

No. 721,081.

PATENTED FEB. 17, 1903.

L. ONDERDONK.
BLINDSTITCH SEWING MACHINE.

APPLICATION FILED DEC. 22, 1899.

NO MODEL.

3 SHEETS—SHEET 1.

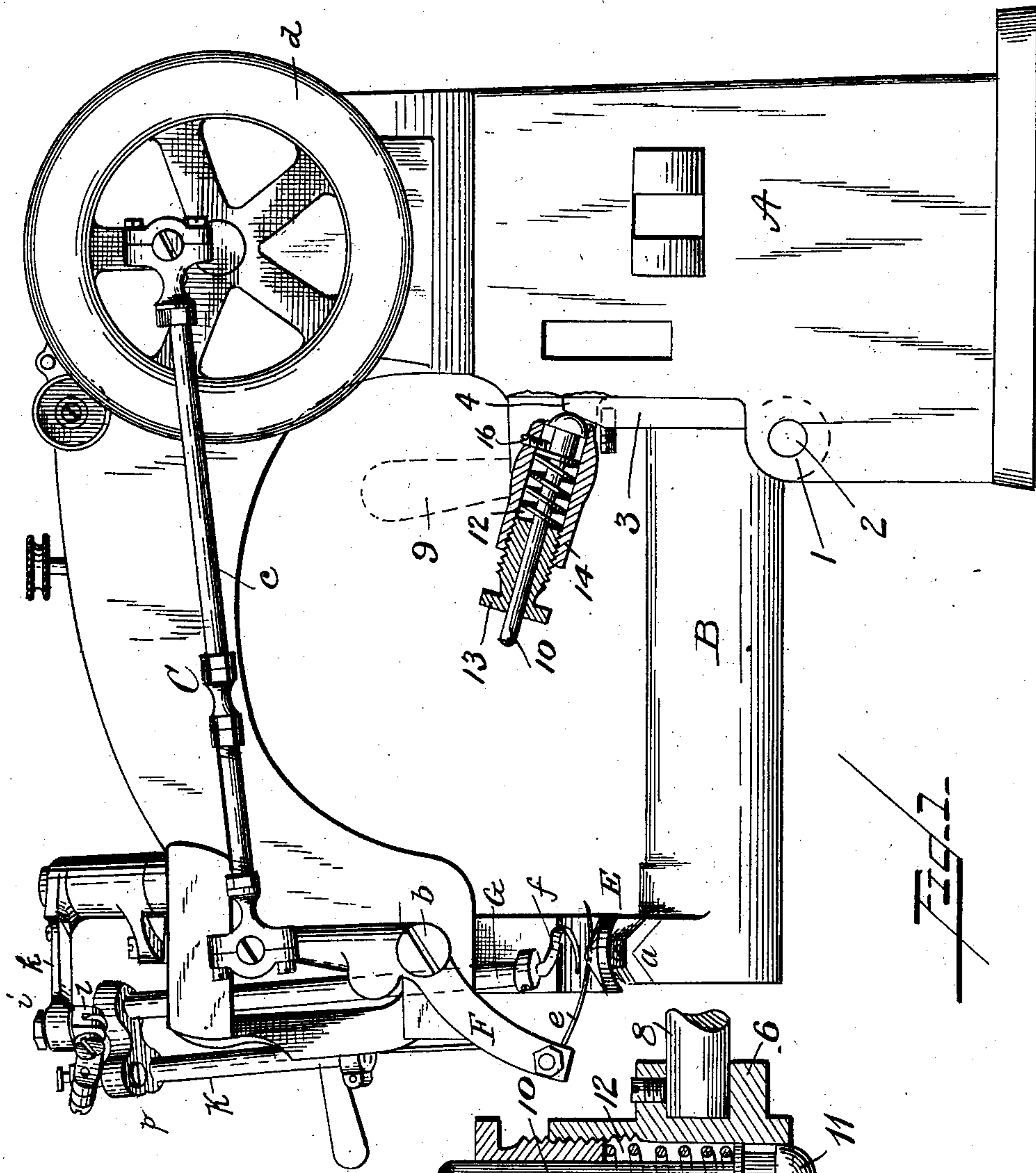
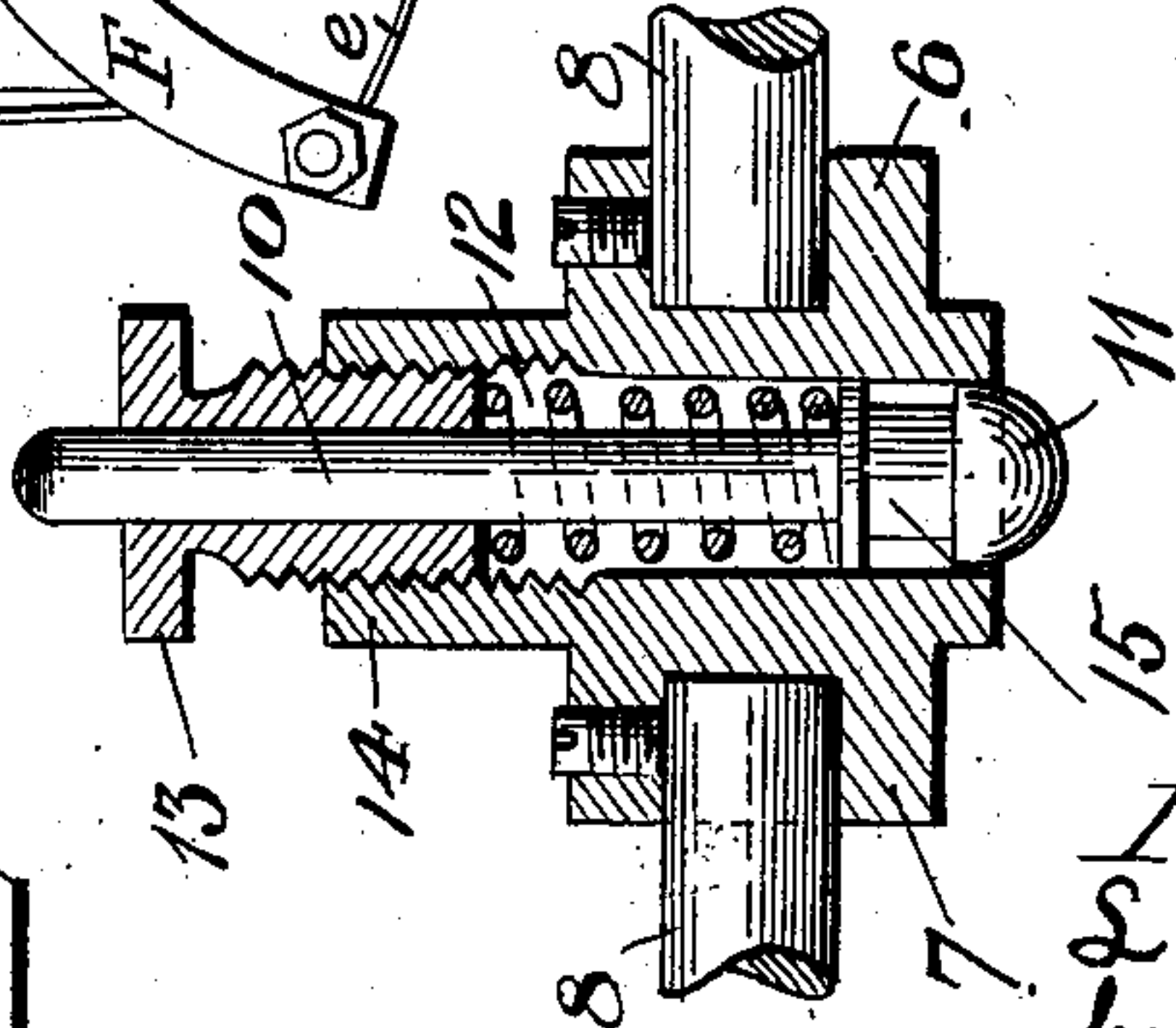


FIG. 1.

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FIG. 2.



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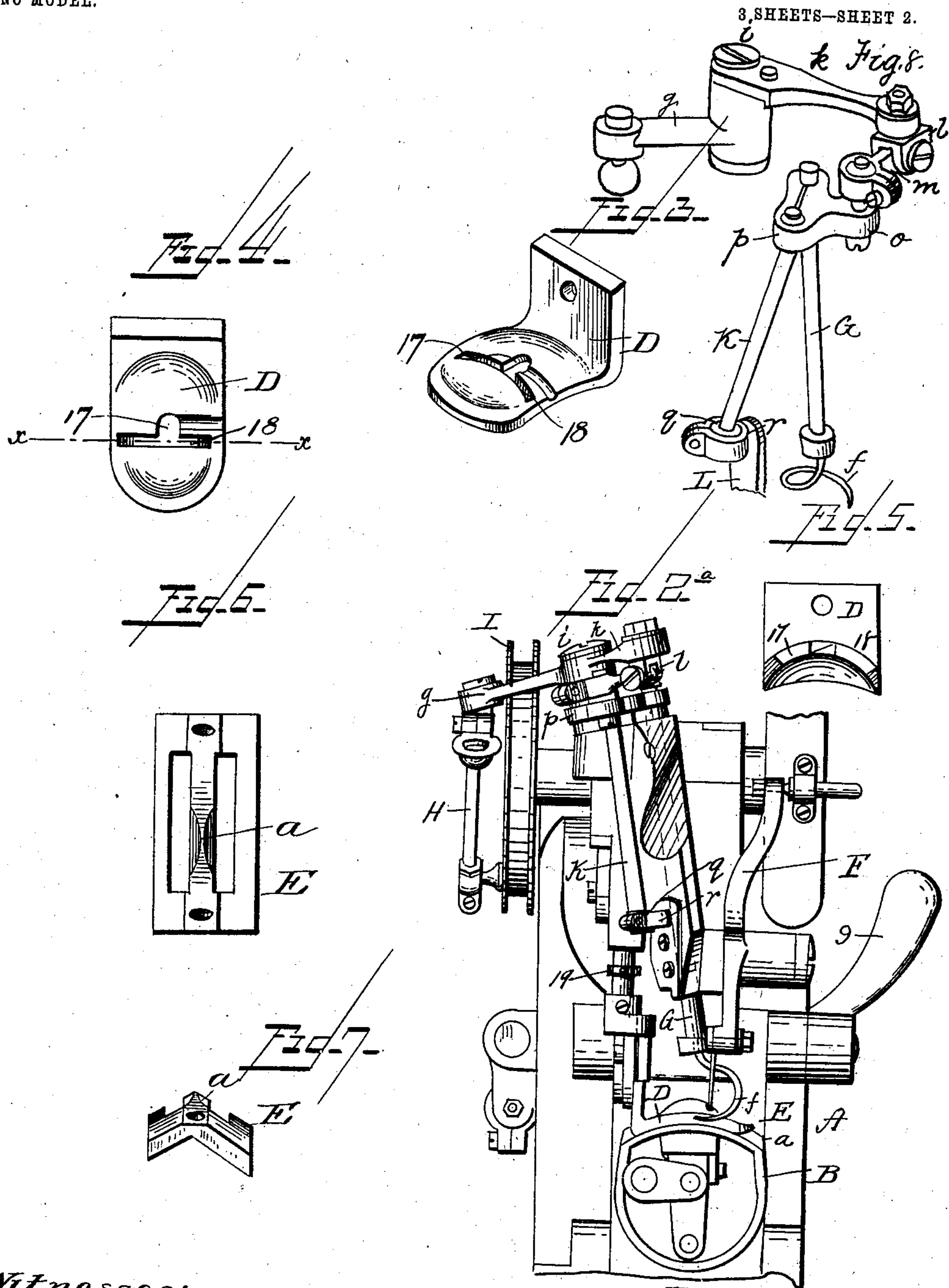
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3 SHEETS—SHEET 2.



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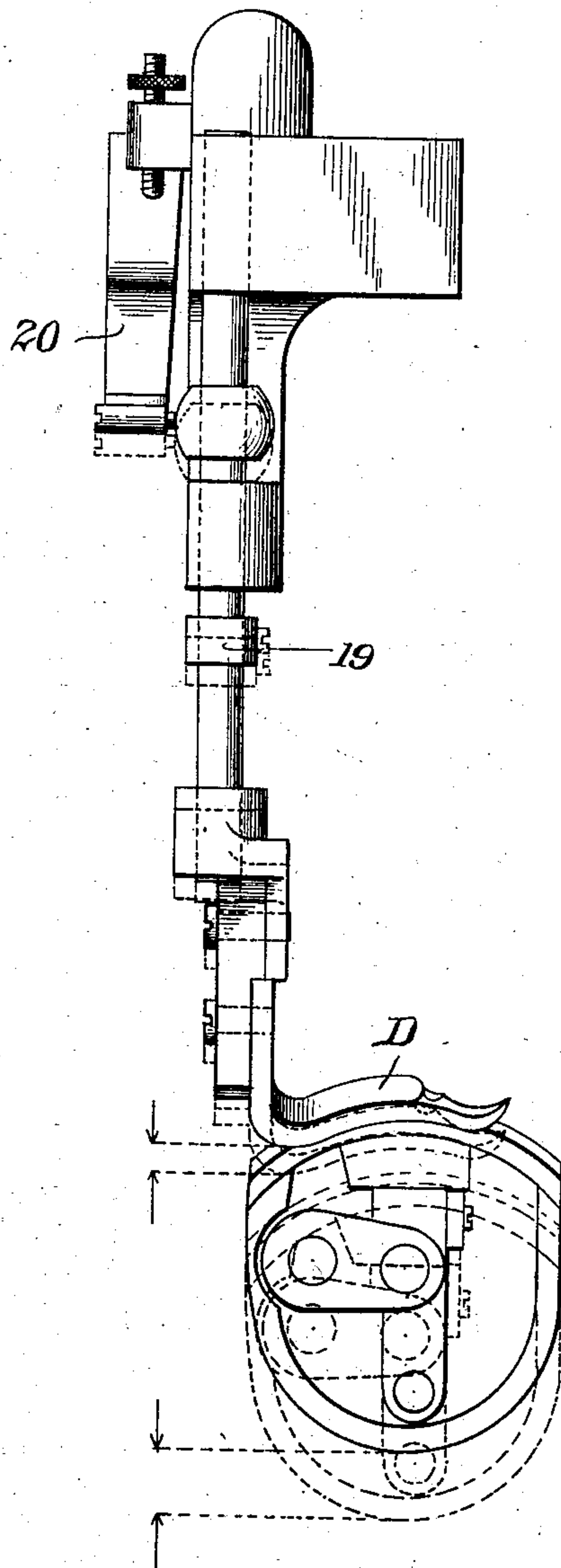
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3 SHEETS—SHEET 3.

Fig. 2.^b



Witnesses
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UNITED STATES PATENT OFFICE.

LANSING ONDERDONK, OF NEW YORK, N. Y., ASSIGNOR TO THE UNION SPECIAL SEWING MACHINE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

BLINDSTITCH SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 721,081, dated February 17, 1903.

Application filed December 22, 1899. Serial No. 741,228. (No model.)

To all whom it may concern:

Be it known that I, LANSING ONDERDONK, a citizen of the United States, residing at New York, in the county of New York, State of New York, have invented certain new and useful Improvements in Blindstitch 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 the improvements forming the subject-matter of this application are especially applicable to sewing-machines of the blindstitch type in which the goods are crimped on the work-plate, and a needle, horizontal, or substantially so, arranged above the bed-plate, coöperates with a looper, also arranged above the bed-plate, to form stitches.

The present invention relates to various details applicable to such machines, including such features as the work-plate adapted to be depressed to allow of the insertion or removal of the material and to have a limited yielding movement under the action of varying thicknesses of goods, so that the needle will always get the proper bite into the goods.

It also includes other features—such as the throat-plate, presser-foot, &c.—all as herein-after described, and referred to in the appended claims.

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

Figure 1 is a front side elevation, partly in section, of a sewing-machine embodying my invention. Fig. 2 is a detail view of the spring which allows the bed-plate to yield downwardly. Fig. 2^a is an end view of a machine embodying the invention, part being broken away. Fig. 2^b is a view similar to Fig. 2^a to show more clearly the relation of the presser-foot and work-plate, the position of the parts when the work-plate is lowered and the presser-foot is lowered being shown in dotted lines. Fig. 3 is a perspective view of the presser-foot detached. Fig. 4 is a top plan view of the same. Fig. 5 is a sectional view of the same. Fig. 6 is a plan view of the throat-plate, and Fig. 7 is an end view

thereof. Fig. 8 is a detail view of the mechanism for raising and lowering the looper-bar.

In the drawings, A is the machine frame or standard; B, the cylindrical bed-plate; C, the gooseneck; D, the presser-foot; E, the throat-plate, beveled and provided with the ridge *a*, over which the material to be sewed is crimped.

F is the needle-lever, pivoted to the head of the machine at *b*, operated by the pitman connection *c* from the wheel *d*, mounted on the main shaft. This needle-lever F carries at its lower end the curved needle *e*, which moves in a substantially horizontal plane back and forth across the line of the seam, engaging the crimped portion of the goods.

G is the looper-bar, carrying on its lower end the looper *f*, which may or may not carry a thread. This looper-bar G is inclined from the perpendicular and has bearings in lugs on the machine-frame. This looper-bar is oscillated to cause the looper to coöperate with the needle to form stitches.

The mechanism for oscillating the looper bar or shaft includes the pitman H, operated from the belt-wheel I, this pitman having a ball-joint connection with the arm *g* on the sleeve *h*, pivoted on the stud *i*, secured to the head of the machine. A second arm *k*, projecting from the sleeve, pivotally embraces a forked stud *l*, between the forks of which is pivoted the part *m*, having a head embracing a ball-stud *n* on the angle-lever or crank *o*, rigidly clamped at one end to the looper-bar G. As the driving-shaft rotates, therefore, the looper-bar G oscillates to impart the proper movement to the looper. By arranging the looper on an inclined shaft and giving it the oscillation referred to it will coöperate with the needle to form stitches, taking the needle-loop at one point and then carrying its own thread (if a double-chain-stitch looper) or the needle-thread (if a single-chain-stitch looper) into position to allow the needle to pass through it. It is desirable, however, to give to the looper a bodily vertical movement as it is passing from one position to the other in order to lift it over seams or other obstructions, and the mechanism for lifting the looper-bar is shown in detail in Fig. 8 and is the same as that

claimed in my application filed of even date herewith, Serial No. 741,229. The angle-lever or crank *o* is formed with a socket to receive the ball *p* on the upper end of the rod *K*, which at its lower end has a ball *q* fitting in a socket *r* in the part *L*, secured to the head of the machine. It will be seen, therefore, that as the arm or rod *K* by reason of the movement of the angle-lever *o* gyrates on its pivot *q r* it will force the said angle-lever or crank *o* up and down, thus raising and lowering the looper-bar *G*, the ball and other pivotal connections between the angle-lever *o* and the pitman *H* preventing any bind.

As herein shown, the work-support *B* is a cylindrical casing in which is contained the feed-operating mechanism, and at its rear end it is provided with a cylindrical lug 1, through which passes the pin 2, journaled in the standard *A*. Projecting upwardly from the rear portion of the bed-plate is a part 3, beveled at its upper end, as shown at 4. By means of the hinge 2 the bed-plate has a limited movement up and down to allow of the removal and insertion of the work, and it is held in its raised position by the means shown, and its free end extends horizontally beneath the stitch-forming mechanism and over this free end tubular work—such as trousers-legs, coat-sleeves, &c.—may be placed and sewed. It is desirable in a machine of this kind to provide means whereby the bed-plate may accommodate itself to varying thicknesses of goods in order that the needle may get the proper bite into the material to be sewed. Where the presser-foot is the yielding part and the bed-plate does not yield at all under an extra thickness of goods, the presser-foot rises so far that the needle will take too much of the body of the goods, and therefore I have provided an arrangement for giving a limited yielding movement to the bed-plate. This is accomplished in the following manner: 5 represents a barrel or sleeve having the opposite-extending projections 6 and 7 rigidly fixed to short rock-shafts 8, journaled in lugs on the machine-standard, a handle 9 serving to manipulate the shafts and the barrel. Passing through this barrel is a spring-plunger 10, carrying on its inner end a hemispherical part 11, adapted to engage with the beveled part 4 of the projection 3. The spring 12 normally keeps the plunger in engagement with the plate 3, and a screw 13, bearing on the spring and threaded into the projection 14 on the barrel, regulates the tension of said spring. By this arrangement when the hand-lever 9 is forced to upright position it causes the hemispherical part 11 to bear firmly against the part 4 of the plate 3 and hold the bed-plate in its raised position. To allow of a limited spring-yielding movement, however, to the bed-plate, the plunger 10, adjacent the head 11, has a reduced portion 15, into which projects the inner end of the screw 16, so that under sufficient pressure from above the plunger is

capable of a sliding movement in the barrel, this sliding movement being limited by the size of the reduced portion 15. The presser-bar has an adjustable collar 19 secured to it that may be set to allow the presser-foot to rise to a limited height. The presser-spring 20 is made lighter than that of the cylinder, so that the presser-foot moves up and down first within a fixed limit according to the varying thickness of the work. When the work is thicker than can be accommodated within the limit of the rise and fall of the presser-foot, then the cylinder yields sufficiently to meet the requirements of the work passing through, for the adjustable collar on the presser-bar coming in contact with the lug through which the presser-bar has its bearing is stopped from rising farther, and then the cylinder yields downwardly. In other words, the presser-foot yields first to a desired extent, after which the cylinder yields a sufficient amount to let the work pass through. By limiting the rise of the presser-foot the bite of the needle is correspondingly limited, as the limit in said rise of the presser-foot may not be sufficient to let seams of heavy thickness of work pass beneath it, and the yielding of the cylinder to accommodate the same becomes necessary. It will thus be seen that although the actual path of movement of the needle remains the same the distance below the top of the goods of the lowest part of the stitch depends upon the extent to which the presser-foot is raised, and this depends on the thickness of the goods and the adjustment of the collar 19.

The yielding of the cylinder after the presser-foot has ceased to rise allows greater thickness of goods to be sewed than could otherwise be accommodated.

At its forward end the work-support or bed-plate *B* is elevated slightly and provided on either side with the V-shaped projecting portions, upon which is secured the throat-plate *E* of the shape shown in Figs. 6 and 7. This throat-plate has the raised V-shaped ridge *a*, the apex of the ridge coming substantially beneath the needle and over which the goods will be crimped to enable the needle to take the proper bite therein, entering and emerging on the same side of the fabric.

The presser-foot (marked *D*) is shown in Figs. 3, 4, and 5 and is cut out, as shown at 17, to allow of the apex of the ridge on the throat-plate fitting closely thereunder and also has the transverse groove 18, forming a passage for the needle. It is hollowed out, as shown in Fig. 5, to fit snugly over the throat-plate and is secured at its rear end to the presser-bar in any suitable way.

Various minor modifications and changes in the construction of the machine may be made without departing from the spirit of my invention.

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

1. In a sewing-machine having suitable stitch-forming mechanism including a needle reciprocating from side to side of the line of seam, and a looper cooperating therewith to form stitches, an overhanging frame carrying the stitch-forming mechanism, a yielding work-supporting arm pivoted to the machine-standard and having a free end extending horizontally beneath the stitch-forming mechanism; substantially as described.

2. In a blindstitch sewing-machine, the combination with suitable stitch-forming mechanism including a needle, a presser-foot, a yielding work-support, a ridge-forming rib movable therewith and engaging the work beneath the presser-foot and over which ridge-forming rib said work is fed, said presser-foot being formed on its under surface to fit said ridge-forming rib; substantially as described.

3. In a sewing-machine having suitable stitch-forming mechanism including a needle reciprocating from side to side of the line of the seam, and a looper cooperating therewith to form stitches, an overhanging frame supporting looper and needle operating mechanisms, a work-support, means for crimping the goods, comprising a presser-foot carried by the overhanging frame and cut out on its under side, a ridge-forming rib on the work-support, adapted to fit the cut-out portion of the presser-foot, whereby the goods are crimped, such ridge-forming rib being yieldingly supported; substantially as described.

4. In a sewing-machine having suitable stitch-forming mechanism including a needle reciprocating from side to side of the line of the seam, and a looper cooperating therewith to form stitches, an overhanging frame supporting the looper and needle operating mechanisms, a yielding work-support, means for crimping the goods, comprising a presser-foot carried by the overhanging frame and cut out on its under side, and a ridge-forming rib on the work-support adapted to fit the cut-out portion of the presser-foot, whereby the goods are crimped; substantially as described.

5. In a sewing-machine having suitable stitch-forming mechanism including a needle reciprocating from side to side of the line of seam, and a looper cooperating therewith to form stitches, a work-supporting cylinder arranged below the needle and looper, and pivoted upon an axis transverse to the machine-frame, whereby it may be raised and lowered, and means for holding it in its raised position, said means including a spring device for permitting yielding movement of the cylinder; substantially as described.

6. In a sewing-machine having suitable stitch-forming mechanism, including a needle reciprocating from side to side of the line of seam, and a looper cooperating therewith to form stitches, an overhanging frame supporting the needle and looper, a work-support arranged below the needle and looper, and pivoted upon an axis transverse to the machine-frame, whereby it may be raised and lowered,

and means for holding it in its raised position; substantially as described.

7. In a sewing-machine having suitable stitch-forming mechanism, including a needle reciprocating from side to side of the line of seam, and a looper cooperating therewith to form stitches, an overhanging frame supporting the looper and needle operating mechanisms, a horizontal work-support pivoted to the standard and extending parallel with the overhanging frame, means for crimping the goods in which the stitches are formed, an element of said crimping means being carried on the work-support; substantially as described.

8. In a sewing-machine having suitable stitch-forming mechanism including a needle reciprocating from side to side of the line of seam, and a looper cooperating therewith to form stitches, both said needle and looper being arranged above the work-support carried upon an overhanging frame, and a yielding horizontal work-support pivoted to the sewing-machine standard below said needle and looper, a device for holding said support in raised position and means for releasing said device to allow said support to fall, for insertion or removal of the work; substantially as described.

9. In a sewing-machine having suitable stitch-forming mechanism including a reciprocating needle, and a looper cooperating therewith to form stitches, a horizontal work-support pivoted to the sewing-machine standard and below the needle and looper, and means for clamping the work-support in operative position and comprising a yielding portion whereby under an increased thickness of goods, the work-plate may yield; substantially as described.

10. In a sewing-machine having suitable stitch-forming mechanism, a work-support pivoted to the machine-frame, means for clamping the work-support in position, including a spring-plunger having limited movement to allow the work-support to yield; substantially as described.

11. In a sewing-machine having suitable stitch-forming mechanism, a work-support pivoted to the machine-frame, a swinging clamp engaging the work-support to keep it normally elevated, said clamp including a yielding spring-pressed plunger bearing on said work-support; substantially as described.

12. In combination with the bed-plate or work-support hinged to the machine-frame, and having the upward projection as 3, the barrel or casing with means for swinging it, and a spring-pressed plunger in said barrel or casing adapted to bear against the part 3 and means for limiting its movement; substantially as described.

13. In a sewing-machine having stitch-forming mechanism, including a reciprocating needle, and a looper cooperating therewith to form stitches, said looper and needle vibrat-

ing from side to side of the line of seam, a work-supporting member having a rib or ridge over which the material to be sewed is crimped, a presser-foot complementary thereto, cut away to receive the crimped portion of the goods and having a transverse guiding-groove in which the needle travels; substantially as described.

14. In a sewing-machine having stitch-forming mechanism, including a reciprocating needle, and a looper cooperating therewith to form stitches, said looper and needle vibrating from side to side of the central line of the seam, a pivoted work-supporting member having a rib or ridge over which the material to be sewed is crimped, a presser-foot complementary thereto, cut away to permit the goods to be raised up into the plane of movement of the needle; substantially as described.

15. In a sewing-machine having stitch-forming mechanism including a needle arranged above the work-support and reciprocating in a substantially horizontal plane a looper also arranged above the work-support and cooperating with said needle to form stitches, a throat-plate on the work-support having a raised portion over which the material is crimped, a presser-foot complementary to the throat-plate and having means for guiding the needle in its reciprocations; substantially as described.

16. In a sewing-machine having stitch-forming mechanism, including a needle arranged above the work-support, and reciprocating in a substantially horizontal plane, a looper also arranged above the work-support and cooperating with said needle to form stitches, a beveled throat-plate on the work-support having a raised portion tapering to an apex beneath the needle, a presser-foot formed to fit over the throat-plate and having a slot to guide the needle, and a longitudinal slot extending from said guiding-slot; substantially as described.

17. In a sewing-machine having stitch-forming mechanism, including a needle reciprocating in a substantially horizontal plane, and a looper cooperating therewith to form stitches, a pivoted work-support having a yielding movement, a presser-foot also having a yielding movement, and adapted to yield more readily than the work-support, means for limiting the movement of the presser-foot, said needle and looper being arranged above the work-support; substantially as described.

18. A sewing-machine having a pivoted yielding work-support, with means thereon for crimping the goods to be sewed, and a presser-foot cooperating therewith, said presser-foot being spring-pressed downwardly by a weaker

spring than that which presses the work-support upwardly and having means for limiting its movement; substantially as described.

19. In a blindstitch sewing-machine, the combination with suitable stitch-forming mechanism including a needle, a presser-foot, a work-support pivoted to allow of the insertion and removal of the work, said work-support having also a yielding movement, a ridge-forming rib movable therewith carried on the outer upper end thereof and engaging the work beneath the presser-foot and over which ridge-forming rib said work is fed, said presser-foot being formed on its under surface to fit said ridge-forming rib; substantially as described.

20. In a blindstitch sewing-machine, the combination with suitable stitch-forming mechanism including a needle, an upper spring-pressing device, a pivoted work-support, a ridge-forming rib over which the work is fed, with means for yieldingly supporting it, said upper spring-pressing device being formed on its under surface to receive the ridge-forming rib; substantially as described.

21. In a sewing-machine having suitable stitch-forming mechanism including a needle reciprocating from side to side of the line of the seam, and a looper cooperating therewith to form stitches, an overhanging frame supporting the looper and needle operating mechanisms, a work-support pivoted at one end to the standard, means for crimping the goods comprising a presser-foot carried by the overhanging frame and cut out on its under side, a ridge-forming rib carried on the outer upper end of the work-support adapted to fit the cut-out portion of the presser-foot, whereby the goods are crimped, said ridge-forming rib being yieldingly supported; substantially as described.

22. In a sewing-machine having suitable stitch-forming mechanism including a needle reciprocating from side to side of the line of the seam, and a looper cooperating therewith to form stitches, an overhanging frame supporting the looper and needle operating mechanisms, a yielding work-support pivoted at one end to the standard, means for crimping the goods, comprising a presser-foot carried by the overhanging frame and cut out on its under side and a ridge-forming rib carried on the outer upper end of the work-support adapted to fit the cut-out portion of the presser-foot, whereby the goods are crimped; substantially as described.

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

LANSING ONDERDONK.

Witnesses:

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J. H. HOWELL.