

(No Model.)

2 Sheets—Sheet 1.

E. WISEMAN.
Straw Braid Sewing Machine.
No. 243,023. Patented June 14, 1881.

Fig 2.

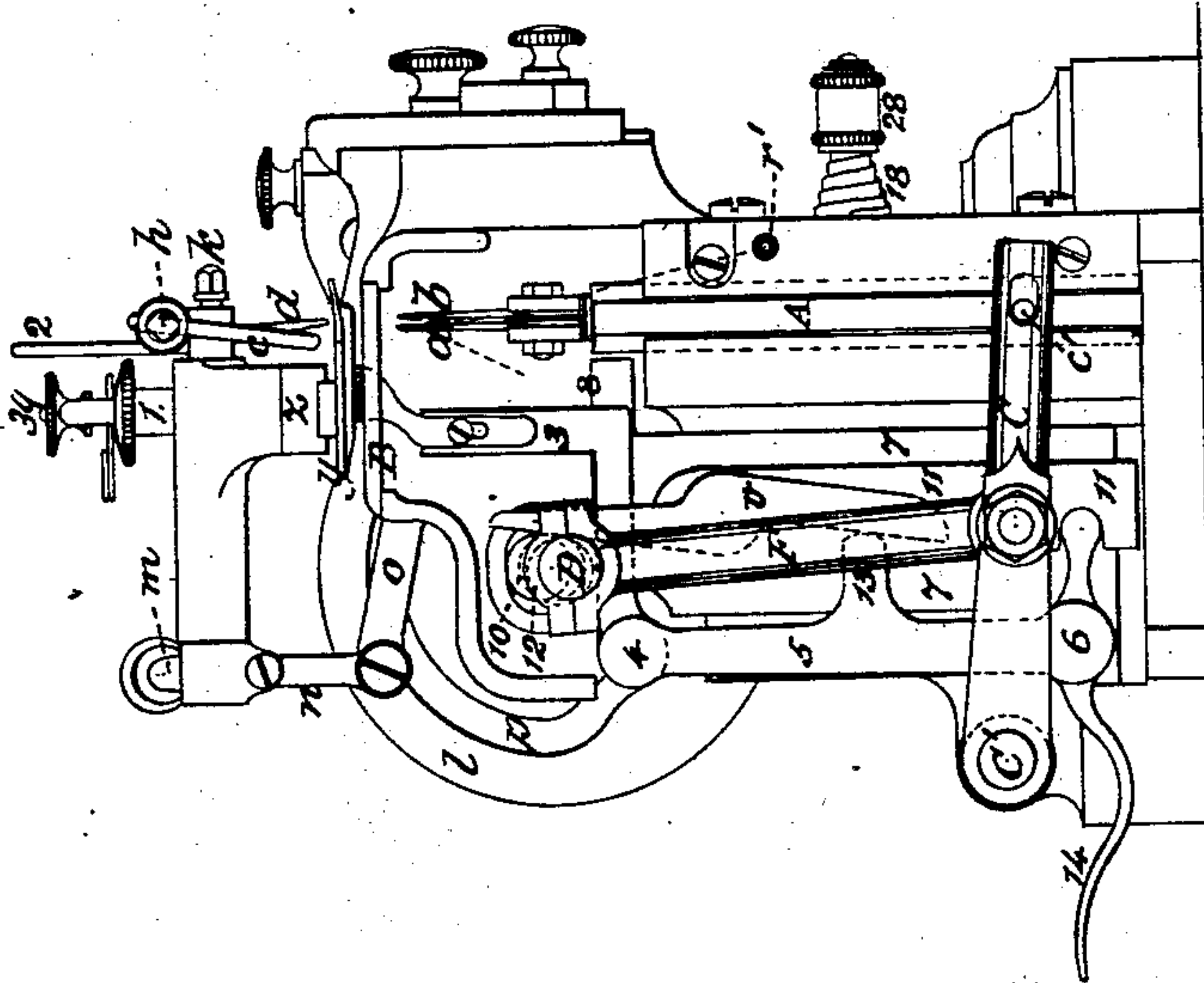
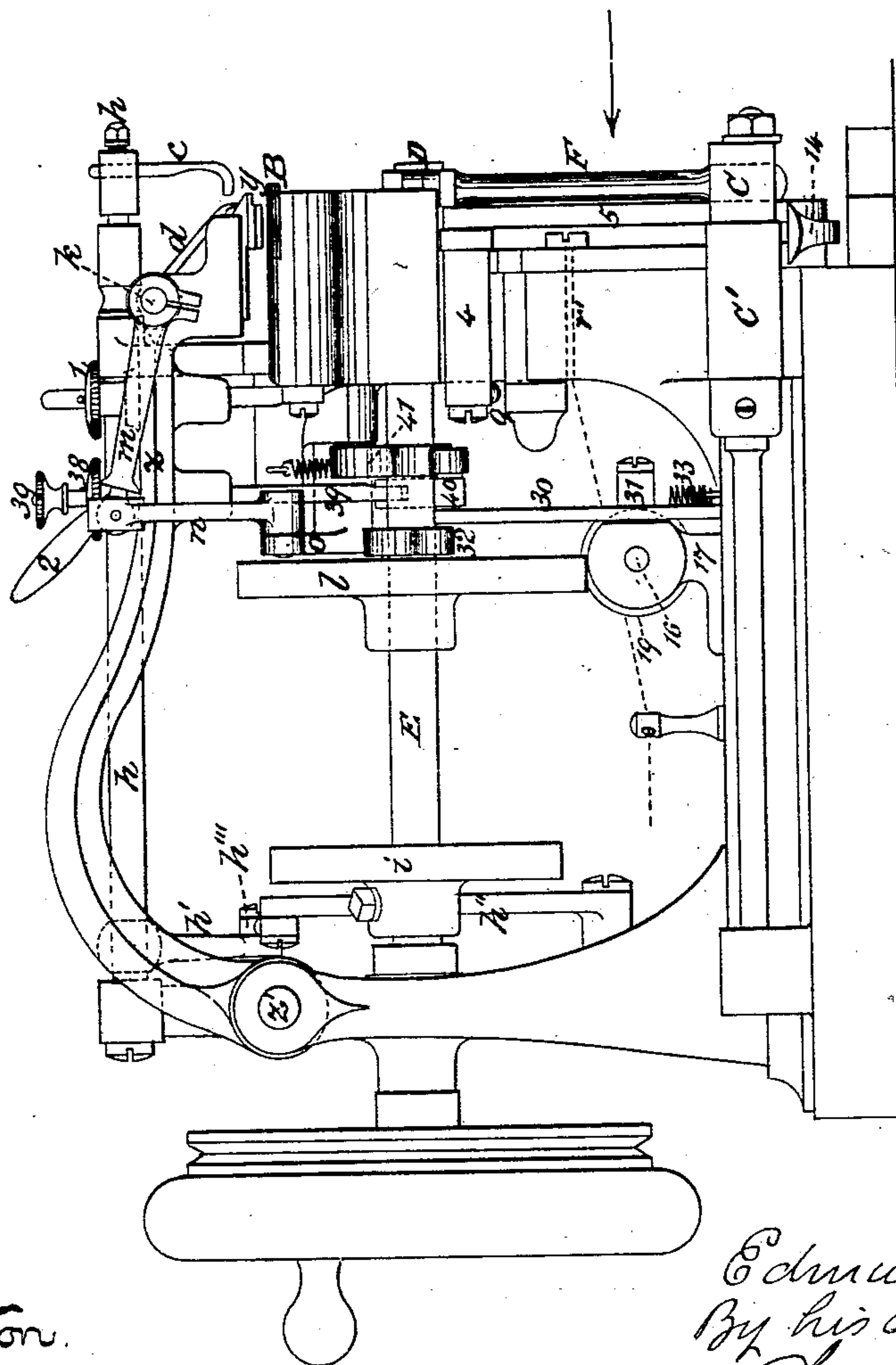


Fig 1.



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A. Hansmann.

Edmund Woreman
By his attorney
Charles E. Foster

(No Model.)

2 Sheets—Sheet 2.

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Straw Braid Sewing Machine.
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Fig 3.

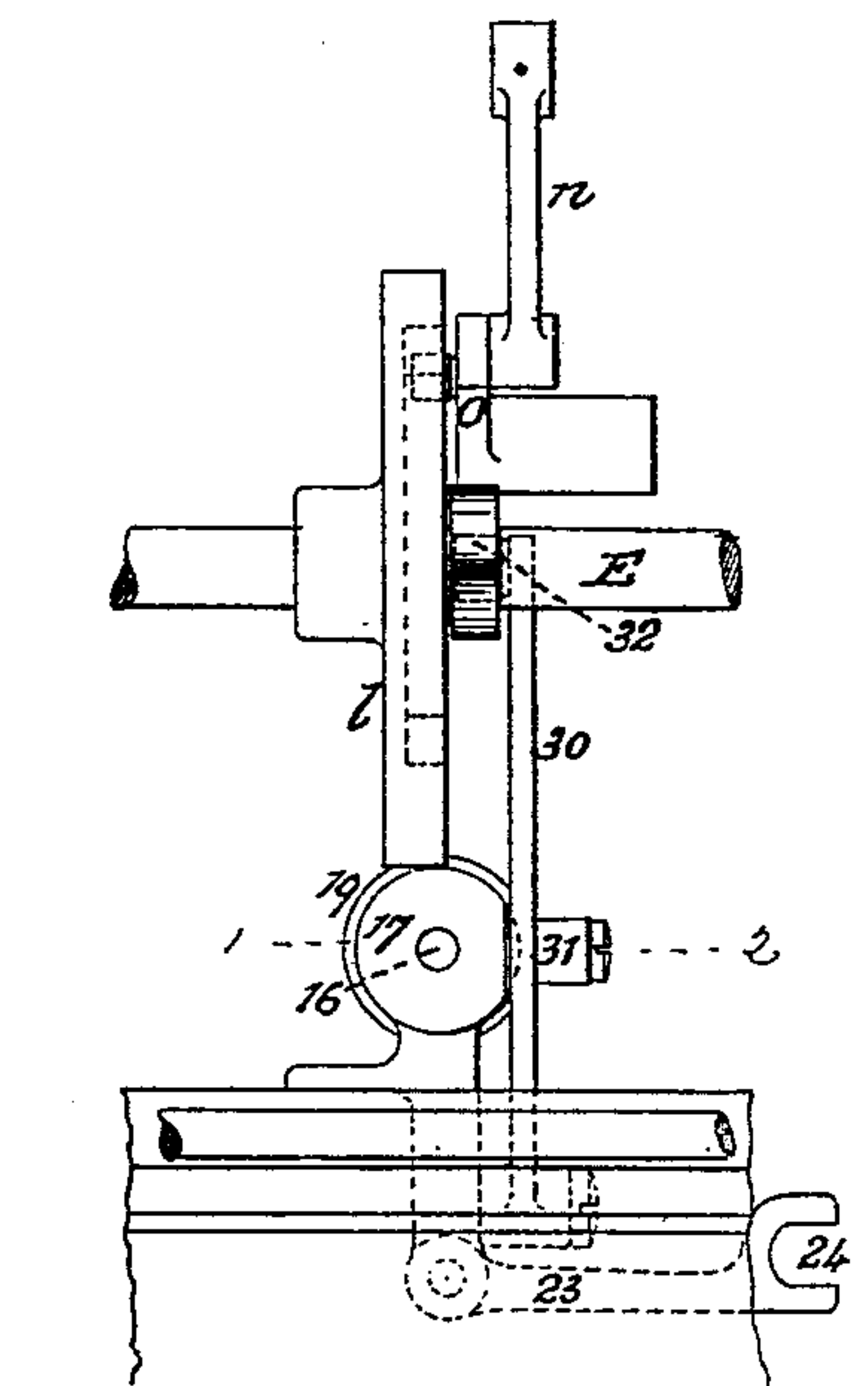


Fig 4.

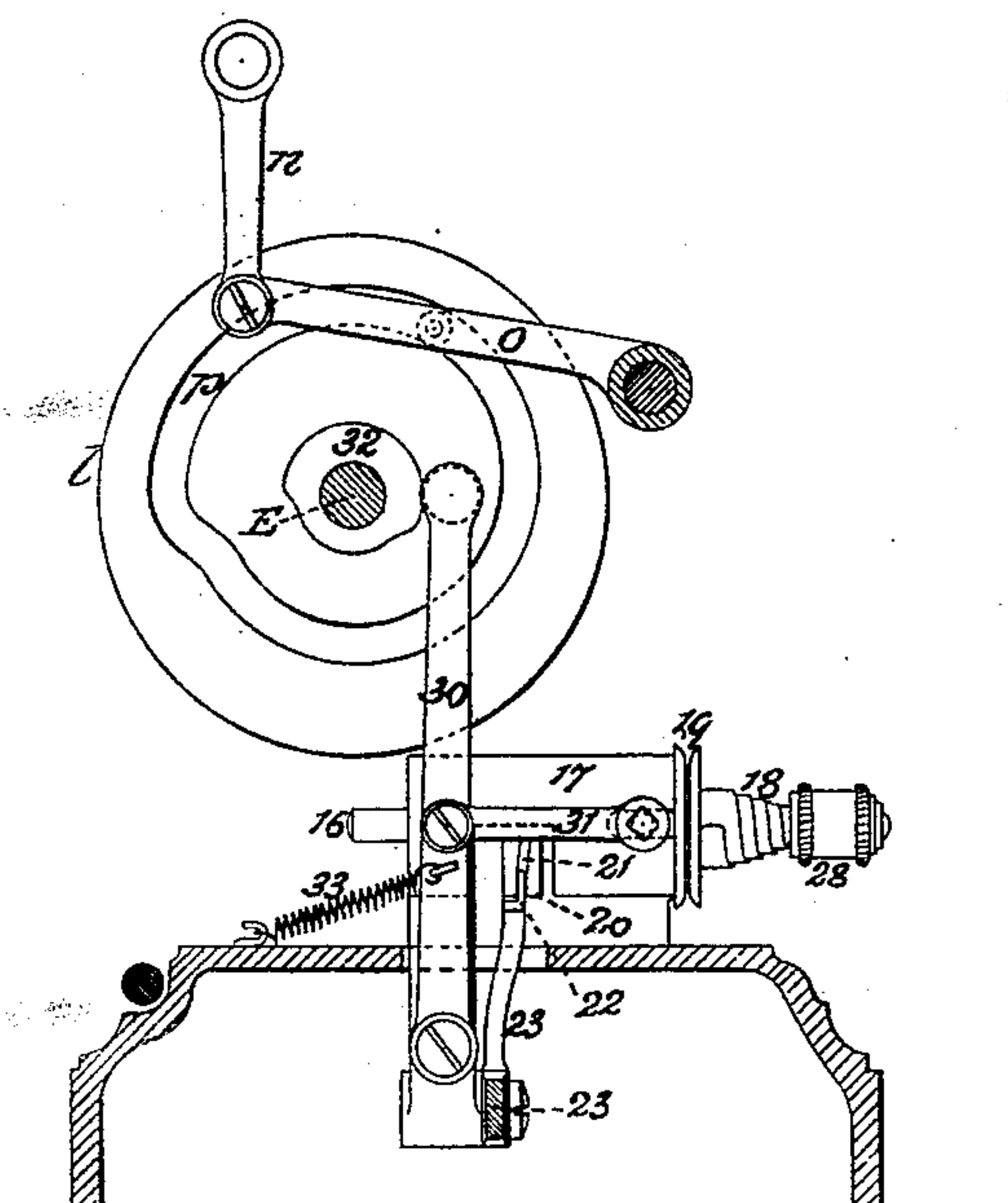


Fig 5.

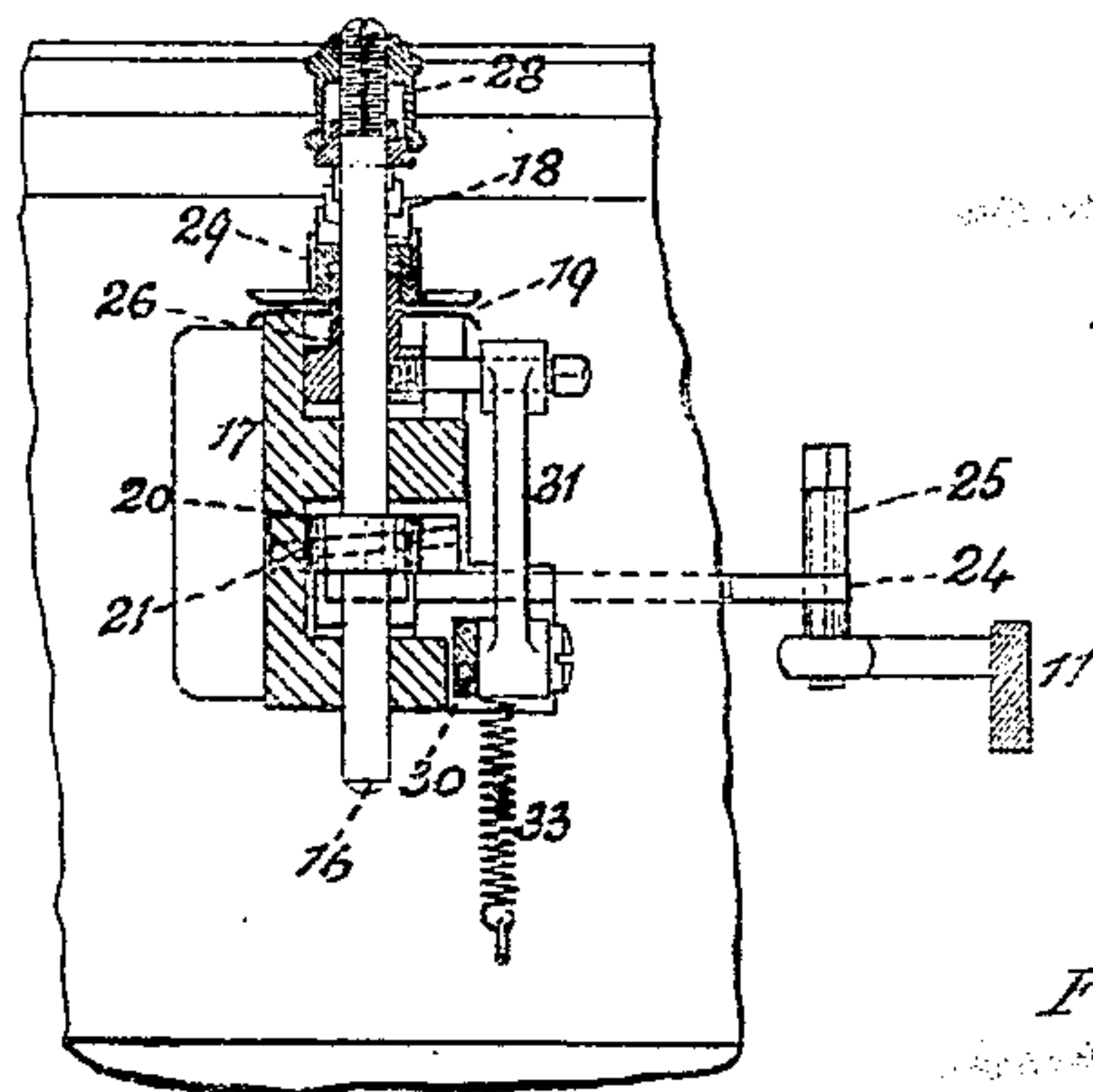


Fig 6.

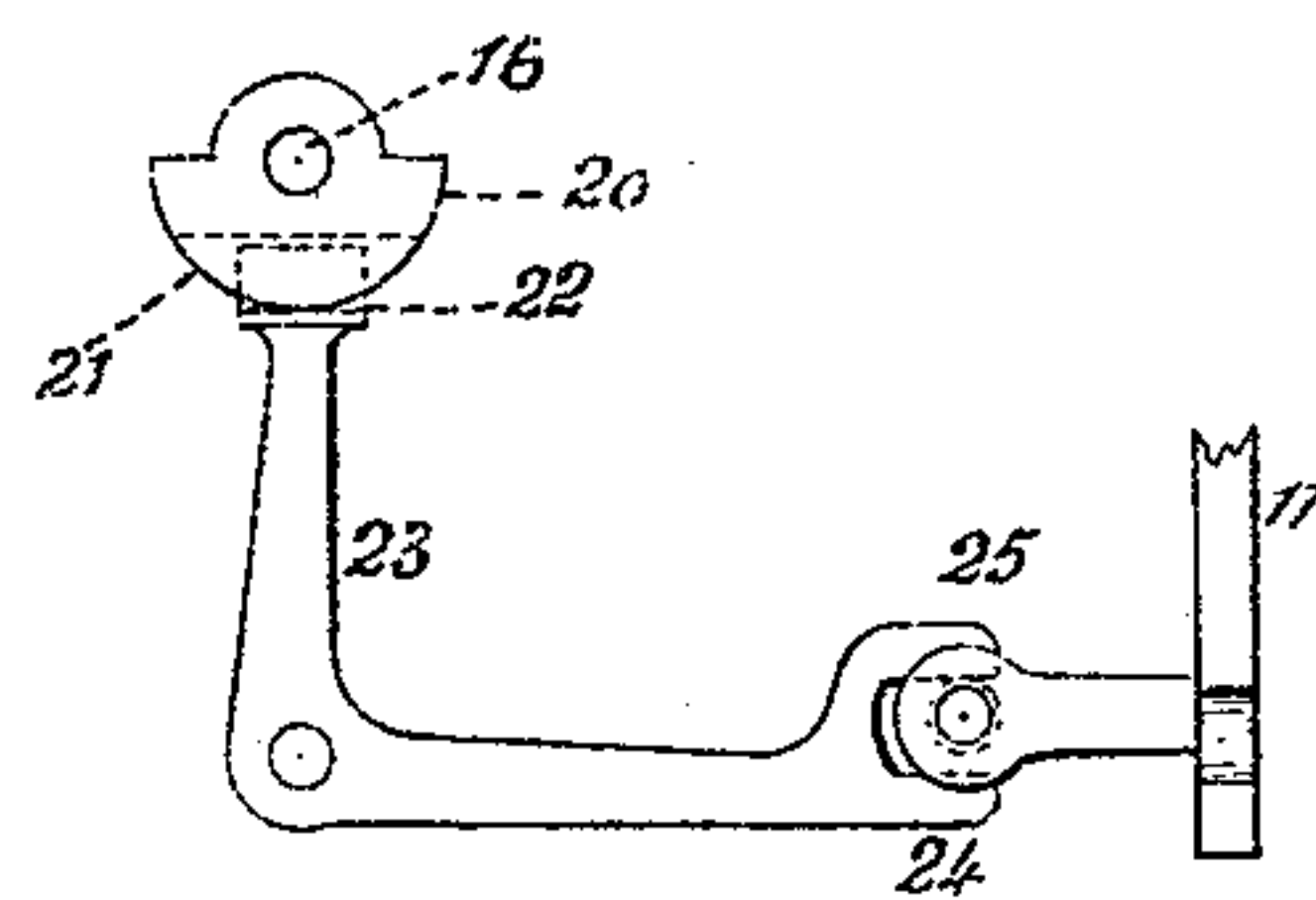
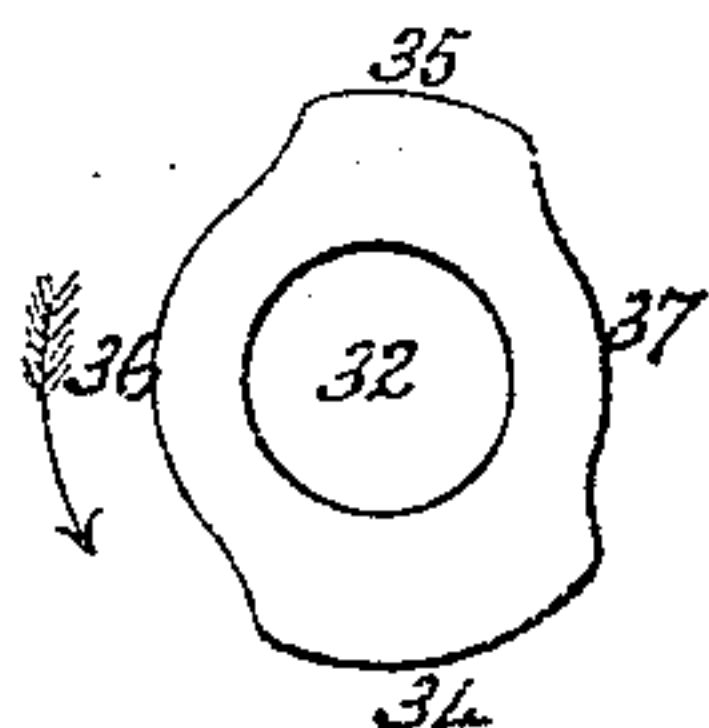


Fig 7.



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UNITED STATES PATENT OFFICE.

EDMUND WISEMAN, OF LUTON, COUNTY OF BEDFORD, ENGLAND.

STRAW-BRAID SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 243,023, dated June 14, 1881.

Application filed October 8, 1880. (No model.)

To all whom it may concern:

Be it known that I, EDMUND WISEMAN, of Luton, in the county of Bedford and Kingdom of England, sewing-machine merchant, have
5 invented Improvements in Straw-Braid Sewing-Machines, of which the following is a specification.

This invention relates to improvements upon the straw-braid sewing-machine for which Letters Patent of the United States were granted to me, bearing date the 8th of June, 1880, No. 228,711, and has for its object the varying or
10 adjusting the tension of the thread of such machine by the act of varying the length of
15 stitch.

My improvements have reference more particularly to a peculiar adjustable tension device, whereby the tension of the thread is adjusted by the act of varying or adjusting the
20 length of stitch in a sewing-machine, such device being governed or regulated by the position of the stitch-regulating appliance of the machine. This tension device is chiefly designed for use in straw-braid stitching-machines of the kind described in the specification to my said former patent, although it is
25 also applicable to other sewing-machines of like character in which the length of stitch and corresponding degree of tension require
30 to be frequently altered.

In the accompanying drawings, in which similar letters of reference indicate like parts, and in which, also, for the sake of clearness, all the parts corresponding to those described
35 and referred to in my said former specification are indicated by corresponding letters of reference, Figure 1 represents a side elevation of my improved straw-braid sewing-machine having my peculiar tension devices combined there-
40 with. Fig. 2 is an end elevation of Fig. 1, looking in the direction of the arrow, and showing the stitching and feeding mechanism and stitch-regulating device, all as previously specified under my patent aforesaid. Fig. 3 is a detail elevation, showing both of my peculiar tension devices combined together in one appa-
45 ratus. Fig. 4 is a detail elevation of the same, taken at right angles to Fig. 3. Fig. 5 is a horizontal section of the said combined tension devices on the line 1 2, Fig. 3; and Fig. 6 is a
50 detail showing the connection between the

stitch regulator or slide of the sewing-machine and the tension device, and illustrating how the latter is governed by the position of the former. Fig. 7 is a detached view of one of the cams as
55 modified.

As the actual stitching devices, feeding device, and stitch-regulating device shown in my drawings annexed, and the means or mechanical appliances for actuating the same, are all
60 the same, or substantially the same, both in their construction, arrangement, and mode of operation, as those described in my said former specification, I have not considered it necessary to recapitulate here the description of
65 their construction and mode of operation; but with a view to enabling such parts of my drawings as are the same as those previously specified by me to be readily identified, I have
70 marked them, where they occur in the drawings annexed, with reference-letters and numbers corresponding to those on the drawings of the same parts in my said former specification.

My peculiar adjustable tension device, as
75 designed for being governed or actuated by the stitch regulator or slide of the sewing-machine, consists of a spindle, 16, sliding longitudinally within a bearing, 17, fixed to the
80 bed-plate or other convenient part of the machine. This spindle 16 is so connected, by means of a bell-crank or other lever, with the adjustable stitch-regulating mechanism or vertically-adjustable slide 11, referred to in the
85 specification of my said former patent, as that on altering the length of the stitch by shifting the stitch regulator or slide 11 the pressure of the helical spring 18 upon one of a pair of tension-disks, 19, shall be increased or diminished. To carry out this object I fix to the
90 sliding spindle 16 a boss, 20, having a horizontally-inclined slot, 21, made transversely on the under side thereof, within which slot moves to and fro, transversely to the axis of the spindle, the end 22 of the vertical arm of a bell-
95 crank lever, 23, the horizontal arm of which is forked at its extremity 24, and is acted upon by a projection or pin, 25, carried by the stitch-regulating slide 11, as shown clearly by the details, Figs. 5 and 6. The fork 24 of the bell-
100 crank lever is made sufficiently wide to allow of the constant up-and-down motion of the ver-

tical slide 7, which carries the stitch-regulating slide 11, as set forth in the specification to my said former patent. The tension-disks 19 are mounted loosely upon the spindle 16, or upon a loose collar, 26, (see Fig. 5,) sliding freely along the said spindle, which collar, when used, is employed in the manner and for the purpose hereinafter explained. The helical spring 18, which is regulated by a thumb-nut, 28, on the end of the said sliding spindle 16, serves to press the disks together, as is well understood.

On moving the stitch-regulating slide 11 up or down by the lever 14, Fig. 2, for the purpose of varying the length of stitch, the end 22 of the vertical arm of the bell-crank lever 23 so acts upon the inclined slot 21 in the boss 20 on the sliding spindle as to cause that spindle to slide longitudinally more or less along its bearing 17, according to the degree of movement of the bell-crank 23, thereby increasing or diminishing more or less (according to the direction in which the spindle is moved and the amount of its motion) the pressure of the spring upon the tension-disks 19, as required by the alteration in the length of stitch. This adjustment of the tension or pressure on the thread as it passes from the bobbin between the said disks on its way to the hole *r'*, Fig. 2, is consequently governed or regulated by the height or vertical position of the stitch-regulating slide 11.

In order to effect the absolute and automatic release of the tension at one or more points in each revolution of the machine, I mount the said tension-disks 19 upon the before-mentioned sliding collar 26, which collar projects slightly through both disks and enters a recessed washer, 29, also mounted loosely on the sliding spindle and pressing with its inner face against the outer one of the tension-disks, it being held against such disk by the helical spring 18 acting upon its outer surface, as shown clearly in Fig. 5. The sliding collar is slid one or more times at each revolution of the machine along the spindle 16 by the action of the upright lever 30 and connecting-link 31, the lever being worked to and fro by a special cam, 32, fitted for that purpose on the main shaft *E* of the machine, assisted by the spring 33, which holds the end of the lever against the cam. The outward movement of the collar 26 along the spindle 16 forces back the recessed washer 29, and thereby releases the pressure of the outer disk upon the thread at and during the time required, the pressure being restored immediately by the spring 18 during the backward or inward movement of the sliding collar, such pressure being adjustable at will by the nut 28.

In Fig. 4 of my drawings I have shown the cam 32 as formed with a single projection, so as to act once only upon the actuating-lever 30 of the automatic tension and releasing device at each revolution of the machine, thereby releasing the thread from pressure during

the time the feed takes place and allowing the thread to render freely. I prefer, however, to make this cam of the form shown in full-size detail in Fig. 7—that is to say, with two projections, 34 and 35, the cam being timed with reference to the movements of the feeder and of the needle *a*, hooked instrument *b*, and loopers *c* and *d* of the sewing-machine, so as to produce the following results: When the wider projecting part 34 of the cam is acting upon the lever 30 of the tension device, the gripe on the thread is removed or released, so as to allow the thread to render freely during the time the feed is in action, and while the needle and hook are below the cloth plate or table. When the part 36 of the cam is opposite the lever 30, the gripe on the thread is restored by the action of the spring 18, this taking place at or about the time the points of the sewing-instruments are entering the work, the gripe being maintained until they are about completing their upward movement. When the projecting part 35 of the cam is in action the gripe on the thread is again released, allowing the loopers *c* and *d* to take up the thread freely at the commencement of their action and at the commencement of the descent of the sewing-instruments, such gripe being allowed to be restored again (by the part 37 of the cam, as previously described) by the time the loopers have completed about half their traverse and the sewing-instruments have completed about half their downward movement above the fabric. This gripe is maintained until the points of the sewing-instruments have about descended through the work, by which time the loopers have completed their action and the feed is about to commence, when the operations are repeated, as before described. I wish it to be understood that where I have used the term “gripe on the thread” I do not intend to imply a dead or positive gripe, or such as would absolutely prevent the drawing off of the thread, but an adjustable elastic or spring pressure.

By the use of the hereinbefore-described adjustable automatic tension and releasing device, in combination with my previously-patented arrangement of sewing and feeding mechanism, I am further enabled to dispense with the use of the take-up lever *t* described in my said former specification.

In lieu of the arm *h'* on the rocking spindle *h* receiving its motion direct from the cam *i*, as in my said former specification, I prefer to transmit the motion of the cam *i* to the arm *h'* through the intervention of a vibrating upright lever, *h''*, and link *h'''*, as shown in Fig. 1 of the accompanying drawings.

I do not here claim, separately, the release and tension arrangement worked by the cam 32, as this may constitute the subject of a separate application.

I would observe, in conclusion, that I do not claim an intermittent tension device, nor the increasing the resistance to the delivery of the

thread during a portion of the stroke of the needle, so as practically to prevent its delivery; neither do I claim a self-acting intermittent tension of the needle-thread by holding such
5 thread rigidly or clamping it between nipping-surfaces at any part of the stroke of the needle by a spring or otherwise; but

What I claim as my invention is—

10 1. The peculiar tension device consisting of the combination of fixed bearing 17, sliding spindle 16, disks 19, spring 18, thumb-nut 28, and operating mechanism consisting of the lever 23, slotted boss 20, and slide 11, substantially as herein specified.

15 2. The combination, with a thread-tension device, and with a device for regulating the length of the stitch, of intermediate appliances whereby the tension is released or applied, according to the position of the stitch-regulator,
20 substantially as set forth.

3. The combination, with the slide 11 and tension-disks 19 and presser-spring, of intermediate mechanism, substantially as described, whereby the said disks are subjected to or released from spring-pressure by the movement-25 of the slide, substantially as set forth.

4. The combination, with the tension device, stitch-regulator, and intermediate appliances for regulating the action of the tension, of a cam and appliances, substantially as set forth, 30 for removing and applying the pressure of the spring on the tension device, as specified.

EDMUND WISEMAN.

Witnesses:

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