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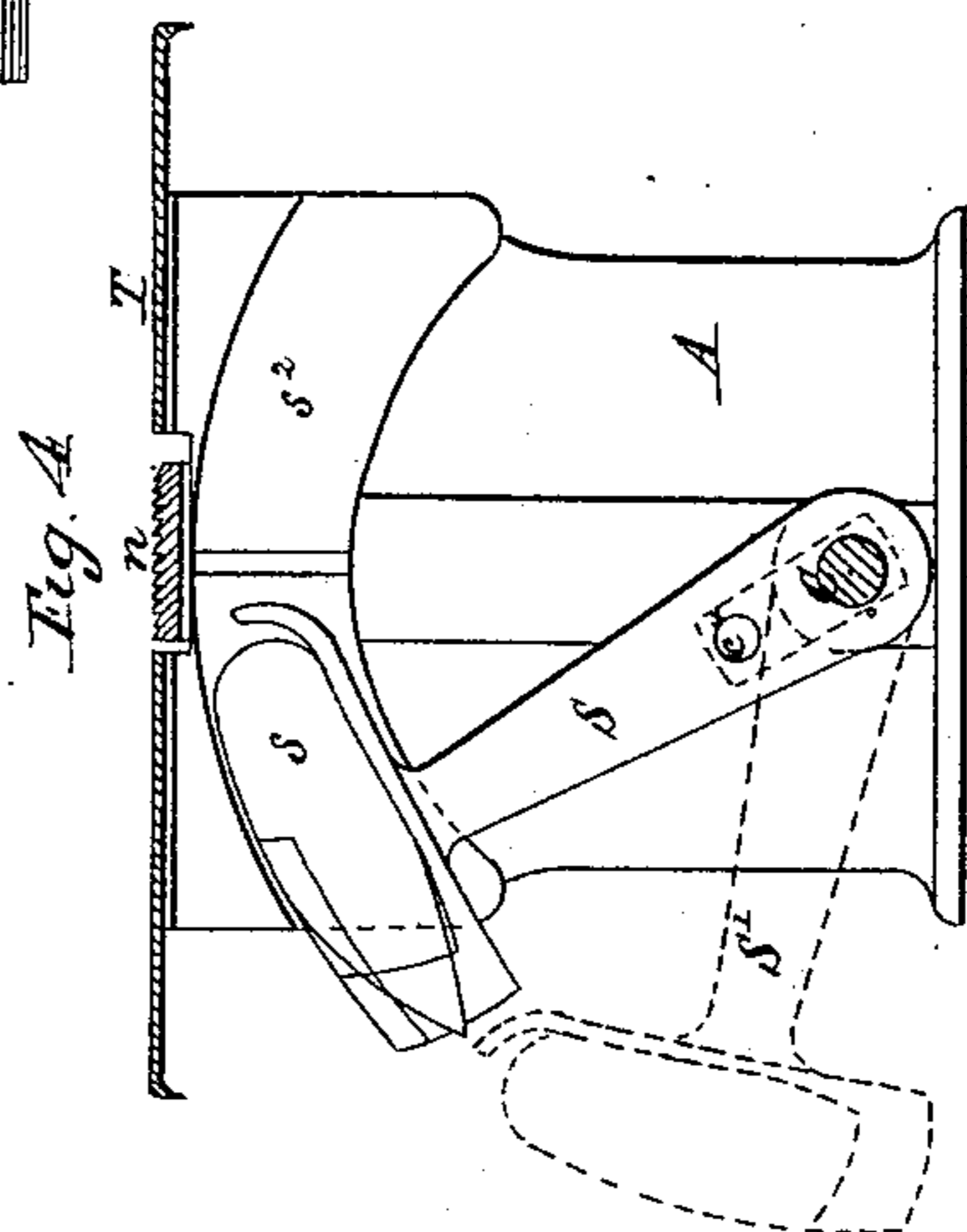
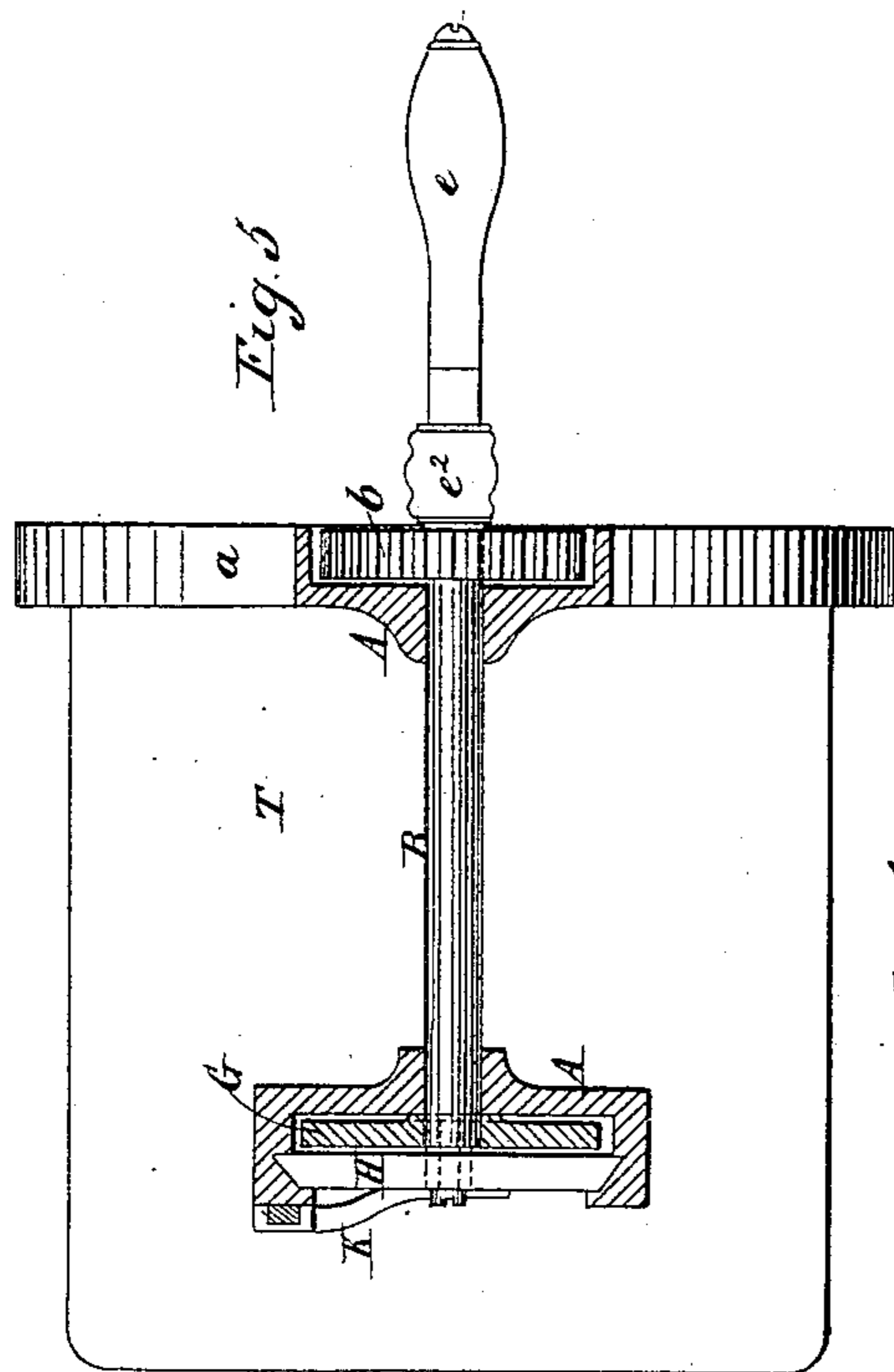
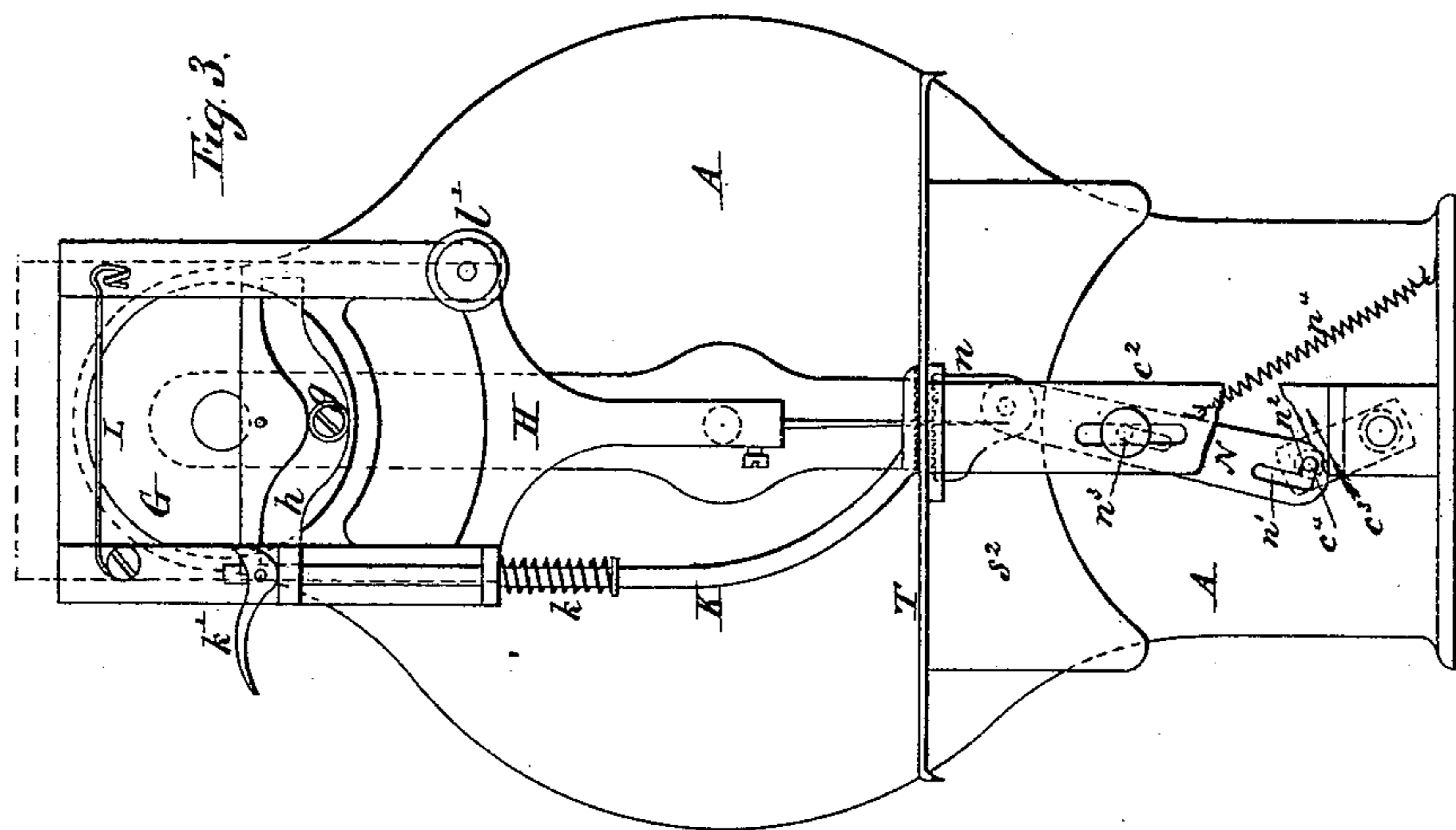
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A. F. WILEMAN.

SEWING MACHINE.

No. 370,225.

Patented Sept. 20, 1887.



Witnesses.

Geo. W. Rea.

Robert Everett

Inventor.

Arthur F. Wileman.

By James L. Norris.  
Atty.

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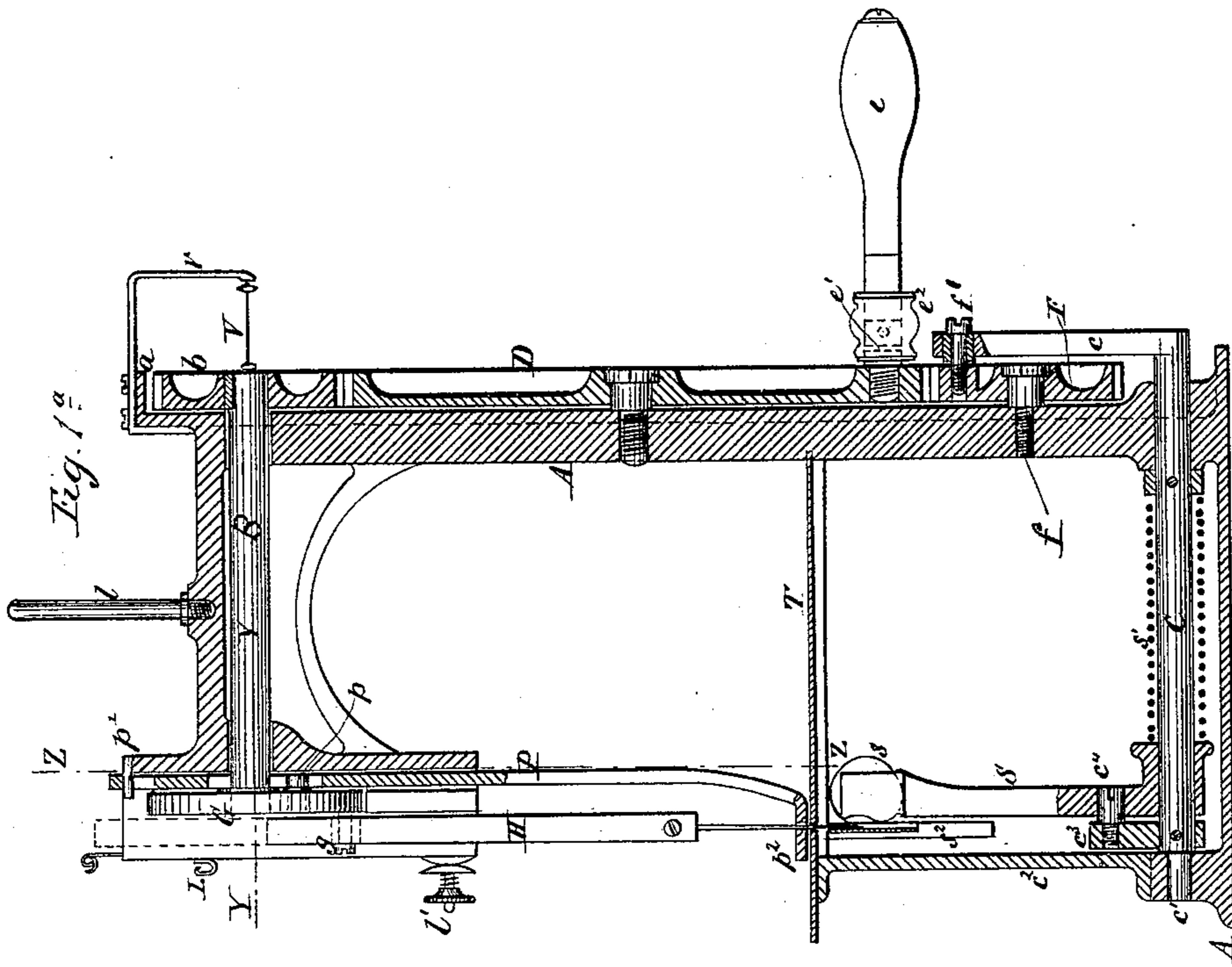
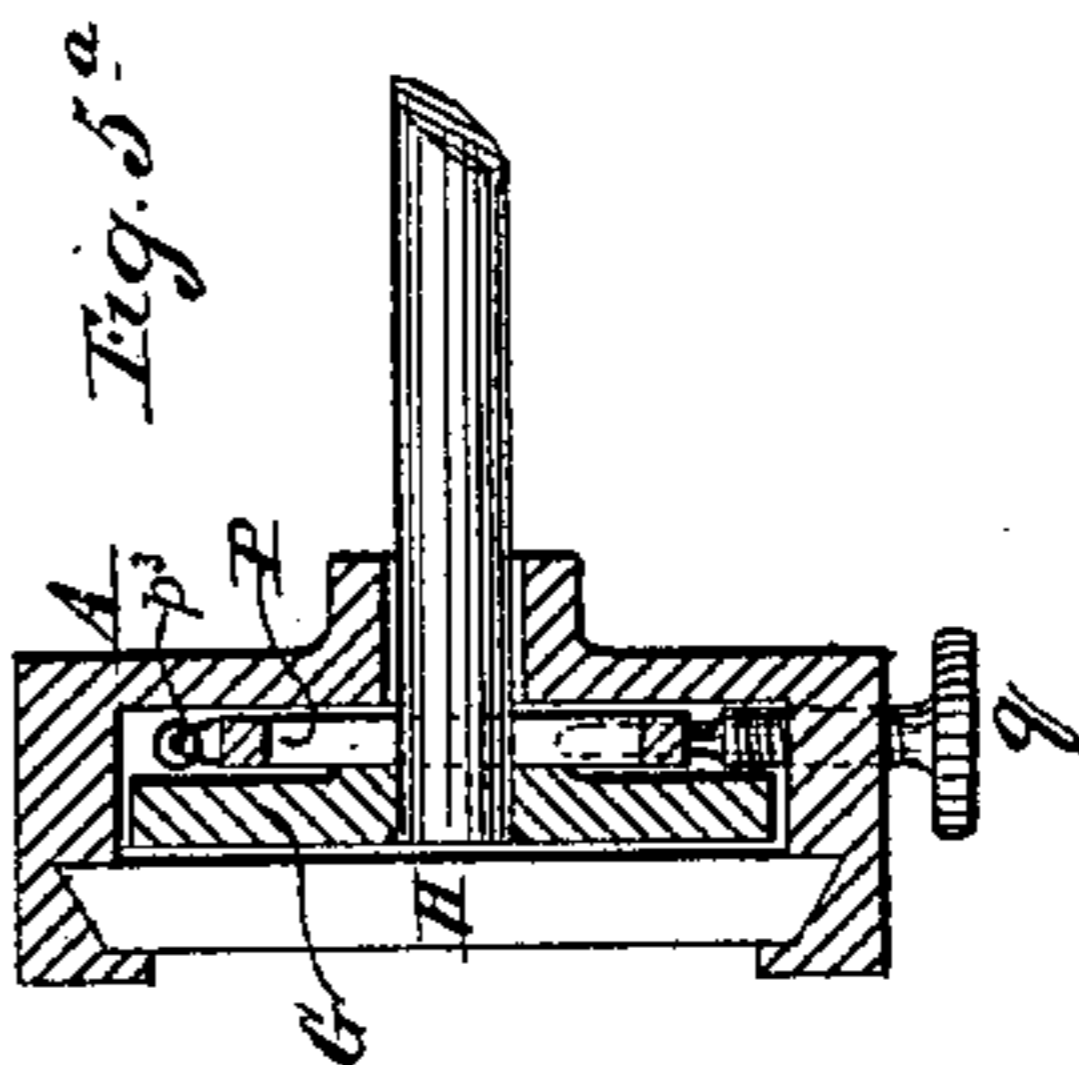
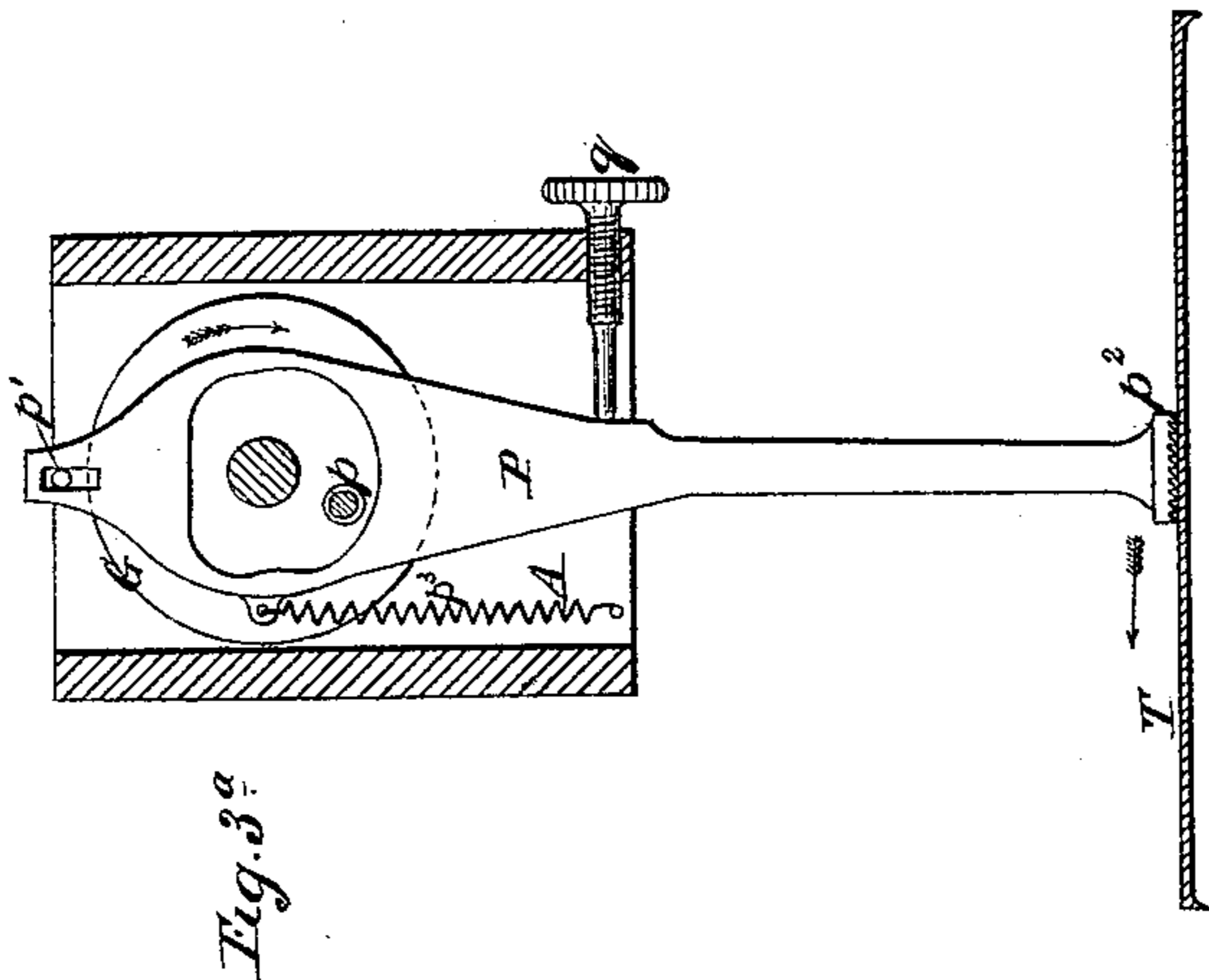
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# UNITED STATES PATENT OFFICE.

ARTHUR F. WILEMAN, OF EALING, COUNTY OF MIDDLESEX, ENGLAND.

## SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 370,225, dated September 20, 1887.

Application filed November 17, 1886. Serial No. 219,198. (No model.) Patented in England September 9, 1886, No. 11,500, and September 28, 1886, No. 12,322; in France November 11, 1886, No. 179,589; in Belgium November 11, 1886, No. 75,195; in Italy December 4, 1886, No. 143, XLI; in Austria-Hungary March 21, 1887, No. 44,699 and No. 9,609, and in Canada April 23, 1887, No. 26,521.

*To all whom it may concern:*

Be it known that I, ARTHUR FRANCIS WILEMAN, a citizen of England, residing at Ealing, in the county of Middlesex, England, have invented a new and useful Lock-Stitch Sewing-Machine, (for which I have obtained patents in Great Britain, dated September 9, 1886, No. 11,500, and September 28, 1886, No. 12,322; in France, dated November 11, 1886, No. 179,589; in Belgium, dated November 11, 1886, No. 75,195; in Italy, dated December 4, 1886, No. 143, vol. XLI; in Austria-Hungary, dated March 21, 1887, No. 44,699 and No. 9,609, and in Canada, dated April 23, 1887, No. 26,521,) of which the following is a specification.

My invention relates to a construction of lock-stitch sewing-machine in a simple and compact manner, as I will describe, referring to the accompanying drawings.

Figure 1 is a vertical section. Fig. 2 is a back elevation. Fig. 3 is a front elevation. Fig. 4 is a part transverse section at X X of Fig. 1. Fig. 5 is a sectional plan on Y Y of Fig. 1. Those figures represent the machine arranged with feed under the fabric sewed. When the machine is modified so as to feed by the movement of the presser-foot above the fabric, the necessary modifications are shown in Fig. 1<sup>a</sup>, which is a vertical section; Fig. 3<sup>a</sup>, a part transverse section on Z Z of Fig. 1<sup>a</sup>, looking from the back; Fig. 5<sup>a</sup>, a part sectional plan on Y Y of Fig. 1<sup>a</sup>.

In all the figures corresponding parts are indicated by similar letters of reference.

Referring, first, to Figs. 1 to 5, inclusive, A is the frame of the machine, which is cast in one piece, bored at the top to receive in bearings the rotating spindle B, and at the bottom to receive the rocking spindle C. At the back of the frame is mounted on a fixed stud-pin a toothed wheel, D, turned by a handle, e, which, for convenience of packing and transport, may be jointed at e', so as to be folded against the wheel when the machine is not in use, a ring, e<sup>2</sup>, being slid over the joint e' to keep it rigid when in use. The wheel D gears with

two equal pinions, the one, b, fixed on the spindle B, and the other, F, mounted on a fixed stud-pin, f.

The frame A is made with a lip, a, projecting at the back, so as to shield the gearing. In the upper part of the machine, at the front of the goose-neck, the spindle B has fixed on it a disk, G, with a projecting crank-pin and roller g, and in front of this is fitted the needle-slide H, which is caused to reciprocate by the roller g revolving in the cam slot h. At the side of the guide for the needle-slide is fitted the sliding presser-foot K, which is pressed down by a spring, k, and can be raised and held up by a cam-lever, k'. There is also mounted on the guide a spring take-up, L, which is moved up by a stud on the needle-slide. The reel for the needle-thread is placed on a pin, l, and the thread is kept tight by an adjustable tension-disk, l'.

In the lower part of the machine the rocking spindle C, which is caused to rock by a crank-pin, f', on the pinion F, working in the slot of an arm, c, fixed on rock-shaft C, which extends to a front bearing, c', an upright, c<sup>2</sup>, from which supports the front part of the table T, the back being held in a notch of the frame A. On the shaft C is fixed an arm, c<sup>3</sup>, in which is a pin, c<sup>4</sup>, projecting both to the front and to the back of the arm c<sup>3</sup>. The back end of the pin c<sup>4</sup> enters a hole in an arm, S, which carries the shuttle s. The arm S is pressed by a spring, s', up against the arm c<sup>3</sup>, so that the pin c<sup>4</sup> engages in the hole in arm S, and in this condition the arm S is caused to rock with the spindle C, moving the shuttle s to and fro in a circular arc under and behind a guide-plate, s<sup>2</sup>, which is fixed under the table T, and which is notched in the middle to allow certain freedom of to-and-fro and up-and-down motion to the serrated feed-slide n. It has also a vertical groove in its top to admit the needle. When it is desired to remove or replace the shuttle s, the arm S is pulled a little back in opposition to the spring s', so as to disengage it from the pin c<sup>4</sup>, and, as the arm S is then free to turn on the spindle C, it can

be turned down, as indicated by the dotted lines  $S'$ , Fig. 4, so as to give access to the upper part of the arm containing the shuttle  $s$ .

The feed apparatus is of the following kind:

5 To the serrated feed-slide  $n$  is jointed a vertical lever,  $N$ , which has in its middle a vertical slot, and at its lower end, also, a vertical slot,  $n'$ , with a side notch,  $n^2$ , at the bottom of the slot. In the upright  $c^2$  (which in Fig. 3  
10 is partly broken away to show the parts behind) there is also a vertical slot, and a pin,  $n^3$ , can, by means of a finger-nut, be fixed higher or lower in this slot, this pin serving as a fulcrum for the vertical lever  $N$ . The  
15 front end of the pin  $c^4$  enters the notched slot  $n'$  of the lever  $N$ . Consequently as the spindle  $C$  and its arm  $c^3$  rock, the lever  $N$  is caused to oscillate on its fulcrum  $n^3$ , moving the feed-slide  $n$  to and fro with a greater or less stroke,  
20 according as the fulcrum-pin  $n^3$  is adjusted lower or higher in the slot of the upright  $c^2$ , thus affording means for regulating the length of stitch. In order that the feed-slide  $n$  may by its stroke in the one direction advance the  
25 fabric on the table  $T$ , but be down clear from the fabric in its back-stroke, a spring,  $n^4$ , attached to the lever  $N$ , operates in conjunction with the notched slot  $n'$ , in the following manner:

30 When the parts are in the position shown in Fig. 3, the arm  $c^3$  moving in the direction of the arrow, the pin  $c^4$  is engaged in the notch  $n^2$ , and consequently as pin  $c^4$  makes its stroke to the right in a circular arc it not only causes  
35 the lever  $N$  to oscillate, but also moves the lever up in opposition to the spring  $n^4$ , and thus the serrated feed-plate  $n$  is pressed upward while it moves to the left and so advances the fabric. When arm  $c^3$  begins to make its back-  
40 stroke to the left, it disengages itself from the notch  $n^2$ , and now the spring  $n^4$  draws down the lever  $N$  and feed-plate  $n$ , which thus makes its back-stroke to the right hand clear of the fabric.

45 For some sewing purposes it is preferred to have an upper instead of an under feed, the presser-foot operating for this purpose. In that case I modify the feed of the machine in the manner shown by Figs. 1<sup>a</sup>, 3<sup>a</sup>, and 5<sup>a</sup>, dispensing with the parts already described for  
50 operating the feed, and effecting it by the movements of the presser-foot. On the back of the disk  $G$ , I provide a crank pin and roller,  $p$ , which work in a cam-slot of a lever,  $P$ .  
55 This lever has at its upper end a slot entered by a pin,  $p'$ , which forms a fulcrum for it, and its lower end is formed as a serrated presser-foot,  $p^2$ . A spring,  $p^3$ , acts on  $P$  on one side of the fulcrum, so as to pull it down and also  
60 to the one side. As the disk  $G$  revolves in the direction of the arrow Fig. 3<sup>a</sup>, its roller  $p$ , acting on one side of the slot of  $P$ , first pushes it to the one side, and the presser-foot, being at this time drawn down by the spring  $p^3$ , advances  
65 the fabric. The roller  $p$ , then acting on the upper part of the slot in  $P$ , raises  $P$ , thus lift-

ing the presser-foot off the fabric, whereupon the spring  $p^3$  causes it to make its back-stroke. There is a screw-pin,  $q$ , which acts as a stop to the lever  $P$  in its back-stroke. By screwing this  
70 more or less backward this back-stroke can be made greater or less, according as a longer or shorter stitch is required.

For the purpose of winding thread on the shuttle-bobbin, I place the bobbin  $V$ , Figs. 1  
75 and 1<sup>a</sup>, between the end of the spindle  $B$  and a spring,  $v$ , in which there is a hole to receive the end of the bobbin-axis.

On causing the spindle  $B$  to revolve it drives the bobbin  $V$  by frictional contact, winding  
80 the shuttle-thread on it.

Having thus described the nature of my invention and the best means I know of carrying it out in practice, I claim—

1. The combination, in a lock-stitch sewing-machine, of the frame  $A$ , the spindle  $B$   
85 in the upper part of the frame, having at one end the pinion  $b$  and at the other end the disk  $G$ , provided with the lateral crank-pin  $g$ , the needle-carrying slide  $H$ , engaged with said  
90 crank-pin, the rock-shaft  $C$  in the lower part of the frame, having at one end the shuttle-carrying arm  $S$  and at the other end the vertically-projecting slotted arm  $c$ , the pinion  $F$ , journaled to the frame and having a crank-  
95 pin working in the slotted arm of the rock-shaft, and the driving gear-wheel  $D$ , interposed between and engaging both the upper and lower pinions, substantially as described.

2. The combination, in a lock-stitch sewing-machine, of the frame  $A$ , having at its top the guide-pin  $p'$ , the spindle  $B$ , arranged at the top of the frame and having at one end the pinion  $b$  and at the other end the disk  $G$ , provided with the forward and rearward project-  
100 ing crank-pins  $g$  and  $p$ , the needle-carrying slide  $H$ , engaging the forward-projecting crank-pin, the upper feed-lever,  $P$ , having the arm-slot engaging the rearward-projecting crank-pin and provided with a slotted top end en-  
105 gaging said guide-pin, a rock-shaft,  $C$ , at the lower end of the frame, having at one end the shuttle-carrying arm  $S$  and at the other end a vertical slotted arm,  $c$ , and pinion  $F$ , journaled to the frame and having a crank-pin,  $f'$ ,  
110 engaging the slotted arm of the rock-shaft, and the driving gear-wheel  $D$ , interposed between and engaging both the upper and lower pinions, substantially as described.

3. The combination, with the needle-slide  
120 and operating mechanism therefor, of the rocking shaft  $C$ , having the rigidly-attached arm  $c^3$ , provided with a lateral pin,  $c^4$ , the shuttle-carrying arm  $S$ , loose on the rock-shaft and having an orifice engaging said pin,  
125 and a spring,  $S'$ , acting to normally hold the shuttle-carrying arm in engagement with the pin, substantially as described.

4. The combination, with the pinion  $F$ , having the lateral crank-pin  $f'$ , of the rock-shaft  
130  $C$ , having adjacent to one end the shuttle-carrying arm  $S$ , and at the other end having

the vertically-projecting arm *c*, provided with a slot in which is arranged the crank-pin of the pinion, substantially as described.

5 The combination, with the frame A, having the top guide-pin, *p'*, and the upper rotating spindle B, provided at one end with the disk G, having the rearward-projecting crank *p*, of the feed-lever P, having a cam-slot engaging the crank-pin and a slotted top portion engaging the top guide-pin, and the spring *p*<sup>3</sup>, connected at one end with the frame and with the feed-lever at one side of its fulcrum, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 1st day of November, A. D. 1886.

A. F. WILEMAN.

Witnesses:

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