

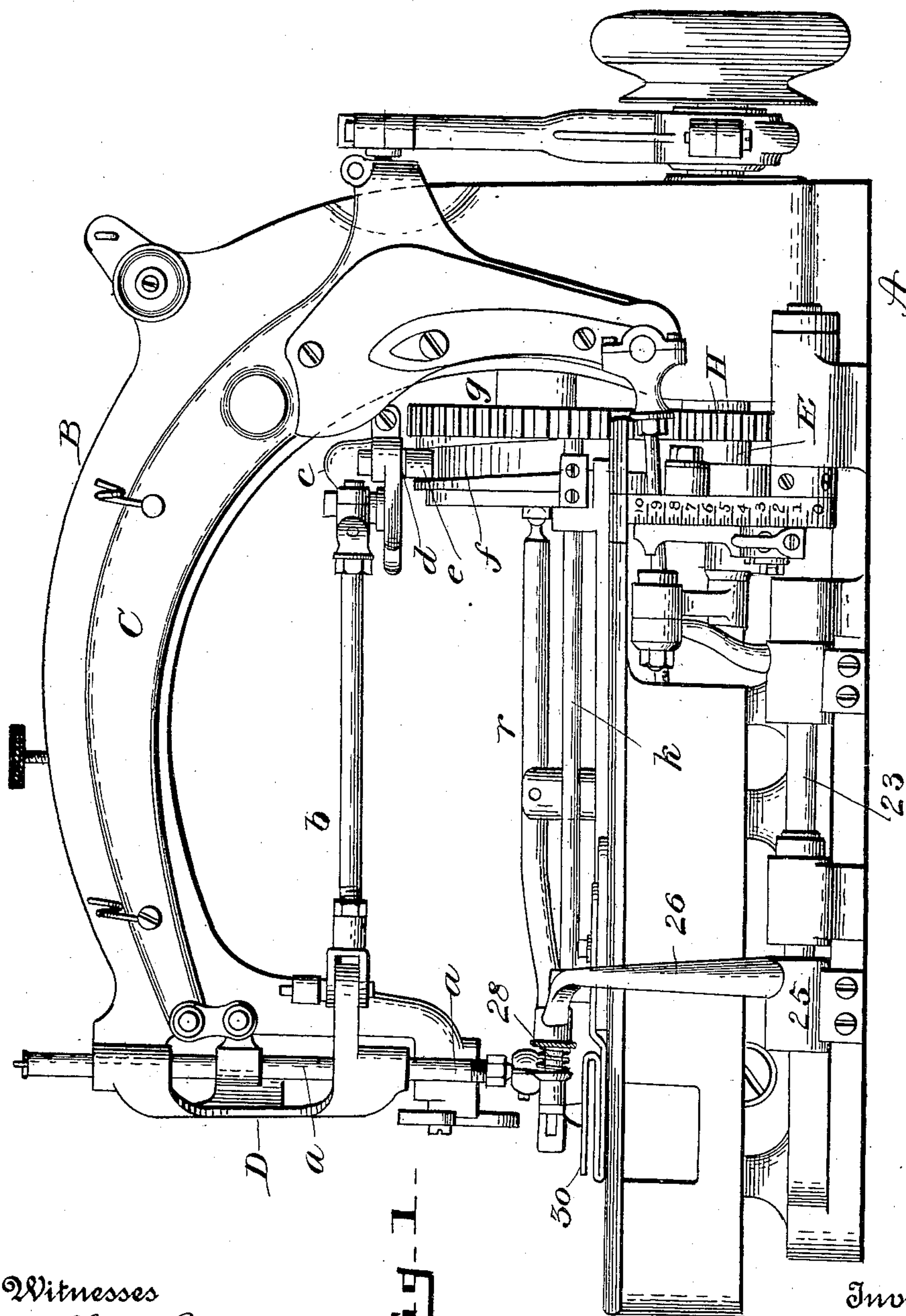
No. 891,789.

PATENTED JUNE 23, 1908.

R. G. WOODWARD.
SEWING AND RUFFLING MACHINE.

APPLICATION FILED JULY 14, 1903.

4 SHEETS—SHEET 1.



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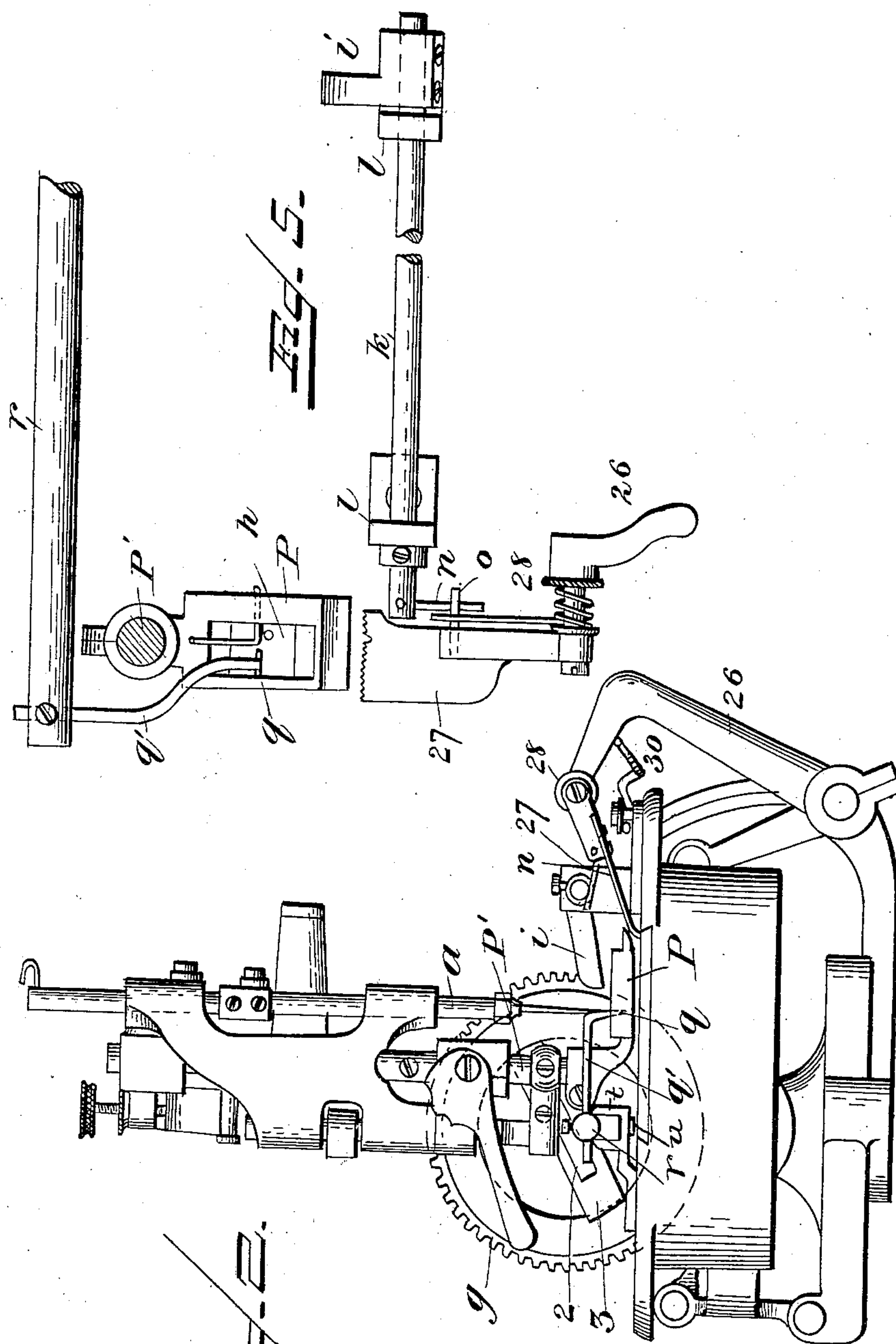
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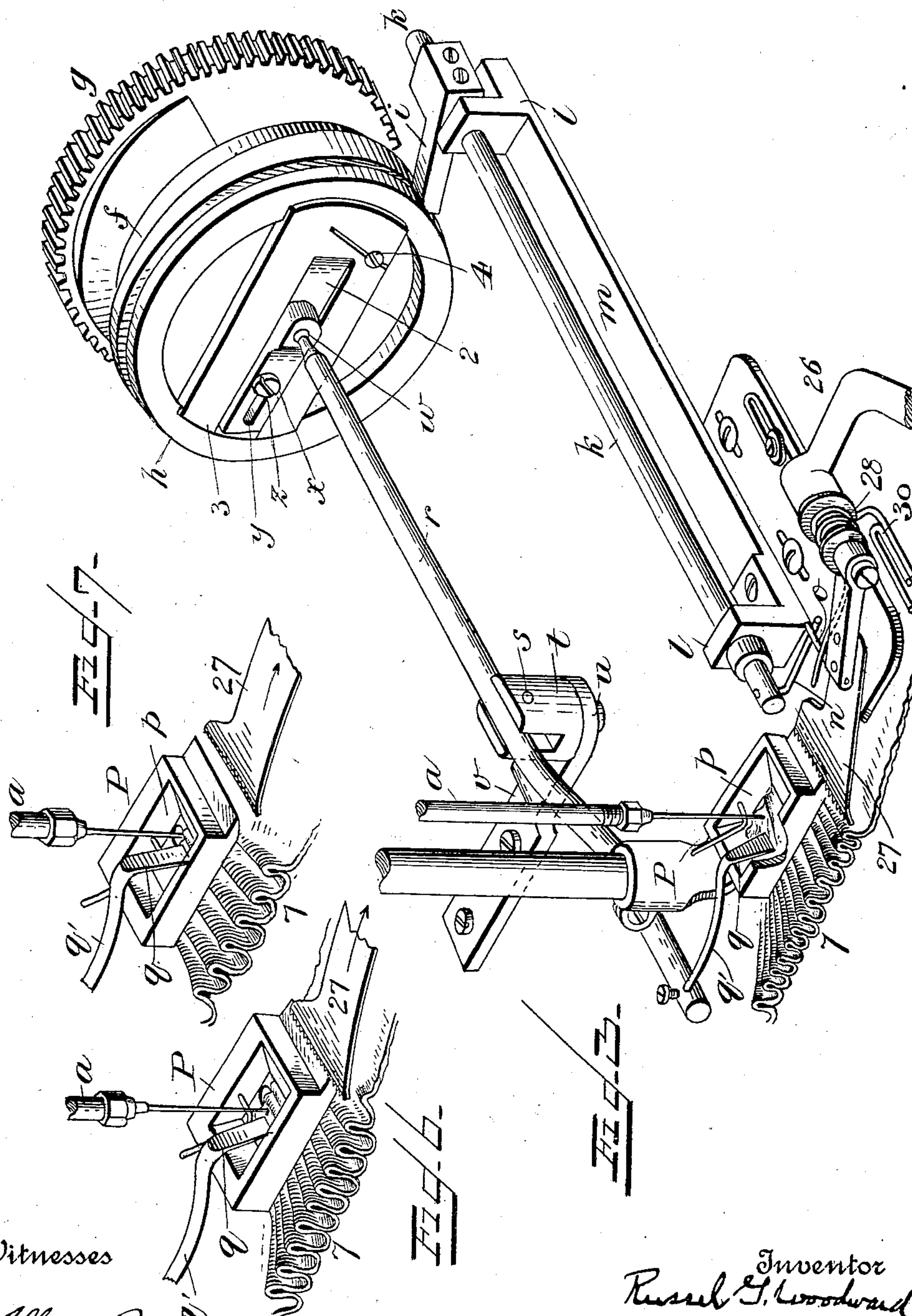
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4 SHEETS—SHEET 3.



Witnesses

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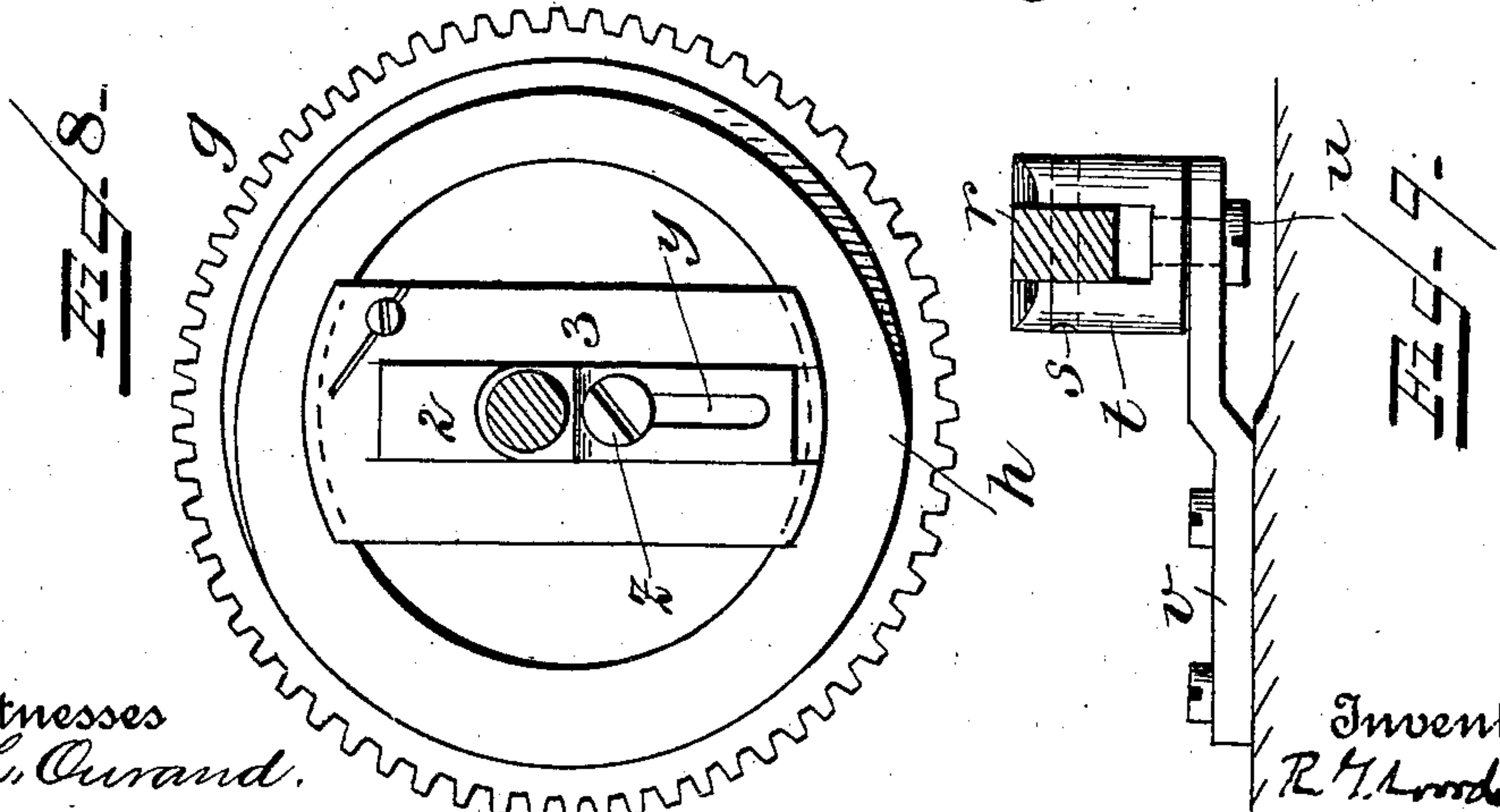
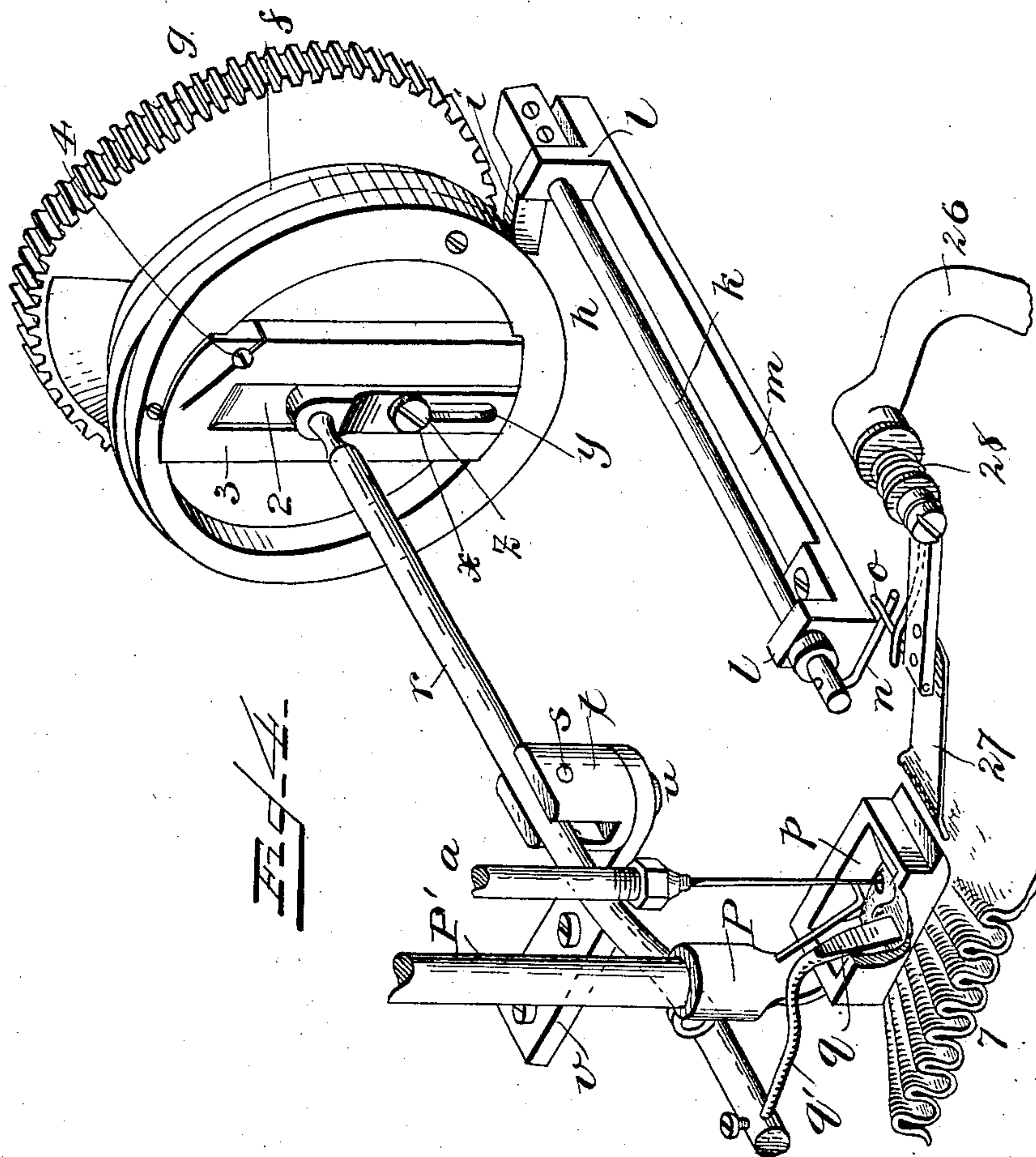
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4 SHEETS—SHEET 4.



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SEWING AND RUFFLING MACHINE.

No. 891,789.

Specification of Letters Patent.

Patented June 23, 1908

Application filed July 14, 1903. Serial No. 165,490.

To all whom it may concern:

Be it known that I, RUSSEL G. WOODWARD, a citizen of the United States, residing at Waukegan, in the county of Lake, State of Illinois, have invented certain new and useful Improvements in Sewing and Ruffling Machines, of which the following is a description, reference being had to the accompanying drawing and to the letters and figures of reference marked thereon.

My invention relates to an improvement in sewing and ruffling machines, the particular object being to provide a sewing and ruffling machine in which the sewing apparatus involves a zig zag stitch-forming mechanism, and is combined with a ruffler.

The purpose for which the present machine has been especially devised is for forming a seam such as illustrated in my Patent No. 718,960, that is, in brief, for providing a fabric with a series of ruffles and securing the ruffles by stitches composed of parallel rows of loops, the loops of one row passing through the bases of the ruffles, and the loops of the other row passing through beyond the edge of the ruffles, the connecting threads lying alongside the bases of the ruffles, whereby the tops of the ruffles are left free and open, and the stitches are substantially hidden, only the points of the triangular stitches showing where they pass over the edge of the ruffle. If this ruffle is secured to a body fabric, as shown in said patent, the points of the stitches will show in the body fabric; otherwise, they will project simply beyond the edge of the ruffled fabric. It will be understood, however, that I do not wish to be limited to the particular mechanism shown for making a cross stitch, for other stitch forming mechanism of this character may be combined with devices, whereby the fabric may be ruffled, the ruffle secured by suitable stitches which do not pass through the tops of the ruffles, but in which the cross stitches or threads extend around the bases of the ruffles formed, one line of stitching being within the fabric and the other outside the edge thereof and passing through a body fabric or both being within the edge of the ruffled fabric.

In providing a machine adapted to make the seam above referred to, a number of

features of importance have been developed, among which may be mentioned the provision of mechanism for actuating the ruffling blade against the fabric, only every other stitch, so that the fabric will not ruffle when the stitch outside of the fabric is being taken. It has also been found desirable to provide a device for catching hold of the ruffle, which has been pressed down by the presser foot, ahead of the stitch-forming mechanism, and drawing it up into vertical position, so that the stitch which is taken inside the edge will not pass through the top of the ruffle being afterward pressed down again by the action of the rear part of the presser foot.

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

So far as the general structure of the machine is concerned, it is of the Union Special overseaming machine type, in which the needle bar is supported in a laterally swinging frame, and there are connections between the frame and the driving shaft, for imparting lateral vibration to the needle. The particular means for vibrating the needle herein shown, are similar to those shown in an older type of Union Special overseaming machine, which has practically been superseded by the type of mechanism shown in the application for Letters Patent filed the 24th day of May, 1900, by Charles G. Kramer, and serially numbered 17,791, but this is only shown by way of illustration. The drawings illustrate the particular mechanism illustrated in an application for patent filed by Lansing Onderdonk, No. 676,432, filed April 4, 1898.

The particular ruffling mechanism illustrated in this application is the same as that illustrated in my Patent No. 706,484, dated August 5th, 1902, except for the provision of the means above referred to for throwing the ruffler blade out at every other stitch.

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

Figure 1 is a side elevation of a sewing machine embodying the invention; Fig. 2 is an end view of the same; Fig. 3 is a perspective view of the machine, with all the parts removed except the presser foot, the ruffler, the mechanism for throwing the ruffler out

of action at every other stitch, and the mechanism for holding the ruffle in a vertical position while the needle is taking the stitch on the inside of the edge of the ruffled fabric; Fig. 4 is a similar view, the parts being shown in a different position from that in Fig. 3; Fig. 5 is a plan view of the ruffling mechanism, and ruffle-holding mechanism, detached; Figs. 6 and 7 are detail views, showing the position of the parts in the formation of the inside and outside stitches; Fig. 8 is a front view of the cam for operating the ruffler-raising device, and for operating the ruffle-holding finger; Fig. 9 is a detail sectional end view of the pivot support for the bar which operates the ruffle-holding finger.

In these drawings, A represents the base of the machine; B, the goose neck or overhanging arm; C the needle lever, which imparts vertical reciprocating movement to the needle bar *a*.

D represents the swinging frame, which supports the needle bar *a*, said swinging frame having lateral vibration imparted to it by means of the pitman connections *b* to the frame *c* pivoted on the sewing machine standard, and which has a downwardly projecting stud *d*, carrying on its lower end a roller *e*, which travels in the cam groove *f*, which is formed with a gear wheel *g*, the hub of which is sleeved on a stud on the machine frame, said gear wheel *g* being in mesh with a gear wheel H on the driving shaft E of the machine.

The numeral 23 represents a rock shaft journaled in suitable bearings on the bed plate. On the outer end of the rock shaft 23 is a collar 25 supporting an arm 26, which carries the ruffling blade 27 pivoted thereto, and held down to its work by the spring 28, motion being imparted to the rock shaft to cause the ruffler blade to operate in the manner set forth in Patent 706,484, above referred to.

All the parts heretofore referred to are of the usual well known construction, and need not be more particularly described.

I will now describe the mechanism for imparting to the ruffler blade an upward movement to cause it to fail of its ruffling action every other stitch; that is, to prevent its ruffling while the needle is making the stitch outside the fabric.

The gear and cam wheel *g*, has at its outer edge, a cam shaped periphery *h*, adapted to engage a lug or projection *i*, secured to the end of the shaft *k*, journaled in lugs *l*, on the bracket plate *m*, secured on the work plate of the machine. At the opposite end the shaft *k* has a projecting finger *n*, which engages the under side of the pin *o*, secured to the ruffler blade support. When the high part of the cam *h*, reaches the projection *i*, it depresses the same, rocks the shaft *k*, and

raises the ruffler blade 27 from the work, thus causing in each revolution of the main shaft, a reciprocation of the ruffler blade to take place without ruffling the fabric. The parts are so timed, that this rise of the ruffler blade begins while the needle is descending to make the stitch outside the ruffled fabric 1, and is held in its raised position while the needle moves upwardly and laterally and into the goods and until it begins to rise, the ruffling taking place while the needle is receding from its position in the goods.

It will be understood that so far as this feature of the invention is concerned, the timing may be changed, or the intervals of ruffling and idleness may be varied, without departing from the spirit of my invention.

P represents the presser foot of the machine, supported on the presser bar P', in the usual way. The action of a presser foot upon the ruffles is, of course, to press them down, and usually the stitches pass through the ruffles, as it is desirable in making the seam set forth that the tops of the ruffles be left free and open, and the inner row of stitches pass only through the bases of the ruffles, and that the connecting threads to the outer row lie alongside the bases so that they will be substantially covered up by the ruffles, the presser foot has an open space *p*, in which the needle reciprocates, and a movable finger or blade *q*, on the end of the arm *q'*, is provided for seizing a ruffle and holding it vertically out of the path of the needle while the stitch in the ruffled goods is being made. The arm *q'* is fixed to the end of a lever *r*, which is pivoted to swing vertically on the pin secured to the block *t*, having a vertical pivot *u*, on the end of the bracket plate *v*, secured to the work plate of the machine. At its opposite end the lever *r*, is formed with a reduced head carrying a ball *w*, which fits in a socket formed on a plate *x* adjustable by slot and set screw *y*, *z*, in a groove 2, formed in the plate 3, fitting the inner periphery of the cam ring *h*, being held therein by the wedging screw 4.

In order to give the movements desired to the lever *r*, the socket in which the ball *w* fits must be off the center, and the time of movement and amount thereof may be varied by adjusting the slide *x* radially across the face of the wheel. In effect, the connection between the lever *r*, and wheel amounts to a crank connection.

In operation, as the parts are timed in the machine illustrated herein, a ruffle is made in the fabric while the needle is rising from the goods, and the finger or blade *q*, moves forward while the needle is moving up, to get across the top of a ruffle, formed but not stitched while the needle is shifting to the right (looking toward the machine), and while it is moving down on the outside the

ruffled goods, the finger or blade *g*, moves down between the ruffle which is next to be stitched, and the one which is in front of it, when the needle begins to rise, the blade *g*, moves to the rear of the machine, raising the ruffle to vertical position and holding it there until the needle passes into the base of the ruffle, when it begins to rise, and then moves forward while the needle is in the ruffled goods, and while the blade 27 is forming another ruffle. It will be seen that while the ruffler is making its idle forward movement, the blade *g* is straightening up the ruffle. After the sewing the ruffles are pressed down by the rear portion of the presser foot. A wire guide 30, for the fabric upon which a fold is turned, is provided, although any suitable folding guide may be provided.

Various modifications and changes may be made in the invention, without departing from the spirit of the same, and it will be understood I do not wish to be limited to the particular stitch forming mechanism herein shown, as other cross stitch mechanisms may be used combined with the ruffling device, acting in such manner as to make a ruffled seam in which the cross stitches lie alongside the bases of the ruffles and the holding stitches are not deposited in the ruffles themselves, but in such position as to hold them permanently, but leaving the tops free and open.

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

1. In a sewing and ruffling machine, stitch-forming mechanism including means for depositing rows of loops upon opposite sides of the central line of the seam, a ruffling device operating to form ruffles across the line of feed, means for holding the tops of said ruffles out of engagement with the loop depositing means, whereby the tops of the ruffles are left free and open, and the connecting threads between the loops lie alongside the bases of the ruffles; substantially as described.

2. In a sewing and ruffling machine, stitch-forming mechanism including means for depositing rows of loops upon opposite sides of the central line of the seam, a ruffling device operating to form ruffles across the line of feed, means for holding the tops of said ruffles out of engagement with the loop-depositing means, whereby the tops of the ruffles are left free and open, and the connecting threads between the loops lie alongside the bases of the ruffles, and means for suspending the action of the ruffling device on the fabric at regular intervals; substantially as described.

3. In a sewing and ruffling machine, stitch-forming mechanism, including means for producing a relative movement between the work and needle transverse to the line of

feed, a ruffling device operating to form ruffles across the line of feed, and means for holding the tops of the ruffles out of engagement with the stitch-forming mechanism, so that the stitches will not pass through the tops of said ruffles; substantially as described.

4. In a sewing and ruffling machine, including over-seaming stitch-forming mechanism including devices for depositing rows of loops upon opposite sides of the central line of the seam, and a ruffling device including a ruffling blade, means for throwing the ruffling device out of operative engagement with the fabric at regular intervals during the stitching; the connecting threads between the loops extending transversely of the line of feed and substantially parallel with the end of the ruffling blade substantially as described.

5. In a sewing and ruffling machine including over-seaming stitch-forming mechanism including devices for depositing rows of loops upon opposite sides of the central line of the seam and a ruffling device including a ruffling blade, means for operating said ruffling device and means for controlling the movements of the ruffling device whereby the same may be given idle movements at regular intervals during the stitching; the connecting threads between the loops extending transversely of the line of feed and substantially parallel with the end of the ruffling blade substantially as described.

6. In a sewing and ruffling machine, stitch-forming mechanism, including mechanism for depositing a row of loops within the ruffled portion of the fabric, and a row of loops outside the ruffled portion of fabric, a ruffling device, and means for holding the ruffling device out of engagement with the fabric while the stitch outside the ruffled goods is being formed; substantially as described.

7. In a sewing and ruffling machine, a ruffling device, a vertically reciprocating and laterally vibrating needle arranged to stitch within and without the ruffled fabric, and means for holding the ruffling device out of action on the fabric when the stitch outside the ruffled fabric is being made; substantially as described.

8. In a sewing and ruffling machine, a ruffling device, a vertically reciprocating and laterally vibrating needle, and means for throwing the ruffling device out of action on the fabric at each alternate stitch; substantially as described.

9. In a sewing and ruffling machine, a ruffling device including a ruffling blade and means for operating the same, a vertically reciprocating and laterally vibrating needle, a driving shaft, a rock shaft having an arm engaging the ruffler, and connections between the rock shaft and driving shaft, for alternately raising and lowering the ruffler

whereby the ruffling blade is given idle movements at intervals; substantially as described.

10. In a sewing and ruffling machine, a ruffling device, a vertically reciprocating and laterally vibrating needle, a driving shaft, a cam thereon, a rock shaft having a projection adapted to be engaged by the cam, and connections between the rock shaft and the ruffler for alternately raising and lowering the same, whereby the ruffler is idle while the needle is making alternate stitches; substantially as described.

11. In a ruffling and sewing machine, a ruffling device, a stitch-forming mechanism, and independent means for engaging the ruffle and holding it vertical while the needle is entering the goods; and means for operating said ruffle-engaging means substantially as described.

12. In a ruffling and sewing machine, a ruffling device, a stitch-forming mechanism, and independent means for engaging the ruffle and holding it vertical, and out of engagement with the stitch forming mechanism; and means for operating said ruffle engaging means substantially as described.

13. In a sewing and ruffling machine, suitable stitch-forming mechanism including means for depositing rows of loops upon opposite sides of the central line of the seam, a ruffling device operating to form ruffles across the line of feed, means for holding the tops of said ruffles out of engagement with the loop-depositing means, whereby the tops of the ruffles are left free and open, and the connecting threads between the loops lie alongside the bases of the ruffles, and means for adjusting the movement of said ruffle holder; substantially as described.

14. In a ruffling and sewing machine, a ruffling device, stitch-forming mechanism including mechanism for depositing stitches, within and without the ruffled fabric, and independent means for engaging the ruffle and holding it out of engagement with the stitch-forming mechanism while the stitches within the ruffled goods are being made; substantially as described.

15. In a ruffling and sewing machine, a ruffling device, stitch-forming mechanism including a vertically reciprocating and laterally vibrating needle, and means for engaging and holding the ruffle out of engagement with the stitch-forming mechanism, so that the needle will not pass through the top of the ruffle; substantially as described.

16. In a ruffling and sewing machine, a ruffling device, stitch-forming mechanism including a vertically reciprocating and laterally vibrating needle, and a blade, with means for operating it to cause it to engage a flattened ruffle and draw it to vertical position out of the path of movement of the needle; substantially as described.

17. In a ruffling and sewing machine, a ruffling device, stitch-forming mechanism including a vertically reciprocating and laterally vibrating needle, and a blade, with means for operating it to cause it to engage a flattened ruffle and draw it to vertical position out of the path of movement of the needle, said means including a vertically and horizontally pivoted rod, having a crank connection with the driving shaft; substantially as described.

18. In a ruffling and sewing machine, a ruffling device, stitch-forming mechanism including a vertically reciprocating and laterally vibrating needle, and a blade, with means for operating it to cause it to engage a flattened ruffle and draw it to vertical position out of the path of movement of the needle, said means including a vertically and horizontally pivoted rod, having an adjustable crank connection with the driving shaft; substantially as described.

19. In a ruffling and sewing machine, a ruffling device, stitch-forming mechanism including a vertically reciprocating and laterally vibrating needle, and a blade, with means for operating it to cause it to engage a flattened ruffle and draw it to vertical position out of the path of movement of the needle, said means including a vertically and horizontally pivoted rod, having a ball and socket connection with a plate axially adjustable across the face of a wheel operated by the driving shaft; substantially as described.

20. A sewing and ruffling machine, comprising a stitch-forming mechanism, including a vertically reciprocating and laterally vibrating needle, a ruffling device, a driving shaft, a cam wheel operated by the driving shaft, connections between said cam wheel and the ruffling device for imparting to said ruffling device an idle movement at alternate stitches, a pivoted lever having a crank connection with the cam wheel, and provided at one end with a blade or finger to engage and hold said ruffles vertically while alternate stitches are being taken; substantially as described.

21. In a ruffling and sewing machine, a ruffling device, stitch forming mechanism including means for depositing rows of loops within and without the ruffled fabric with connecting threads between the rows of loops and a blade with means for operating it to cause it to engage a flattened ruffle and draw it to vertical position out of the path of movement of the stitch forming mechanism, so that the tops of the ruffles will not be engaged by said stitch forming mechanism; substantially as described.

22. In a sewing and ruffling machine, including stitch forming mechanism and a ruffling device, a presser foot having an opening therein, with stitch forming mechanism

operating in said opening and means also operating in said opening for holding the ruffle out of engagement with the stitch forming mechanism; substantially as described.

5 23. In a ruffling and sewing machine, a ruffling device, a stitch-forming mechanism, and a movable ruffler holder for engaging the ruffle and holding it vertical while the needle is entering the goods, and means for adjust-

ing the amount of movement of said ruffle holder; substantially as described. 10

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

RUSSEL G. WOODWARD.

Witnesses:

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A. B. CLOTHIER.