

No. 689,398.

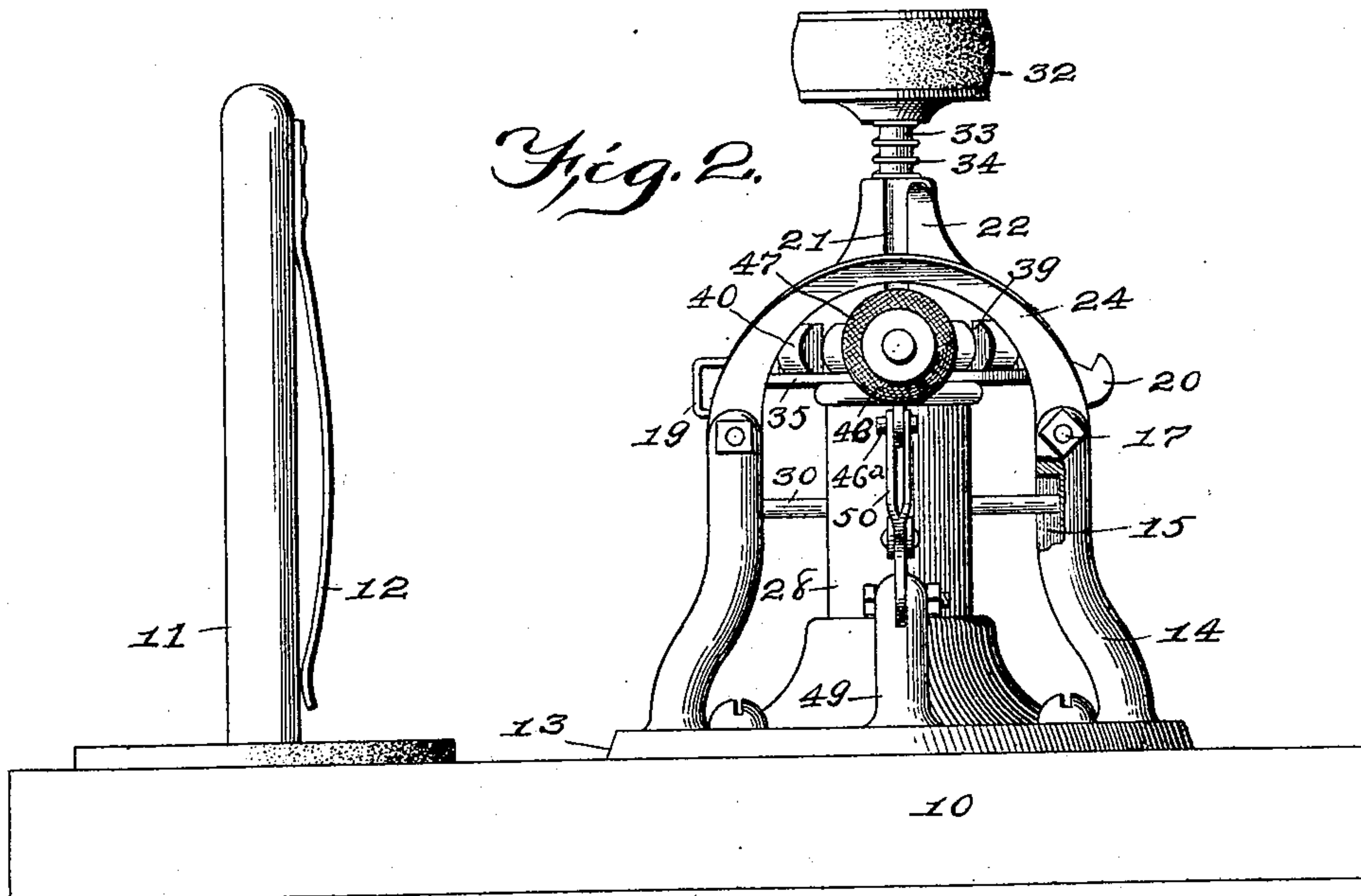
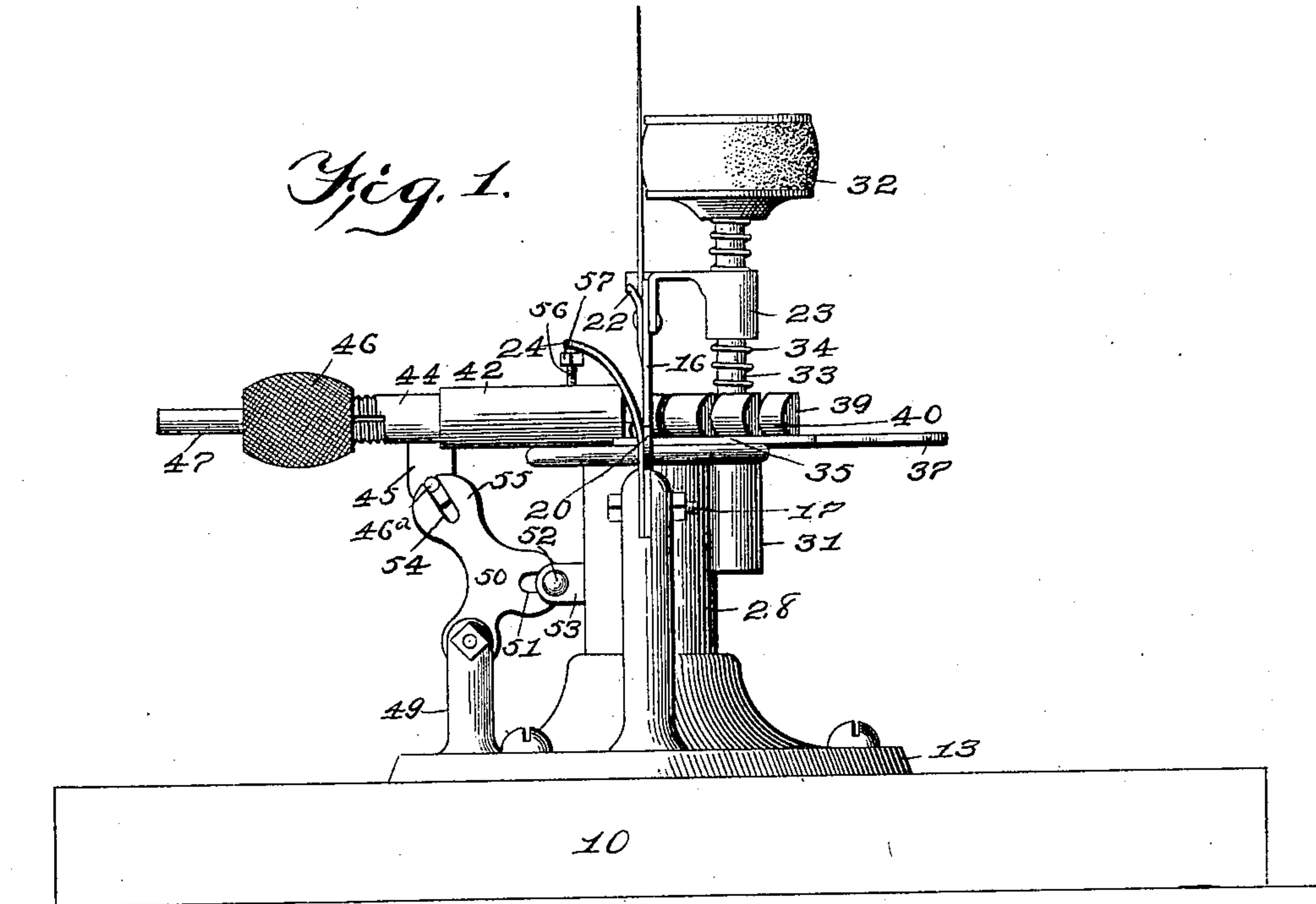
Patented Dec. 24, 1901.

J. R. HOIT.
NEEDLE THREADER.

(Application filed Mar. 11, 1901.)

(No Model.)

2 Sheets—Sheet 1.



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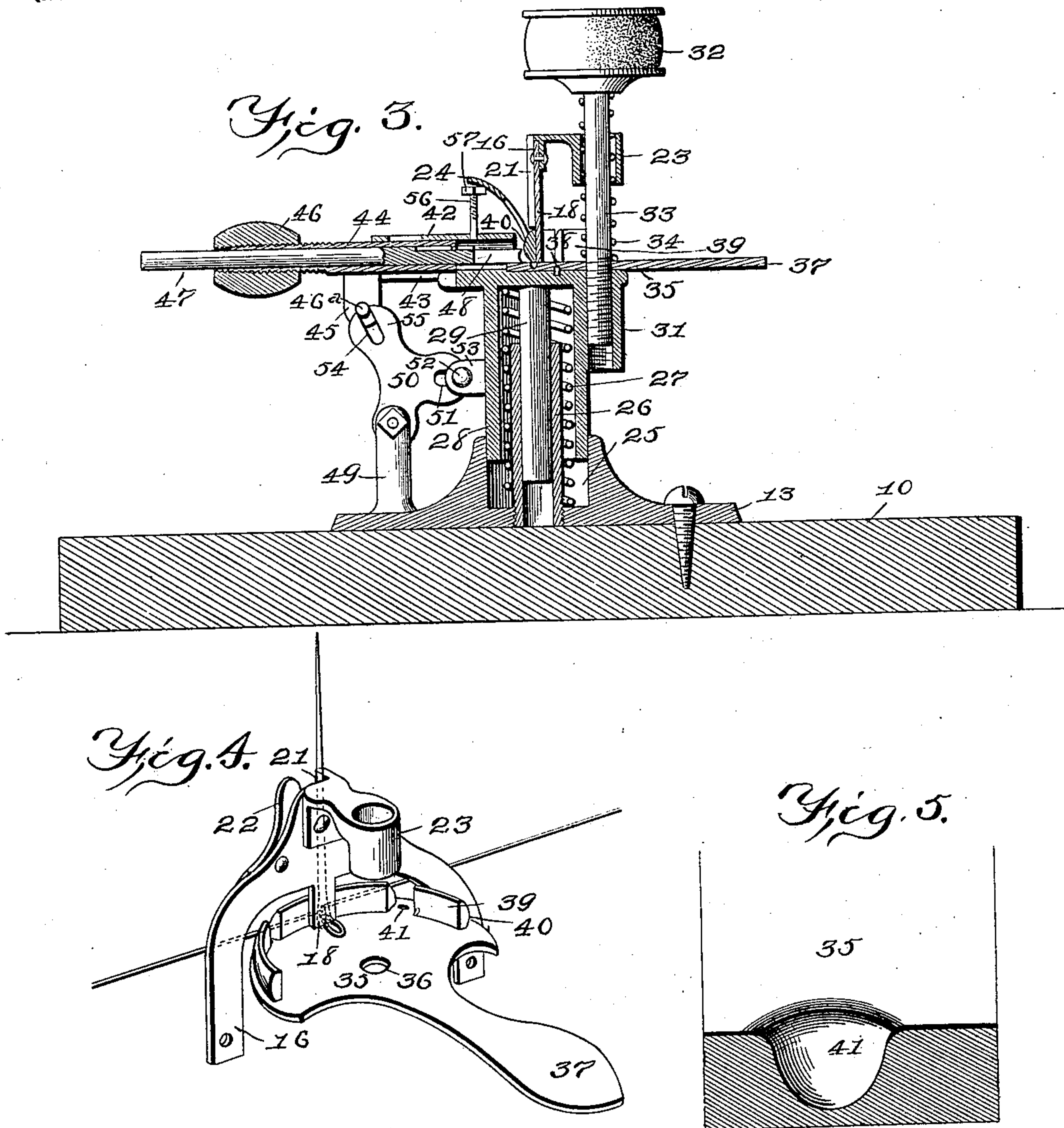
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(No Model.)



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UNITED STATES PATENT OFFICE.

JACOB R. HOIT, OF DES MOINES, IOWA.

NEEDLE-THREADER.

SPECIFICATION forming part of Letters Patent No. 689,398, dated December 24, 1901.

Application filed March 11, 1901. Serial No. 50,605. (No model.)

To all whom it may concern:

Be it known that I, JACOB R. HOIT, a citizen of the United States, residing at Des Moines, in the county of Polk and State of Iowa, have
5 invented certain new and useful Improvements in Needle - Threading Machines, of which the following is a specification.

The object of my invention is to provide a machine of simple, durable, and inexpensive
10 construction designed to hold the end portion of a thread and so constructed that an operator may place the eye end of a needle into a comparatively large opening in the machine—that is to say, he may place the needle into an
15 opening which can be readily found by a person whose eyes are incapable of seeing the eye of a needle. Then when the needle is placed in said opening the operator may by pressing upon a button force the thread
20 through the eye of the needle and hold that portion that is forced through. Then, obviously, if the needle is withdrawn from the opening the thread will remain in the eye of the needle.

25 A further object is to provide a needle-threading machine by which an operator may with one hand and without using his eyes thread a needle in less time than is ordinarily consumed by a person using both hands and
30 having unimpaired vision.

My invention consists in certain details in the construction, arrangement, and combination of the various parts of the device whereby the objects contemplated are attained, as
35 hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which—

Figure 1 shows a side elevation of the complete machine. Fig. 2 shows a front elevation of same. Fig. 3 shows a vertical central
40 sectional view of the complete machine. Fig. 4 shows in perspective the means for forcing the thread through the eye of the needle and for holding the portion thus forced through, also showing the needle in position in relation
45 to said parts. Fig. 5 shows an enlarged detail sectional perspective view to illustrate the contour of the holes for receiving the eye end of the needle.

50 Referring to the accompanying drawings, I have used the reference-numeral 10 to indicate a base, preferably circular in outline.

Mounted upon the base is an upright 11, having a spring 12 fixed thereto at its upper end and with its lower end resting against the up- 55 right and its central portion bowed outwardly therefrom. This device is for the purpose of receiving the spool of thread, the upright and spring being of a size and shape to pass through the spool of thread, the spring serving to apply a yielding pressure to the spool
60 to prevent too-free rotation thereof for purposes hereinafter made clear.

The base of the threader proper is indicated by the reference-numeral 13. Mounted 65 upon this base are two stationary uprights 14, having vertical slots 15 on their inner faces and having their upper ends slotted. Mounted in the slots in the tops of the uprights 14 is a rigid arch 16, with its ends placed 70 in the slots in the top of the uprights 14 and held in place by the bolts 17. At the central portion of the arch is a downward extension 18, having a flat under surface. On one side of the arch 16 is a thread-guiding hook 19, 75 and on the opposite side is a thread-cutter 20. On the front face of the arch at its top central portion a vertical groove 21 is formed, and at one side of this groove is a forwardly and upwardly projecting lip 22. This lip is 80 for the purpose of receiving a needle and directing it to the groove into which it is passed when it is to be threaded. Projecting rearwardly from the top of the arch is a sleeve 23 for purposes hereinafter made clear. I have 85 also provided a thread-guide by which the thread is held against the front face of the arch. This guide comprises a strip of thin metal, substantially semicircular in shape, (indicated by the reference-numeral 24,) with 90 its central portion inclined forwardly and its ends designed to be placed in the slotted uprights 14 and held in position by the bolts 17.

In use a spool of thread is placed upon the upright 11, the end of the thread is passed 95 through the hook 19, and then between the guide 24 and the arch 16. This guide is preferably made of spring metal, so as to exert a yielding pressure upon the thread for the purpose of retaining it in position. In the central portion of the base is a cylindrical opening 25, and projecting upwardly through the base and through the cylindrical opening in the base is a tube 26. This tube 26 is sur- 100

rounded by an extensile coil-spring 27. The reference-numeral 28 indicates a hollow tubular body portion fitted in the opening 25 to be capable of vertical movement and having on its interior a rounded projection 29, designed to enter the tube 26, the said coil-spring 27 being contained within the said body portion. On the sides of the body portion 29 are two outwardly-projecting arms 30 to enter the slots 15 and serve as guides to prevent lateral movements of the said body portion. Obviously this body portion is normally held to its upward limit by the spring 27, and yet may readily be forced downwardly to a limited extent against the pressure of said spring. On the rear face of the body portion 28 is a sleeve 31, internally screw-threaded. This sleeve 31 is arranged directly below the sleeve 23, before described.

The reference-numeral 32 indicates a button having a flat top and of such a size as to stand in position where the top of a needle in the needle-groove will rest against it. Fixed to said button is a downwardly-projecting rod 33, with its lower end screw-threaded. This rod is designed to pass through the sleeve 23 and to be screwed into the sleeve 31. An extensile coil-spring 34 is wound upon the rod 33, with one end impinging against the under surface of a button, for purposes hereinafter made clear.

Mounted upon the top of the body portion 28 is a device for receiving the end of the needle and for aiding in clamping the thread, which device is constructed as follows: The numeral 35 indicates a flat circular plate having a central opening 36 and a handle 37 at one side. This said plate is of a size designed to enter between the sides of the arch 16 and be capable of rotation therein. The said central opening 36 is designed to receive the rod 33, and the spring 34 presses downwardly upon the plate 35 to normally hold said plate to its downward limit. On the top of the body portion 28 is an upwardly-projecting pin 38, which projects only a slight distance above the surface of the body portion. This pin 38 is designed to enter a corresponding notch in the under surface of the plate 35, to thereby hold said plate against turning. Obviously the plate may be turned when desired by moving the handle 37. The said plate will move upwardly against the pressure of the spring 34 sufficiently to permit the projection 38 to move out of the notch in the under surface of the plate. Upon the top surface of the plate 35, near the periphery thereof, is a series of upwardly-projecting guides 39, having their outer faces rounded at 40, convex shape, to provide a notch at the point where the projections 39 contact with the plate 35. Between each pair of projections 39 is an opening 41 in the plate 35. This opening, as clearly shown in Fig. 5, is oval in contour and tapers downwardly and inwardly. In this connection it is to be remembered that the eye end of a needle is always

flattened and tapered, and obviously when the eye end of a needle is placed in this opening 41 it must assume a position with its eye at right angles to the longitudinal axis of the oval-shaped opening, and the said openings 41 are arranged with their longitudinal axes at right angles to a radial line from the center of the plate 35. The said projection 38 is so arranged that the plate 35 will be held in position to receive a needle passed through the groove 21. I preferably provide a number of openings 41 of different sizes, so that the device may be adapted quickly and easily for needles of different sizes by simply turning the plate 35 until an opening 41 of the desired size is in alinement with the groove 21.

Upon the front edge of the top portion of the body 28 is a horizontal tubular extension 42, having a longitudinal slot 43 in its under surface and open at both ends. Mounted in said tubular extension 42 is a sliding sleeve 44, having the downward projection 45, in which a pin 46^a is fixed. The outer end portion of the sleeve 44 is slotted and slightly tapered on its outer surface, and said outer surface is screw-threaded. A thumb-nut 46, having an internally-screw-threaded opening, which opening is also slightly tapered, is placed on the outer end of the sleeve 44, and said thumb-nut is open at both ends. Passed through the sleeve 44 is a bar 47, having at its inner end a flattened projection 48. Obviously the said bar 47 may be moved longitudinally within the sleeve 44, and when the thumb-nut 46 is screwed tight the bar 47 will be firmly clamped in position. Furthermore, the sleeve 44 may slide longitudinally within the tubular extension 42. The flattened end 48 of the bar 47 is designed to stand in a plane directly above the top surface of the plate 35. I have provided means for moving this bar 47 upon a downward pressure of the button 32, as follows: Fixed to the machine-base is an upright 49, and fulcrumed in the top of the upright is a lever 50. This lever 50 is provided with a slot 51, which slot is designed to receive a pin 52, fixed to a support 53 on the body portion 28. A slot 54 is also formed in an arm 55 of said lever to admit the pin 46. By this means it is obvious that a downward movement of the body portion 28 will move the bar 47 longitudinally. I have provided means also for adjusting the guard 24 relative to the arch 16 to adapt it for different-sized threads, as follows: Mounted on the upper surface of the tubular extension 42 is a threaded rod 56, and on top of said rod is a nut 57, designed to engage the forward surface of the guard 24. Obviously a manipulation of the nut on the rod will move the guard to and from the arch, thereby adapting it to receive threads of different sizes and apply any desirable tension to the thread.

In practical use the operator first places a spool of thread upon the upright 11. Then the thread is passed through the thread-holder 19, as illustrated in Fig. 4, and then between

the guard 20 and the arch 16. Obviously when the thread is pulled down it will become wedged between these parts at points some distance from each other. The plate 35 is so arranged that the thread between these two points will rest upon the top edge of the plate 35 and against the rounded front surface of the central projections 39. Then the operator grasps the point end of the needle between his thumb and forefinger and then passes the eye end of the needle down through the groove 21 until the eye end of the needle passes between the two projections 39 and enters the oval-shaped notch or opening 41 in the plate 35. When this is done, the operator slightly turns the needle until the needle enters the opening 41, it being understood in this connection that the eye end of a needle is oval in cross-section and it cannot enter the opening 41 until it is turned to proper position with the eye directly in alinement with the bar 48. Then the operator presses the button 32, together with the needle, downwardly against the force of the spring 27. The first effect of this downward movement will be to force the bar 48 against the thread that is lying directly in front of the opening 41. Then the bar and thread are pushed jointly through the eye of the needle and a loop is made in the thread beyond the eye of the needle. When the button is released, the bar 48 is withdrawn from the eye of the needle, and the plate 35 is elevated by the spring 27 until the projection 18 engages the loop of the thread and clamps it against the top of the plate 35. Obviously this portion of the thread will be firmly held in this position. Then the needle may be withdrawn from the groove 21 and it will slide upon the thread until the desired amount of thread has passed through the eye of the needle. Then the operator simply presses the button 32 sufficiently to force the plate 35 downwardly far enough to release the thread that has been clamped between the projection 18 and the plate 35. Then the thread is drawn outwardly until a sufficient quantity of it has passed beyond the thread-cutter 20, whereupon the thread is wrapped around the cutter and severed. Obviously the device will then be again in position for threading, as the end portion of the thread will be clamped between the guard 24 and the arch 16. As before explained, the various openings 41 are made of graduated sizes, and if the operator is using a comparatively small needle the lever 37 is grasped and turned until the desired one of the openings 41 is in position under the needle-groove 21, while if a coarser needle is used the lever 37 is moved in an opposite direction until a proper opening is reached.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States therefor, is—

1. In a needle-threader, the combination of, a thread-holder, a needle-holder, a threading-

pin for forcing the bight of the thread through the eye of the needle, and a clamping device operated from the threading-pin and having two jaws designed to clamp between them the bight of the thread after it has passed through the needle and after the threading-pin has been partially withdrawn.

2. In a needle-threader, the combination of, a needle-holder, a threading-pin to force the bight of the thread through the eye of the needle, a thread-clamping device to engage the bight after it has passed through the needle, and a thread-holder yieldingly engaging the thread on both sides of the portion being passed through the needle so that when the threading-pin withdraws the thread will not withdraw with the pin.

3. In a needle-threader the combination of a spring-actuated thread-holder capable of yieldingly engaging a thread at two separate points, a needle-holder, a substantially V-shaped thread-guide adjacent to the needle-holder whereby a thread of any thickness is held directly in front of the eye of the needle in the needle-holder, a manually-operated threading-pin to force the bight of the thread through the needle-eye and a flat clamping member operated from the threading-pin to press the bight of the thread against a flat surface after the threading-pin has been withdrawn from the needle.

4. In a needle-threader, the combination of a vertically-movable body portion, a needle-holder connected therewith, a yielding pressure device for normally holding the body portion to its upward limit, a horizontally-movable threader mounted on the body portion, means for moving the threader over the needle-holder when the body portion is moved downwardly, and a stationary thread-holding member above the body portion, for the purposes stated.

5. An improved needle-threader, comprising in combination, a vertically-movable body portion, a yielding pressure device for normally holding the body portion to its upward limit, a plate on the top of the body portion, having a needle-holding opening therein, means for holding a length of thread adjacent to the said needle-holding opening, a horizontally-movable bar connected with the vertically-movable body portion, means for passing the bar over the needle-holding opening when the body portion is moved downwardly, to thereby pass a bight of the thread through the eye of the needle, and a stationary projection above the plate having a needle-opening and arranged in position to clamp the bight of the thread after it has passed through the eye of the needle against the top of said plate, for the purposes stated.

6. An improved needle-threader, comprising in combination, a stationary arch having a downward projection at its central portion, a thread-holder designed to receive a thread and yieldingly hold it against the sides of the arch, a needle-groove in the front of the arch,

a vertically-movable body portion under the center of the arch, a plate on the body portion, having a needle-opening therein, directly in alinement with said groove, a yielding pressure device for holding the movable body to its upward limit, a horizontally-movable threading-bar on the body portion, means for moving said bar through the eye of a needle in said opening when the body portion is moved downwardly, and for returning it when the body portion is raised, said downward projection from the arch being so shaped as to clamp the thread against the said plate after the threading-bar has been withdrawn, for the purposes stated.

7. In an improved needle-threader, the combination of a stationary arch having a central downward projection, a needle-groove at the front of the arch, a vertically-movable body portion beneath the projection, a horizontally-movable threading-bar on the body portion, means for advancing the threading-bar on the body portion, means for advancing the threading-bar under the arch when the body portion is moved downwardly, and for withdrawing it when the body portion is elevated, a rotary plate on the body portion, having a series of needle-openings therein, said needle-openings each being capable of assuming a position directly under the said needle-groove, uprights on the opposite sides of each of said openings, said uprights having notches to receive a thread and to hold it in position adjacent to the needle-opening of the plate, and in line with the said threader, the said arch and body portion being so arranged that when the threader has passed a bight of the thread through the needle, the projection will clamp said bight against the plate when the body portion is elevated, for the purposes stated.

8. In a needle-threader, the combination of a plate 35, rotatably mounted, a series of projections 39 on the top edge of the plate near its periphery, notches 40 between the front faces of the side projections and the top of said plate, and the needle-receiving openings 41 between each pair of said projections, substantially as and for the purposes stated.

9. In a machine of the class described, having a needle-receiving groove, the combination of a rotatable plate 35, projections 39 thereon, having notches 40 between their outer surfaces and the top surface of the plate, oval needle-receiving openings in the plate, between each pair of projections and in position where a needle in said groove may enter each opening in turn, and means for yieldingly holding the said plate in position with the said needle-holding groove, in alinement with any one of said needle-holding openings, for the purposes stated.

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Witnesses:

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