US 20120174807A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2012/0174807 A1**

(43) **Pub. Date: Jul. 12, 2012**

Zlatin

(54) **ADJUSTABLE INKING OR DAMPENING APPARATUS FOR A VARIABLE CUTOFF PRESS AND METHOD**

(75) Inventor: **Lev Zlatin**, Portsmouth, NH (US)

(73) Assignee: **GOSS INTERNATIONAL AMERICAS, INC.**, Durham, NH (US)

(21) Appl. No.: **13/326,483**

(22) Filed: **Dec. 15, 2011**

Related U.S. Application Data

(60) Provisional application No. 61/423,646, filed on Dec. 16, 2010.

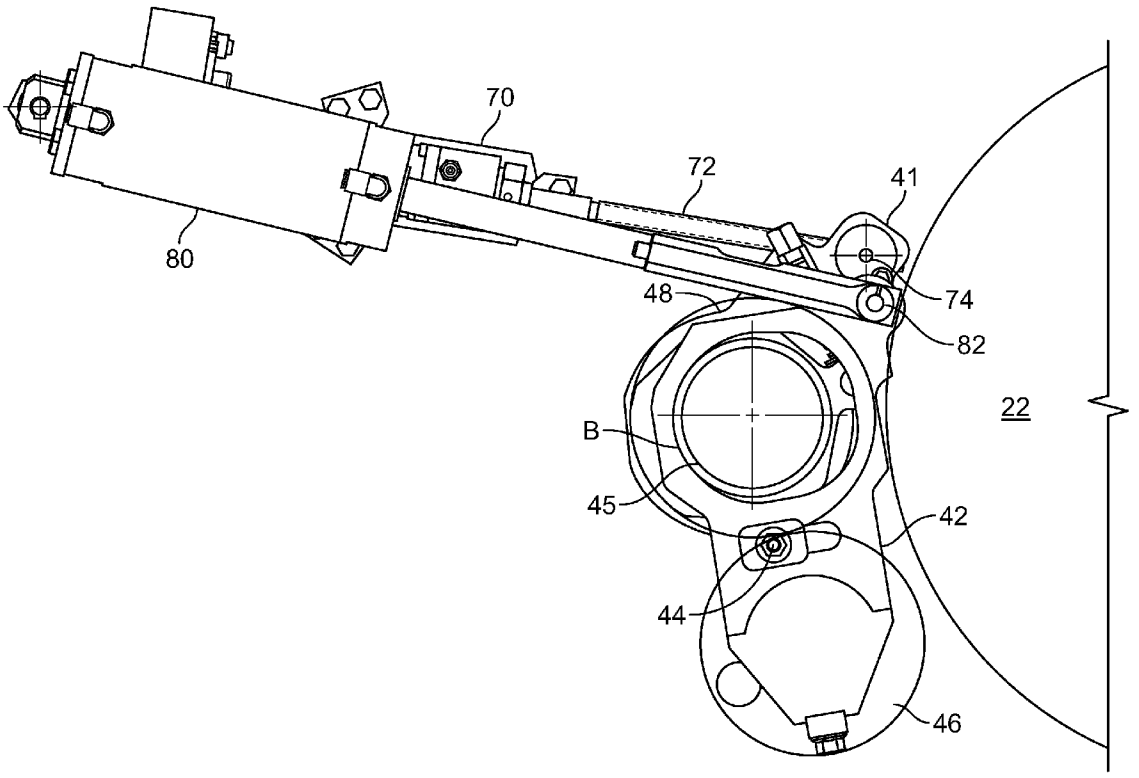
Publication Classification

(51) **Int. Cl.**
B41L 23/02 (2006.01)

(52) **U.S. Cl.** **101/148**

(57) **ABSTRACT**

An adjustable dampening apparatus and an adjustable inking apparatus is provided. The adjustable dampening apparatus includes a rotatable base for supporting a dampening roller, a rotatable socket connected to the rotatable base for adjusting a position of the dampening roller, a first actuating device connected to the rotatable base for positioning the rotatable base in a predetermined position for a given cutoff and a second actuating device connected to the rotatable socket for positioning the rotatable socket between a first position and a second position. Adjustable inking apparatus and variable cutoff printing presses are also provided. A method for adjusting dampening apparatus and inking apparatus are also provided.



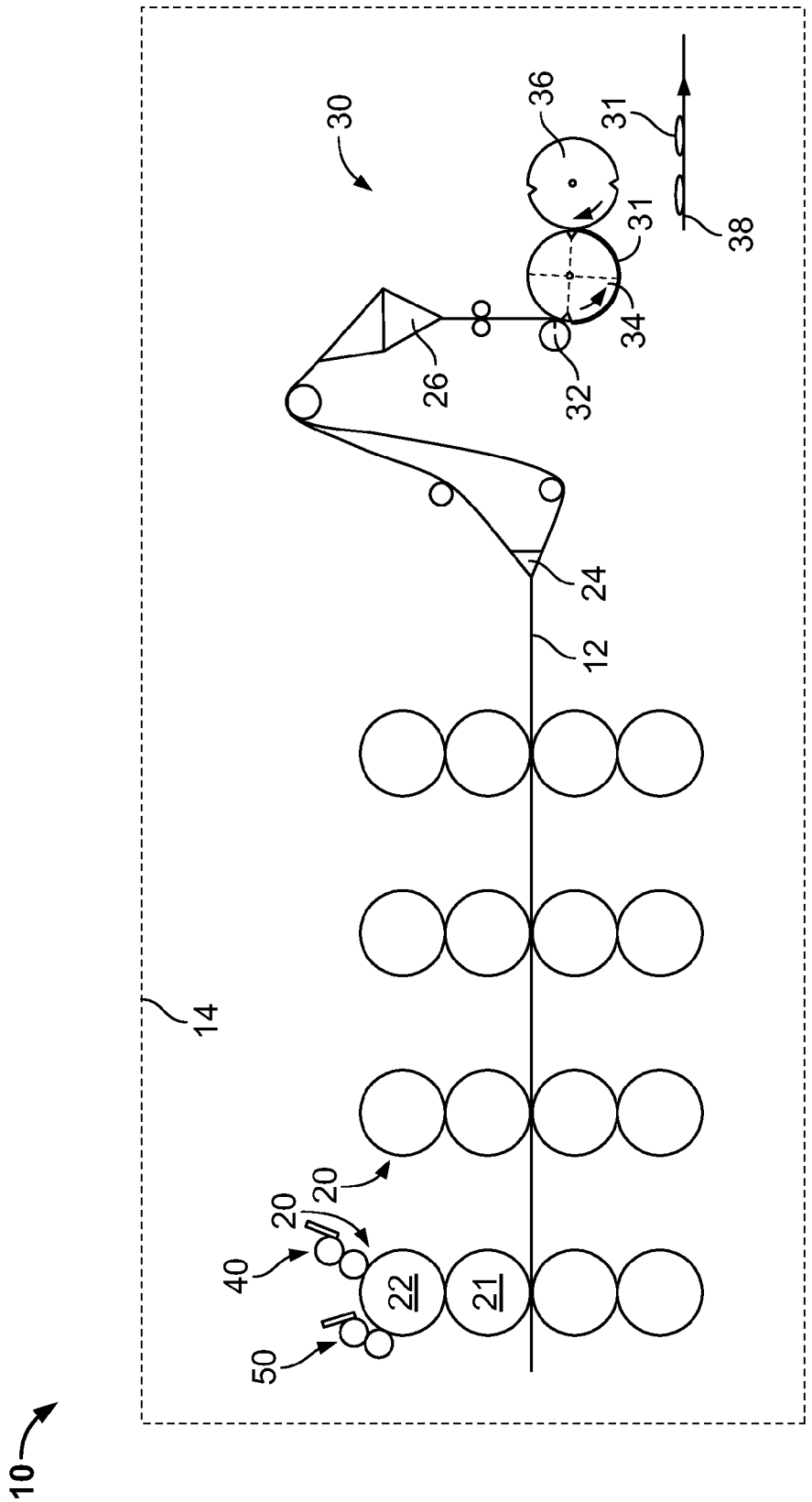


FIG. 1

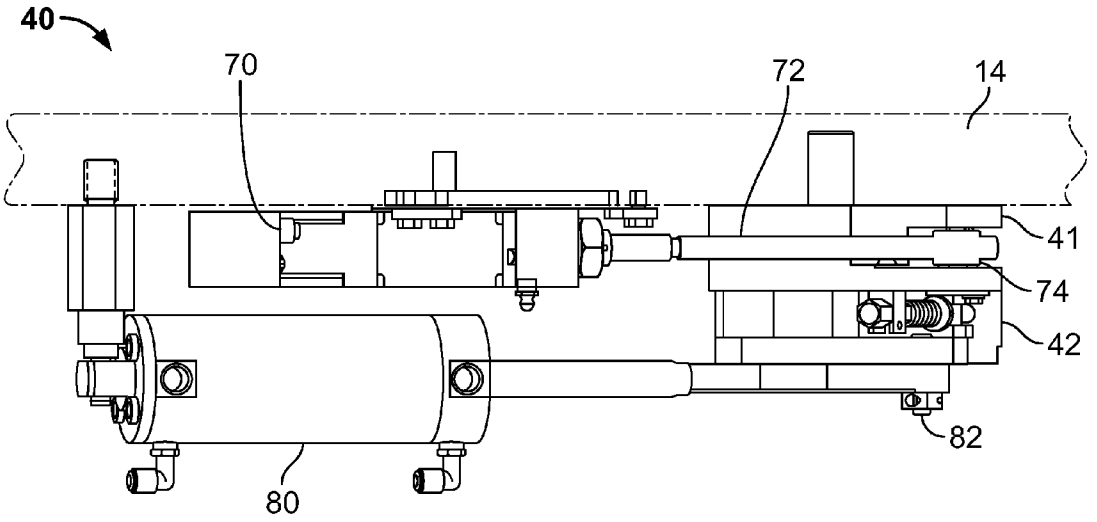


FIG. 2

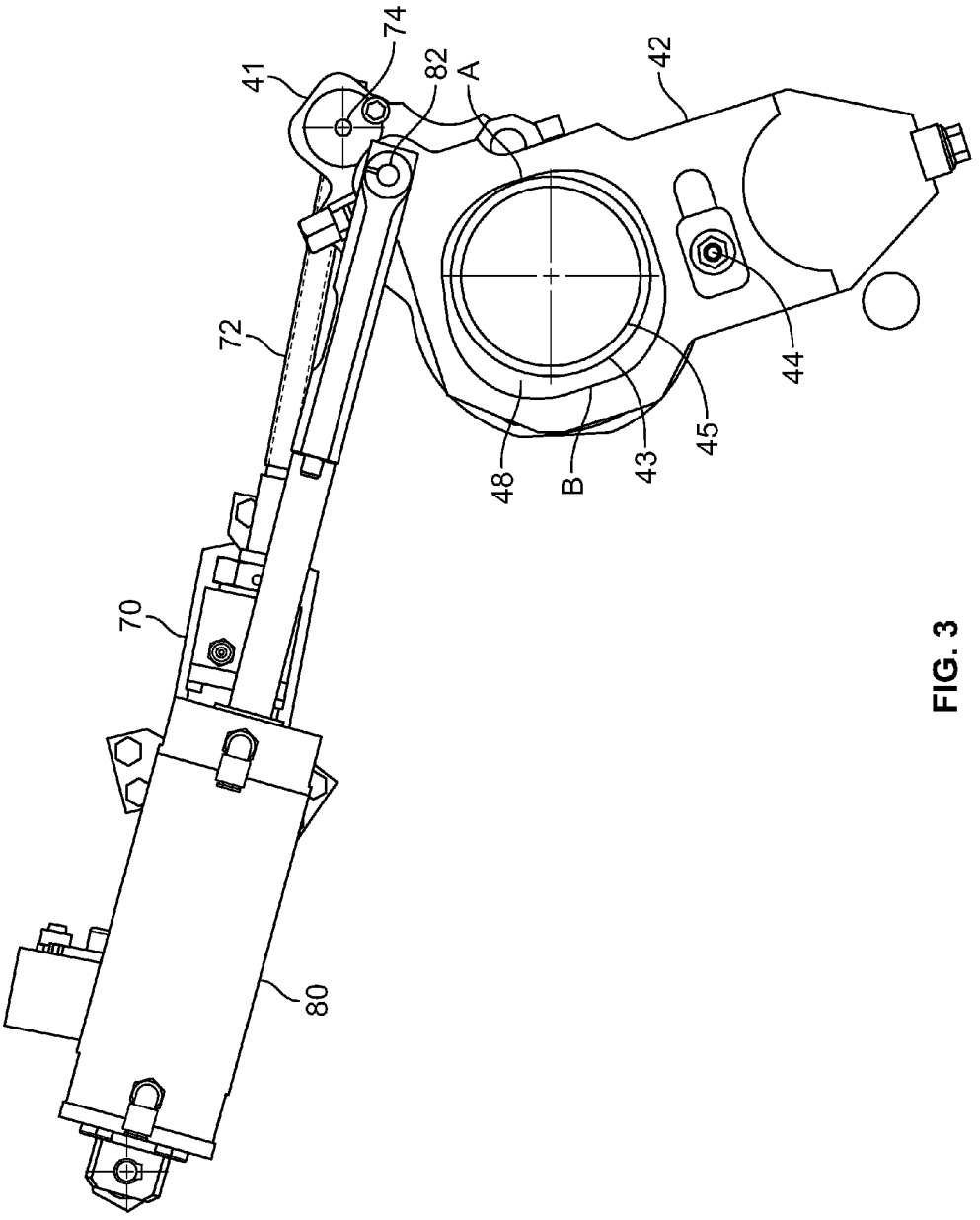


FIG. 3

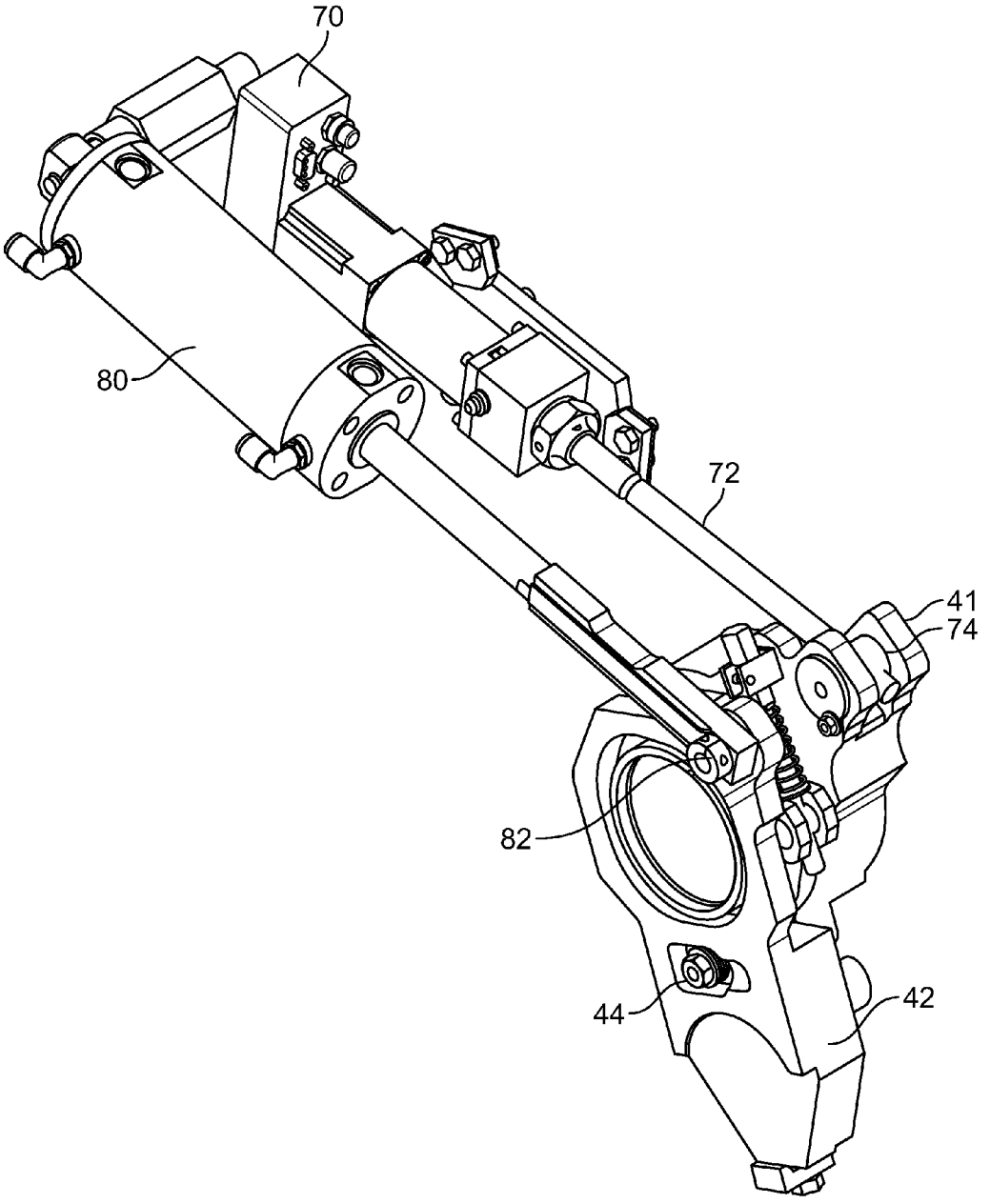


FIG. 4

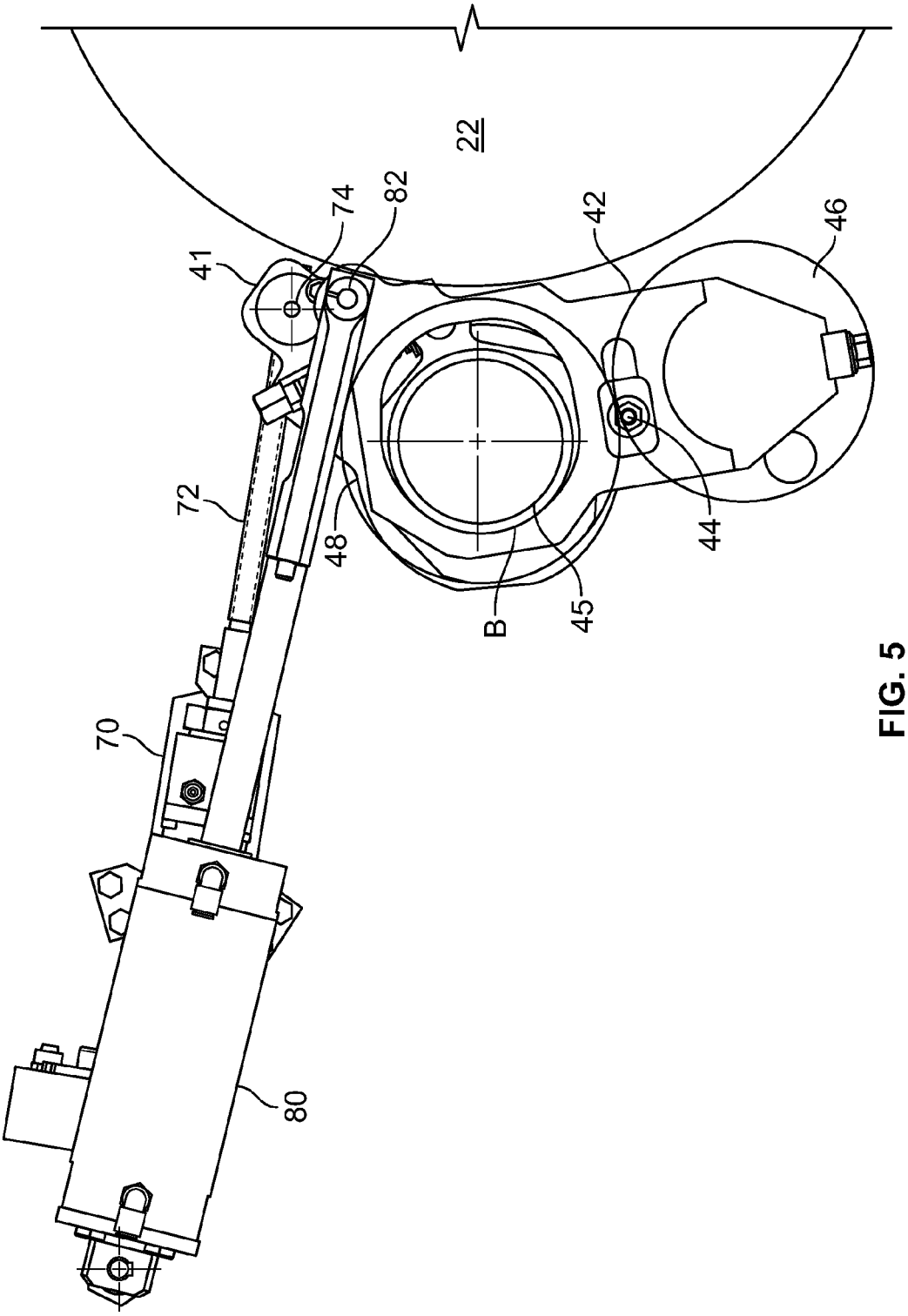


FIG. 5

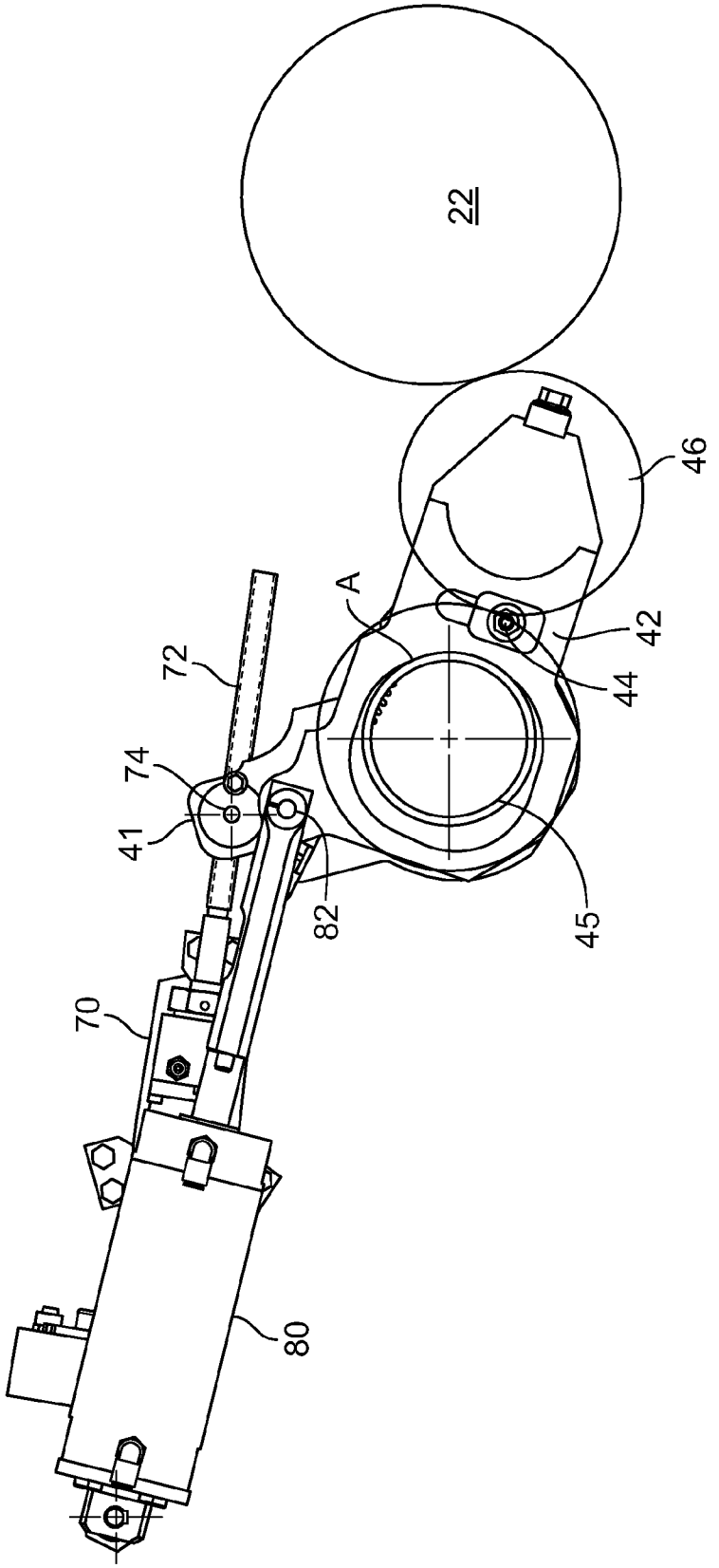


FIG. 6

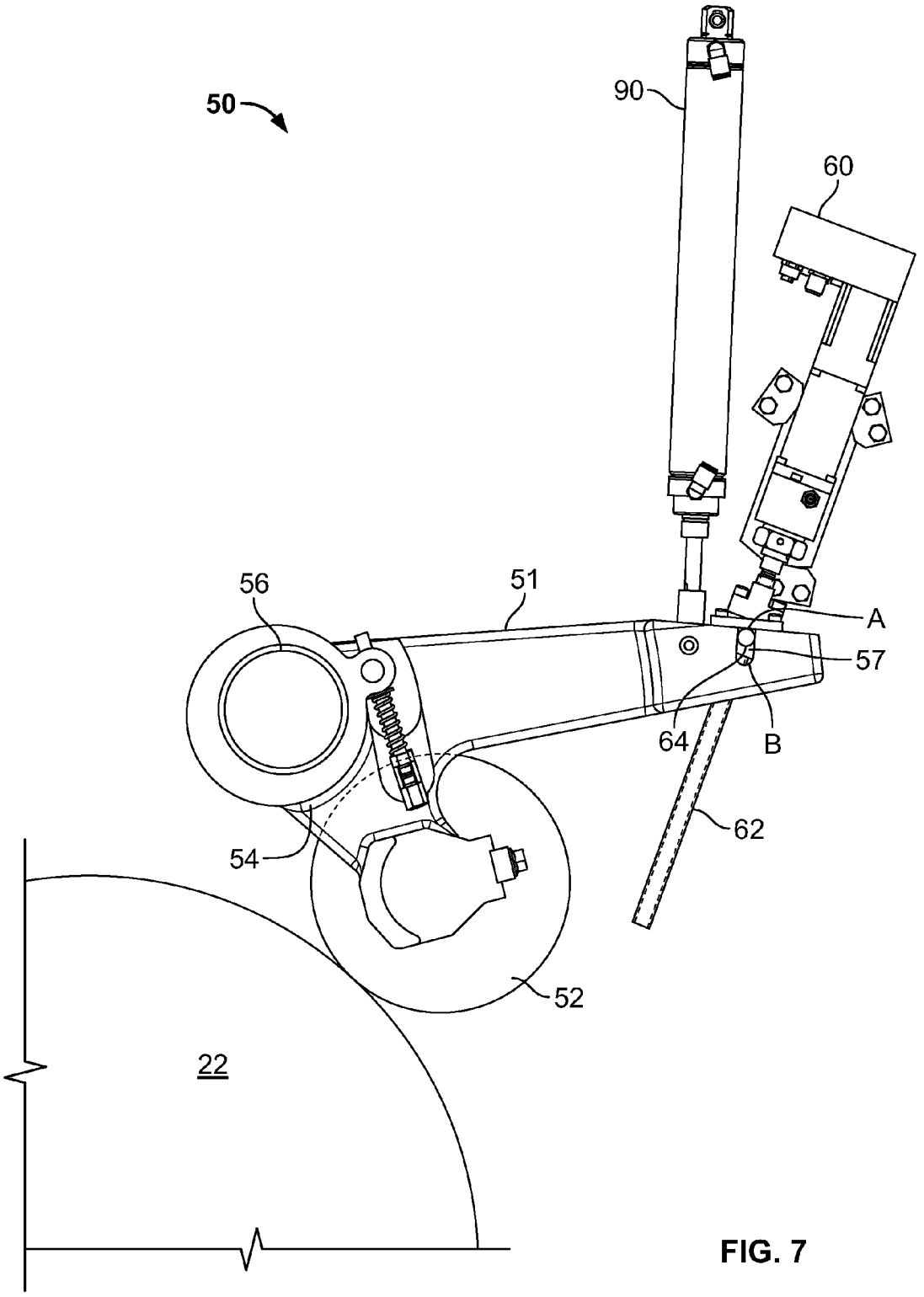


FIG. 7

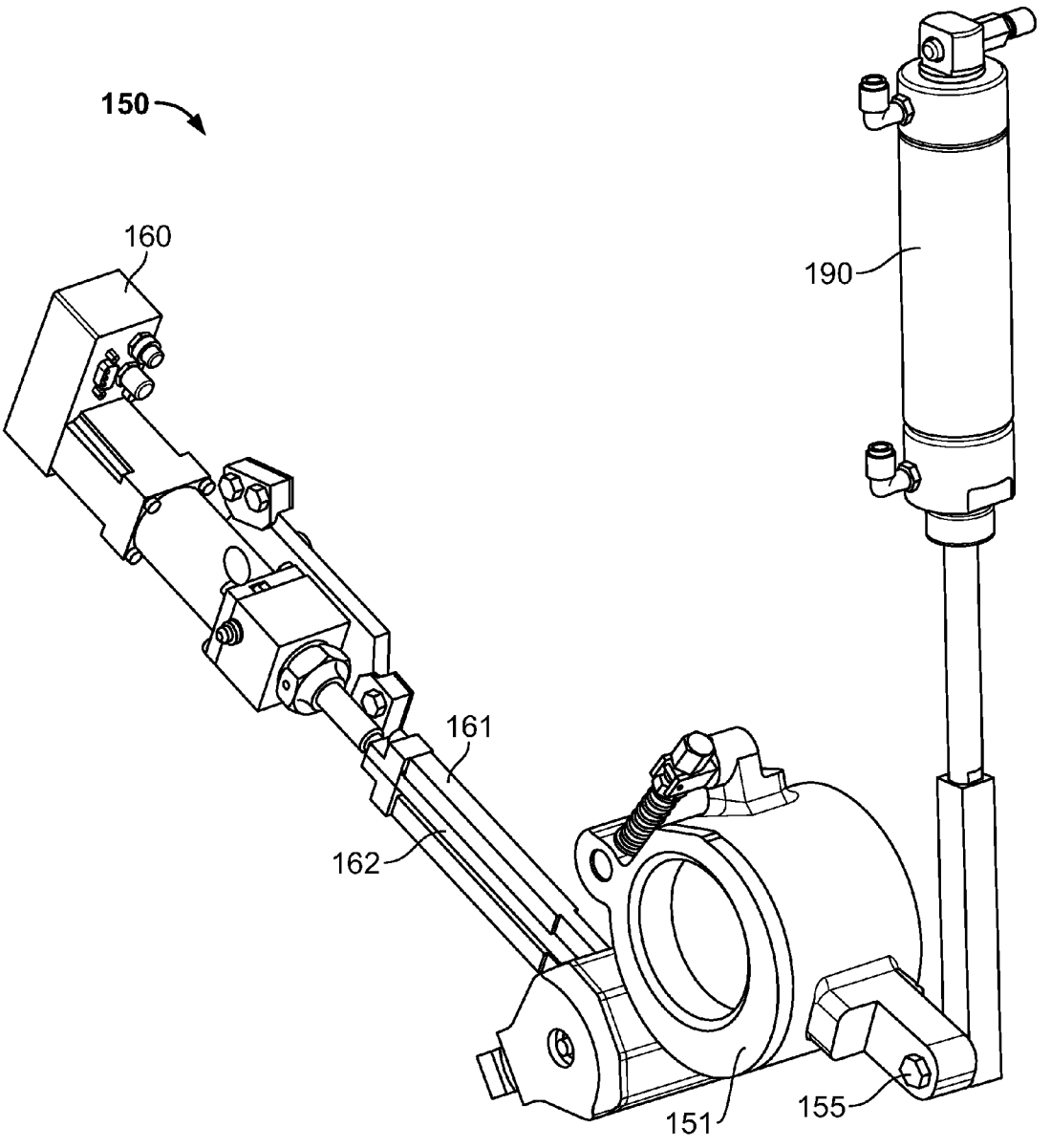


FIG. 8

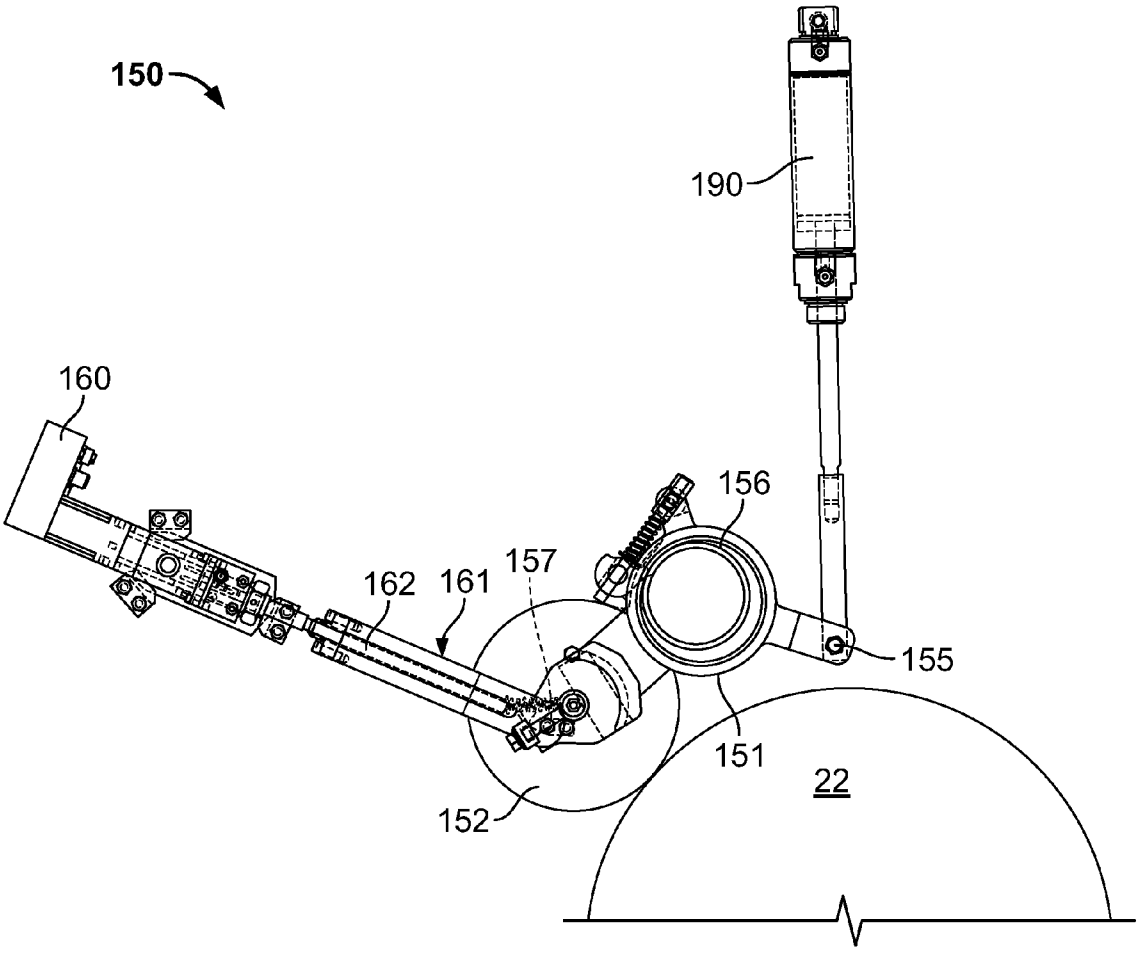


FIG. 9

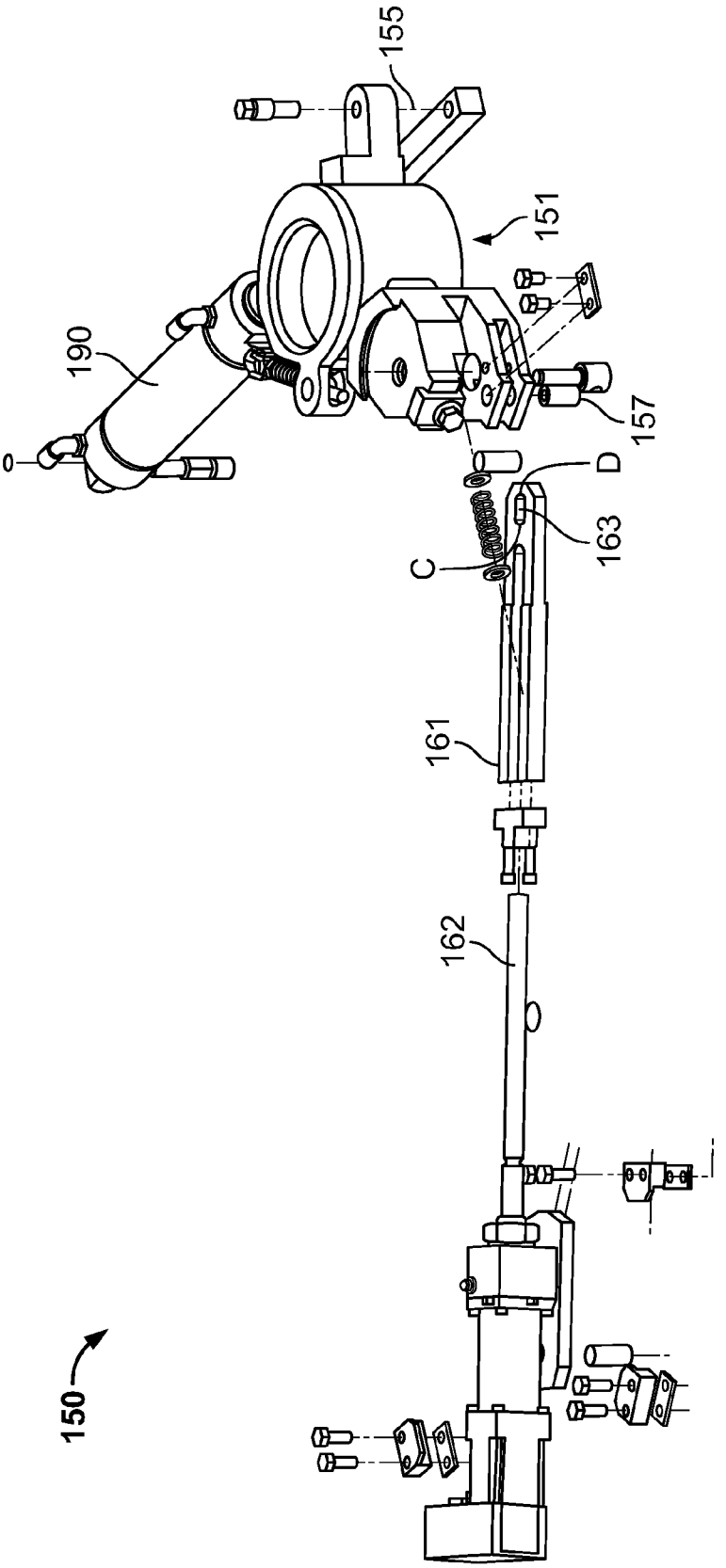


FIG. 10

ADJUSTABLE INKING OR DAMPENING APPARATUS FOR A VARIABLE CUTOFF PRESS AND METHOD

[0001] Priority is hereby claimed to U.S. Provisional Application No. 61/423,646 filed on Dec. 16, 2010, the entire disclosure of which is hereby incorporated by reference herein.

[0002] The present invention relates generally to printing press equipment and more particularly to inking units and dampening units.

BACKGROUND

[0003] U.S. Pat. No. 5,152,220 purportedly discloses a wiping device having a trough and a wiping cylinder which is mounted in the mutually opposite side walls of the trough. The trough is itself mounted tiltably about a pivot axis lying at least approximately in that plane which passes through the axis of rotation of the wiping cylinder and which is parallel to the tangential plane of the wiping cylinder and plate cylinder passing through the point of contact between the two cylinders.

[0004] U.S. Pat. No. 5,142,977 purportedly discloses a device for moving rollers of a printing press in two independent directions. The movement in each direction is independent of the movement in the other direction.

[0005] U.S. Pat. No. 5,555,806 purportedly discloses a roller assembly including a roller for a damping unit or an inking unit in a rotary printing machine, which is supported relative to rollers via pressure mechanism with springs, for example, a pressure spring and a leaf spring, so that the weight of the roller is balanced by the leaf spring.

[0006] U.S. Pat. No. 7,270,057 purportedly discloses an adjustment system for positioning a rolling element such as a form roller or an impression cylinder relative to a first cylinder having a first diameter and relative to at least a second cylinder adapted to replace the first cylinder and having a second diameter different than the first diameter.

[0007] U.S. Pat. No. 7,370,578 purportedly discloses an inking or damping unit that includes an applicator roll mounted on levers so that the application roll can be pivoted about a distributor cylinder onto a form cylinder with a controlled throw-on force.

BRIEF SUMMARY OF THE INVENTION

[0008] When force is used as the primary criteria for setting the stripe between the inking roller and plate cylinder or the dampening roller and plate cylinder, known embodiments may provide inconsistent results. Resisting forces such as friction and weight of the rollers and cylinders are changing during printing and interfere with the force used to set or adjust the inking or dampening apparatus. The resisting forces cannot be accounted for in a way that provides consistent results.

[0009] An object of the present invention is to provide an inking or dampening apparatus design that keeps a center distance between a center of the plate cylinder and inking roller or dampening roller consistent for a given cutoff, yet permits movement of the inking roller and dampening roller as needed.

[0010] The present invention provides an adjustable dampening apparatus. The adjustable dampening apparatus provides a dampening solution to a plate cylinder. The adjustable dampening apparatus comprises a rotatable base for supporting a dampening roller, a rotatable socket connected to the rotatable base for adjusting a position of the dampening roller, a first actuating device connected to the rotatable base for positioning the rotatable base in a predetermined position for a given cutoff and a second actuating device connected to the rotatable socket for positioning the rotatable socket between a first position and a second position.

[0011] The present invention also provides an adjustable inking apparatus. The adjustable inking apparatus provides ink to a plate cylinder. The adjustable inking apparatus comprises a socket supporting an ink form roller, the socket having a slot for receiving a fastener, a first actuating device connected to a screw, the first actuating device positioning the socket in a predetermined position for a given cutoff by adjusting a position of the fastener along the screw and a second actuating device moving the socket between a first position and a second position to adjust a position of the ink form roller.

[0012] The present invention further provides another adjustable inking apparatus. The adjustable inking apparatus provides ink to a plate cylinder, the adjustable inking apparatus comprises a rotatable socket supporting an ink form roller, a first actuating device connected to the rotatable socket, the first actuating device positioning the socket in a predetermined position for a given cutoff and a second actuating device connected to the rotatable socket at a pivot, the second actuating device positioning the rotatable socket between a first position and a second position.

[0013] The present invention also provides a method of adjusting the dampening apparatus comprising the steps of setting the predetermined position of the rotatable base for the given cutoff length using the first actuating device, moving the rotatable socket between the first position and the second position and delimiting the rotation caused by the second actuating device.

[0014] The present invention also provides methods of adjusting the inking apparatus which includes the steps of setting the rotatable socket into a predetermined position for the given cutoff length using the first actuating device, moving the rotatable socket between the first position and second position using the second actuating device and delimiting the rotation caused by the second actuating device.

[0015] Moreover, the present invention provides a variable cutoff printing press. The press may include at least one printing unit having a plate cylinder and a blanket cylinder, the printing unit printing on a web, an adjustable dampening apparatus and an adjustable inking apparatus providing ink to the plate cylinder.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] A preferred embodiment of the present invention will be elucidated with reference to the drawings, in which:

[0017] FIG. **1** shows a printing press including an adjustable dampening apparatus and an adjustable inking apparatus in accordance with the present invention;

[0018] FIGS. **2** to **6** show the adjustable dampening apparatus in accordance with the present invention; and

[0019] FIGS. **7** to **10** show two adjustable inking apparatus embodiments in accordance with the present invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0020] FIG. **1** shows a web offset, perfecting printing press including a dampening apparatus and inking apparatus in accordance with the present invention. Printing press **10** includes a plurality of printing units **20** printing on a web **12**. Each printing unit may include a plate cylinder **22** and blanket cylinder **21**. Printing press **10** is a variable cutoff printing press. Variable cutoff printing presses are able to a plurality of print jobs having a variety of cutoff lengths. In order to accommodate a variety of cutoff lengths, circumferences of plate and blanket cylinders may be varied, for example, blanket and plate cylinders of different sizes may be employed, existing cylinders may be packed or padded to increase their circumference, or printing plates and blankets having a variety of thicknesses may be interchanged.

[0021] Each plate cylinder **22** includes a corresponding dampening apparatus **40** and a corresponding inking apparatus **50** for supplying a dampening solution and ink to plate cylinder **22**.

[0022] After a web **12** is printed, web **12** may be split into a plurality of ribbons by a splitter **24** then folded in half longitudinally by a former **26**. A folder **30** of press **10** may include a knife cylinder **32** for cutting web **12** into signatures **31**, a collect cylinder **34** for gripping and collecting signatures **31** and a jaw cylinder **36** for folding a plurality of collected signatures **31** in half. A conveyor **38** may be provided to transport signatures **31** further downstream for further processing and/or delivery.

[0023] FIGS. **2** to **6** show a preferred embodiment of dampening apparatus **40** in accordance with the present invention including a rotatable base **41** attached to printing press frame **14**. Base **41** is rotatable around vibrator roll bushing **45**. A rotatable socket **42** is connected to rotatable base **41**. Socket **42** is rotatable about a pivot **44**. Vibrator bushing **45** extends into an opening **43** in socket **42**.

[0024] Dampening apparatus **20** also includes two actuating devices **70**, **80**. A first actuating device **70** is connected to rotatable base **41**. First actuating device **70** may include, for example, a smart motor, or a hydraulic cylinder. As shown in FIGS. **2** to **6**, actuating device **70** includes a smart motor. Actuating device **70** is connected to rotatable base **41** by a screw **72** and nut **74**. Actuating device **70** rotates base **41** about vibrator roll bushing **45** into a predetermined position for a given cutoff

[0025] Dampening apparatus **40** also includes a second actuating device **80** connected to socket **42**. Second actuating device **80** may be, for example, an air cylinder. Air cylinder **80** is secured to socket **42** by a nut **82**. Actuating device **80** rotates socket **42** about pivot **44**. However, since vibrator roll bushing **45** extends into an opening **43** in socket **42**, vibrator bushing **45** limits an amount of rotation socket **42** can rotate about pivot **44**. Thus, socket **42** moves between an "on position" in which a face A of opening **43** contacts vibrator roll bushing **45** and an "off position" in which a face B of opening **43** contacts vibrator roll bushing **45**. In the "on position" dampening roller **46** contacts plate cylinder **22** as shown in FIG. **6**. In the "off position" dampening roller **46** is spaced apart from plate cylinder **22** and vibrator roll **48** as shown in FIG. **5**.

[0026] Thus, dampening apparatus **40** includes two actuating devices **70**, **80** which provide respective adjustments. The first actuating device **70** adjusts a position of base **41** with respect to a given cutoff being printed on web **12**. The position of base **41** remains unchanged for the duration of printing for this given cutoff. When the printing cutoff is changed, the position of base **41** is adjusted. The second actuating device **80** adjusts a position of socket **42** to move dampening roller **46** into and out of contact with plate cylinder **22** and vibrator roller **48** as desired. The two-part adjustability of dampening apparatus **40** permits base **41** to remain stationary for a given cutoff while moving and adjusting dampening roller **46** as needed. The limited movement of dampening roller **46** defined by vibrator roll bushing **45** in opening **43** allows for controlled movement between the "on position" and "off position."

[0027] FIG. **7** shows an inking apparatus **50** in accordance with the present invention Inking apparatus **50** includes a socket **51**, a first actuating device **60**, a second actuating device **90**, a fastener **64** and a screw **62**. Socket **51** is rotatable about a vibrator bushing **56**. First actuating device **60**, which may be, for example, a smart motor, adjusts a position of fastener **64** along screw **62**. Fastener **64** may be moved up and down along a length of screw **62** and is moved into position based on a corresponding cutoff. Fastener **64** extends into a slot **57** in socket **51** with socket **51** resting on fastener **64**. Socket **51** rotates about bushing **56** following fastener **64** as fastener **64** is positioned, thereby positioning socket **51** for the corresponding cutoff.

[0028] Second actuating device **90** moves socket **51** between two positions, an "on position" in which fastener **54** is resting against a face A of slot **57** and an "off position" in which fastener **54** is resting against a face B of slot **57**. In the "on position," the form or inking roller **52** is thrown on plate cylinder **22** and in the "off position" the inking roller **52** is thrown off plate cylinder **22**. The inking roller **52** does not need to be thrown off the vibrator roll **54** in either the on or off position. Second actuating device **90** may include, for example, an air cylinder. Slot **57** delimits movement of socket **51** caused by second actuating device **90**.

[0029] Thus, inking apparatus **50** includes two actuating devices **60**, **90** which provide respective adjustments. The first actuating device **60** adjusts a position of socket **51** with respect to a given cutoff. The position of socket **51** remains unchanged for a duration of printing for a given cutoff. When the printing cutoff is changed, the position of socket **51** is adjusted to accommodate the subsequent cutoff length. The second actuating device **90** adjusts a position of socket **51** to move inking roller **52** into and out of contact with plate cylinder **22** as desired. The two-part adjustability of inking apparatus **50** permits socket **51** to remain stationary for a given cutoff while moving the inking roller **52** as needed. The limited movement of inking roller **52** defined by fastener **64** in slot **57** allows for controlled movement between the two positions.

[0030] FIGS. **8** to **10** show another preferred embodiment of inking apparatus **150** in accordance with the present invention. Inking apparatus includes a long nut **161** which includes a slot **163** on one end. Long nut **161** receives a screw **162**. Socket **151** includes a pin **157** fixed to the socket. Thus, in contrast to FIG. **6** in which the socket **51** includes a slot **57**, in this embodiment, socket **151** includes a fixed pin **157**.

[0031] Socket **151** is rotatable about bushing **156**. A first actuating device **160** causes socket **151** to rotate about bushing **156** by extending or retracting screw **162** into or out of long nut **161** into position for a given cutoff. After this pri-

mary position is set for the given cutoff, a second actuating device **190** rotates socket **151** about a pivot **155** in order to throw an ink or form roller **152** on and off plate cylinder **22**. Rotation of socket **151** is delimited by slot **163**. Pin **157** will move between a position in which pin **157** rests against a face C of slot **163** or a face D of slot **163** to move the inking roller **152** in and out of contact with plate cylinder **22**.

[0032] Inking apparatus **150** shown in FIGS. **8** to **10** also includes two actuating devices **160**, **190** which provide respective adjustments. The limited movement of inking roller **152** is defined by pin **157** and slot **163** which allow for controlled movement between the two positions.

[0033] In the preceding specification, the invention has been described with reference to specific exemplary embodiments and examples thereof. It will, however, be evident that various modifications and changes may be made thereto without departing from the broader spirit and scope of invention as set forth in the claims that follow. The specification and drawings are accordingly to be regarded in an illustrative manner rather than a restrictive sense.

What is claimed is:

1. An adjustable dampening apparatus providing a dampening solution to a plate cylinder, the adjustable dampening apparatus comprising:
- a rotatable base for supporting a dampening roller;
- a rotatable socket connected to the rotatable base for adjusting a position of the dampening roller;
- a first actuating device connected to the rotatable base for positioning the rotatable base in a predetermined position for a given cutoff; and
- a second actuating device connected to the rotatable socket for positioning the rotatable socket between a first position and a second position.

2. The adjustable dampening apparatus as recited in claim **1** wherein the second actuating device rotates the rotatable socket about a pivot.

3. The adjustable dampening apparatus as recited in claim **2** wherein a vibrator roll bushing for supporting a vibrator roll extends into an opening of the rotatable socket, the vibrator roll bushing limiting an amount of rotation of rotatable socket about the pivot.

4. The adjustable dampening apparatus as recited in claim **1** wherein the first actuating device is a smart motor.

5. The adjustable dampening apparatus as recited in claim **1** wherein the second actuating device is a hydraulic cylinder.

6. The adjustable dampening apparatus as recited in claim **1** wherein the first position is a throw-off position in which the dampening roller is spaced apart from the plate cylinder and the second position is a throw-on position in which the dampening roller is contacting the plate cylinder.

7. The adjustable dampening apparatus as recited in claim **6** wherein the dampening roller is spaced apart from the vibrator roll and the plate cylinder when the dampening roller is in the first position

8. A variable cutoff printing press comprising:
- at least one printing unit having a plate cylinder and a blanket cylinder, the printing unit printing on a web; and
- the adjustable dampening apparatus as recited in claim **1**.

9. The variable cutoff printing press as recited in claim **8** further comprising:
- an adjustable inking apparatus providing ink to the plate cylinder.

10. A method of adjusting the dampening apparatus as recited in claim **1**, comprising the steps of:
- setting the predetermined position of the rotatable base for the given cutoff length using the first actuating device;
- moving the rotatable socket between the first position and the second position; and
- delimiting the rotation caused by the second actuating device.

11. An adjustable inking apparatus providing ink to a plate cylinder, the adjustable inking apparatus comprising:
- a socket supporting an ink form roller, the socket having a slot for receiving a fastener;
- a first actuating device connected to a screw, the first actuating device positioning the socket in a predetermined position for a given cutoff by adjusting a position of the fastener along the screw; and
- a second actuating device moving the socket between a first position and a second position to adjust a position of the ink form roller.

12. The adjustable inking apparatus as recited in claim **11** wherein the first actuating device is a smart motor.

13. The adjustable inking apparatus as recited in claim **11** wherein the second actuating device includes an air cylinder.

14. The adjustable inking apparatus as recited in claim **11** wherein the fastener contacts a first face of the slot in the first position and a second face of the slot in the second position.

15. The adjustable inking apparatus as recited in claim **11** wherein the first actuating device rotates the socket about a first pivot.

16. The adjustable inking apparatus as recited in claim **11** wherein the first pivot is a vibrator roll bushing.

17. A variable cutoff printing press comprising:
- at least one printing unit having a plate cylinder and a blanket cylinder, the printing unit printing on a web; and
- the adjustable inking apparatus as recited in claim **11**.

18. An adjustable inking apparatus providing ink to a plate cylinder, the adjustable inking apparatus comprising:
- a rotatable socket supporting an ink form roller;
- a first actuating device connected to the rotatable socket, the first actuating device positioning the socket in a predetermined position for a given cutoff; and
- a second actuating device connected to the rotatable socket at a pivot, the second actuating device positioning the rotatable socket between a first position and a second position.

19. The variable cutoff printing press as recited in claim **18** wherein the socket includes a pin.

20. The variable cutoff printing press as recited in claim **19** further comprising a long nut connected the rotatable socket.

21. The variable cutoff printing press as recited in claim **20** wherein the first actuating device is connected to a screw, first actuating device positions the socket in the predetermined position for a given cutoff by retracting or extending the screw into the long nut.

22. The variable cutoff printing press as recited in claim **21** wherein the socket rotates about a vibrator roll bushing.

23. The variable cutoff printing press as recited in claim **20** wherein the long nut includes a slot for receiving the pin, the slot and pin limiting movement of the socket about the pivot.

24. A variable cutoff printing press comprising:
- at least one printing unit having a plate cylinder and a blanket cylinder, the printing unit printing on a web; and
- the adjustable inking apparatus as recited in claim **18**.

25. The variable cutoff printing press as recited in claim **9** wherein the adjustable inking apparatus includes:

an ink socket supporting an ink form roller, the ink socket having a slot for receiving a fastener;

a first ink actuating device connected to a screw, the first ink actuating device positioning the ink socket in a predetermined ink position for the given cutoff by adjusting a position of the fastener along the screw; and

a second ink actuating device moving the ink socket between a first ink position and a second ink position to adjust a position of the ink form roller.

26. The variable cutoff printing press as recited in claim **9** wherein the adjustable inking apparatus includes:

a rotatable ink socket supporting an ink form roller;

a first ink actuating device connected to the rotatable ink socket, the first ink actuating device positioning the socket in a predetermined ink position for the given cutoff; and

a second ink actuating device connected to the rotatable ink socket at a pivot, the second ink actuating device positioning the rotatable ink socket between a first ink position and a second ink position.

* * * * *