

No. 687,094.

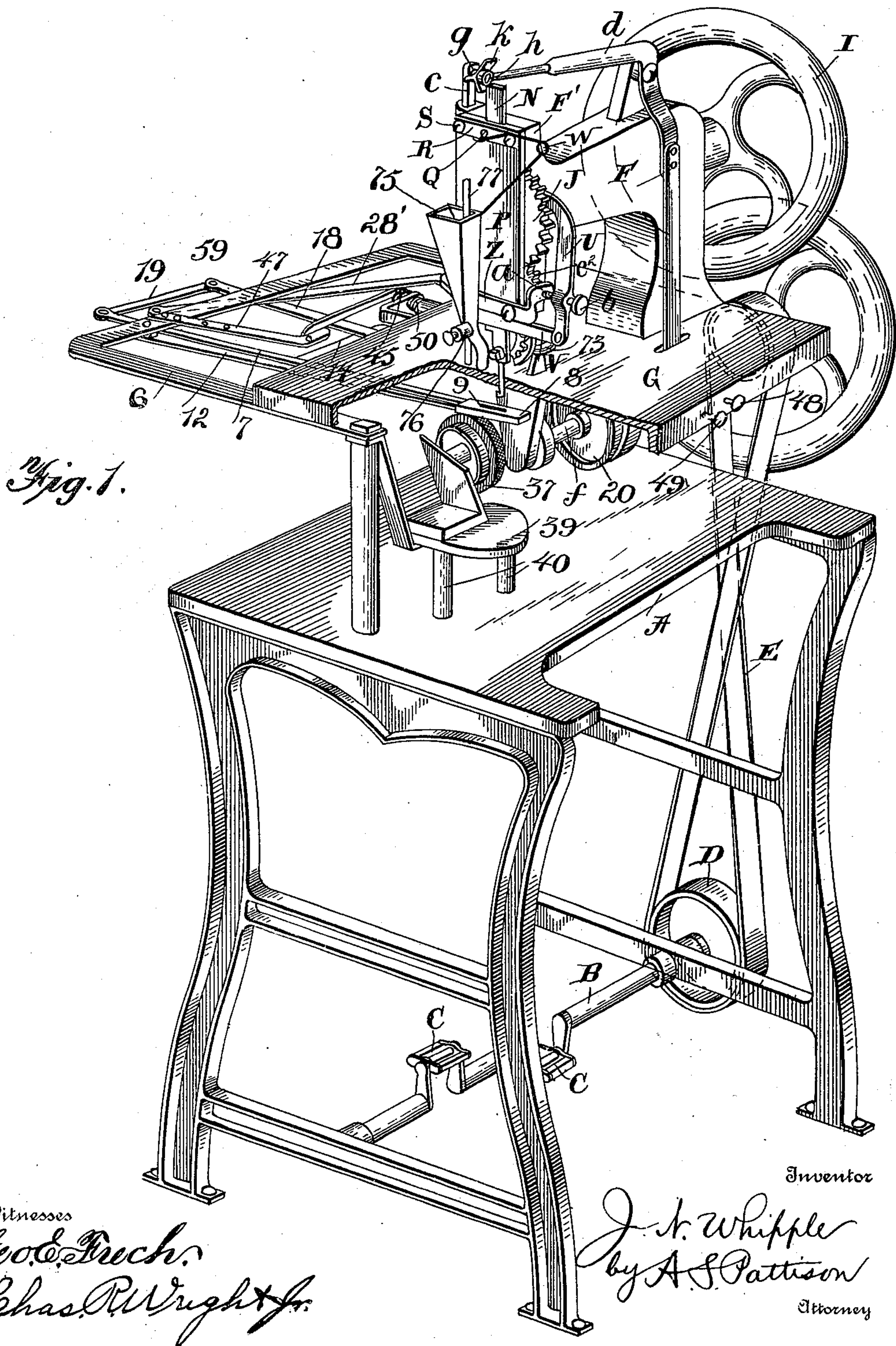
Patented Nov. 19, 1901.

J. N. WHIPPLE.  
HARNESS LOOP SEWING MACHINE.

(Application filed Jan. 11, 1900.)

(No Model.)

5 Sheets—Sheet 1.



Witnesses  
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**No. 687,094.**

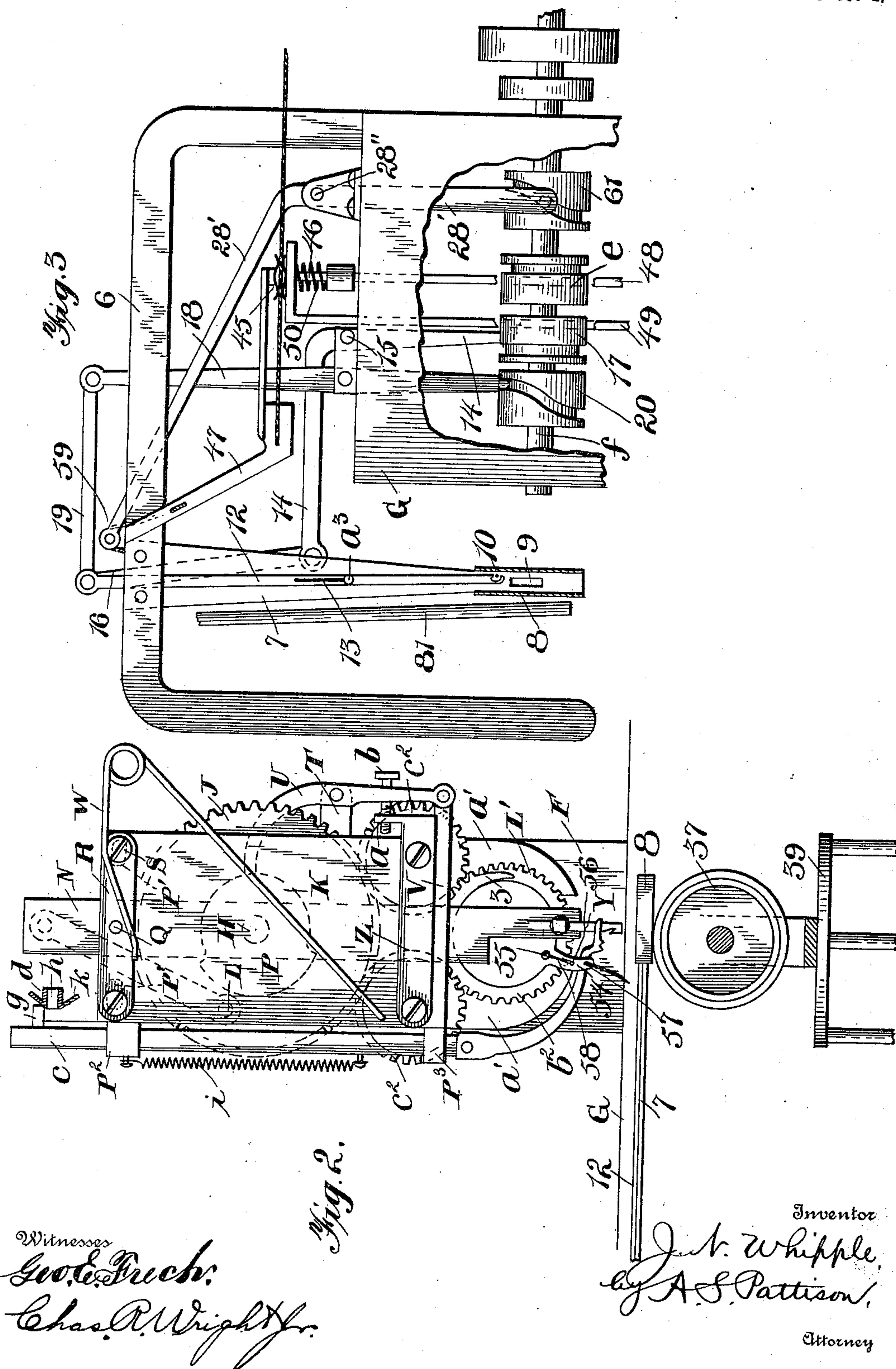
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(No Model.)

**5 Sheets—Sheet 2.**



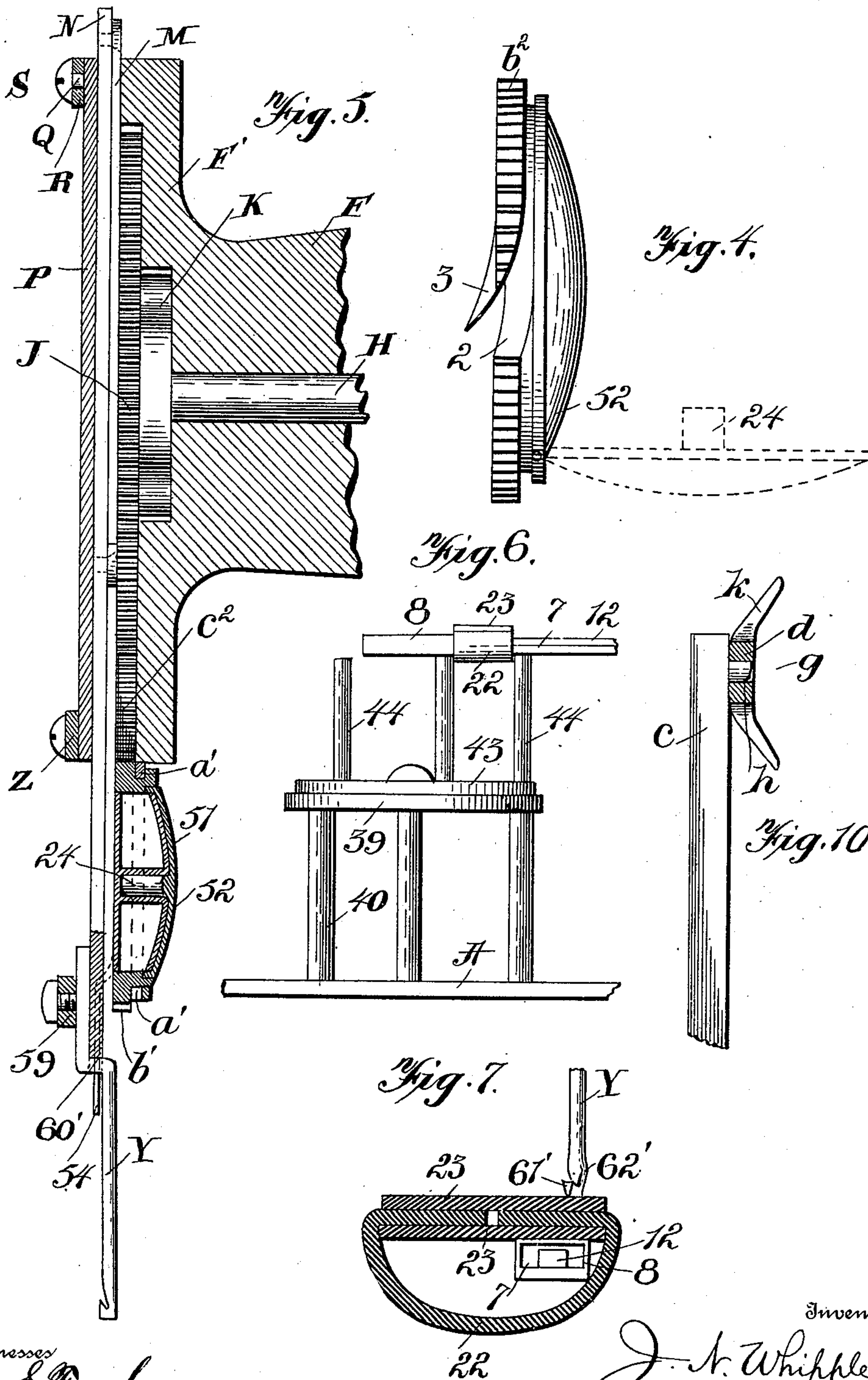


J. N. WHIPPLE.  
HARNESS LOOP SEWING MACHINE.

(Application filed Jan. 11, 1900.)

(No Model.)

5 Sheets—Sheet 3.



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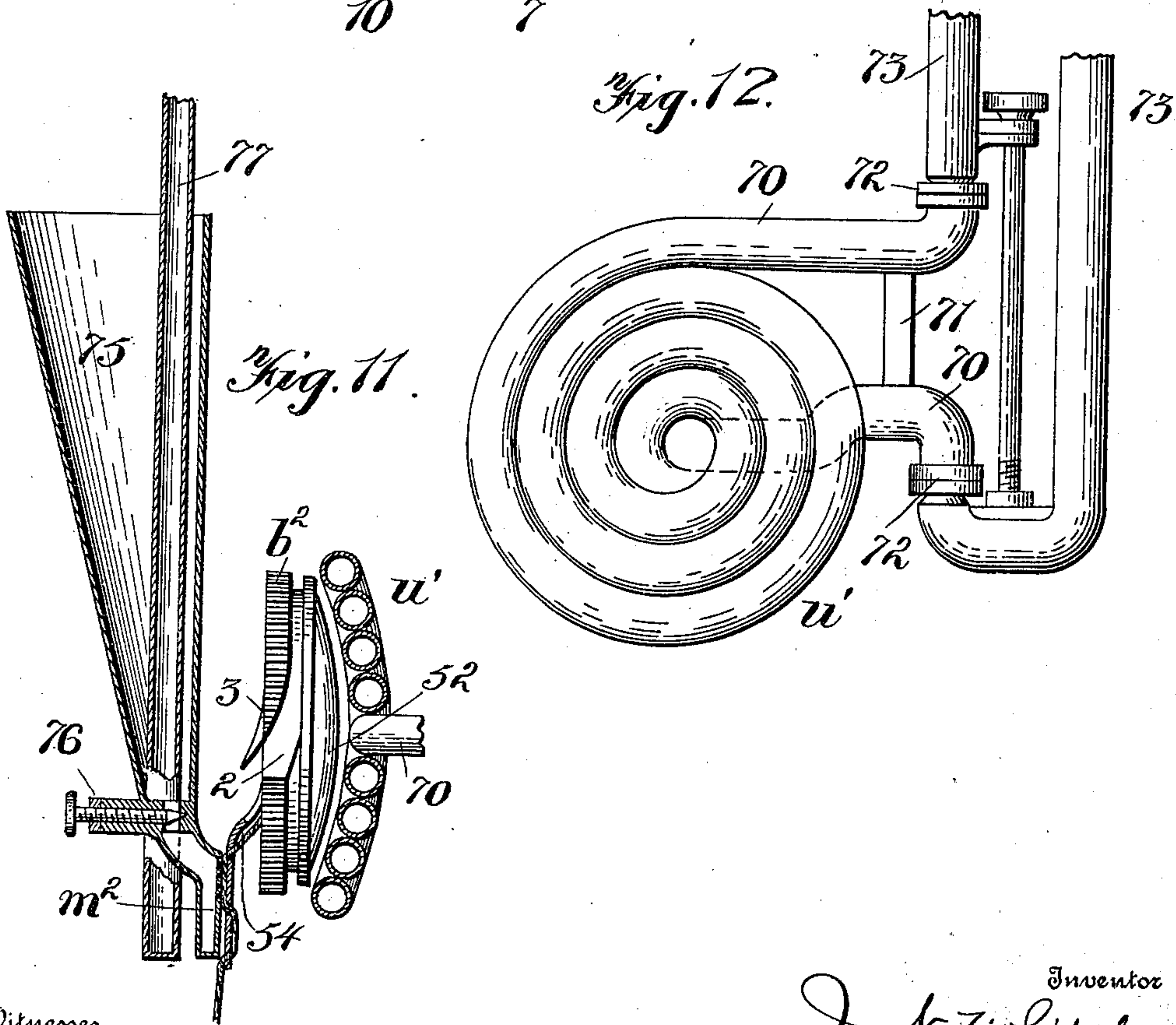
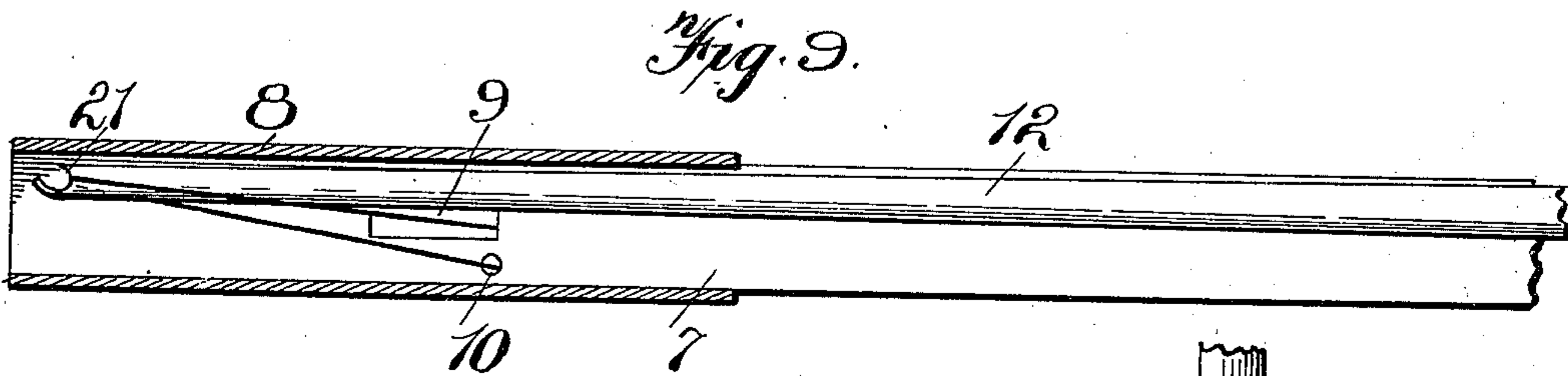
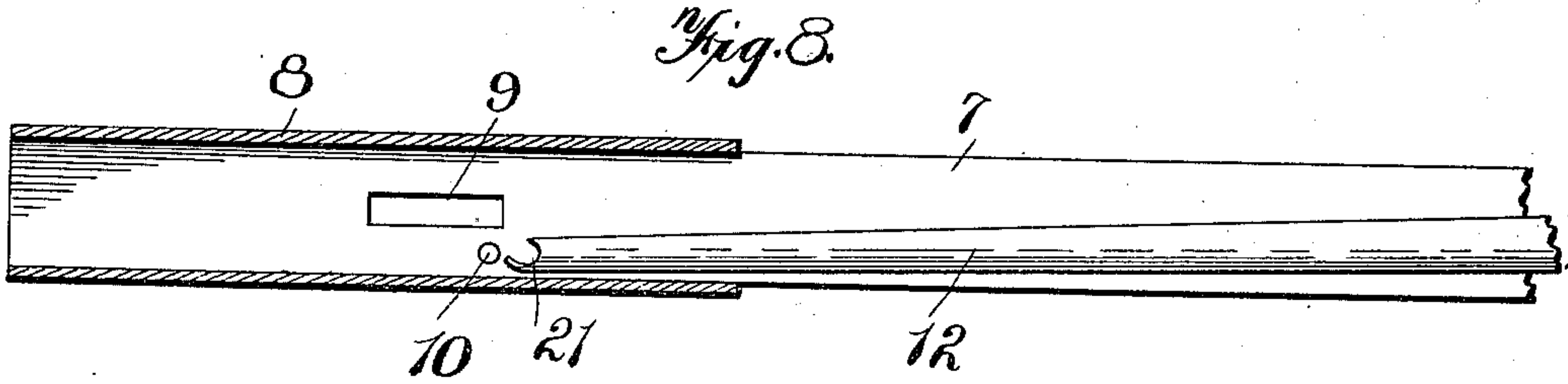
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J. N. WHIPPLE.  
HARNESS LOOP SEWING MACHINE.

(Application filed Jan. 11, 1900.)

(No Model.)

5 Sheets—Sheet 4.



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No. 687,094.

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5 Sheets—Sheet 5.

Fig. 13.

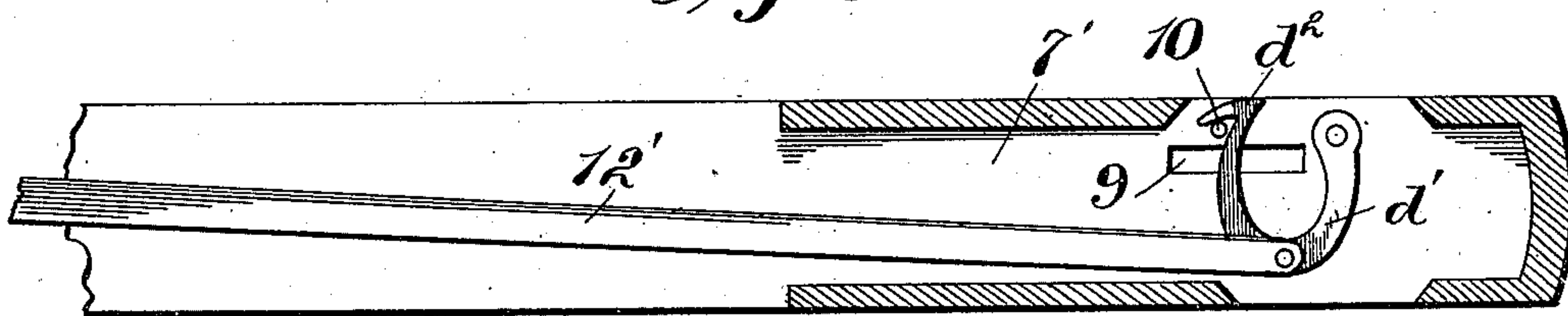


Fig. 14.

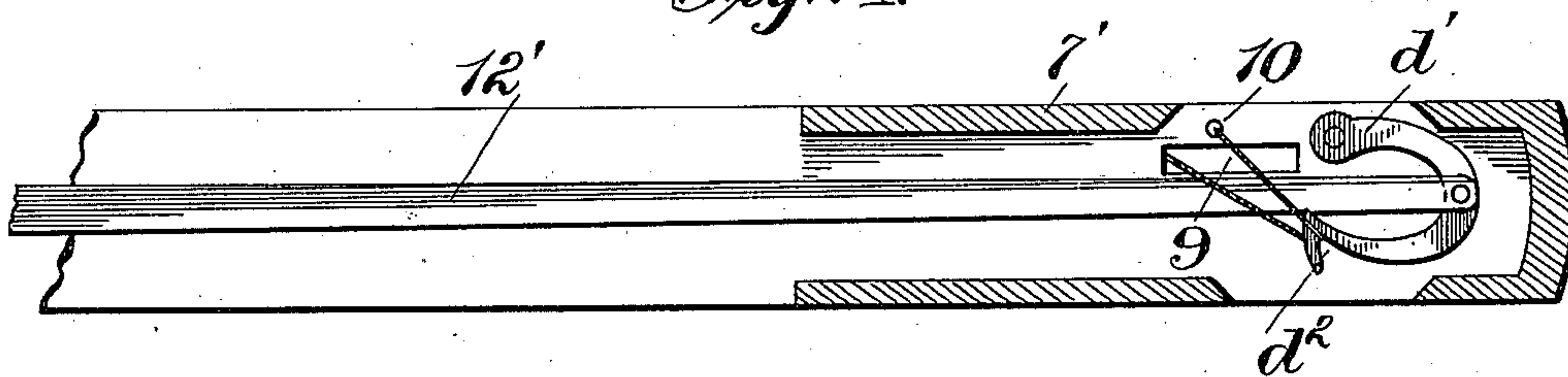


Fig. 15.

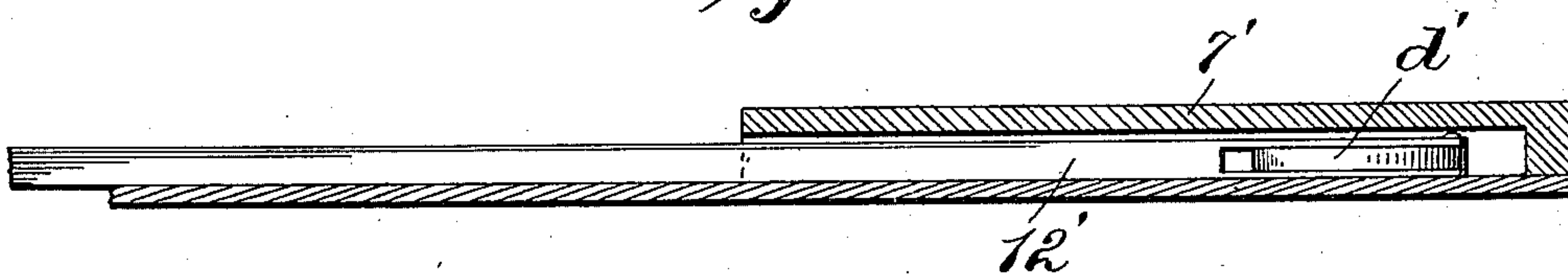


Fig. 16.

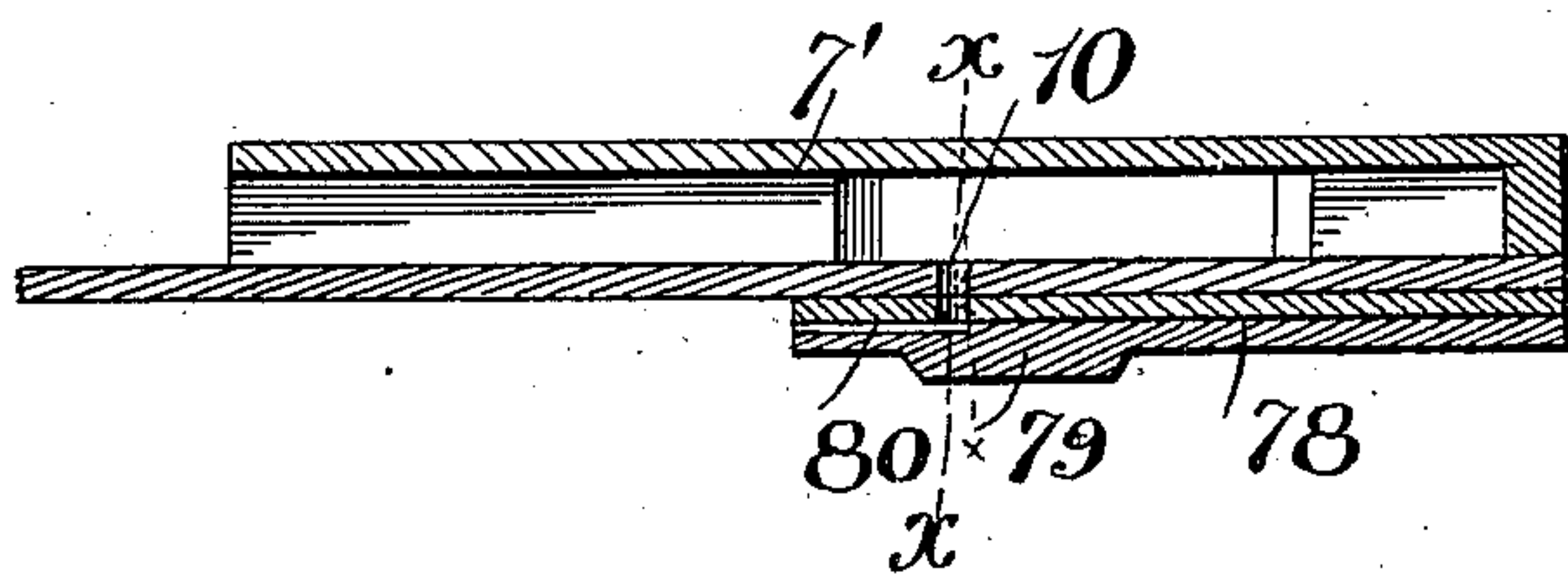
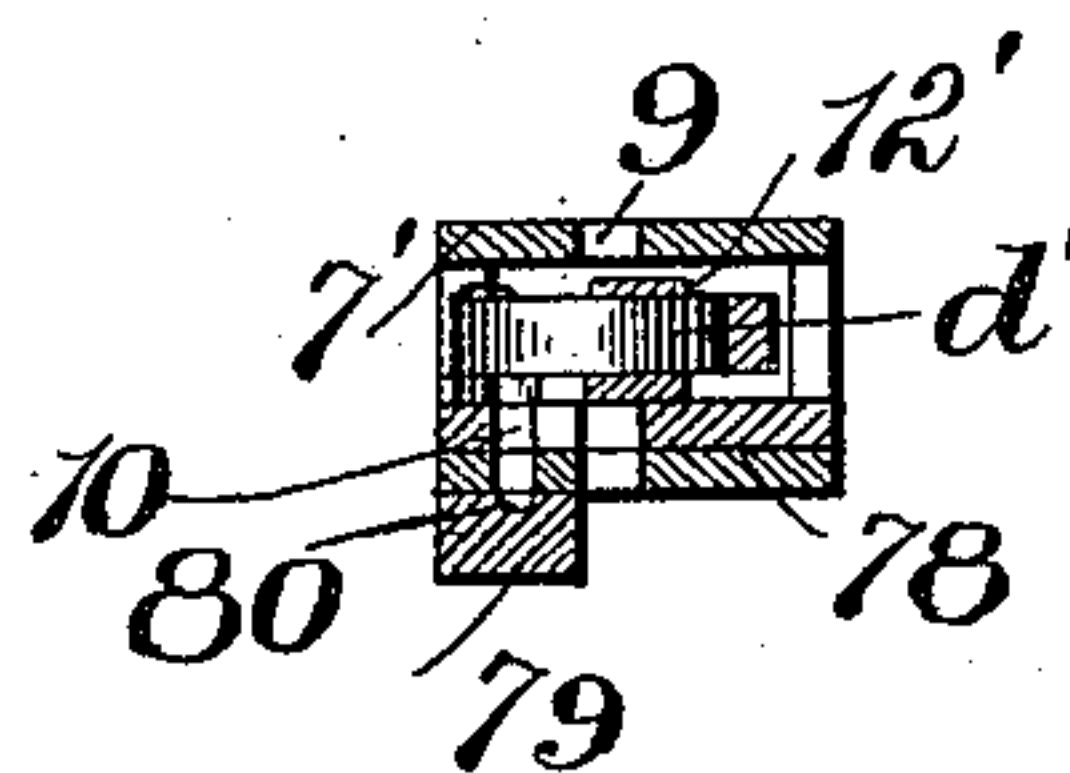


Fig. 17.



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# UNITED STATES PATENT OFFICE.

JOEL N. WHIPPLE, OF AURORA, ILLINOIS, ASSIGNOR TO THE LANDIS MACHINE COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

## HARNESS-LOOP-SEWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 687,094, dated November 19, 1901.

Application filed January 11, 1900. Serial No. 1,124. (No model.)

*To all whom it may concern:*

Be it known that I, JOEL N. WHIPPLE, a citizen of the United States, residing at Aurora, in the county of Kane and State of Illinois, have invented new and useful Improvements in Harness-Loop-Sewing Machines, of which the following is a specification.

My invention relates to improvements in harness-loop-sewing machines; and it consists in the construction and arrangement of parts, as will be fully described hereinafter and particularly referred to in the claims.

The primary object of my invention is to produce a sewing-machine which will sew loops upon harness and other straps.

Another object of my invention is to have the main thread fed at the bottom or inner side of the strap to which the loop is being attached and the locking-thread fed by a rotary shuttle carried above the goods and adjacent the needle, the latter being constructed to puncture the strap and edges of the loop and catch the main thread and draw it through the goods in the form of a loop, which is caught by the hook of the shuttle and passed therearound for forming a lock-stitch.

In the accompanying drawings, Figure 1 represents a perspective view of a machine embodying my invention. Fig. 2 is an end view of the same. Fig. 3 is a plan view with the top plate of the machine removed, showing the mechanism for carrying the thread across the needle, the thread-supporting arm being shown partly in section. Fig. 4 is an enlarged side elevation of the shuttle with the bobbin-holder therein and the hinged side of the bobbin-holder shown open in dotted lines. Fig. 5 is an edge elevation of the plate at the end of the arm H and the mechanism carried by and adjacent to the said plate for effecting the operation of the shuttle, the shuttle and bobbin-holder being shown in vertical section. Fig. 6 is a side elevation of a modified form of support for the outer end of the arm that supports the loop-holding arm, the said modification to be used when narrow loops are being sewed. Fig. 7 is a view showing the relative positions of the loop and the arm which passes through it and which arm

supports the thread-operating lever. Fig. 8 is a longitudinal sectional view of the outer end of the loop-carrying arm 7, showing the thread-operating lever or finger situated therein. Fig. 9 is a similar view showing the thread carried diagonally across the needle-opening by means of the thread-operating finger or lever. Fig. 10 is an enlarged view showing the specific form of the end of the presser-foot-operating lever and the manner in which the same is connected with the presser-foot. Fig. 11 is an enlarged view showing the wax-box, the shuttle containing the bobbin-holder, and the steam-pipes used in connection therewith. Fig. 12 is a plan view showing the specific construction of the steam-coil which is hinged and supported adjacent the bobbin and shuttle for keeping them warm. Fig. 13 is a sectional view of the loop-supporting arm, showing a modified form of finger for carrying the thread across the needle-opening, the said finger in this figure being shown in position to receive the thread. Fig. 14 is a similar view, the finger being shown in the position assumed thereby when the thread has been caught and carried across the needle-opening. Fig. 15 is a side elevation of the finger-operating arm and the finger shown in Figs. 14 and 15. Fig. 16 is a vertical sectional view of the loop-supporting arm shown in Figs. 14 and 15, the finger and its operating lever or link being omitted. Fig. 17 is a section on line *x x*, Fig. 16.

Referring now to the drawings, A indicates a suitable supporting-table, in the lower end of the frame of which is suitably journaled a horizontal double crank-shaft B, carrying the pedals C. One end of this shaft is provided with a pulley D, around which a driving-belt E passes to the driving-pulley of the machine.

The arm F of the machine projects over the bed-plate G, as shown, and journaled longitudinally in this arm F is a driving-shaft H, carrying a balance-wheel I at its outer end. The opposite end of this shaft H is provided with a cog-wheel J, the said cog-wheel having a wrist-pin L, upon which the lower end of a pitman M is journaled, the upper end of the said pitman being pivotally connected



with the upper end of the needle-bar N and by means of which the needle-bar is reciprocated, as will be readily understood.

A cross-bar R has its ends secured to the end piece F' of the arm F by means of the screws or bolts S, and the needle-bar race-plate P is pivotally connected to this bar R at the point Q, whereby the lower end of the race-plate P is permitted to have a reciprocating movement transverse the machine for the purpose of feeding the loop, being sewed in a manner which will be fully described hereinafter. The race-plate P is provided with the horizontally-elongated openings P', (shown in dotted lines, Fig. 2,) through which the screws or bolts S pass and which permit the race-plate to have a reciprocating movement independent of the end piece F' of the arm F. The race-plate is reciprocated by means of a lever U, which is intermediately pivoted to an arm T, extending laterally from the arm F, the upper end of the lever U lying in the path traveled by the cam K upon the shaft H and by means of which cam the lever is operated. Pivotally connected to the lower end of this lever is a pitman or link V, the opposite end of the pitman or link being connected with the race-plate P, as clearly shown. A spring W exerts a tension upon the lower end of the race-plate toward the lower end of the lever U, and thus keeps the upper end of said lever in contact with the cam K. A hooked needle or awl Y is connected to the lower end of the said race-plate, and this above-described mechanism for reciprocating the race-plate is so timed that the needle is moved by the lever when it is down, and therefore within the goods, and thus the needle serves to move the goods the distance the race-plate is moved by the lever and the cam before referred to.

For the purpose of regulating the length of the stitch a plate or bar Z, similar to the bar R and secured in the same manner as the bar R, is provided at that end adjacent the lever U with an upwardly-projecting arm *a*. Passing through this arm *a* is a regulating-screw *b*, which is in the path traveled by the lower end of the race-plate P, so that the said plate will engage it. By this construction it will be seen that the said plate is limited in its movement under the tension of the spring W, so that when the lever is operated by the cam K it does not move the race-plate as far as it would otherwise, and consequently the length of the stitch is regulated.

Sliding in bearings P<sup>2</sup> and P<sup>3</sup>, projecting, respectively, from the ends of one side of the front end of the arm F, is a presser-foot *c*, which is connected at its upper end with an L-shaped lever *d*, the said lever *d* having its lower end passing through the table A and engaging a cam *e* upon a shaft *f*, which is journaled to the under side of the table. The mechanism for operating the needle-bar and the presser-foot is so timed that the presser-foot is down when the needle-bar is raised,

and remains down until the needle has moved downward for piercing the loop and the strap to which it is attached. When the needle has made the limit of its downward stroke, the presser-foot is raised by means of the said lever *d*, whereby the goods being operated upon is moved by the lateral movement of the needle, which movement is effected by the reciprocation of the race-plate P, as before described. Owing to the fact that the presser-foot is down when the needle is raised it is necessary to provide means for releasing the presser-foot when it is desired to pass the loop over the outer end of the loop-supporting arm 7, which will be more fully described hereinafter. The releasing of the presser-foot from the lever *d* is effected by a lateral movement of the free end of the L-shaped lever *d*, which will disengage the opening *h* of the said lever from the laterally-projecting lug *g*, which extends from the upper end of the presser-foot. When it is desired to release the presser-foot, it is only necessary to press outward upon the free end of the lever *d* sufficiently to disengage the opening *h* of the projection *g*, when the presser-foot will be drawn upward by means of a spring *i*, which has its lower end connected with the presser-foot and its upper end connected with the bearing P<sup>2</sup>, as clearly shown in Fig. 2. When the presser-foot is released from the lever *d*, it will assume the position shown in Fig. 11, and in order to have the presser-foot to automatically interlock with the free end of the lever *d* when the machine is started I provide the outer end of the lever with the inclined or tapered portion *k*, which will engage the projection *g* of the presser-foot and force the outer end of the lever outward and over the projection until the opening therein registers with the projection, at which period the two are automatically connected and the machine is in an operating condition.

Supported at the outer end of the arm F and below the race-plate is a shuttle-race L', consisting of two curve-shaped portions *a'*, having their lower ends separated and forming a thread passage-way, as will more fully hereinafter appear. It should be noted that the shuttle is supported above the goods operated upon instead of below it, as usual. For the purpose of rotating the shuttle it is provided upon its periphery with the cogs *b'*, which engage with intermediate gears *c'*, the latter being in mesh with the gear J, carried by the end of the shaft H. Attention is also directed to the fact that the gear J has twice as many teeth as the shuttle, whereby the shuttle is rotated twice for each rotation of the gear J, and consequently the shaft H, for a purpose to be presently explained. The object in having the two gears *c'* is to cause a continuous rotation of the shuttle by having one of the said gears *c'* in mesh with the shuttle when the other gear *c'* is out of mesh therewith or opposite the thread-slot 2, formed in the periphery thereof. These gears are



a distance apart greater than the length of the said slot, whereby the rotation of the shuttle is not interrupted. One end of the thread passage or slot 2 is provided with a hook 3 for catching in the loop of the thread drawn up by the needle Y. When the thread is drawn up through the goods by the needle, the loop formed thereby is caught by the hook 3 of the shuttle and the thread remains in the recess 2 while the shuttle is revolving, and when the shuttle has completed its revolution and permits the thread to pass out the slack is taken up by a "take-up" mechanism, which will be described hereinafter. The shuttle then makes another revolution for the purpose of bringing the point to the needle for again catching the next loop brought up thereby. It will thus be seen that the shuttle makes two revolutions for each up-and-down movement of the needle, or, in other words, one revolution when the needle is descending and another when the needle is elevated.

A substantially U-shaped frame 6 has its ends suitably supported by the table A and projects laterally to one side of the top of the machine G, as illustrated in Fig. 1. Connected at the outer end of this frame 6 is a bar 7, the said bar being in a box form, as illustrated in Figs. 9 and 10, and is slightly flexible for the purpose of enabling its free end to be lifted to permit the passage thereover of the loop to be sewed. The free end of this box or bar is provided with a vertical needle-opening 9, which is longitudinally elongated, as shown, and the lower portion is provided with a thread-opening 10, which is located adjacent the inner end of the said needle-opening. The thread passes through this box or arm 7 and is carried across the needle-opening, as illustrated in Fig. 10, for the purpose of being caught by the hook end of the needle. The means for effecting this movement of the thread will now be described.

Situated within the box-shaped bar 7 is a thread-operating lever or finger 12, the said lever or finger being provided with a longitudinal slot 13, through which a pivotal pin or projection  $a^3$  passes. This manner of connecting the said thread-lever with the bar or arm 7 allows the said lever an endwise and lateral movement at its free end, which extends to a point adjacent the needle-opening 9. These two movements are obtained through the medium of the L-shaped lever 14, pivoted between its ends at the point 15 and connected by means of a link or rod 16 with the outer end of the thread lever or finger 12, as plainly shown in Fig. 3. The inner end of this L-shaped lever 14 engages a cam 17 upon the shaft  $f$ , the said cam serving to move that end of the lever laterally, as will be readily understood, and its outer end back and forth longitudinally in respect to the lever 12, and through the medium of the link 16 imparts to the said thread-lever 12 a longitudinal

movement. The lateral movement of this finger or lever 12 is effected by means of a straight lever 18, which is pivoted between its ends adjacent to the pivotal point of the L-shaped lever 14 and has its outer end connected with the thread-lever by means of a link 19. The inner end of the lever 18 engages the cam 20 upon the shaft  $f$ , and is thereby given a reciprocating movement, which is in turn imparted to the outer end of the thread-lever, thus giving the said thread-lever a lateral movement. The object and operation of this lever are as follows: When the needle or awl Y is up, the thread-lever 12 is given a forward movement from the position shown in Fig. 9, which catches the thread in a notch 21, formed in the inner end of the said lever. The lever then continues to move forward, and at the same time it moves laterally across the needle-opening 9, thus carrying the thread across the said opening and holding it in a diagonal position thereover, as illustrated in Fig. 10. When the needle descends, the thread is in its diagonal position, to be caught by the hook formed upon the lower end thereof, and the needle in its upward movement draws with it the thread in the form of a loop through the hole which has been made in the goods, and this loop is then caught by the hook in the shuttle and passed around the same, as before described, for effecting a lock-stitch. At this time—that is, as the loop has dropped from the shuttle—the thread is drawn tight by the take-up, which will be described farther on. The position of the box-shaped bar 7 and the thread-lever in relation to the goods is plainly shown in Fig. 7. By reference to this figure it will be seen that the said bar and lever pass through the loop 22, which has its ends or edges placed between the straps 23. If a finish is not desired, the edges of the loop 22 can of course be connected to one strap or overlapped, as will be readily understood. The bobbin is placed within the shuttle upon the spindle 24 of the bobbin-carrier 51, the said spindle being connected to the hinged side 52 of the bobbin-carrier, whereby the side may be swung out, as shown in dotted lines, Fig. 4, for the purpose of removing the bobbin and the carrier or for the purpose of placing them in position therein. The shuttle revolves around the bobbin-carrier 51, and the outer face of the bobbin-carrier is provided with a downwardly and outwardly projecting thread-guiding arm 54. This arm is provided at its upper end with a passage-way 55, communicating with the interior of the bobbin, and through this opening the thread 58 passes, the said thread passing also through an opening 56, which leaves the thread exposed between the said openings at the outer side of the arm, and the thread then again passes through an opening 57 in the lower end of the said arm. The passage of the thread through these openings serves the purpose of producing a tension upon the thread



which will prevent the thread from being fed too rapidly and also provides means whereby the thread is waxed in a manner to be explained hereinafter. The lower end of the needle-bar is cut out at one side, as shown at 58', to allow room for said thread-guide.

The take-up mechanism consists of an L-shaped lever 28', which is pivoted intermediate its ends at the point 28'', and the outer end of the said lever is provided with a roller 59, around which the thread passes, the inner end of the lever 28' engaging a cam 61, situated upon the shaft *f*, as shown in Fig. 3.

The outer end of the box-shaped arm 7 rests upon a wheel 37, as shown in Fig. 1, or upon a post 44, as illustrated in Fig. 6, (the latter being a modification to be explained farther on,) and the said wheel 37 is journaled in a support 38, that is connected to a disk 39, supported upon the upper ends of the posts 40, that have their lower ends connected with the table A. The loop 22 rests upon the periphery of this wheel, which is preferably roughened, as shown. When the needle moves the goods forward, the wheel 37 revolves. The bar 7 is made flexible, as before stated, so that its inner free end may be lifted out of contact with the wheel or out of contact with the post 44, as the case may be, for the purpose of inserting the loop to be sewed or removing it therefrom after it has been sewed. When narrow loops are being sewed, the wheel 37 will be removed and a disk 43, Fig. 6, pivotally connected at its center to the center of the disk 39, and this disk 43 is provided with several posts 44, upon which the arm 7 is adapted to rest. One of the posts is placed just in front of the front edge of the loop, and as the goods is fed the disk 43 is revolved by the loop engaging the said post, and before this post passes off the bar the next succeeding post is brought under the bar 7 for supporting it. If the wheel 37 were used in short loops, when the loop passed between the wheel and the bar 7 the bar would be raised, which I desire to avoid, and this is accomplished by using the revoluble disk 43, which the posts will engage only the bar and not the loop, as plainly shown in Fig. 6, above referred to.

The thread 11 passes from the ball to the tension device, which consists of two disks 45, which are placed upon a screw-rod 46, but has one end connected to the thread-guide 47. The rod 48 has its inner end provided with a screw-threaded socket which receives the screw-threaded end of the screw-rod 46, as shown in Fig. 3, and the outer end of this rod extends to the front end of the machine in convenient position to be operated for regulating the tension of the thread. A releasing-rod 49 extends to the front of the machine and parallel with the regulating-rod 48, and the inner end of this releasing-rod has its inner end bent so that the rod or screw 46 passes through it. A spring 50 is placed upon the screw 46, with its ends resting against the socket at the inner end of the rod 48 and

the inner end of the releasing-rod 49. Thus it will be seen that the spring 50 normally holds the friction plates or disks together and that the tension of the spring for this purpose is regulated by turning the regulating-rod 48. When it is desired to release the tension upon the thread, it is only necessary to pull outward upon the releasing-rod 49, which will release the friction-disks 45 of the tension of the spring, and thus release or relieve the thread passing between it. The thread after passing through this tension device is guided by the guide 47 to the operating end of the take-up lever.

I here show the mechanism above described supported by the U-shaped frame 6 as exposed; but it will be understood that this will preferably be covered by the bed-plate G, (here shown broken away,) leaving only the inner end of the bar 7 suitably exposed to permit of the application thereto of the loop to be sewed.

For the purpose of waxing the thread and of keeping the shuttle and the bobbin warm I provide a wax-supplying cup or chamber and heating-pipes, which I will now explain.

Situated beside the shuttle and the bobbin-carrier is a steam-pipe coil *u'*, which has its ends 70 connected by means of a bar 71, and the ends 70 extend laterally in opposite directions, as shown. The laterally-extending ends are provided with swivel-joints 72, connecting them with the steam-pipes 73, which are in communication with any desired source of steam-supply. The joints 72 are ground so that they make a tight fit, and the swivel-joint provides a construction whereby the coil may be thrown backward and downward to permit the opening of the bobbin-carrier for the purpose of inserting and removing the bobbin. Wax is supplied to the threads by means of a wax cup or chamber 75, which is suitably supported just in front of the needle race-plate. The lower end of this cup is provided with a semicircular-shaped heating end *m*<sup>2</sup>, which lies adjacent to and just outside of the thread-guide 54 of the bobbin-carrier, and is adapted to apply the wax to the thread passing from the bobbin between the openings 55 and 56, and is so situated that the thread which is drawn by the needle through the goods in passing around the shuttle also passes between the semicircular portion *m*<sup>2</sup> and the arm 54 and is also waxed, as will be readily understood. In this way wax is supplied to both the top and the under threads. It is applied to the top thread directly and to the under thread by the said thread passing between the semicircular portion *m*<sup>2</sup> and the arm 54. A valve 76 is provided for the purpose of regulating the supply of wax, and passing through the wax-cup M is a steam-pipe 77, which is adapted to keep the wax liquid within the cup M, and this pipe also extends through the lower end of the cup and adjacent to the portion *m*<sup>2</sup> for the purpose of keeping the wax warm at that point.



In Figs. 15 to 17, inclusive, I show a modified form of the box-shaped arm 7 and a modified form of the thread-operating finger situated therein. The purpose of this modified form is to provide a preferred construction for operating upon heavier material where large loops are required, and this arm is adapted to be interchanged for the arm 7, heretofore described and illustrated. Referring now to these Figs. 15 to 17, inclusive, 7' is a box-shaped arm, which has situated therein an arm 12', the inner end of the arm being pivotally connected to a thread-finger  $d'$  at a point intermediate the ends of the latter, as clearly illustrated in Fig. 15. The free end of this finger  $d'$  is provided with a hook  $d^2$ , adapted to rest at a point to embrace the thread-opening 10, as illustrated in Fig. 14, and to be moved in the position indicated in Fig. 15 for carrying the thread across the needle-opening 9. In this instance the lever 12', instead of being constructed like that heretofore described, has simply an endwise movement, and in this instance the link 19 will not be connected with the outer end of the lever 12', and the lever will thus be given only an endwise movement through the medium of the L-shaped lever 14, and the link 16 serving to connect the outer end of the lever 12' and the L-shaped lever 14. For the purpose of strengthening the outer end of this modified form of box-shaped bar a plate 78 will be secured to its under side, as illustrated in Fig. 17, and projecting from the lower side of the bar under the thread-opening is a projection 79 for the purpose of making the needle passage-way deeper and to prevent the leather from being punctured by the needle-hook. This projection is also provided with a thread-groove 80. A steam-pipe 81 also preferably extends under the box-shaped bar 7 and the loop for the purpose of keeping the wax warm upon the thread in the operation of the machine.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a sewing-machine, the combination of a needle-operating mechanism, a needle having a hook, a rotary shuttle above the goods adjacent the needle, a thread-feeding mechanism comprising a flexible bar carrying a laterally-movable thread-finger, and mechanism for operating the thread-finger, substantially as described.

2. In a sewing-machine, the combination of a needle-operating mechanism, a needle having a hook, a rotary shuttle above the goods adjacent to the needle, a thread-feeding mechanism situated below the goods and consisting of a hollow supporting-arm, a thread-lever situated within the hollow arm, means for moving the thread-lever laterally, the said lever adapted to engage the thread and carry it across the path traveled by the needle, substantially as described.

3. A sewing-machine comprising a loop-bar,

a thread-guide pivoted thereon, a lever connected at one end with the thread-guide for operating it longitudinally, the other end of the lever engaging a cam, a needle-operating mechanism, a needle having a hook, and a rotary shuttle situated above the goods adjacent to the needle, substantially as described.

4. A sewing-machine comprising a loop-bar, a thread-guide pivoted and sliding thereon, a lever connected at one end with the said thread-guide for moving it longitudinally, a cam engaging the other end of the said lever, a second lever having one end connected with the said thread-guide for moving it laterally, a second cam engaging the other end of the said second lever, a shaft upon which the said cams are placed, a needle-operating mechanism, a needle having a hook, and a rotary shuttle above the goods and adjacent to the needle, substantially as described.

5. A sewing-machine comprising a thread-feeding mechanism below the goods, a needle-bar race-plate having a movement at its lower end for feeding the goods, a lever connected with the race-plate at one end, a shaft, a cam upon the shaft which engages the opposite end of the said lever, a spring for holding the race-plate normally in one direction, a needle, and a shuttle above the goods, substantially as described.

6. A sewing-machine comprising a thread-feeding mechanism below the goods, a needle-operating mechanism, a needle having a hook, a shuttle above the goods adjacent the needle, a bobbin within the said shuttle, said bobbin having a thread-outlet adjacent the needle and a wax-receptacle having an outlet-opening situated adjacent the bobbin-thread opening and in the path of the travel of the thread of the said bobbin, whereby the thread is waxed immediately before passing into the stitch, substantially as described.

7. A sewing-machine comprising a needle-bar-supporting arm having a longitudinally-arranged needle-bar-driving shaft, the outer end of the driving-shaft provided with a gear, a shuttle supported by the outer end of the said arm, said shuttle having a peripheral gear operatively connected with said driving-shaft gear, a needle-bar, and a pitman operatively connected with the said drive-shaft gear and with the needle-bar, substantially as described.

8. A machine of the character described the combination of a shuttle situated above the goods, a bobbin-carrier provided with a thread guide-arm projecting therefrom, thread passing outside of said arm, and a wax-supplying member adjacent the thread-guide and adapted to apply wax to the thread carried by the said guide after the thread passes around the shuttle, substantially as described.

9. A sewing-machine comprising a supporting bed-plate, a shuttle supported above the bed plate, a bobbin laterally removable from the said shuttle, and an upwardly-extending bobbin-heater situated at one side of



the bobbin and shuttle, a support therefor, the said heater being hinged to said support to fold downward to permit the removal of the bobbin from the said shuttle, substantially as described.

10 A sewing-machine comprising a supporting bed-plate, a shuttle-support, a shuttle supported above the bed-plate, a bobbin carried by the shuttle, and a shuttle-heater  
15 and having a heating-coil arranged on one side of and in close proximity to the shuttle, substantially as described.

11. A sewing-machine comprising a needle-operating mechanism, a thread-feeding mechanism below the goods, a needle having a  
15 hook, a rotary shuttle above the goods and

adjacent to the needle and provided with a hook, means for rotating the shuttle, and a bobbin about which said shuttle rotates having a thread-guiding arm extending outwardly beyond the plane of the end of the shuttle-hook and downwardly adjacent to the needle and formed with thread-receiving openings, substantially as described.

In testimony whereof I have hereunto set  
25 my hand in the presence of two subscribing witnesses.

JOEL N. WHIPPLE.

Witnesses:

JACOB R. SANDAGE,  
F. EMIL LUNDIN.