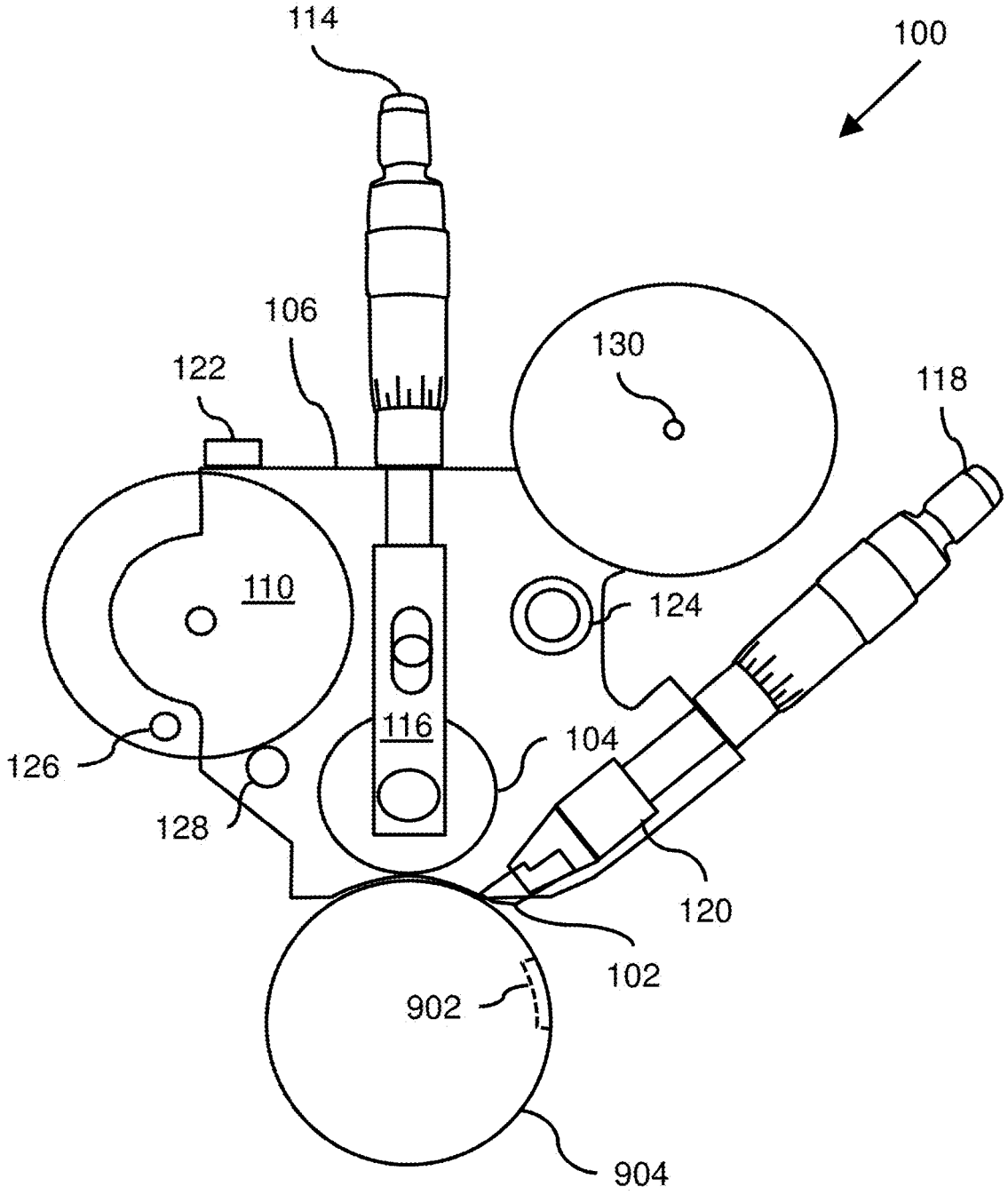

FIG. 10

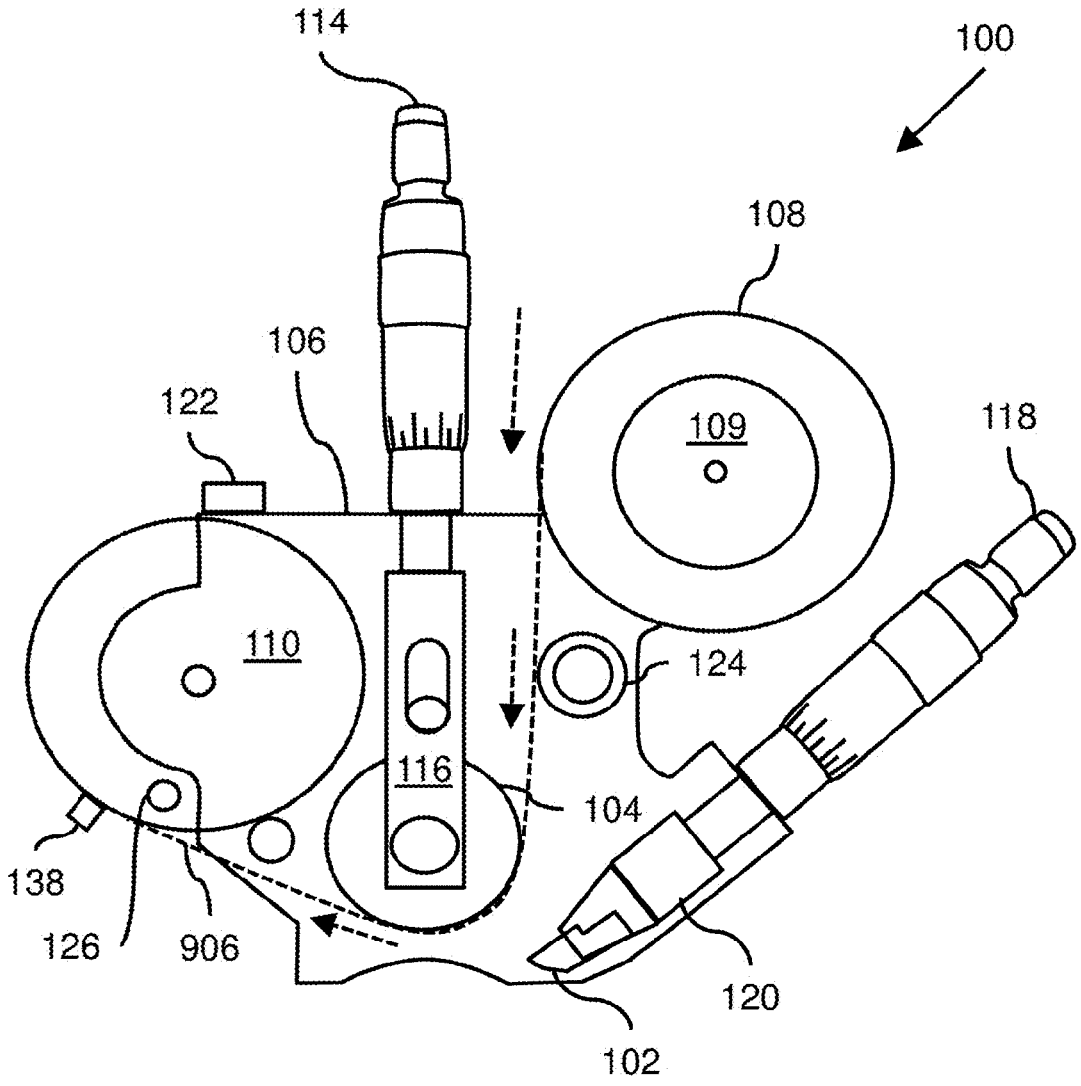

FIG. 11

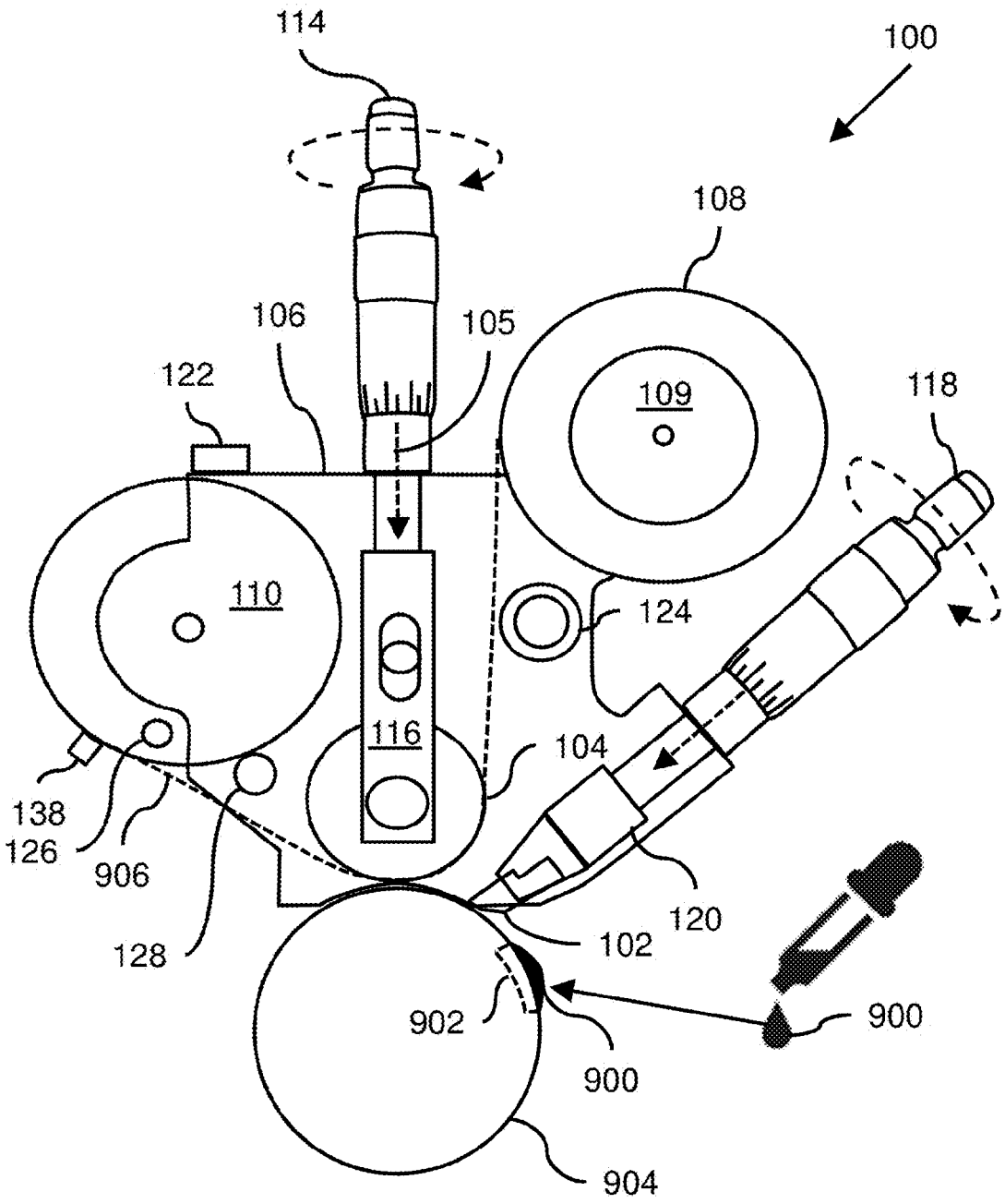
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FIG. 12

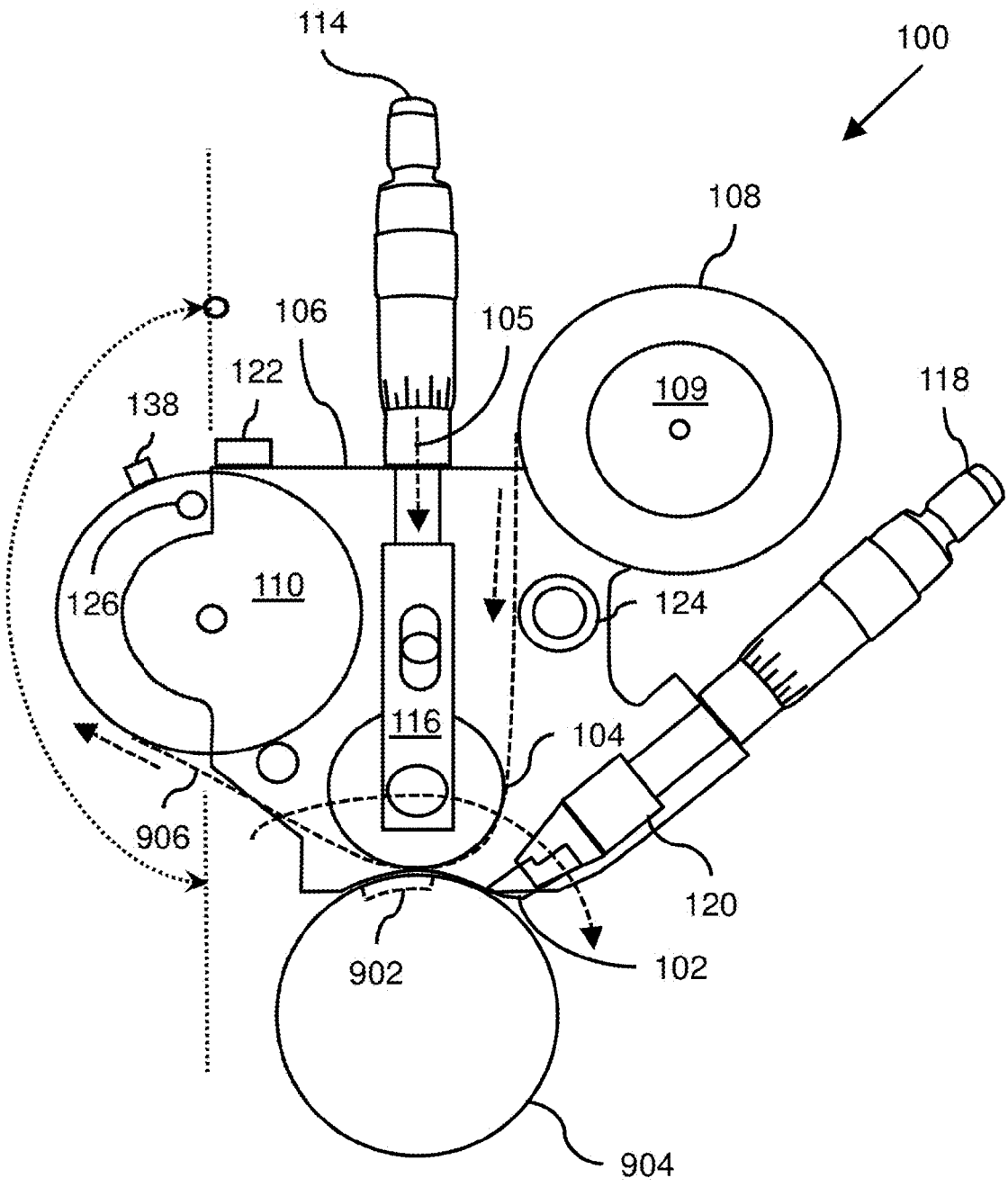
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FIG. 13

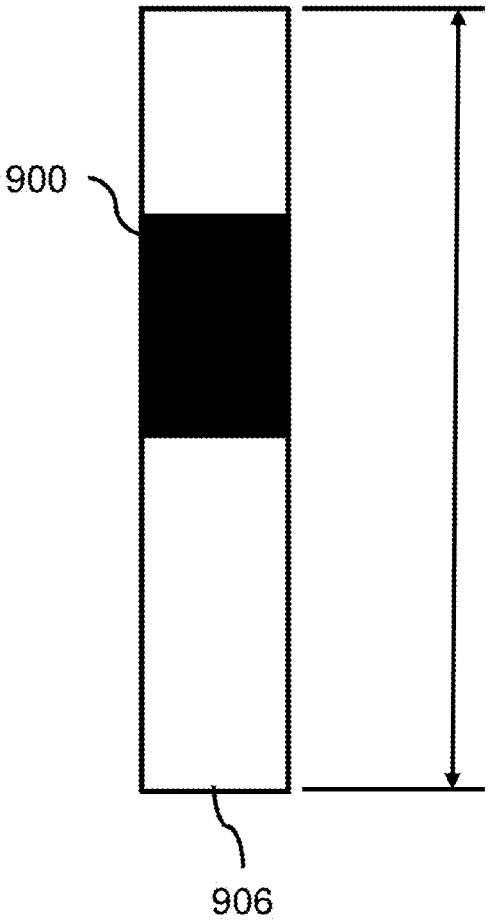

FIG. 14

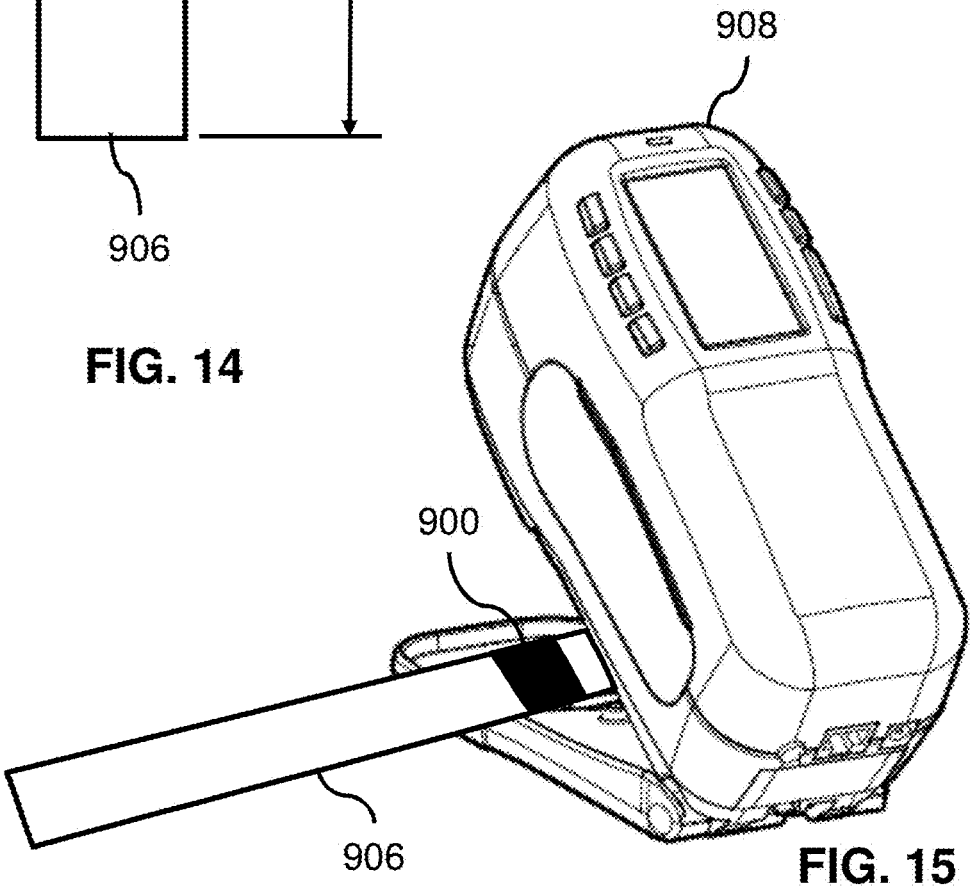

FIG. 15

APPARATUS INCLUDES HOUSING ASSEMBLY, MOUNTABLE TO PRINTING MACHINE CYLINDER, FOR SUPPORTING DOCTOR BLADE AND IMPRESSION ROLLER

TECHNICAL FIELD

[0001] This document relates to the technical field of (and is not limited to) an apparatus including a doctor blade, an impression roller, and a housing assembly configured to be selectively coupled to a printing machine cylinder, in which the housing assembly is for supporting the doctor blade and the impression roller.

BACKGROUND

[0002] A printing machine (which may be called a rotogravure intaglio printing press) is configured to apply pressure to an inked surface for contact with a printable material (a print medium, such as paper or films cloth), thereby transferring the printing ink to the printable material.

SUMMARY

[0003] It will be appreciated that there exists a need to mitigate (at least in part) at least one problem associated with the existing printing machines (also called the existing technology). After much study of the known systems and methods with experimentation, an understanding of the problem and its solution has been identified and is articulated as follows:

[0004] The formulation of the printing ink used for making impressions (expressions) on printable material (such as paper or films, etc.) is an important factor of a printing process used by a rotogravure printing machine (and any equivalent thereof). Companies manufacture and sell a variety of products under various tradenames and/or trademarks. The trade dress of the manufactured products employ specific colors that are identified by a colour attribute (such as, a pantone number or a specified custom specific color, etc.). This is done so that the consumer of the manufactured product may readily identify or associate the manufactured product with the color scheme selected by the source or manufacturer of that product. The ink is specified to have a predetermined color attribute (such as, a pantone number or a specified custom specific color, etrc.) for placement on a printable material by a printing machine.

[0005] The problem that exists today with existing printing machines is that after the printable material is printed with a printing ink, the color of the printing ink placed (formed) on the printable material may not have the correct colour attribute (such as, a pantone number or a specified custom specific color, etc.) that was originally specified (for placement on the printable material). Prior to printing, the printing ink may have colour attribute (a color value, a pantone number or a specified custom specific color, etc.) that is different from the color value as measured on the printing ink placed onto the printable material produce from the rotogravure printing press (and any equivalent thereof).

[0006] The reason for this problem statement is the inability to formulate exact color match without the use of the actual production engrave Rotogravure printing cylinder and process parameters. The Prior Art Printing ink industry currently utilizes a range of desktop or hand held ink proofing apparatus to formulate ink and color match colors prior to the production orders. These Prior Art technologies are unable to % duplicate exact color match due to the mask range of engraving screens use with a variety of angles and shapes in a production environment to achieve end users final product specification.

[0007] There are just simply too many variables associated with production engravings when compared to a single or multi step engraving plate use on a hand held or desktop ink proofing apparatuses that results in ink film thickness variation when compared to production engrave cylinder differences.

[0008] Moreover, the printable material may inadvertently interact with the printing ink (for instance, some printable materials may absorb too much of the printing ink). Thus, once the printing ink has dried on the printing material, the color value (such as, the pantone number) of the applied ink (as measured by a color measuring system) is not the same as the color value (the pantone number) of the printing ink that consumed by the printing machine.

[0009] Currently, there is much wastage of printed material produced by a printing machine because the output is monitored and tested until the color value (the pantone number) of the ink received by the printable material is correct. This arrangement results in wastage of printable material, printing inks to be readjusted or set aside entirely, and lost production time with increased labor costs.

[0010] What is needed is an apparatus configured to facilitate determination and validation of the color value of the printing ink received by the printable material prior to setting up and using the printing machine for mass printing, and thereby reduce the costs associated with the manner of operating existing printing machines.

[0011] What is needed is an apparatus configured to be selectively securely coupled (mounted) to a printing machine cylinder of a printing machine (such as, to be selectively securely rotatably slide mount to the stationary-mounted printing machine cylinder). The apparatus is also configured to support a doctor blade and an impression roller relative to an engraving area of the printing machine cylinder. In this manner, the apparatus may produce a sample of the printable material having the printing ink impressed thereon (deposited or formed thereon), and then a color measuring device may be used to measure the color value of the printing ink formed on the printable material (for validating the formulation of the printable ink). For the case where the color value of the printable ink is measured to be not within the required parameters as originally specified, the formulation of the printable ink may be changed or adapted and the apparatus is used for producing another instance of the sample of the printable material having the newer formulation of the printing ink formed thereon, and the color measuring device may be used to validate the printing ink formed on the newer sample of the printable material. For the case where the color measuring device indicates that the measured color attribute of printing ink formed on the printable material is correct (within specification), then the printing machine may be operated using the validated formula of the printing ink along with the printable material in a mass print production (with relatively lower print wastage, lost printing time, operating cost and/or labor cost).

[0012] It will be appreciated that the apparatus is not simply limited to application with a printing cylinder of a

rotogravure intaglio printing press, and that the apparatus may be usable on any type of printing cylinder (if so desired).

[0013] To mitigate, at least in part, at least one problem associated with the existing technology, there is provided (in accordance with a major aspect) an apparatus. The apparatus includes a synergistic combination of a doctor blade, an impression roller, and a housing assembly configured to be selectively securely mounted to a stationary-mounted printing machine cylinder. The housing assembly is also configured to support, in use, the doctor blade and the impression roller relative to an engraving area of the stationary-mounted printing machine cylinder once the housing assembly is selectively securely mounted to the stationary-mounted printing machine cylinder.

[0014] To mitigate, at least in part, at least one problem associated with the existing technology, there is provided (in accordance with a major aspect) an apparatus. The apparatus includes a synergistic combination of a doctor blade, an impression roller, and a housing assembly. The doctor blade is configured to remove, in use, an excess amount of a printing ink received in an engraving area provided by a stationary-mounted printing machine cylinder, in which the engraving area is configured to receive the printing ink to be transferred to a printable material. The impression roller is configured to apply, in use, a predetermined amount of an impression force to the printable material positioned proximate to the engraving area of the stationary-mounted printing machine cylinder. The impression force (in use), which was applied by the impression roller to the printable material, urges, at least in part, the transfer of the printing ink from the engraving area of the stationary-mounted printing machine cylinder to the printable material. Preferably, the housing assembly is configured to be selectively securely mounted to the stationary-mounted printing machine cylinder. For instance, the housing assembly is configured to be selectively securely rotatably slide mounted to the stationary-mounted printing machine cylinder. The housing assembly is also configured to support, in use, the doctor blade and the impression roller relative to the engraving area of the stationary-mounted printing machine cylinder once the housing assembly is selectively securely rotatably slide mounted to the stationary-mounted printing machine cylinder.

[0015] Other aspects are identified in the claims.

[0016] Other aspects and features of the non-limiting embodiments may now become apparent to those skilled in the art upon review of the following detailed description of the non-limiting embodiments with the accompanying drawings.

[0017] This Summary is provided to introduce concepts in simplified form that are further described below in the Detailed Description. This Summary is not intended to identify key features or essential features of the disclosed or claimed subject matter, and is not intended to describe each disclosed embodiment or every implementation of the disclosed or claimed subject matter, and is not intended to be used as an aid in determining the scope of the claimed subject matter. Many other novel advantages, features, and relationships will become apparent as this description proceeds. The figures and the description that follow more particularly exemplify illustrative embodiments.

DETAILED DESCRIPTION OF THE DRAWINGS

[0018] The non-limiting embodiments may be more fully appreciated by reference to the following detailed description of the non-limiting embodiments when taken in conjunction with the accompanying drawings, in which:

[0019] FIG. **1** and FIG. **2** (SHEET **1** of **10**) depict perspective views of an apparatus configured to transfer a printing ink, which is received in an engraving area provided by a stationary-mounted printing machine cylinder, to a printable material;

[0020] FIG. **3** (SHEET **2** of **10**) depicts a bottom perspective view of the apparatus of FIG. **1**, in which a bottom section of the apparatus is configured to make contact with an outer surface of the stationary-mounted printing machine cylinder;

[0021] FIG. **4**, FIG. **5** and FIG. **6** (SHEET **3** of **10**) depict side views of the apparatus of FIG. **1**, and also depict the manner in which the apparatus is operatively coupled to the stationary-mounted printing machine cylinder;

[0022] FIG. **7** (SHEET **4** of **10**) depicts a side view of the apparatus of FIG. **1**, in which the directional movements of various components of the apparatus are depicted;

[0023] FIG. **8** (SHEET **4** of **10**) depicts a side view of a magnetic-coupling assembly of the apparatus of FIG. **1**;

[0024] FIG. **9** and FIG. **10** (SHEETS **5** and **6** of **10**) depict side views of the apparatus of FIG. **1**, in which the apparatus is calibrated before the apparatus is used to transfer the printing ink to the printable material;

[0025] FIG. **11** (SHEET **7** of **10**) depicts a side view of the apparatus of FIG. **1**, in which the printable material is installed in the apparatus (prior to the printable material receiving the printing ink);

[0026] FIG. **12** and FIG. **13** (SHEETS **8** and **9** of **10**) depict side views of the apparatus of FIG. **1**, in which the apparatus is operated in such a way that the printing ink is transferred to the printable material;

[0027] FIG. **14** (SHEET **10** of **10**) depicts a top view of the printable material receiving the printing ink, which was transferred thereto by the apparatus of FIG. **13**; and

[0028] FIG. **15** (SHEET **10** of **10**) depicts a perspective view of the printable material of FIG. **14**, and also depicts a color-measuring system configured to determine a color value measurement associated with the printing ink that was transferred to the printable material of FIG. **14**.

[0029] The drawings are not necessarily to scale and may be illustrated by phantom lines, diagrammatic representations and fragmentary views. In certain instances, details unnecessary for an understanding of the embodiments (and/or details that render other details difficult to perceive) may have been omitted.

[0030] Corresponding reference characters indicate corresponding components throughout the several figures of the drawings. Elements in the several figures are illustrated for simplicity and clarity and have not been drawn to scale. The dimensions of some of the elements in the figures may be emphasized relative to other elements for facilitating an understanding of the various disclosed embodiments. In addition, common, but well-understood, elements that are useful or necessary in commercially feasible embodiments are often not depicted to provide a less obstructed view of the embodiments of the present disclosure.

LISTING OF REFERENCE NUMERALS USED IN THE DRAWINGS

[0031] **100** apparatus
[0032] **102** doctor blade
[0033] **104** impression roller
[0034] **105** impression force
[0035] **106** housing assembly
[0036] **108** dispensing spool
[0037] **109** spool clutch
[0038] **110** retrieval drum
[0039] **112** magnetic-coupling assembly
[0040] **113** on-off lever
[0041] **114** roller-positioning device
[0042] **116** roller-support device
[0043] **118** blade-positioning device
[0044] **120** blade-support assembly
[0045] **122** cutting assembly
[0046] **124** idler roller
[0047] **126** stop
[0048] **128** structural spacer
[0049] **130** spool support
[0050] **132** lateral side walls
[0051] **134** roller dial indicator
[0052] **136** blade dial indicator
[0053] **138** attachment mechanism
[0054] **900** printing ink
[0055] **902** engraving area
[0056] **904** stationary-mounted printing machine cylinder (printing cylinder)
[0057] **906** printable material
[0058] **908** color-measuring system
[0059] **910** stationary frame

DETAILED DESCRIPTION OF THE NON-LIMITING EMBODIMENT(S)

[0060] The following detailed description is merely exemplary and is not intended to limit the described embodiments or the application and uses of the described embodiments. As used, the word "exemplary" or "illustrative" means "serving as an example, instance, or illustration." Any implementation described as "exemplary" or "illustrative" is not necessarily to be construed as preferred or advantageous over other implementations. All of the implementations described below are exemplary implementations provided to enable persons skilled in the art to make or use the embodiments of the disclosure and are not intended to limit the scope of the disclosure. The scope of the invention is defined by the claims. For the description, the terms "upper," "lower," "left," "rear," "right," "front," "vertical," "horizontal," and derivatives thereof shall relate to the examples as oriented in the drawings. There is no intention to be bound by any expressed or implied theory in the preceding Technical Field, Background, Summary or the following detailed description. It is also to be understood that the devices and processes illustrated in the attached drawings, and described in the following specification, are exemplary embodiments (examples), aspects and/or concepts defined in the appended claims. Hence, dimensions and other physical characteristics relating to the embodiments disclosed are not to be considered as limiting, unless the claims expressly state otherwise. It is understood that the phrase "at least one" is equivalent to "a". The aspects (examples, alterations, modifications, options, variations, embodiments and any equivalent thereof) are described regarding the drawings. It should be understood that the invention is limited to the subject matter provided by the claims, and that the invention is not limited to the particular aspects depicted and described.

[0061] FIG. **1** and FIG. **2** depict perspective views of an apparatus **100** configured to transfer a printing ink **900** (depicted in FIG. **12**), which is received in an engraving area **902** (also depicted in FIG. **12** and also called an engraving cell) provided by (defined by) a stationary-mounted printing machine cylinder **904** (also depicted in FIG. **12** and also called a printing drum), to a printable material **906**. The stationary-mounted printing machine cylinder **904** may be called the actual production-engraved printing cylinder to be used by the printing machine (known and not depicted). For ease of description of the FIGS., the stationary-mounted printing machine cylinder **904** is referred to as the printing cylinder **904**.

[0062] In accordance with the embodiment as depicted in FIG. **1** and FIG. **2**, the apparatus **100** includes (and is not limited to) a synergistic combination of a housing assembly **106** (also called a frame assembly), a dispensing spool **108**, a retrieval drum **110**, a magnetic-coupling assembly **112**, a roller-positioning device **114**, a blade-positioning device **118**, and a cutting assembly **122**.

[0063] It will be appreciated that the apparatus is not simply limited to application with a printing cylinder of a rotogravure intaglio printing press, and that the apparatus may be usable on any type of printing cylinder (if so desired).

[0064] Generally, the apparatus **100** is configured to produce (provide) the printable material **906** (also called an actual color strip sample) for the purpose of color verification (verify color qualities of the printed ink formed on the printable material **906**) prior to printing production (mass printing). The apparatus **100** may be called a direct proofer. The apparatus **100** is configured to be a hand-held tool.

[0065] In accordance with a preferred embodiment, the apparatus **100** is configured to selectively magnetically attach directly to (and magnetically detach from) the printing cylinder **904** (also called a printing drum). The printing cylinder **904** is to be deployed or used in the printing machine (known and not depicted).

[0066] In accordance with an embodiment, the housing assembly **106** is configured to be selectively removable from the printing cylinder **904** once the apparatus **100** is no longer required.

[0067] Preferably, the housing assembly **106** is configured to support the dispensing spool **108**. The dispensing spool **108** is configured to receive and support the printable material **906**, in which the printable material **906** includes a material strip (having paper, plastic, metal, etc., and any equivalent thereof). The dispensing spool **108** is configured to be removable from the apparatus **100**. The dispensing spool **108** is configured to be operatively rotatably mounted to a spool support **130** (also called a shaft member). A spool clutch **109** is configured to rotatably mount the dispensing spool **108** to the spool support **130**. The spool clutch **109** is configured to control and regulate the release of the printable material **906** from the dispensing spool **108** (in a controlled manner). Preferably, the spool clutch **109** includes a spring mechanism for regulating controlled movement of the printable material **906** from the dispensing spool **108**.

[0068] Preferably, the housing assembly **106** is configured to support the retrieval drum **110**. The retrieval drum **110** is

configured to receive the printable material **906** from the dispensing spool **108** (after an inked impression is imparted to the printable material **906**).

[0069] Preferably, the housing assembly **106** is configured to support the magnetic-coupling assembly **112**. The magnetic-coupling assembly **112** is configured to selectively magnetically couple the housing assembly **106** to the printing cylinder **904** (as depicted in FIG. **4**, FIG. **5** and FIG. **6**). In addition, the magnetic-coupling assembly **112** is configured to selectively magnetically uncouple the housing assembly **106** from the printing cylinder **904** so that the housing assembly **106** may be removed (disconnected) from the printing cylinder **904**. Preferably, the magnetic-coupling assembly **112** includes two instances of an industrial magnet positioned on opposite sides of the housing assembly **106**.

[0070] Preferably, the apparatus **100** includes the magnetic-coupling assembly **112** configured to magnetically attach (and detach) the housing assembly **106** directly to (and from) the printing cylinder **904** (also called the actual production engrave printing cylinder), which is depicted in FIG. **4**. For instance, the range of printing cylinders is from about four inches to about 14 inches in diameter.

[0071] In accordance with a preferred embodiment, the magnetic-coupling assembly **112** has a magnetic attraction force of about 40 pounds. The magnetic-coupling assembly **112** includes an ON/OFF switch for work holding position (A) base is machined; (B) the dimensions are about 2.5 inches by about two inches by about 2 and 3/16 inches. The magnetic-coupling assembly **112** includes a V-groove base configured to allow mounting onto a cylindrical surface. More preferably, the magnetic-coupling assembly **112** includes a permanent magnet that has about a 60 kilogram (about 130 pounds) of holding force.

[0072] Preferably, the housing assembly **106** is configured to support the roller-positioning device **114**. The operation and purpose of the roller-positioning device **114** is described below in greater detail. Preferably, the housing assembly **106** is configured to support the blade-positioning device **118**. The operation and purpose of the blade-positioning device **118** is described below in greater detail. Preferably, the housing assembly **106** is configured to support the cutting assembly **122**. The operation and purpose of the cutting assembly **122** is described below in greater detail.

[0073] FIG. **3** depicts a bottom perspective view of the apparatus **100** of FIG. **1**, in which a bottom section of the apparatus **100** is configured to make contact with an outer surface of the printing cylinder **904** (as depicted in FIG. **12** and in other FIGS).

[0074] In accordance with the embodiment as depicted in FIG. **3**, the apparatus **100** includes a synergistic combination of a doctor blade **102**, an impression roller **104**, a housing assembly **106**, a dispensing spool **108**, a retrieval drum **110**, a magnetic-coupling assembly **112**, a blade-positioning device **118** and a blade-support assembly **120**. Preferably, the housing assembly **106** includes spaced-apart opposite lateral side walls **132**. Preferably, the housing assembly **106** is configured to support the doctor blade **102** (in such a way that the doctor blade **102** is positioned between the spaced-apart opposite lateral side walls **132**, and to one side of the housing assembly **106**). Preferably, the housing assembly **106** is configured to support the impression roller **104** (in such a way that the impression roller **104** is positioned between the spaced-apart opposite lateral side walls **132**, and is also positioned in a central position of the housing assembly **106**). Preferably, the housing assembly **106** is configured to support the magnetic-coupling assembly **112**. More preferably, the magnetic-coupling assembly **112** includes two instances of an industrial magnet which are positioned on the outer surfaces of the spaced-apart opposite lateral side walls **132** (and is also positioned at a central position of the housing assembly **106**). Preferably, the housing assembly **106** is configured to support the blade-positioning device **118**. The blade-positioning device **118** is operatively connected to the blade-support assembly **120**. The blade-positioning device **118** is configured to move the blade-support assembly **120**. Preferably, the housing assembly **106** is configured to support movement of the blade-support assembly **120**. The blade-support assembly **120** is configured to support a fixed connection with the doctor blade **102** (in such a way that the doctor blade **102** faces the printing cylinder **904**, as depicted in FIG. **4**).

[0075] FIG. **4**, FIG. **5** and FIG. **6** depict side views of the apparatus **100** of FIG. **1**, and also depict the manner in which the apparatus **100** is operatively coupled to the printing cylinder **904**. This is done in such a way that the apparatus **100** may be movable relative to an outer curved peripheral surface of the printing cylinder **904**.

[0076] In accordance with the embodiment as depicted in FIG. **4**, FIG. **5** and FIG. **6**, the printing cylinder **904** is fixedly attached to a stationary frame **910** (in such a way that the printing cylinder **904** cannot rotate along its axis). It will be appreciated that the printing cylinder **904** is removed from the printing machine. The housing assembly **106** is operatively attached (coupled) to the printing cylinder **904** relative to the engraving area **902**. Once the housing assembly **106** is operatively coupled to the printing cylinder **904** (by (A) engagement or activation of the magnetic-coupling assembly **112** as depicted in FIG. **2**, and (B) positioning the housing assembly **106** onto the outer surface of the printing cylinder **904**), the housing assembly **106** may be rotatably moved along the outer curved surface of the printing cylinder **904**. This is done in such a way that the housing assembly **106** is made to move over (and past) the engraving area **902**. Once the housing assembly **106** is moved past the doctor blade **102**, a printed marking is imparted to the printable material **906** (as depicted in FIG. **13** and FIG. **14**). By way of example, the travel distance taken or moved by the apparatus **100** along the circumference of the printing cylinder **904** is about 3.75 inches.

[0077] FIG. **7** depicts a side view of the apparatus **100** of FIG. **1**, in which the directional movements of various components of the apparatus **100** are depicted.

[0078] In accordance with the embodiment as depicted in FIG. **7**, the impression roller **104** is configured to be rotatably mounted to the housing assembly **106**. The impression roller **104** (also called a wheel or a transfer roller) is rotatably coupled (mounted) to an end portion of the roller-support device **116**. Preferably, the impression roller **104** includes a rubber roller or a urethane rubber roller (and any equivalent thereof) having a predetermined hardness (suitable for imparting a force to the printable material **906**, when needed). The impression roller **104** is configured to apply the impression force **105** (as depicted in FIG. **9**, and is also called a contact pressure) to the printable material **906** (also called a strip). This is done in such a way that the printable material **906** contacts the outer curved peripheral circumference of the printing cylinder **904** (while the printing cylinder **904** is held relatively stationary).

[0079] The roller-support device **116** (also called a vertical adjustment support block) is slide-mounted to the housing assembly **106**, and is configured to be slide movable relative to the housing assembly **106**.

[0080] The roller-positioning device **114** is operatively mounted and supported by the housing assembly **106**. The roller-positioning device **114** is attached to an end section of the roller-support device **116**. The roller-positioning device **114** is configured to linearly translate (reciprocate) the roller-support device **116** in a back and forth motion in such a way that the impression roller **104** is moved toward (or away from) the printing cylinder **904** (as depicted in FIGS. **9** and **10**). Specifically, the roller-positioning device **114** is configured to impart the impression force **105** (as depicted in FIG. **9**) to the printing cylinder **904** while the magnetic-coupling assembly **112** magnetically clamps (couples) the housing assembly **106** to the printing cylinder **904**. This is done in such a way that the printing ink **900** may become transferred from the engraving area **902** to the printable material **906** (thereby creating a print marking on the printable material **906**). The roller-positioning device **114** is configured to apply a predetermined pressure (within a tolerance level) against the outer surface of the printing cylinder **904** in such a way that the print ink may be transferred from the engraving area **902** to the printable material **906**. Preferably, the roller-positioning device **114** includes a measurement head, such as the MITUTOYO (TRADEMARK) MODEL 153-207 micrometer measurement head (and any equivalent thereof).

[0081] The blade-positioning device **118** is operatively mounted to (and is supported by) the housing assembly **106**. Preferably, the blade-positioning device **118** includes a measurement head, such as the MITUTOYO (TRADEMARK) MODEL 153-207 micrometer measurement head (and any equivalent thereof).

[0082] The doctor blade **102** is connected to (supported by) the blade-support assembly **120**. The blade-support assembly **120** is configured to receive and support the doctor blade **102** in a fixed relationship. The blade-support assembly **120** is connected to the blade-positioning device **118**. The blade-positioning device **118** is configured to linearly translate (reciprocate) the blade-support assembly **120** in such a way that the doctor blade **102** is moved toward (or away from) the printing cylinder **904** (as depicted in FIGS. **9** and **10**). The blade-positioning device **118** is configured to apply the correct contact point angle for the doctor blade **102**. This is done in such a way that (A) the doctor blade **102** may remove or wipe the printing ink **900** from the printing cylinder **904** (as depicted in FIGS. **12** and **13**), and (B) the printing ink **900** that remains in the engraving area **902** (also called an engraving cell) may be transferred (ink dot transfer) to the printable material **906** (also called the actual substrate material to be printed on in the printing machine).

[0083] The doctor blade **102** is configured to meter the printing ink **900** to be applied from the printing cylinder **904** to the printable material **906**. The doctor blade **102** provides a contact point tip configured to wipe (remove) excess ink from the outer surface of the printing cylinder **904** (as depicted in FIGS. **12** and **13**) while allowing some of the printing ink **900** to be retained in the engraving area **902** (which is then to be transferred to the printable material **906**) as a printing dot.

[0084] In accordance with the embodiment as depicted in FIG. **7** and FIG. **8**, the magnetic-coupling assembly **112** is configure to couple the housing assembly **106** to the printing cylinder **904**. The magnetic-coupling assembly **112** is configured to selectively fixedly attach the housing assembly **106** to the outer curved peripheral circumference of the printing cylinder **904** (while the printing cylinder **904** is held relatively stationary). It will be appreciated that other equivalent devices may be used as a substitute for the magnet. The magnetic-coupling assembly **112** includes an on-off lever **113** configured to release the magnetic-coupling assembly **112** from the printing cylinder **904**. Generally, the housing assembly **106** is configured to be selectively removable from the printing cylinder **904** (once the apparatus **100** is no longer required), and this arrangement is provided by the magnetic-coupling assembly **112**.

[0085] The on-off lever **113** is configured to magnetically apply force to (A) maintain the impression roller **104** against the outer surface of the printing cylinder **904** (to apply pressure), and (B) maintain the doctor blade **102** in contact relationship with the outer surface of the printing cylinder **904**, while a hand-held pull force is applied by the user (as depicted in FIGS. **4** to **6**). It will be appreciated that other equivalent methods may be used as a substitute (if so desired). This action results in transfer of a printing mark (print dot) to the printable material **906**.

[0086] In accordance with the embodiment as depicted in FIG. **7**, a dispensing spool **108** is configured to receive, and to dispense, the printable material **906**. Preferably, the dispensing spool **108** is configured to receive, and to dispense, the printable material **906** in such a way that the printable material **906** is positioned proximate to the impression roller **104** once the printable material **906** extends from the dispensing spool **108**. The dispensing spool **108** is configured to store the printable material **906** (an unprinted material strip) in a circular storage format. For instance, the dispensing spool **108** may be sized at about 2.75 inches by about 0.5 inches. The printable material **906** may be called a printing substrate spool ribbon. The dispensing spool **108** receives a preference material (paper, plastic, etc.) used for receiving printing marks on the printing machine (known and not depicted).

[0087] The spool clutch **109** is configured to control rotational speed of the dispensing spool **108**. The spool clutch **109** provides a knob configured to hold the dispensing spool **108**. The spool clutch **109** is configured to provide a clutch braking device (known and not depicted). The printable material **906** is configured to be (A) taken (removed) from the dispensing spool **108**, (B) make contact with the outer curved periphery of the impression roller **104**, and then (C) received by the retrieval drum **110** (in a serpentine manner).

[0088] The cutting assembly **122** is configured to cut the printable material **906** after the printable material **906** has received an ink impression (ink dot). The cutting assembly **122** may include a serrated edge (similar to a tape dispenser, which is known and not depicted).

[0089] In accordance with the embodiment as depicted in FIG. **12** and FIG. **13**, a retrieval drum **110** is configured to receive, and to take up, the printable material **906** from the dispensing spool **108** via the impression roller **104**. The retrieval drum **110** is configured to receive (draw or retrieve) the printable material **906** from the impression roller **104**. The printable material **906** having the printed ink marking is then held in the retrieval drum **110** (as a printed strip sample). The retrieval drum **110** includes a mechanical

recoil spring (known and not depicted), and while under tension, the retrieval drum **110** is configured to retrieve the printable material **906** thereby avoiding loose material during the printing step, etc.

[0090] The idler roller **124** is configured to apply tension to the printable material **906** while the printable material **906** is moved from the dispensing spool **108** to the retrieval drum **110**. The idler roller **124** is configured to facilitate the correct path of travel for the printable material **906** and to transfer the printable material **906** from dispensing spool **108** to the retrieval drum **110** with ease (and thereby preventing improper tension that may create unwanted scratches on the printable material **906**).

[0091] The stop **126** is configured to prevent the retrieval drum **110** from rotating (as depicted in FIGS. **12** and **13**).

[0092] The structural spacer **128** is configured to maintain the opposite side walls (as depicted in FIG. **2**) of the housing assembly **106** in a spaced apart in a fixed and spaced-apart relationship. The structural spacer **128** is configured to (A) secure the oppositly-facing side-panel sections (also called frames) of the housing assembly **106**, and (B) prevent the side panel sections from spreading apart, and to prevent the printable material **906** from wrapping around the impression roller **104** while the printable material **906** is in motion (while the printable material **906** leaves the dispensing spool **108**, goes around part of the impression roller **104** and enters the retrieval drum **110**).

[0093] FIG. **8** depicts a side view of the magnetic-coupling assembly **112** of the apparatus **100** of FIG. **1**.

[0094] FIG. **9** and FIG. **10** depict side views of the apparatus **100** of FIG. **1**, in which the apparatus **100** is calibrated before the apparatus **100** is used (deployed) to transfer the printing ink **900** to the printable material **906**.

[0095] In accordance with the embodiment as depicted in FIG. **9** and FIG. **10**, the doctor blade **102** is configured to be retractable from the engraving area **902** of the printing cylinder **904** in such a way that the doctor blade **102** becomes spaced apart from an exterior outer surface of the printing cylinder **904**.

[0096] In accordance with the embodiment as depicted in FIG. **9** and FIG. **10**, the doctor blade **102** is configured to be movable towards the engraving area **902** of the printing cylinder **904** in such a way that the doctor blade **102**, in use, makes contact with an exterior outer surface of the printing cylinder **904** located proximate to the engraving area **902**.

[0097] In accordance with the embodiment as depicted in FIG. **9** and FIG. **10**, prior to placing the apparatus **100** onto the outer surface of the printing cylinder **904**, turn (position) the on-off lever **113** (as depicted in FIG. **8**) to the OFF position (otherwise, the apparatus **100** may inadvertently damage the outer surface of the printing cylinder **904**). In accordance with an embodiment, the lower section of the apparatus **100** includes a relatively thinner layer of elastic material configured to prevent inadvertent damage to the printing cylinder **904** in response to the placement of the lower section onto the outer surface of the printing cylinder **904**. Precise setting or positing of the impression roller **104** and doctor blade **102** relative to the outer surface of the printing cylinder **904** ensures the correct ink film thickness transfer to the printable material **906**.

[0098] In accordance with the embodiment as depicted in FIG. **9** and FIG. **10**, the following describes the operational steps to be performed by the user for calibrating the apparatus **100** (calibrating the position of the impression roller **104** and the doctor blade **102**):

[0099] Operation A includes disengaging the magnetic-coupling assembly **112** (as depicted in FIG. **12**); this may be accomplished by turning the on-off lever **113** to the OFF position so that the apparatus **100** does not inadvertently damage the printing cylinder **904** by becoming magnetically coupled to the surface of the printing cylinder **904**.

[0100] Operation B includes fully retracting the impression roller **104** into the interior of the apparatus **100** by using the roller-positioning device **114**.

[0101] Operation C includes fully retracting the doctor blade **102** into the interior of the apparatus **100** by using the blade-positioning device **118**.

[0102] Operation D includes placing the apparatus **100** on the surface of the printing cylinder **904** without the printable material **906** installed in or to the apparatus **100** (as depicted in FIG. **9** and FIG. **10**, the dispensing spool **108** of FIG. **7** is not installed or mounted to the spool support **130** of the apparatus **100**); once the lower section of the apparatus **100** is installed to (is contact with) the outer surface of the printing cylinder **904**, the impression roller **104** and the doctor blade **102** are spaced apart from (and not in contact with) the outer surface of the printing cylinder **904**.

[0103] Operation E includes engaging the magnetic-coupling assembly **112** (as depicted in FIG. **12**). This may be accomplished by turning the on-off lever **113** to the ON position so that the apparatus **100** becomes magnetically attracted to and magnetically coupled to the surface of the printing cylinder **904** while permitting the user to push the apparatus **100** along the outer surface of the printing cylinder **904**.

[0104] Operation F includes, once the apparatus **100** is magnetically coupled to the printing cylinder **904**, moving the impression roller **104** by engaging (rotating) the roller-positioning device **114** until the impression roller **104** touches the outer surface of the printing cylinder **904**. The roller-positioning device **114** includes a roller dial indicator **134**.

[0105] Operation G includes making a note (a recording) of the value indicated by the roller dial indicator **134**.

[0106] Operation H includes rotating the roller-positioning device **114** by at least one full turn (such as, applying about 0.025 thousands pressure).

[0107] Operation I includes making a note (a recording) of the value (final value) as indicated by the roller dial indicator **134** of the roller-positioning device **114** (for future reference).

[0108] Operation J includes moving the doctor blade **102** by engaging (rotating) the blade-positioning device **118** until the doctor blade **102** touches the outer surface of the printing cylinder **904**. The blade-positioning device **118** includes a blade dial indicator **136**.

[0109] Operation K includes making a note (a recording) of the value indicated on the blade dial indicator **136**.

[0110] Operation L includes rotating the blade-positioning device **118** by at least one full turn (such as, applying about 0.025 thousands pressure).

[0111] Operation M includes making a note (a recording) of the value (final value) as indicated on the blade dial indicator **136** (for future reference).

[0112] Operation N includes retracting the doctor blade **102** into the interior of the apparatus **100** by utilizing the roller-positioning device **114**.

[0113] Operation O includes retracting the impression roller **104** into the interior of the apparatus **100** by utilizing the blade-positioning device **118**.

[0114] Operation P includes disengaging the magnetic-coupling assembly **112** (as depicted in FIG. **12**); this may be accomplished by turning the on-off lever **113** to the OFF position.

[0115] Operation Q includes removing the apparatus **100** from the outer surface of the printing cylinder **904**.

[0116] FIG. **11** depicts a side view of the apparatus **100** of FIG. **1**, in which the printable material **906** is installed in the apparatus **100** (prior to the printable material **906** receiving the printing ink **900** (as depicted in FIG. **12**).

[0117] Referring to the embodiment as depicted in FIG. **11**, after the apparatus **100** is calibrated (as depicted in FIG. **9** and FIG. **10**), the printable material **906** is installed to the dispensing spool **108**, and then the dispensing spool **108** is installed to the apparatus **100**. The printable material **906** is installed to the interior components of the apparatus **100**. For instance, the printable material **906** is threaded (extended) from the dispensing spool **108**, past the idler roller **124**, and around a portion (the lower portion) of the impression roller **104**, and then the printable material **906** is installed to the retrieval drum **110** (for take up by the retrieval drum **110**).

[0118] Referring to the embodiment as depicted in FIG. **11**, the user uses the following operational steps to load the printable material **906** to the apparatus **100**:

[0119] Operation A includes loading the dispensing spool **108** with the correct material (a sampling of the material to receive the ink by the printing machine).

[0120] Operation B includes installing the dispensing spool **108** to the apparatus **100** (specifically, to the spool support **130**, as depicted in FIG. **10**).

[0121] Operation C includes attaching the spool clutch **109** (also called the recoil spool winder) to the dispensing spool **108** and the spool support **130** (as depicted in FIG. **10**).

[0122] Operation D includes extending the printable material **906** from the dispensing spool **108** past the idler roller **124** and around the lower portion of the impression roller **104**, and then toward the retrieval drum **110**.

[0123] Operation E includes recoiling the dispensing spool **108** by turning the dispensing spool **108** clockwise until the spool clutch **109** (also called a magnetic clamp) recoils to a stop position (as this action may allow for proper tension wind up to take place).

[0124] Operation F includes positing the retrieval drum **110** in such a way that the stop **126** abuts (placed against) the housing assembly **106** (as depicted in FIG. **11**).

[0125] Operation G includes coupling the end portion of the printable material **906** to the retrieval drum **110** with an attachment mechanism **138**. The attachment mechanism **138** may include a magnet portion and the outer section of the retrieval drum **110** having a magnetisable material.

[0126] FIG. **12** and FIG. **13** depict side views of the apparatus **100** of FIG. **1**, in which the apparatus **100** is operated in such a way that the printing ink **900** is transferred to the printable material **906**.

[0127] In accordance with the embodiment as depicted in FIG. **13**, the apparatus **100** is configured to produce an inked impression onto the printable material **906** (the printable material **906** may be called an actual sample color strip), in which an embodiment of the inked impression made onto the printable material **906** is depicted in FIG. **14**. The inked impression (as depicted in FIG. **14**) is made on the printing cylinder **904** (which may be called the actual production-engraved printing cylinder) to be used (deployed) in a printing machine (known and not depicted), prior to printing production (that is, prior to using the printing machine for producing a batch or mass printing job with the printing cylinder **904**).

[0128] In accordance with the embodiment as depicted in FIG. **12** and FIG. **13**, the apparatus **100** includes a synergistic combination of a doctor blade **102**, an impression roller **104**, and a housing assembly **106**.

[0129] The doctor blade **102** is configured to remove (wipe off), in use, an excess amount of a printing ink **900** received in an engraving area **902** (as depicted in FIGS. **12** and **13**) provided by (defined by) a printing cylinder **904**. The engraving area **902** is configured to receive the printing ink **900** to be transferred to a printable material **906**.

[0130] The impression roller **104** is configured to apply, in use, a predetermined amount of an impression force **105** to the printable material **906** positioned proximate to the engraving area **902** of the printing cylinder **904** (as depicted in FIGS. **12** and **13**). The impression force **105** (in use), which was applied by the impression roller **104** to the printable material **906**, urges, at least in part, the transfer of the printing ink **900** from the engraving area **902** of the printing cylinder **904** to the printable material **906**.

[0131] The housing assembly **106** is configured to be selectively securely rotatably slide mounted to the printing cylinder **904** (as depicted in FIGS. **12** and **13**). More specifically, the housing assembly **106** is also configured to support, in use, the doctor blade **102** and the impression roller **104** relative to (an outer printing surface of) the engraving area **902** of the printing cylinder **904** once the housing assembly **106** is selectively securely rotatably slide mounted to the printing cylinder **904**.

[0132] In accordance with the embodiment as depicted in FIG. **12** and FIG. **13**, the housing assembly **106** is configured to support, in use, the doctor blade **102** and the impression roller **104** relative to an outer printing surface of the printing cylinder **904** once the housing assembly **106** is selectively securely rotatably slide mounted to the printing cylinder **904**.

[0133] In accordance with the embodiment as depicted in FIG. **12** and FIG. **13**, the doctor blade **102** is configured to remove the excess amount of the printing ink **900** received in the engraving area **902** of the printing cylinder **904**. This is done in response to: (A) the housing assembly **106** being securely rotatably slide mounted to the printing cylinder **904**, (B) the doctor blade **102** making contact with the outer printing surface of the printing cylinder **904**, and (C) permitting relative movement between the housing assembly **106** and the printing cylinder **904** (while the housing assembly **106** remains coupled to the printing cylinder **904** during such relative movement).

[0134] In accordance with the embodiment as depicted in FIG. **12** and FIG. **13**, the impression roller **104** is configured to apply, in response to the relative movement between the housing assembly **106** and the printing cylinder **904**, the predetermined amount of the impression force **105** to the printable material **906** that is positioned over proximate to the engraving area **902** of the printing cylinder **904**. This is done in such a way that the impression force **105** (in use) urges, at least in part, transfer of the printing ink **900** from the engraving area **902** of the printing cylinder **904** to the printable material **906**.

[0135] In accordance with the embodiment as depicted in FIG. **12** and FIG. **13**, the impression roller **104** is configured to apply the predetermined amount of the impression force **105** to the printable material **906** that is positioned proximate to the engraving area **902** of the printing cylinder **904**. This is done in response to (A) the housing assembly **106** being securely rotatably slide mounted to the printing cylinder **904**, and (B) the impression roller **104** making contact with the printable material **906**; and (C) permitting relative movement between the housing assembly **106** and the printing cylinder **904**.

[0136] In accordance with the embodiment as depicted in FIG. **12** and FIG. **13**, the housing assembly **106** is configured to support the doctor blade **102** and the impression roller **104** relative to the outer printing surface of the printing cylinder **904** once the housing assembly **106** is selectively securely rotatably slide mounted to the printing cylinder **904** (by way of deployment of the magnetic-coupling assembly **112**, as depicted in FIGS. **7** and **8**).

[0137] In accordance with the embodiment as depicted in FIG. **12** and FIG. **13**, the apparatus **100** closely reproduces the printing press sample by using press parameters identified from printing production process recordings. Preferably, the printable material **906** includes the same material substrate (to receive the ink from the printing machine), the same printing ink to be used (consumed) by the printing machine, the printing-ink viscosity and the printing-ink blend, etc. Changes in these inputs may affect the outcome results. Improved successful outcome may require discipline from both the press data (data about the printing machine) and ink proofer attendant (the user).

[0138] In accordance with the embodiment as depicted in FIG. **12** and FIG. **13**, the apparatus **100** includes a synergistic combination of the doctor blade **102**, the impression roller **104**, and the housing assembly **106** configured to be selectively securely mounted to a stationary-mounted printing machine cylinder **904**. The housing assembly **106** is also configured to support, in use, the doctor blade **102** and the impression roller **104** relative to an engraving area **902** of the stationary-mounted printing machine cylinder **904** once the housing assembly **106** is selectively securely mounted to the stationary-mounted printing machine cylinder **904**.

[0139] In accordance with the embodiment as depicted in FIG. **12** and FIG. **13**, the user uses the following operational steps for manipulating the apparatus **100** for imprinting a mark (ink mark) onto the printable material **906**:

[0140] Operation A includes disengaging the magnetic-coupling assembly **112** (as depicted in FIG. **12**); this may be accomplished by turning the on-off lever **113** to the OFF position so that the apparatus **100** does not inadvertently damage the printing cylinder **904** by becoming magnetically coupled to the surface of the printing cylinder **904**.

[0141] Operation B includes placing the apparatus **100** to the outer surface of the printing cylinder **904** (when the magnetic-coupling assembly **112** remains disengaged) in front of the engraving area **902** of the printing cylinder **904**.

[0142] Operation C includes engaging the magnetic-coupling assembly **112** (as depicted in FIG. **12**); this may be accomplished by turning the on-off lever **113** to the ON position so that the apparatus **100** becomes magnetically attracted to and magnetically coupled to the surface of the printing cylinder **904** while permitting the user to push the apparatus **100** along the outer surface of the printing cylinder **904**.

[0143] Operation D includes moving the impression roller **104** into contact with the outer surface of the printing cylinder **904** (preferably, to the predetermined position as identified in the calibration process).

[0144] Operation E includes moving the doctor blade **102** into contact with the outer surface of the printing cylinder **904** (preferably, to the predetermined position as identified in the calibration process).

[0145] Operation F includes applying enough of the printing ink **900** into the engraving area **902** (a sufficient amount of the printing ink **900** for proper ink transfer to take place.

[0146] Operation G includes pulling or moving the apparatus **100** towards one side of the printing cylinder **904** at a comfortable speed until the recoil stops (approximately 2 inches of travel), as depicted in FIG. **13**.

[0147] Operation H includes disengaging the magnetic-coupling assembly **112** (as depicted in FIG. **12**) from the printing cylinder **904**; this may be accomplished by turning the on-off lever **113** to the OFF position.

[0148] Operation I includes removing the attachment mechanism **138**, and pulling a length of the printable material **906**, and then cutting the length of the printable material **906** by using the cutting assembly **122**.

[0149] Operation J includes measuring the ink that was formed on the printable material **906** with the color-measuring system **908** (as depicted in FIG. **15**).

[0150] Operation K includes recording the data provided by the color-measuring system **908**.

[0151] Operation L includes formulating (reformulating) the chemistry of the printing ink **900** (in order to determine a more satisfactory ink attribute for the printing ink).

[0152] Operation M includes reiterating (at least in part) the above operational steps for the newly formulated ink until the verified (validated) color attribute is achieved for the printing ink (to be determined by a measurement of the color value of the printing ink formed on the printable material **906** by the color-measuring system **908**, as depicted in FIG. **15**).

[0153] Operation N includes moving the impression roller **104** into the interior of the apparatus **100** and away from the printing cylinder **904**.

[0154] Operation O includes moving the doctor blade **102** into the interior of the apparatus **100** and away from the printing cylinder **904**.

[0155] Operation P includes removing the apparatus **100** from the printing cylinder **904** (by disengaging the magnetic-coupling assembly **112**, as depicted in FIG. **12**, by turning or placing the on-off lever **113** to the OFF position).

[0156] FIG. **14** depicts a top view of the printable material **906** receiving the printing ink **900**, which was transferred thereto by the apparatus **100** of FIG. **13**.

[0157] FIG. **15** depicts a perspective view of the printable material **906** of FIG. **14**, and also depicts a color-measuring system **908** configured to determine a color value measurement associated with the printing ink **900** that was transferred to the printable material **906** of FIG. **14**.

[0158] In accordance with the embodiments as depicted in FIG. **14** and FIG. **15**, the printable material **906** having the printed ink formed or deposited thereon (as depicted in FIG. **14**) is produced or provided by the apparatus **100** (as depicted in FIG. **13**). The printing ink formed on the printable material **906** is analyzed for a color attribute (such as, color verification, as depicted in FIG. **15**). The apparatus **100** is configured to produce an actual sample of material

(that is, the printable material **906**) from an actual production-engraved instance of the printing cylinder **904** to be used in a printing machine (prior to production of a large amount of printing materials by the printing machine).

[0159] The color-measuring system **908** is configured to measure an aspect or an attribute (such as, the color value) of the imprinted ink formed (deposited) on the printable material **906**. Embodiments of the color-measuring system **908** may include (and are not limited to): the KONICA MINOLTA (TRADEMARK) Model Number FD-7 SpectroDensitometer machine, the X-RITE (TRADEMARK) Model Number 939 SpectroDdensitometer machine, and/or the X-RITE (TRADEMARK) Model Number+500 Series SpectroDensitometer machine, etc., and any equivalent thereof. The color-measuring system **908** is configured to produce or provide color verification of printed ink formed (deposited) on the printable material **906**. For instance, for the case where the color-measuring system **908** indicates that the ink that was imprinted onto the printable material **906** (as depicted in FIG. **14**) is not color verified (for instance, the pantone number measured for the ink marked on the printable material **906** is incorrect), the following actions may be taken (by the user): (A) adjusting the formula of the printing ink **900** (thickening, thinning, etc.), (B) removing the unwanted ink held in the engraving area **902** of the printing cylinder **904**, (C) applying a newly formulated instance of the printing ink **900** to the engraving area **902** of the printing cylinder **904**, (D) using the apparatus **100** to produce a new instance of the printable material **906** (based on the newly formulated ink), and (E) checking for color verification (by using the color-measuring system **908**) of the newly imprinted ink formed on the printable material **906**. The process may be reiterated as many times as desired until the color verification is obtained of the imprinted ink formed on the printable material **906**.

[0160] For the case where the imprinted ink formed on the printable material **906** (as depicted in FIG. **14**) is color verified by the color-measuring system **908** (such as, the pantone color number of the imprinted ink is validated), the printing cylinder **904** is deployed into the printing machine, and the printing machine is used for manufacturing a print job, in which the print job uses the same material as the material used in the printable material **906**.

[0161] The technical effects of the apparatus **100** is that the apparatus **100** may improve confidence for the formulation of the printing ink **900** to be consumed by the printing machine and the printing cylinder **904** for printing (manufacturing) the print job (imprinting the printing ink **900** onto the printed material in the printing machine may have the correct color value, such as color verification or pantone number, etc.).

[0162] It will be appreciated that the description identifies and describes options and variations of the apparatus **100**, regardless of whether the description identifies the options and/or variations of the apparatus **100** by way of explicit terms and/or non-explicit terms. Other options for the apparatus **100** as identified in this paragraph may include any combination and/or permutation of the technical features (assemblies, components, items, devices, etc.) as identified in the detailed description, as may be required and/or desired to suit a particular technical purpose and/or technical function. It will be appreciated, that where possible, any one or more of the technical features and/or any one or more sections of the technical features of the apparatus **100** may be combined with any other one or more of the technical features and/or any other one or more sections of the technical features of the apparatus **100** in any combination and/or permutation. Any one or more of the technical features and/or any one or more sections of the technical features of the apparatus **100** may stand on its own merit without having to be combined with another technical feature. It will be appreciated that persons skilled in the art would know that technical features of each embodiment may be deployed (where possible) in other embodiments even if not expressly stated as such above. It will be appreciated that persons skilled in the art would know that other options would be possible for the configuration of the components of the apparatus **100** (if so desired) to adjust to manufacturing requirements and still remain within the scope of the invention as described in at least one or more of the claims. This written description uses examples to disclose the invention, including the best mode, and also to enable any person skilled in the art to make and use the invention. The patentable scope of the invention is defined by the claims, and may include other examples that occur to those skilled in the art. Such other examples are within the scope of the claims if they have structural elements that do not differ from the literal language of the claims, or if they include equivalent structural elements with insubstantial differences from the literal language of the claims. It may be appreciated that the assemblies and modules described above may be connected with each other as required to perform desired functions and tasks within the scope of persons of skill in the art to make such combinations and permutations without having to describe each and every one in explicit terms. There is no particular assembly or component that may be superior to any of the equivalents available to the person skilled in the art. There is no particular mode of practicing the disclosed subject matter that is superior to others, so long as the functions may be performed. It is believed that all the crucial aspects of the disclosed subject matter have been provided in this document. It is understood that the scope of the present invention is limited to the scope provided by the independent claim(s), and it is also understood that the scope of the present invention is not limited to: (i) the dependent claims, (ii) the detailed description of the non-limiting embodiments, (iii) the summary, (iv) the abstract, and/or (v) the description provided outside of this document (that is, outside of the instant application as filed, as prosecuted, and/or as granted). It is understood, for this document, that the phrase "includes" is equivalent to the word "comprising." The foregoing has outlined the non-limiting embodiments (examples). The description is made for particular non-limiting embodiments (examples). It is understood that the non-limiting embodiments are merely illustrative as examples.

What is claimed is:

1. An apparatus, comprising:

a doctor blade; and

an impression roller; and

a housing assembly being configured to be selectively securely mounted to a stationary-mounted printing machine cylinder; and

the housing assembly also being configured to support, in use, the doctor blade and the impression roller relative to an engraving area of the stationary-mounted printing

machine cylinder once the housing assembly is selectively securely mounted to the stationary-mounted printing machine cylinder.

2. An apparatus, comprising:

a doctor blade being configured to remove, in use, an excess amount of a printing ink received in an engraving area provided by a stationary-mounted printing machine cylinder, in which the engraving area is configured to receive the printing ink to be transferred to a printable material; and

an impression roller being configured to apply, in use, a predetermined amount of an impression force to the printable material positioned proximate to the engraving area of the stationary-mounted printing machine cylinder, and the impression force, which was applied by the impression roller to the printable material, urges, at least in part, transfer of the printing ink from the engraving area of the stationary-mounted printing machine cylinder to the printable material; and

a housing assembly being configured to:

(A) be selectively securely rotatably slide mounted to the stationary-mounted printing machine cylinder; and

(B) support, in use, the doctor blade and the impression roller relative to the engraving area of the stationary-mounted printing machine cylinder once the housing assembly is selectively securely rotatably slide mounted to the stationary-mounted printing machine cylinder.

3. The apparatus of claim **2**, wherein:

the impression roller is configured to be rotatably mounted to the housing assembly.

4. The apparatus of claim **2**, wherein:

the housing assembly is configured to support, in use, the doctor blade and the impression roller relative to an outer printing surface of the stationary-mounted printing machine cylinder once the housing assembly is selectively securely rotatably slide mounted to the stationary-mounted printing machine cylinder.

5. The apparatus of claim **2**, wherein:

the housing assembly is configured to be selectively removable from the stationary-mounted printing machine cylinder.

6. The apparatus of claim **2**, wherein:

the doctor blade is configured to remove the excess amount of the printing ink received in the engraving area of the stationary-mounted printing machine cylinder in response to:

(A) the housing assembly being securely rotatably slide mounted to the stationary-mounted printing machine cylinder; and

(B) the doctor blade making contact with an outer printing surface of the stationary-mounted printing machine cylinder; and

(C) allowing relative movement between the housing assembly and the stationary-mounted printing machine cylinder.

7. The apparatus of claim **2**, wherein:

the impression roller is configured to apply, in response to relative movement between the housing assembly and the stationary-mounted printing machine cylinder, the predetermined amount of the impression force to the printable material that is positioned over proximate to the engraving area of the stationary-mounted printing machine cylinder, and the impression force, in use, urges, at least in part, transfer of the printing ink from the engraving area of the stationary-mounted printing machine cylinder to the printable material.

8. The apparatus of claim **2**, further comprising:

a dispensing spool is configured to receive, and to dispense, the printable material.

9. The apparatus of claim **2**, further comprising:

a dispensing spool is configured to receive, and to dispense, the printable material in such a way that the printable material is positioned proximate to the impression roller once the printable material extends from the dispensing spool.

10. The apparatus of claim **9**, further comprising:

a retrieval drum is configured to receive, and to take up, the printable material from the dispensing spool via the impression roller.

11. The apparatus of claim **2**, further comprising:

a magnetic-coupling assembly for coupling the housing assembly to the stationary-mounted printing machine cylinder.

12. The apparatus of claim **2**, wherein:

the housing assembly is configured to be selectively removable from the stationary-mounted printing machine cylinder once the apparatus is no longer required.

13. The apparatus of claim **2**, wherein:

the doctor blade is configured to be movable towards the engraving area of the stationary-mounted printing machine cylinder in such a way that the doctor blade, in use, makes contact with an exterior outer surface of the stationary-mounted printing machine cylinder located proximate to the engraving area.

14. The apparatus of claim **2**, wherein:

the doctor blade is configured to be retractable from the engraving area of the stationary-mounted printing machine cylinder in such a way that the doctor blade becomes spaced apart from an exterior outer surface of the stationary-mounted printing machine cylinder.

15. The apparatus of claim **2**, wherein:

the impression roller is configured to apply the predetermined amount of the impression force to the printable material that is positioned proximate to the engraving area of the stationary-mounted printing machine cylinder in response to:

(A) the housing assembly being securely rotatably slide mounted to the stationary-mounted printing machine cylinder; and

(B) the impression roller making contact with the printable material; and

(C) allowing relative movement between the housing assembly and the stationary-mounted printing machine cylinder.

16. The apparatus of claim **2**, wherein:

the housing assembly is configured to support the doctor blade and the impression roller relative to an outer printing surface of the stationary-mounted printing machine cylinder once the housing assembly is selectively securely rotatably slide mounted to the stationary-mounted printing machine cylinder.

17. The apparatus of claim **2**, wherein:

the doctor blade is configured to remove the excess amount of the printing ink received in the engraving area of the stationary-mounted printing machine cylinder in response to:

(A) the housing assembly being securely rotatably slide mounted to the stationary-mounted printing machine cylinder; and

(B) the doctor blade making contact with an outer printing surface of the stationary-mounted printing machine cylinder; and

(C) allowing relative movement between the housing assembly and the stationary-mounted printing machine cylinder; and

the impression roller is configured to apply the predetermined amount of the impression force to the printable material that is positioned proximate to the engraving area of the stationary-mounted printing machine cylinder in response to:

(A) the housing assembly being securely rotatably slide mounted to the stationary-mounted printing machine cylinder; and

(B) the impression roller making contact with the printable material; and

(C) allowing relative movement between the housing assembly and the stationary-mounted printing machine cylinder.

18. The apparatus of claim **17**, further comprising:

a dispensing spool being configured to receive, and to dispense, the printable material in such a way that the printable material is positioned proximate to the impression roller once the printable material extends from the dispensing spool; and

a retrieval drum being configured to receive, and to take up, the printable material from the dispensing spool via the impression roller; and

a magnetic-coupling assembly being configured to couple the housing assembly to the stationary-mounted printing machine cylinder.

19. The apparatus of claim **18**, further comprising:

a roller-positioning device being supported by the housing assembly; and

a roller-support device being coupled to the roller-positioning device; and

the roller-support device being supported by the housing assembly; and

the roller-support device being coupled to the impression roller; and

the roller-positioning device being configured to move the roller-support device and the impression roller relative to the stationary-mounted printing machine cylinder once the housing assembly is operatively mounted to the stationary-mounted printing machine cylinder.

20. The apparatus of claim **19**, further comprising:

a blade-positioning device being supported by the housing assembly; and

a blade-support assembly being coupled to the blade-positioning device; and

the blade-support assembly being supported by the housing assembly; and

the blade-support assembly being coupled to the doctor blade; and

the blade-positioning device being configured to move the blade-support assembly and the doctor blade relative to the stationary-mounted printing machine cylinder once the housing assembly is operatively mounted to the stationary-mounted printing machine cylinder.

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