

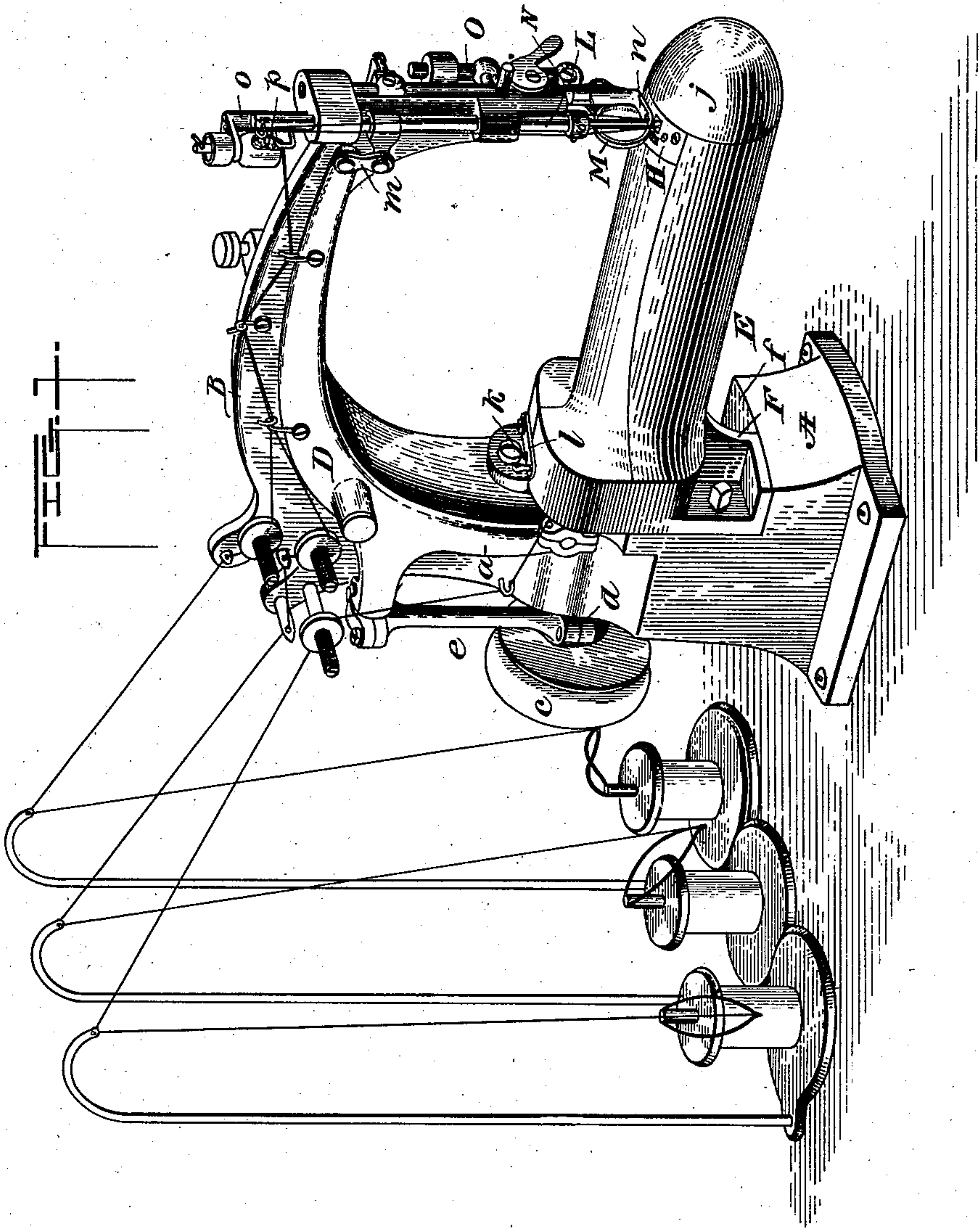
(No Model.)

5 Sheets—Sheet 1.

L. ONDERDONK.
SEWING MACHINE.

No. 547,675.

Patented Oct. 8, 1895.



Witnesses

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Gales P. Moore

Inventor
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Attorney

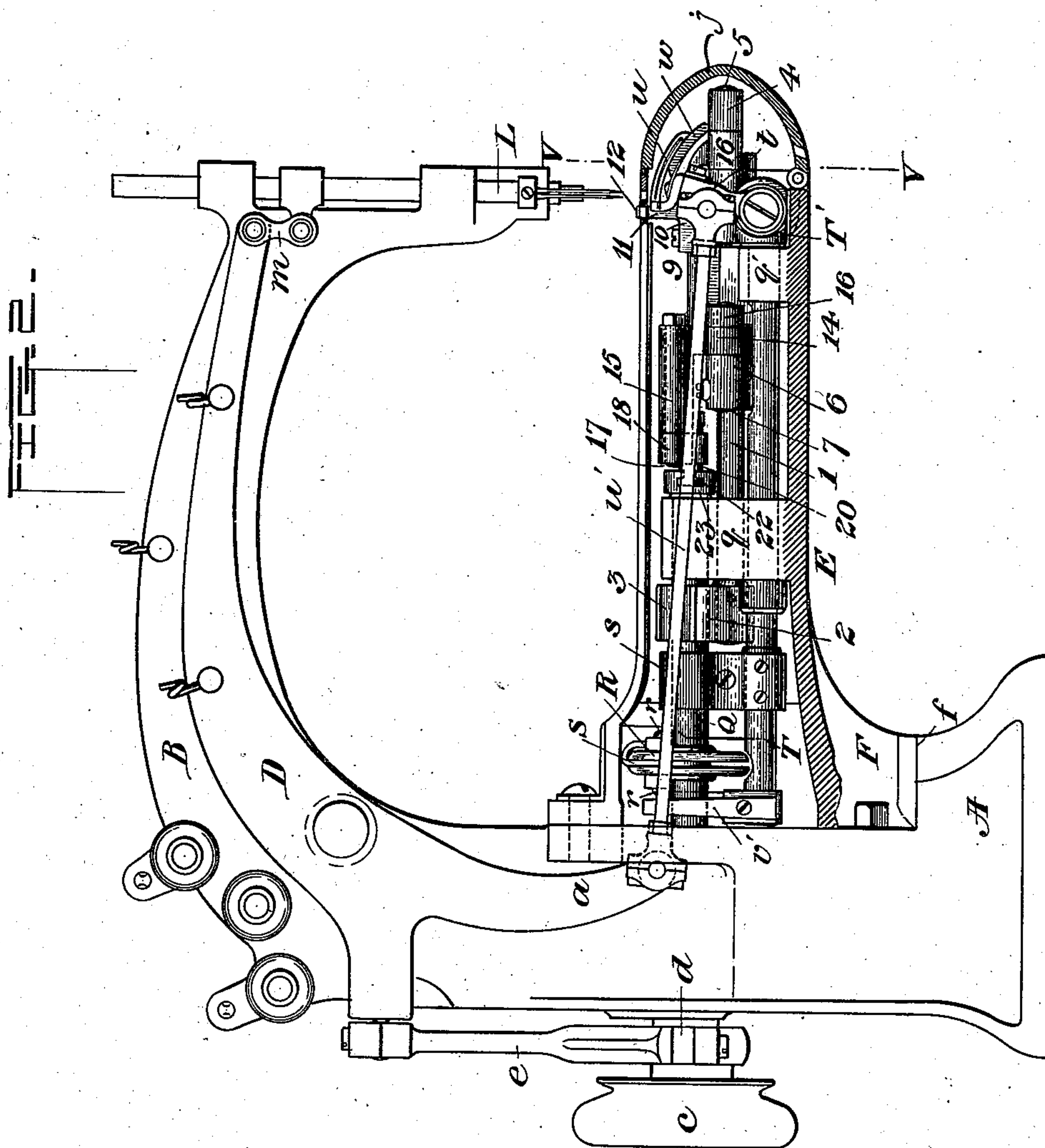
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5 Sheets—Sheet 2.

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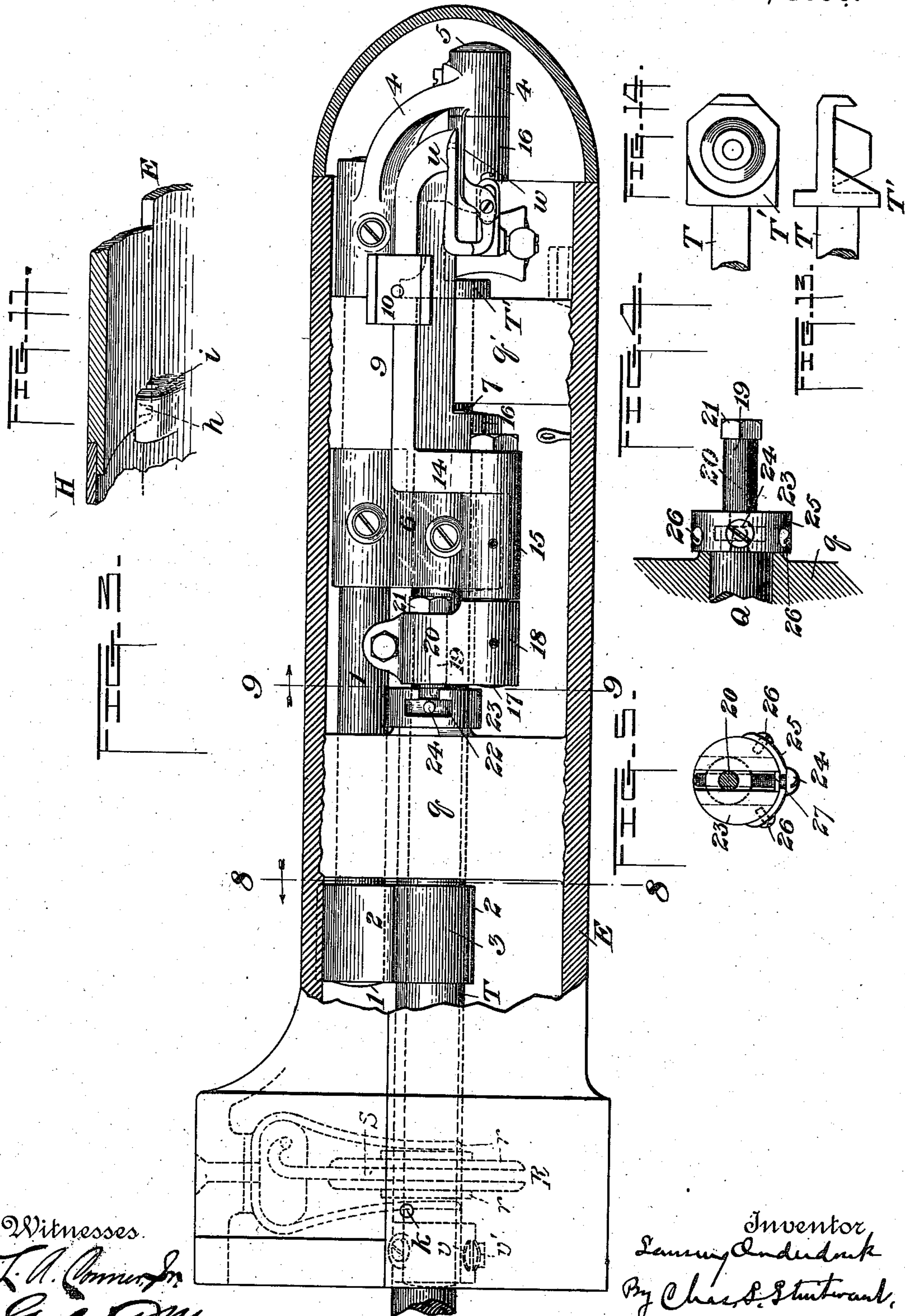
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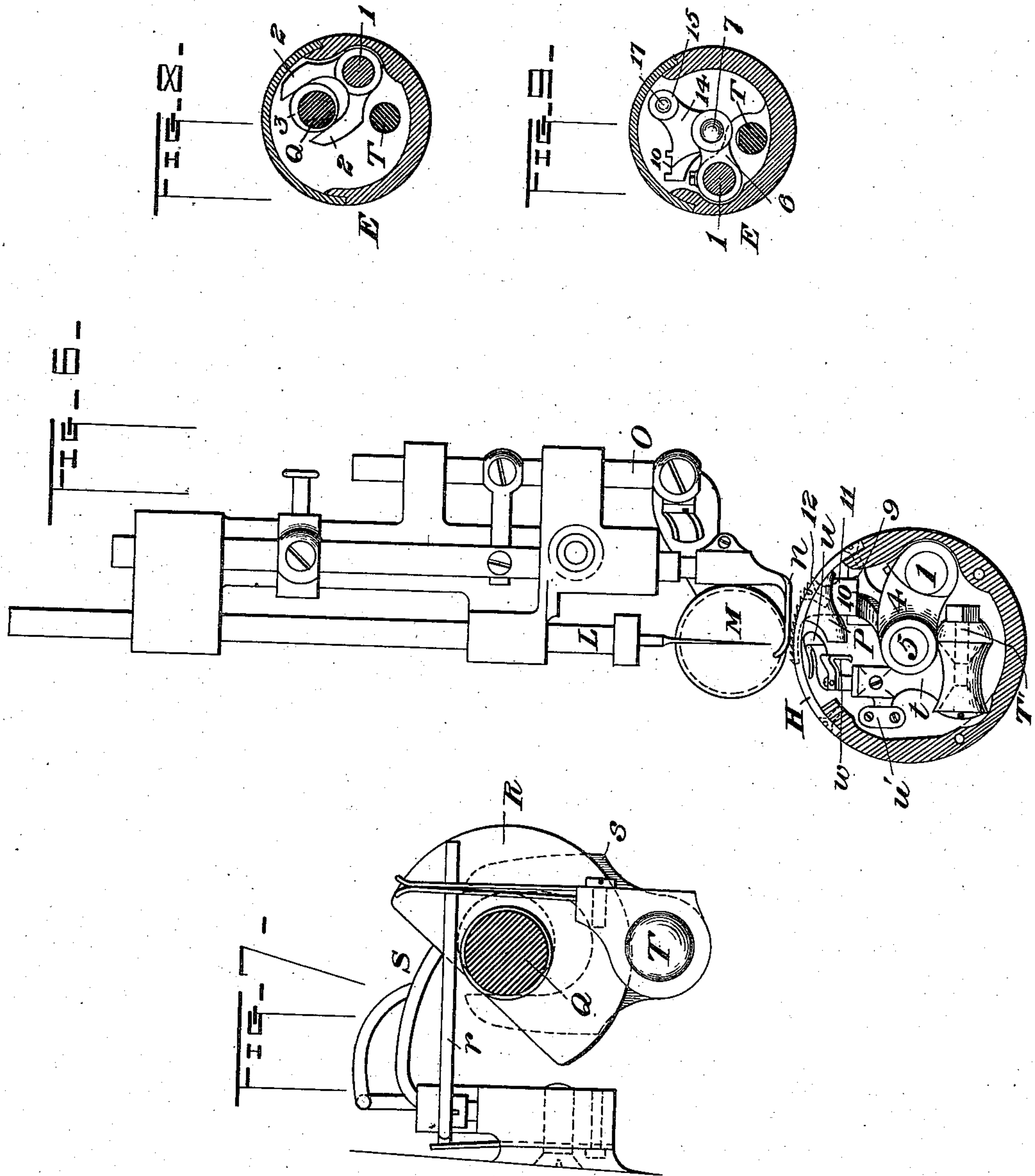
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L. ONDERDONK.
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No. 547,675

Patented Oct. 8, 1895.



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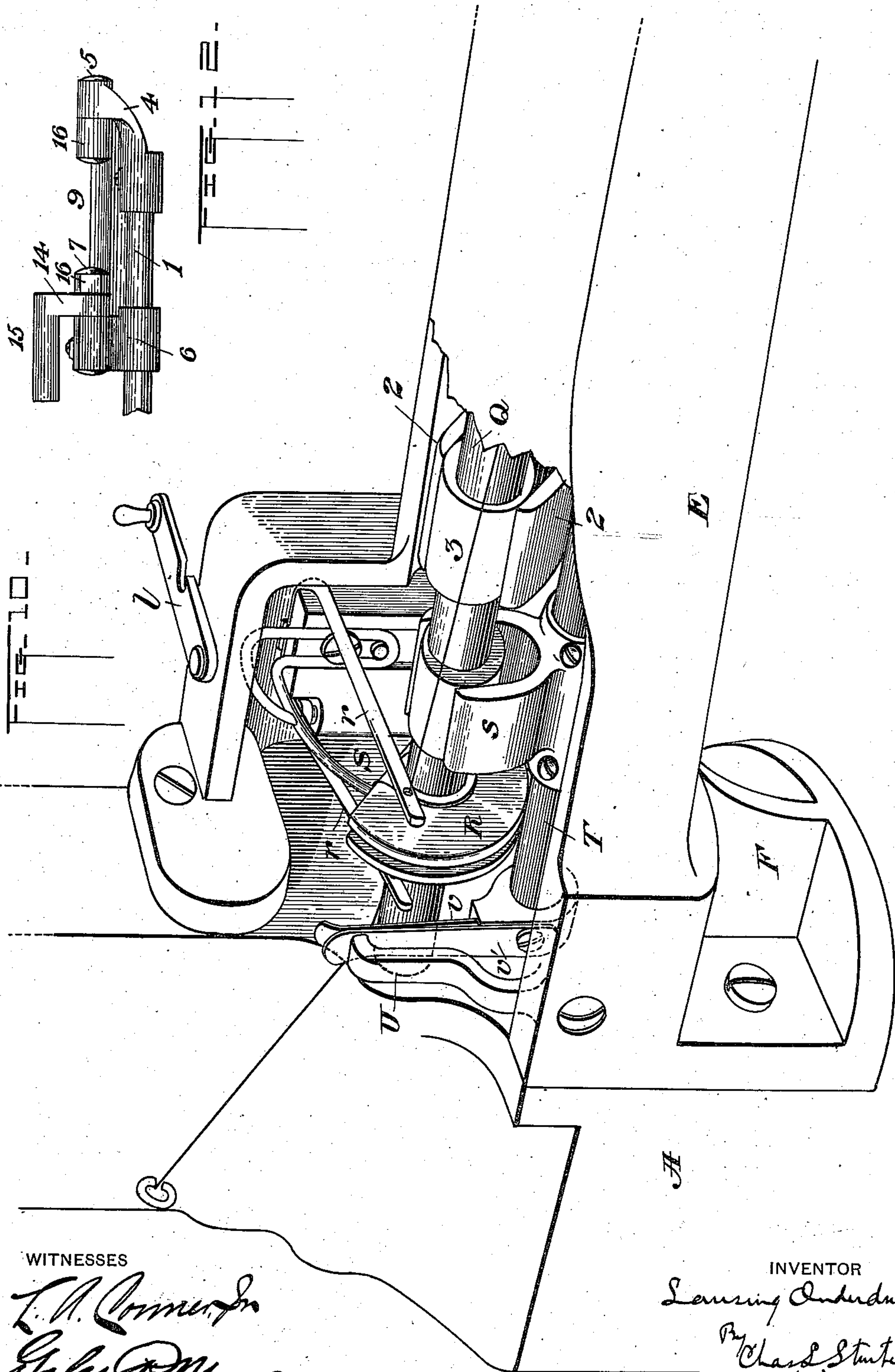
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5 Sheets—Sheet 5.

L. ONDERDONK.
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No. 547,675.

Patented Oct. 8, 1895.



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UNITED STATES PATENT OFFICE.

LANSING ONDERDONK, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE
UNION SPECIAL SEWING MACHINE COMPANY, OF CHICAGO, ILLINOIS.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 547,675, dated October 8, 1895.

Application filed December 9, 1892. Serial No. 454,648. (No model.)

To all whom it may concern:

Be it known that I, LANSING ONDERDONK, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a description, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon.

My invention relates to an improvement in sewing-machines; and its principal object is to provide a machine for use in the sewing of shoes for placing the rows of stitches on the vamps of men's shoes. In such work it is desirable that the bed-plate of the machine be of cylindrical form, in order that the work may more properly fit thereover, and hence the present invention is an improvement upon what is known as a "cylinder vamping-machine."

While the machine is designed principally for use in sewing shoes, it will be understood that it may be used for all purposes where a horn or cylinder, over which the goods are placed to be sewed, is substituted for the ordinary flat bed-plate.

Generally speaking, the present invention has been designed to adapt the well-known Union Special Sewing-Machine to the class of work above mentioned.

The invention therefore consists in the matters hereinafter described, and referred to in the appended claims.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a sewing-machine constructed in accordance with my invention. Fig. 2 is a side elevation, the cylindrical casing being broken away on one side. Fig. 3 is a sectional plan of the cylindrical casing, showing the operating parts secured therein. Figs. 4 and 5 represent in plan and vertical section, respectively, details of the connection between the main shaft and feed-rocker frame. Fig. 6 is a front view of a machine embodying my invention, the end of the cylinder being removed. Fig. 7 is a view looking from the rear end of the cylinder, showing the rotary take-up and nipping-spring

mechanism. Figs. 8 and 9 are sections on the lines 8 8 and 9 9, respectively, of Fig. 3, looking in the direction of the arrows. Fig. 10 is a perspective of a portion of the casing with the various parts shown in an enlarged form. Fig. 11 is a detail view showing the manner of attaching the upper part of the casing at its forward end. Fig. 12 is a side elevation of the front end of the feed-shaft carrying the feed-dog supporting-frame. Figs. 13 and 14 are respectively plan and side views in detail of the looper rocker and shaft.

In the drawings, A is the standard base-plate secured to a bench or table in any suitable manner.

B is the overhanging arm or goose-neck of the machine.

D is the needle-arm pivoted on the goose-neck and provided with a downward extension *a*, to which the looper-rod is attached in the ordinary manner.

c is the belt-wheel, to which power is applied in the usual way. This is carried on the end of the main shaft of the machine, the needle-arm being rocked by a suitable eccentric *d* and connecting-rod *e*. Secured to the standard or base-plate is the cylindrical casing E, the lower rear end of which F fits on a ledge *f* on the base-plate and is secured thereto. This cylindrical casing is enlarged at its rear end to accommodate the parts, such as the rotary take-up, &c., which extend above the plane of the main shaft. The upper part of the casing is removable and at its front is provided with a downwardly-projecting pin *h*, which fits a slot formed in a cut-away portion *i* of the casing, as shown in Fig. 11. In front of the removable plate and upon projecting edges of the casing is secured the throat-plate H of the machine, curved to conform to the cylindrical casing and having the necessary slots for the passage of the needle or needles and feed-dog. The end of the cylindrical casing is closed by a conical-shaped cap *j*, hinged to the lower part of the casing. It will thus be seen that when the upper plate or cover is in position and the cap shut the cylindrical casing is entirely closed and acts as a work-plate for the goods to be sewed. The cover of the cylinder at the rear end is provided

with a pin *k*, adapted to register with a slot in the clamping-piece *l*, pivoted to the upwardly-extending enlarged part of the lower portion of the casing.

5 The needle-arm *D* is provided with the ordinary thread-eyelets and is attached to the needle-bar *L* by a link connection *m*. I have herein shown the needle-bar as carrying two needles set closely together and held from
10 lateral deflection by the guide-foot *n* on one side and the roller-presser foot *M* on the other side, the guide-foot being attached to the ordinary presser-foot bar *N*, while the roller-presser foot is of the usual construction, supported by the supplemental presser-bar *O*.
15 The needle-bar and presser-bars reciprocate in guides carried by the goose-neck of the machine, and upon a post *o*, extending vertically from the top thereof, is supported an oil-cup *p*, from which oil is fed to a piece of
20 sponge or other absorbent material, which keeps the needle-threads lubricated. Longitudinal deflection of the needles is prevented by the needle-guard *P*, secured upon the under side of the curved throat-plate, as shown
25 in Fig. 6, and the guard-finger traveling in unison with the looper.

The operative parts of the machine for acting on the lower thread and feeding forward
30 the material are located within the cylindrical casing *E*.

The main shaft *Q* is journaled near its outer end in a suitable bearing on the standard of the machine and carries the ordinary belt-wheel *c*. It extends lengthwise of and into
35 the casing and at its inner end is journaled in a bearing in the standard *q*, carried by the cylindrical casing.

Near the inner end of the casing upon the
40 main shaft is located the rotary take-up *R*, composed of the cam-shaped disks made in one piece, with a collar secured to said shaft and stationary throw-off *S*, the thread being
45 by the guides *r r*, the guides and stationary throw-off being secured within the enlarged part of the cylindrical casing. In the rotation of the disks the straight edges thereof catch the portion of thread between the
50 guides and carry it up with them (thereby taking up the slack from the looper) until the throw-off replaces it, at which time the looper is ready for another forward impulse and not only draws the slack thus temporarily taken care of by the take-up, but a stitch-length in addition. Actuated from the main
55 shaft by an eccentric thereon working in a fork *s* is a shaft *T*, to which the fork is secured, said shaft having a bearing in the lower part of the standard *q* and in a second
60 lug or standard *q'* near the front of the cylinder. As shown in dotted lines, Fig. 6, and in detail in Figs. 13 and 14, this shaft *T* is formed with an extension *T'*, to which the
65 crank *t*, which carries the looper *u*, is pivoted, this crank being connected by a ball-joint with the end of the looper-rod *u'*, connected

with the needle-arm extension. The pivotal connection of the crank *t* with the shaft *T* is made by providing the extension or head *T'* 70 with a conical or ball projection, over which a socket in the looper-crank *t* fits. It will thus be seen that in the movement of the main shaft the looper-rod will be reciprocated back and forth, thus reciprocating the crank to 75 which the looper is attached backward and forward, and at the same time the shaft *T* will be rocked, thus giving the said crank a sidewise movement, and owing to the ball-joint connection between the crank and the 80 end of the looper-rod both movements are allowed to take place. To a lug or standard on the inner end of the looper rock-shaft *T* are attached two springs *v v'*, extending vertically, which are brought together to clasp 85 the thread between them at the proper intervals by contact of the spring *v'* with the upwardly-projecting arm *U*, secured to the casing. When the looper begins its forward movement and the springs rock away from 90 the arm *U*, they automatically open and free the thread, which can then be drawn by the looper without resistance. In the backward movement of the looper, however, the springs rock toward the projecting arm *U* and are 95 closed, thereby gripping the thread and holding it tight during the said backward movement of the looper.

Connected to the looper-crank and moving in unison with the looper-rocker is the guard-finger *w*, of ordinary construction, between 100 which and the looper the needles pass in the forward movement of the looper, thus preventing deflection of the needles in that direction, while the guard on the throat-plate 105 guides the needles on the side on which it is located.

I will now proceed to describe the feeding mechanism used on my machine, for which I make no claim in this application, *per se*, the 110 same being claimed in an application filed by me in the United States Patent Office on the 9th day of December, 1892, Serial No. 454,647.

1 represents a shaft running nearly the whole length of the cylinder and having bearings in the standards *q q'* on the inside of said cylinder. This shaft has fixed to it two arms 2, forming a fork, between which arms a cam 3 on the main shaft revolves, thereby oscillating said shaft 1. At its outer end the shaft 1 120 is provided with a curved arm 4, fixed to it and forming an extension thereof beyond the cylinder proper. At its outer end this curved arm is provided with an opening, within which is placed a stud, shaft, or pin 5, to which said 125 curved arm is rigidly attached. At a point near the center of the cylinder the shaft 1 is provided with a laterally-extending lug or standard 6, rigidly attached to it, so that it, together with the curved arm 4, rocks with 130 the shaft 1. This lug 6 is provided also with a stud, shaft, or pin 7, so arranged as to be approximately in line with the stud or pin 5, as shown in Fig. 12. Loosely mounted on the

studs or pins 5 and 7 is the rocking crank-frame. This consists of three parts, the forward longitudinal arm 9, to which is removably secured the dovetailed groove 10, the shank 11 of the feed-dog 12, curved to conform to the shape of the cylinder and extending up through an opening in the throat-plate H, the short connecting part 14, and the rearwardly-extending longitudinal arm 15. This crank-frame is preferably made all in one piece.

While I have shown the part 9 of the crank as provided with lugs 16 16, having openings fitting over the studs or pins 5 7, it will be understood that the studs or pins may be secured to the arm 9 and pass loosely through the openings on the lug 6 and curved arm 4. The rearwardly-extending part 15 of the frame is provided with an opening in which is secured the stud or shaft 17. Upon one end of this shaft is mounted, so as to swing thereon, one end of the crank 18, which has a split bearing at its opposite end encircling a sleeve 19 surrounding the axial stud pin or shaft 20, such sleeve being held from longitudinal displacement by the nut 21 on the threaded end of the shaft or pin 20. This shaft or pin 20 is herein shown as provided at its inner end with a circular enlargement or head which is fitted in a slot 22, formed in a crank-disk 23, attached to the end of the main shaft. This slot is formed with a contracted front opening, so that the head of the stud 20 is prevented from longitudinal displacement. To permit of adjustment of the stud 20 in the slot, and thereby vary the throw of the crank 18, I have provided a screw 24, which passes through the head of the stud 20. The screw is secured to the crank-disk by means of the clamping-plate 25, having a slot which fits the screw beneath the head thereof, said clamping-plate being secured to the periphery of the crank-disk by screws 26, as shown. To accomplish the adjustment of the stud 20 without changing the position of the screw 24 with respect to the crank-disk I have provided said screw with a collar 27 just below the clamping-plate 25, so that longitudinal movement of the screw 24 is prevented by the head and collar, respectively, so that in the turning of the screw the head on the stud 20 will be moved up or down, thus changing the point of connection of the crank-disk in the main shaft with the crank 18, thereby altering the throw of said crank and varying the amount of forward and backward movement of the rocking frame and feed-dog. It will be readily understood, therefore, that by reason of the rocking connection of the feed-dog carrying-frame with the shaft 1 and the crank connection of said frame with the main shaft that the vertical and forward and backward movements of the feed-dog are effected, and also that by the adjustment of the head of the stud or bolt 20 in the slot of the crank-disk the amount of throw of the rocking frame is varied, and thereby the length of stitch regulated.

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

1. A sewing machine comprising a cylindrical casing, a main shaft extending within the same, feeding and looper shafts also arranged within the casing and oscillated from the main shaft, one of said shafts being arranged in a plane to one side of the main shaft, but parallel therewith, and the other in substantially the same vertical plane as the main shaft, a rocking feed dog carrying frame pivoted to and entirely supported by the feed shaft and operatively connected to the main shaft, and a looper connected to the looper shaft; substantially as described.

2. A sewing machine comprising a main shaft, a cylindrical casing into which the main shaft extends, a feed operating shaft driven from the main shaft, a third shaft extending lengthwise of the casing, parallel with and below the main shaft with its forward end in advance of the forward end of the main shaft, with connections between the main shaft and the third shaft for operating the latter, and a looper connected to the forward end of the third shaft and rocked thereby; substantially as described.

3. A sewing machine comprising a main shaft, a cylindrical casing into which the main shaft extends, a second shaft extending lengthwise of the casing and parallel with the main shaft but the forward end in advance of the forward end of the main shaft, connections between the main shaft and the second shaft for operating the latter, a rocking feed dog frame pivotally connected to and entirely supported by the second shaft, a third shaft extending lengthwise of the casing and parallel with and below the main shaft, with its forward end in advance of the forward end of the main shaft, with connections between the main shaft and the third shaft for operating the latter and a looper connected to the forward end of the third shaft and rocked thereby; substantially as described.

4. In a sewing machine, suitable stitch forming mechanism, a cylindrical casing enlarged at one end, feeding and looper mechanisms contained within said casing and a rotary take up mechanism supported in the enlarged portion; substantially as described.

5. A sewing machine comprising a cylindrical casing entirely closed on its under side, and having a plurality of standards therein, a removable top plate curved to conform to the shape of the cylinder extending throughout the length thereof, a hinged cap for said cylinder, a main shaft, looper rocker shaft and feed shaft journaled in the respective standards and extending lengthwise of and within the casing, whereby the parts are compactly arranged, easy of access, but only from the top or end; substantially as described.

6. A sewing machine comprising a cylindrical casing, a main shaft arranged lengthwise thereof and extending within the same, a rock

shaft entirely within the casing, a looper rocker connected to said shaft and extending at right angles thereto with means for reciprocating said looper, a second rock shaft independent of the first with connections between it and the main shaft, a feed dog carrying frame pivotally connected to the second rock shaft and oscillated thereby with independent connections between said frame and the main shaft, said main, looper and feed shafts being arranged so that the main shaft and the pivot points of the feed dog carrying frame and looper rocker will be in substantially the same vertical plane which passes through the longitudinal axis of the main shaft, whereby the parts may be compactly arranged within a minimum space; substantially as described.

7. A sewing machine comprising a cylindrical casing, a main shaft extending lengthwise of and within said casing, a looper mechanism also within the same, a removable top plate for said casing, a tapering hinged end cap, a feed shaft curved at its outer end to conform to the shape of the hinged end cap and rocking feed dog carrying frame pivoted at one end with the curved portion of the feed shaft, and complementary stitch forming mechanism; substantially as described.

8. In a sewing machine, a suitable standard and a cylindrical casing forming the bed plate of the sewing machine, resting at its inner end upon and secured to said standard and extending laterally therefrom, said cylindrical casing being provided with a removable top plate curved to conform to the periphery of the cylindrical casing, and having a conical hinged end cap, whereby the working parts within the bed plate are easy of access and tubular articles may be readily placed over the bed plate of the machine; substantially as described.

9. A sewing machine comprising a cylindrical casing, a main shaft extending lengthwise of said casing and within the same, an under thread carrying looper provided with a guard finger, a feeding mechanism, all of said parts being contained within the casing, a throat plate, curved to conform to the shape of the casing, provided with a needle guard, complementary stitch forming mechanism, and means for reciprocating the looper and its guard finger lengthwise of the casing; substantially as described.

10. In a sewing machine the combination with the main shaft, feed shaft, looper shaft and means for operating the same, the feed and looper shafts extending parallel with and in advance of the forward end of the main shaft, and the looper shaft carrying a conical projection at a right angle thereto, of a feed dog carrying frame supported by the feed shaft and operatively connected to the main shaft, a looper and looper carrier supported by said conical projection, and means for oscillating the looper carrier in the direction of

the length of the looper; substantially as described.

11. A sewing machine comprising a cylindrical casing having an enlarged rear portion, a stationary abutment within said enlarged portion, a looper rock shaft extending lengthwise of and within said casing, a pair of vertical nipper springs carried by the rear end of said shaft and within said enlarged portion, and operating against said abutment; substantially as described.

12. In a sewing machine a cylindrical casing forming a bed plate, a complementary stitch forming mechanism, said bed plate comprising the lower part within which the feeding and looper mechanisms and a portion of the main shaft are supported, an upper removable plate having an upward extension at its rear end, and the rotary take-up mechanism operating therein, a curved throat plate secured to the lower part of the casing, and provided with openings for the passage of the needles and feed dogs; substantially as described.

13. In a sewing machine, a cylindrical casing forming the bed plate of the machine, suitable stitch forming mechanism, said bed plate comprising a lower part within which certain parts of the stitch forming mechanism are supported, and open at its top, a removable top plate adapted to cover said opening curved to conform to the shape of the cylinder, and a cap having a cylindrical rim fitting against the end of the cylinder for closing the same; substantially as described.

14. In a sewing machine in combination with the cylindrical casing, a main shaft extending lengthwise of the casing, a feed operating shaft arranged below and to one side the main shaft with its forward end in advance of the forward end of the main shaft, connections between the main shaft and the feed operating shaft for oscillating the latter, a feed dog rocking frame pivoted to the feed shaft with connections between said rocking frame and the main shaft, a looper rocker shaft arranged below the plane of the main shaft with its forward end in advance thereof, said looper rocking shaft being also below the plane of the feed operating shaft, a looper rocker pivoted to said looper-rocker shaft and extending at right angles thereto, a looper attached to said rocker and means for oscillating the looper; substantially as described.

15. In a sewing machine and in combination, the main shaft, the cylindrical casing into which the main shaft extends, said main shaft being arranged in the upper portion of the cylindrical casing, a feed operating shaft arranged adjacent to the side of the casing and with its forward end in advance of the forward end of the main shaft, a rocking frame pivotally connected to the second shaft whereby in the movement of the second shaft the frame is rocked up and down, a feed dog carried by the rocking frame, and a connection between said rocking frame and the for-

ward end of the main shaft whereby the feed
dog is given a forward and backward move-
ment, a third shaft arranged in the bottom
part of the casing in substantially the same
5 vertical plane as the main shaft, but with its
forward end in advance of the forward end
of said main shaft, a looper arranged on the
inside of the casing opposite the feed shaft
and pivoted to the said third shaft, with means

for reciprocating said looper lengthwise of
the casing; substantially as described.

In testimony whereof I affix my signature
in presence of two witnesses.

LANSING ONDERDONK.

Witnesses:

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JOHN W. CONVERSE.