M. O. SMITH & W. E. FROST.

NEEDLE THREADING ATTACHMENT FOR SEWING MACHINES.

APPLICATION FILED MAR. 2, 1916.

1,220,019.

Patented Mar. 20, 1917.

2 SHEETS—SHEET 1.

FIG. 1.

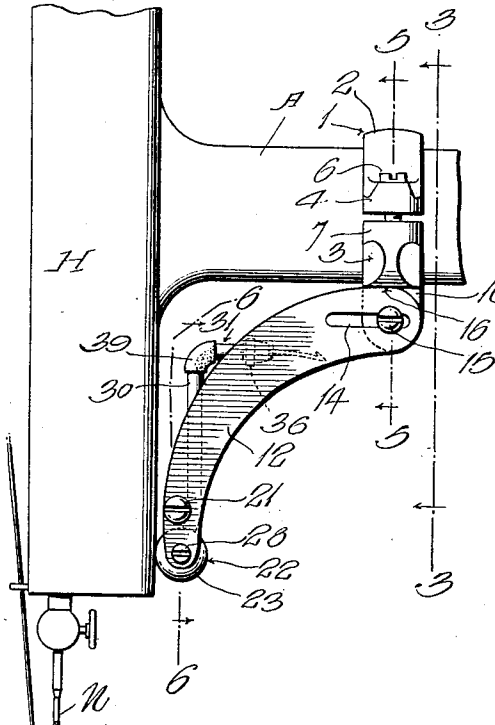


FIG. 2.

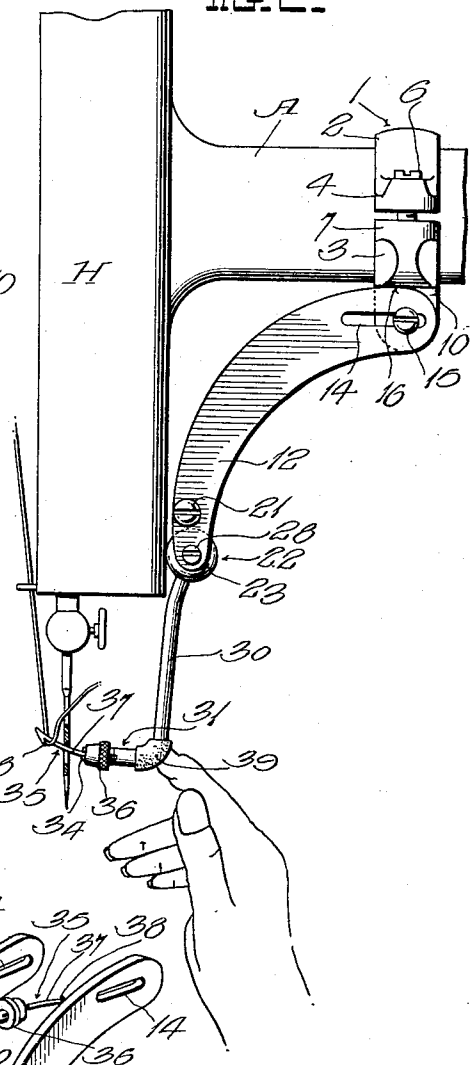
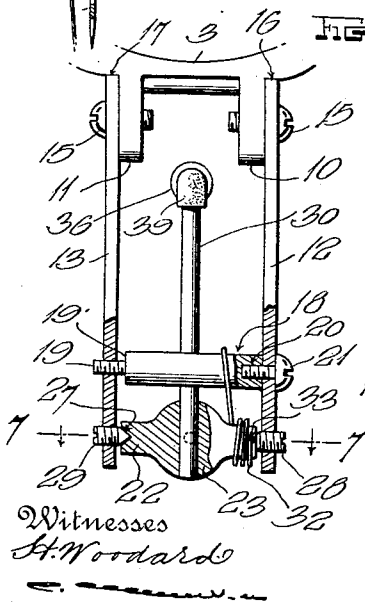


FIG. 5.



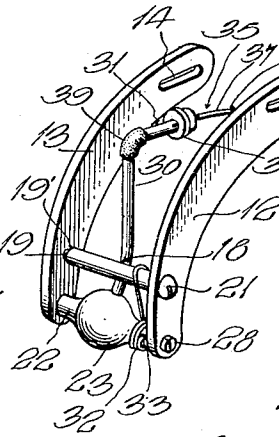


FIG. 8.

Witnesses
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2 SHEETS—SHEET 2.

FIG. 4.

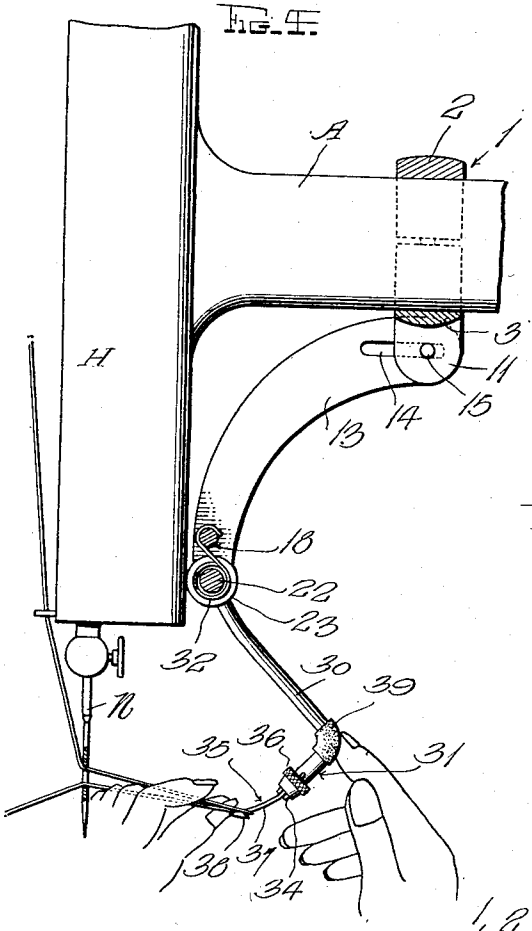


FIG. 3.

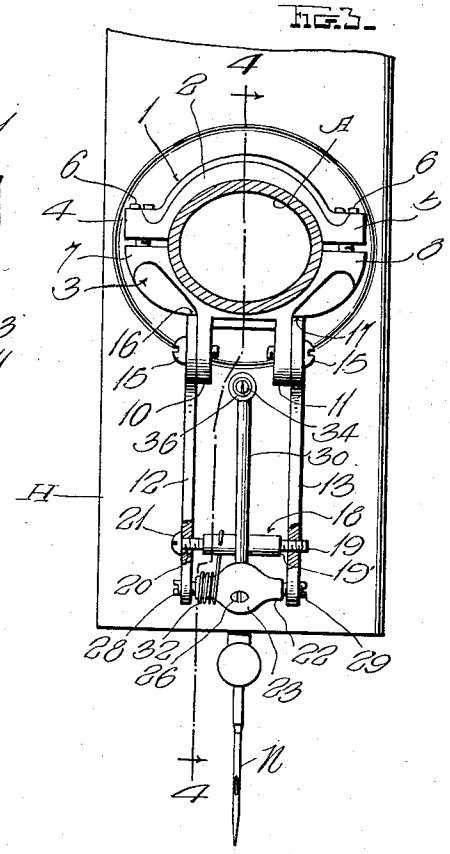


FIG. 5.

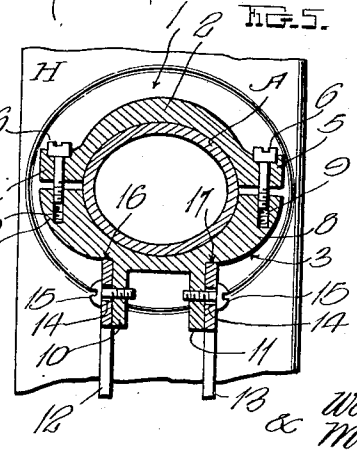


FIG. 9.

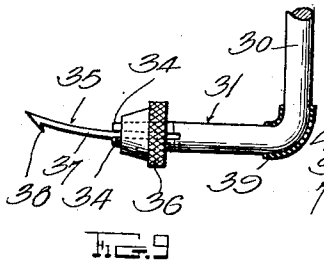
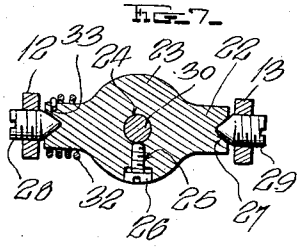


FIG. 7.



Witnesses
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UNITED STATES PATENT OFFICE.

MARY O. SMITH AND WALTER E. FROST, OF AUBURN, MAINE; SAID FROST ASSIGNOR OF ONE-FOURTH OF THE WHOLE RIGHT TO AIMÉ C. LEVESGNE AND JOSEPH A. LAROSE, BOTH OF LEWISTON, MAINE.

NEEDLE-THREADING ATTACHMENT FOR SEWING-MACHINES.

1,220,019. Specification of Letters Patent. **Patented Mar. 20, 1917.**

Application filed March 2, 1916. Serial No. 81,731.

To all whom it may concern:

Be it known that we, MARY O. SMITH and WALTER E. FROST, citizens of the United States, residing at Auburn, in the county of Androscoggin and State of Maine, have invented certain new and useful Improvements in Needle-Threading Attachments for Sewing-Machines; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in needle threaders for sewing machines.

The main object of the invention is to provide a simply constructed and efficient device of this character which may be applied to sewing machines of any make and is so constructed and mounted as not to interfere with the ordinary use of the machine or the employment of the usual attachments, and yet is positioned for instant use when it is required to thread a needle.

Another object of the invention is to so construct the supporting means which carry the hook member that they will perform the double function of a support and of a protective housing for the hook when not in use to prevent it from engaging adjacent objects or injuring the operator.

With these and other objects in view, the invention consists of certain novel features of construction, and the combination and arrangement of parts which will be hereinafter described and claimed.

In the accompanying drawings:

Figure 1 represents a side elevation of a portion of a sewing machine head with this improved threader applied and with the needle hook disposed in inoperative housed position;

Fig. 2 is a similar view showing the hook in engagement with the thread prior to its withdrawal through the needle;

Fig. 3 is a transverse vertical section taken on the line 3—3 of Fig. 1;

Fig. 4 is a view on line 4—4 of Fig. 3 showing the hook in the act of drawing the thread through the needle eye;

Fig. 5 is a transverse vertical section taken on line 5—5 of Fig. 1;

Fig. 6 is a similar view taken on line 6—6 of Fig. 1 and with parts broken out;

Fig. 7 is a transverse section taken on line 7—7 of Fig. 6;

Fig. 8 is a detail perspective view of the hook carrying bracket detached with the hook in retracted inoperative position;

Fig. 9 is an enlarged detail side view of the free end of the hook carrying arm with the finger engaging sleeve in section.

This attachment which is designed to be mounted on the horizontal arm A of a sewing machine head comprises a clamp 1 composed of two detachably connected sections 2 and 3 shaped to encircle the arm A when assembled. One of these sections is provided at its ends with laterally extending apertured bosses or lugs 4 and 5, the apertures of which are threaded to receive the connecting screws 6, and the other section is provided with laterally extending bosses 7 and 8 having threaded sockets 9 arranged to aline with the threaded apertures in the bosses 4 and 5 of the other section to receive the connecting screws 6, whereby said sections are detachably connected to adapt them to fit machine arms of varying sizes.

Two apertured ears 10 and 11 depend from the lower section 3 of the clamp and are arranged in longitudinal alinement and are designed to form supports for the combined hook carrying and housing brackets now to be described.

This bracket comprises two longitudinally curved arms 12 and 13 which are preferably constructed of metal plates wider at one end than at the other to adapt them to form a protective housing for the hook of the threader when the parts are assembled as will be hereinafter described. The wider ends of these arms 12 and 13 are longitudinally slotted as shown at 14 to provide for their adjustable connection with the ears 10 and 11 to adapt the device to fit different sized sewing machine heads. Connecting and adjusting screws 15 extend through the slots 14 of the arms 12 and 13 and engage the apertures in the ears 10 and 11. These enlarged arm ends are provided with flat inner or upper edges which are designed to engage flat right angularly extending

faces 16 and 17 formed at the bases of the bosses 7 and 8 in which the sockets 9 are formed so that these arms will be held against upward movement and the downward movement thereof limited thereby.

The free ends of the arms 12 and 13 are adjustably connected at points spaced inwardly from their terminals by means of a spacing and adjusting member 18 which is provided at one end with a reduced threaded extension 19 having threaded engagement with an aperture formed in one of the arms of the bracket, and the other end thereof has an internally threaded socket 20 to receive an adjusting and connecting screw 21 to provide for the adjustment of said arms 12 and 13 toward or away from each other, as may be desired, it being understood that to accomplish this adjustment the screw 21 is first loosened and the threaded reduced extension 19 of the member 18 turned either in or out to space the inner face of the arm the desired distance from the shoulder 19' formed at the base of the reduced extension 19, and the screw 21 is then tightened to clamp the other arm against the socketed end of the member 18.

A hook carrying shaft 22 is revolubly mounted between the free ends of the arms 12 and 13 in advance of the adjusting and spacing member 18. This shaft 22 has an enlarged central portion 23 here shown substantially globular in form which is pierced by a transversely extending passage 24 to adjustably receive one end of an L-shaped arm 30 which carries the threading hook 35.

The globular enlargement of this shaft 22 has a threaded bore 25 extending transversely inward from one side thereof in a plane at right angles to the passage 24 and which communicates with said passage, and is designed to receive an adjusting screw 26 which when secured, operatively and adjustably engages the L-shaped arm 30 above referred to. The ends of this shaft 22 have inwardly tapered sockets 27 which are designed to receive pointed journals 28 and 29 carried by the inner faces of the arms 12 and 13 to insure the free turning of the shaft 22 between said arms.

A coiled spring 32 is arranged around one end of the shaft 22 and has one of its terminals engaged with said shaft, said terminal being bent inwardly at right angles and inserted in an aperture 33 in the shaft. The other end of this spring is attached to the spacing and adjusting member 18, and this spring is designed to exert its tension to normally retract the hook carrying arm 30 to dispose it in inoperative position, as shown in Fig. 1, which is the normal position of the hook when not in use.

The end of the L-shaped hook-carrying arm 30 which is adjustably mounted in the globular enlargement 23 of the shaft 22 is curved or bent longitudinally, with the concave face of the bend therein designed to engage the spacing member 18 when said arm is in retracted position, as is shown clearly in Fig. 1, so that the hook will be positioned between the wide ends of the arms 12 and 13.

The hook receiving portion of the arm 30 is formed on the terminal of the short member of said arm, said end being split longitudinally to form clamping jaws 34 between which the hook 35 is designed to be clamped, the clamping engagement of the jaws being effected by means of an internally threaded sleeve 36 which is adapted to be screwed on the split end of said member, which end is externally threaded to receive said sleeve, and by turning the sleeve inwardly or outwardly the jaws will be either opened or closed at the will of the operator.

The hook 35 has a longitudinally curved shank 37 provided with a downturned bill 38 at its free outer end. This shank is curved longitudinally to facilitate the insertion of the bill through the eye of the needle to be threaded.

An anti-slipping or finger gripping sleeve 39 is disposed on the L-shaped arm 30 at the bend thereof and is preferably constructed of rubber. This member 39 is designed to assist in retaining the finger in engagement with the arm during the actuation thereof, as shown in Figs. 2 and 4.

In the use of this improved threader attachment, the clamp 1 is engaged with the arm A of a sewing machine at the proper point thereon to position the longitudinally curved bracket adjacent the junction of the arm A with the vertical portion or head H of the machine and to adapt said bracket to fit against the under face of said arm and the inner face of said head, as is shown clearly in Figs. 1 and 2, whereby it will be positioned out of the way and will occupy as small a space as possible. When the clamp has been positioned at the desired point, the screws 6 which connect the sections thereof are tightened to rigidly secure it to the arm A and the device is then ready for use, the L-shaped hook carrying arm being automatically retracted into inoperative position by the coiled spring 32 and is held in this position with the bill of the hook arranged between the enlarged ends of the arms 12 and 13 which fully protect it and prevent all possibility of its engaging adjacent objects or injuring the operator.

After the attachment has been so applied to the arm A the hook carrying arm 30 is adjusted in the passage 24 of the enlarged portion 23 of the shaft 22 so as to properly position the hook at the free end of said arm to adapt it to aline with the eye of the needle N when said arm 30 is swung outwardly and forwardly and the needle is at the extreme limit of its upward movement. This adjust-

ment of the arm 30 provides for the proper positioning of the hook vertically relative to the needle eye, and to laterally adjust it in relation to said eye the position of the clamp 1 on the arm A may be slightly varied, only a slight adjustment being found necessary as the parts when so formed and assembled and the device is applied, will be so arranged that the hook will be in the proper position for entering the needle eye, and the bracket may be adjusted on the clamp to properly position this thread hook by loosening the screws 15 and moving the arms of the bracket into the desired position, owing to the slotted connection thereof with the lugs of the clamp.

From the above description it will be obvious that this device while very simple in construction, is very efficacious for the purposes for which it is intended and may be applied to or used with sewing machines having various sized arms and heads, owing to the peculiar adjustment permitted by the structure above described.

It will thus be seen that the threader, its attaching means and the combined support and housing for the hook when said hook is in inoperative position, are all combined in a single attachment adapted to be mounted on the horizontal arm of a machine head and the parts of which are so constructed and arranged that the device will be entirely out of the way when not in use.

We claim:—

1. In a sewing machine needle threader, the combination of a clamp to take over the horizontal arm of a sewing machine head, a bracket carried by said clamp and curved longitudinally to fit at the junction of the horizontal arm and the vertical head of the machine, whereby said bracket is disposed in unobstructing position when applied, and a spring retracted hook carrying member pivotally mounted on said bracket and adapted to be swung downwardly and forwardly into operative position.

2. In a sewing machine needle threader, the combination of a clamp to take over the horizontal arm of a sewing machine, a bracket carried by and mounted for longitudinal adjustment on said clamp, said bracket being curved longitudinally to fit at the junction of the horizontal arm and the vertical head of the sewing machine, whereby it is disposed in unobstructing position when applied, and a spring retracted hook carrying member pivotally mounted on said bracket and adapted to be swung downwardly and forwardly into operative position.

3. In a sewing machine needle threader, the combination of a clamp to take over the horizontal arm of the sewing machine and having depending apertured ears spaced longitudinally relatively to the clamp, longitudinally curved bracket arms attached to said ears and shaped to fit a sewing machine head at the junction of its horizontal arm and its vertical front head member, a hook carrying member pivotally mounted between said arms, a combined spacing and adjusting member carried by said arms and positioned to engage said hook carrying member when swung into retracted position, and a coiled spring connected to retract said hook carrying member.

4. In a sewing machine needle threader, the combination of a clamp to take over the horizontal arm of a sewing machine and having depending spaced apertured ears, flat faces formed on said clamp at the base of said ears extending substantially in planes at right angles to the outer faces of the ears, bracket arms engaged with the outer faces of said ears and having their upper edges engaging the flat faces of said clamp, whereby the upward movement of said arms is prevented and their downward movement limited, said arms being longitudinally slotted at their connected ends, adjusting screws passing through said slots and engaging the apertures of said ears, and a spring retracted hook carrying member pivotally mounted between said arms and adapted to be swung downwardly and forwardly into operative position, the bill of the hook carried thereby being housed between said arms when said member is in retracted position.

5. In a sewing machine needle threader, the combination of laterally spaced supporting arms, means for connecting said arms to a sewing machine head, a shaft pivotally mounted between said arms, a hook carrying member carried by said shaft, and a combined spacing and adjusting member arranged between said arms and having one end reduced and threaded, one of said arms having a threaded aperture to receive the reduced threaded end of said spacing and adjusting member, the other end of said member having an internally threaded socket, and the other arm having an aperture positioned to register with the aperture in the first mentioned arm and with the socket in said member when the parts are assembled, and a screw passing through said aperture and engaging the socket in the spacing member, whereby said member may be adjusted to vary the position of the arms toward or away from each other.

6. In a sewing machine needle threader, the combination of a pair of laterally spaced supporting arms, means for adjustably connecting said arms relatively to each other, means connecting said arms to a sewing machine head, said arms having inwardly extending tapered journals at their free ends, a shaft having tapered bearings at its opposite ends for engagement with said

journals, an enlargement formed in said shaft intermediately of its ends and having a passage extending transversely therethrough, a bore extending transversely of said enlargement in a plane at right angles to said passage and communicating therewith, a set screw mounted in said bore, an L-shaped hook carrying member having the free end of one arm thereof disposed in the passage of said shaft enlargement and adapted to be engaged by said set screw for adjustably connecting it with said shaft, and a spring connected to retract said hook carrying member into inoperative position when not in use.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

MARY O. SMITH.
WALTER E. FROST.

Witnesses:
CARRIE E. WEST,
JOHN A. MORRILL.