

(No Model.)

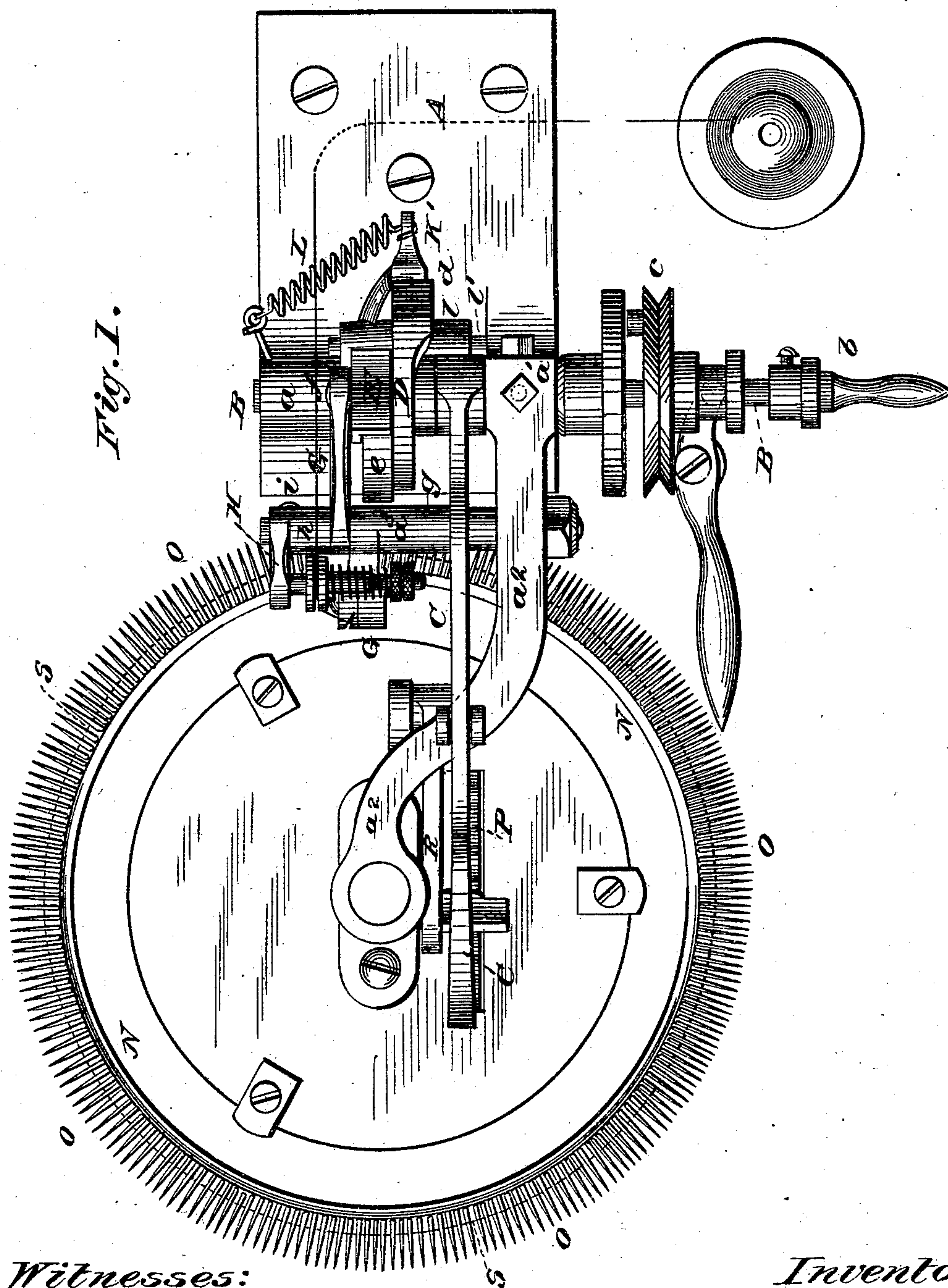
3 Sheets—Sheet 1.

W. PEARSON.

# MACHINE FOR UNITING KNIT FABRICS.

No. 273,143.

Patented Feb. 27, 1883.



*Witnesses:*

Fred. G. Dietrich

*P. C. Dietrich*

*Inventor:*

William Pearson,  
by Louis Bagger & Co.  
his Attorneys.

(No Model.)

3 Sheets—Sheet 2.

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Fig. 2.

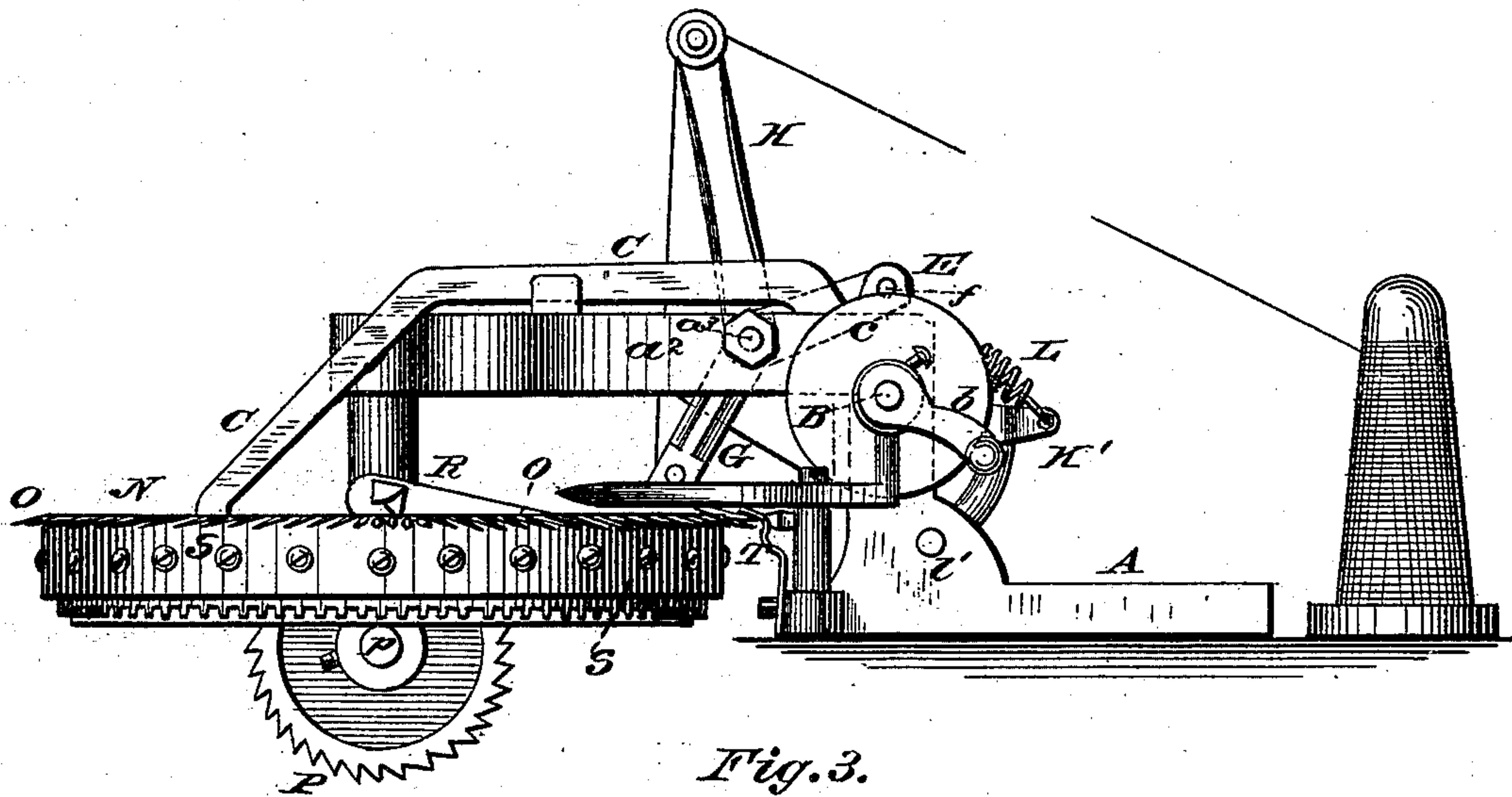


Fig. 3.

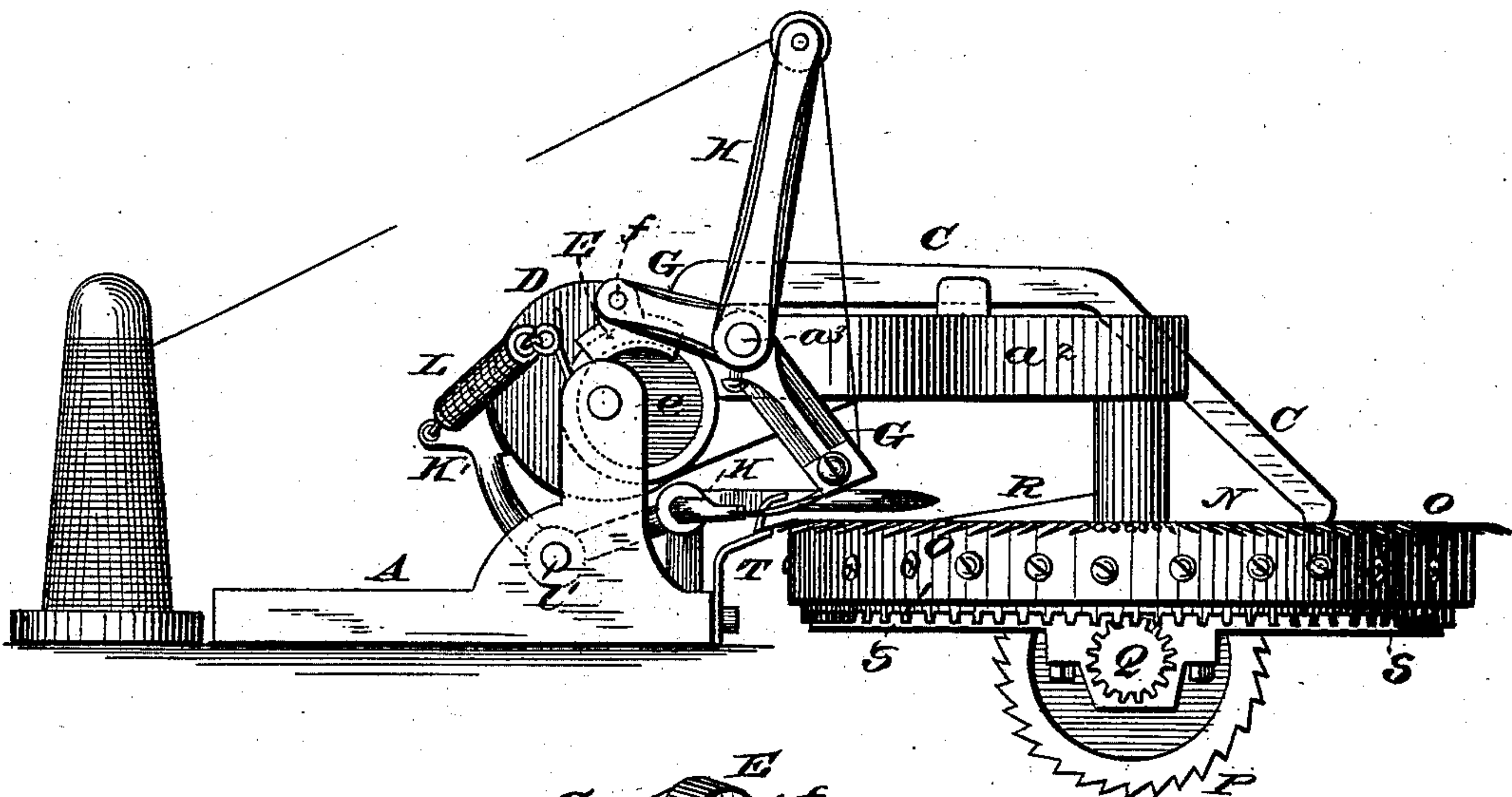


Fig. 7.

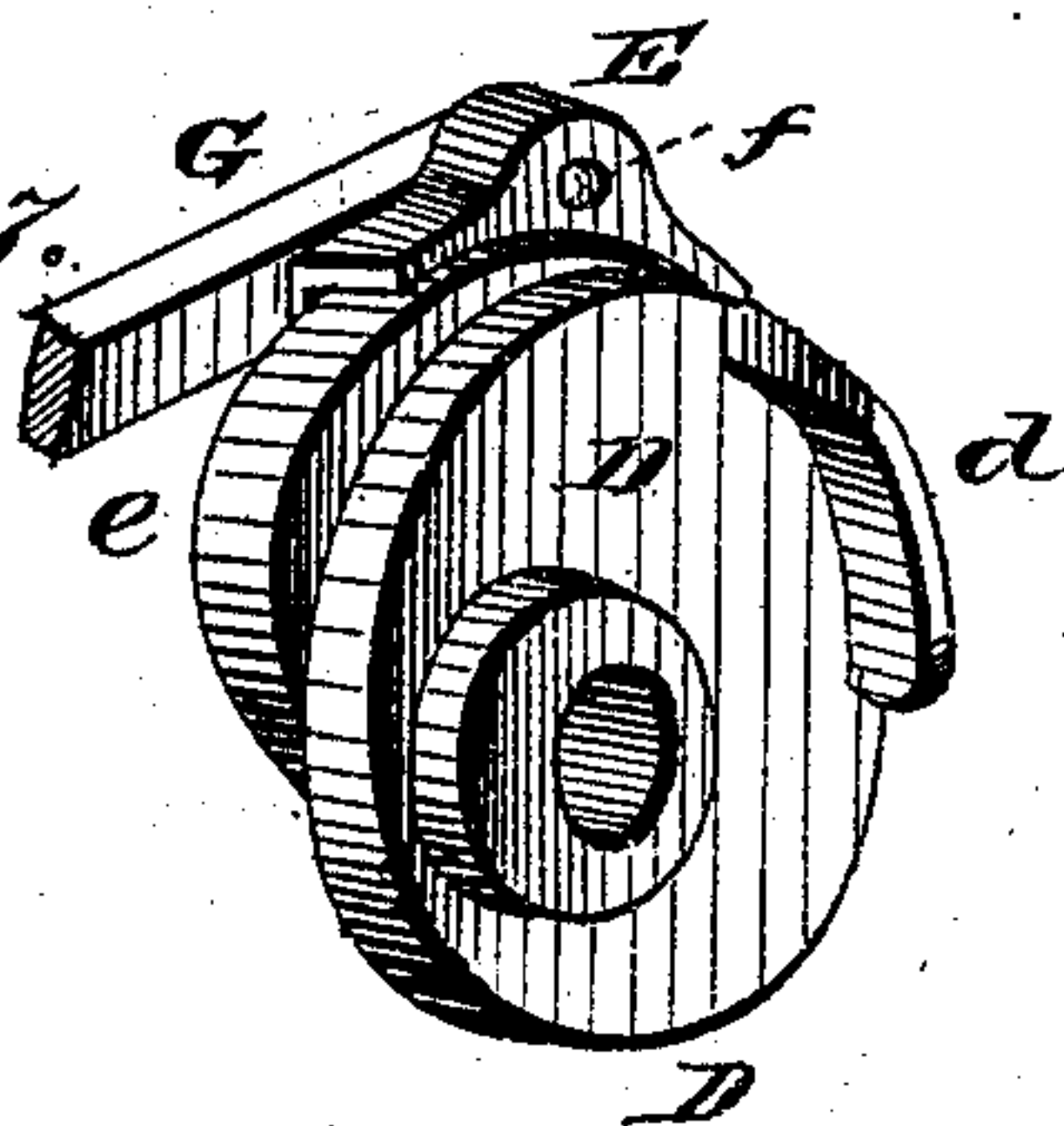
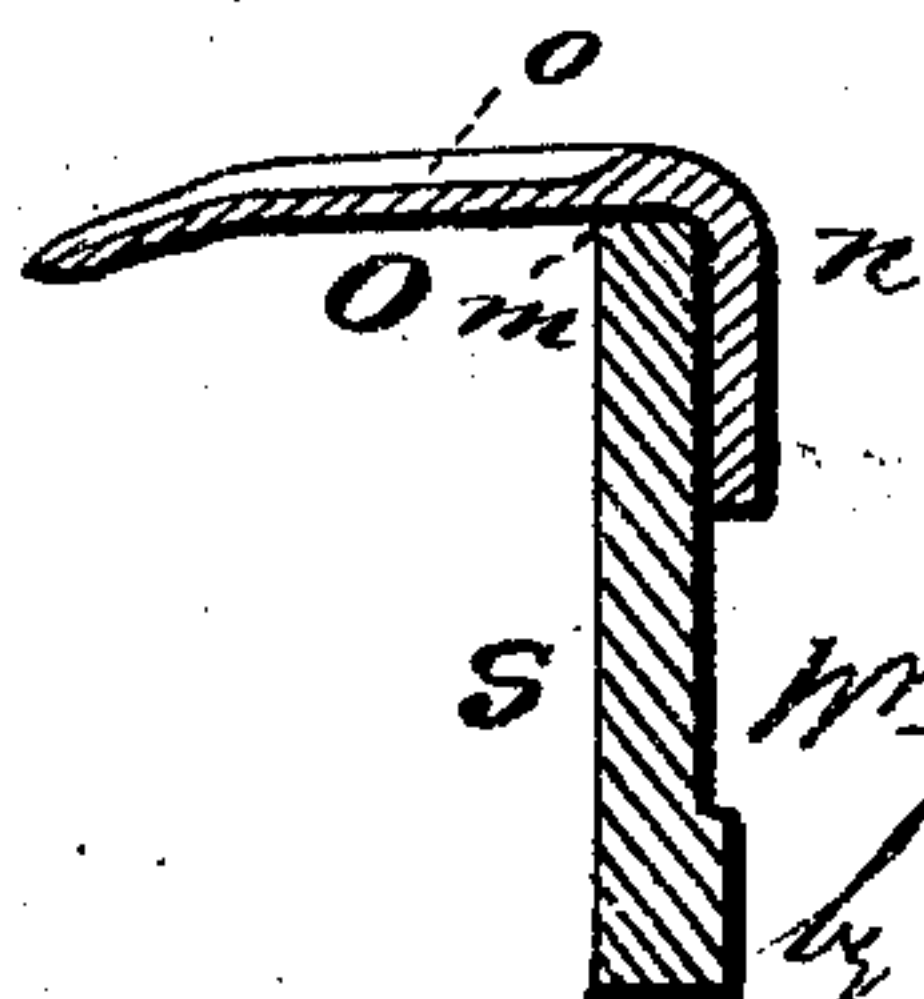


Fig. 8.



Witnesses:

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P. C. Dutovich

Inventor.

Wm. Pearson  
by Louis Baggett  
his attorney.



(No Model.)

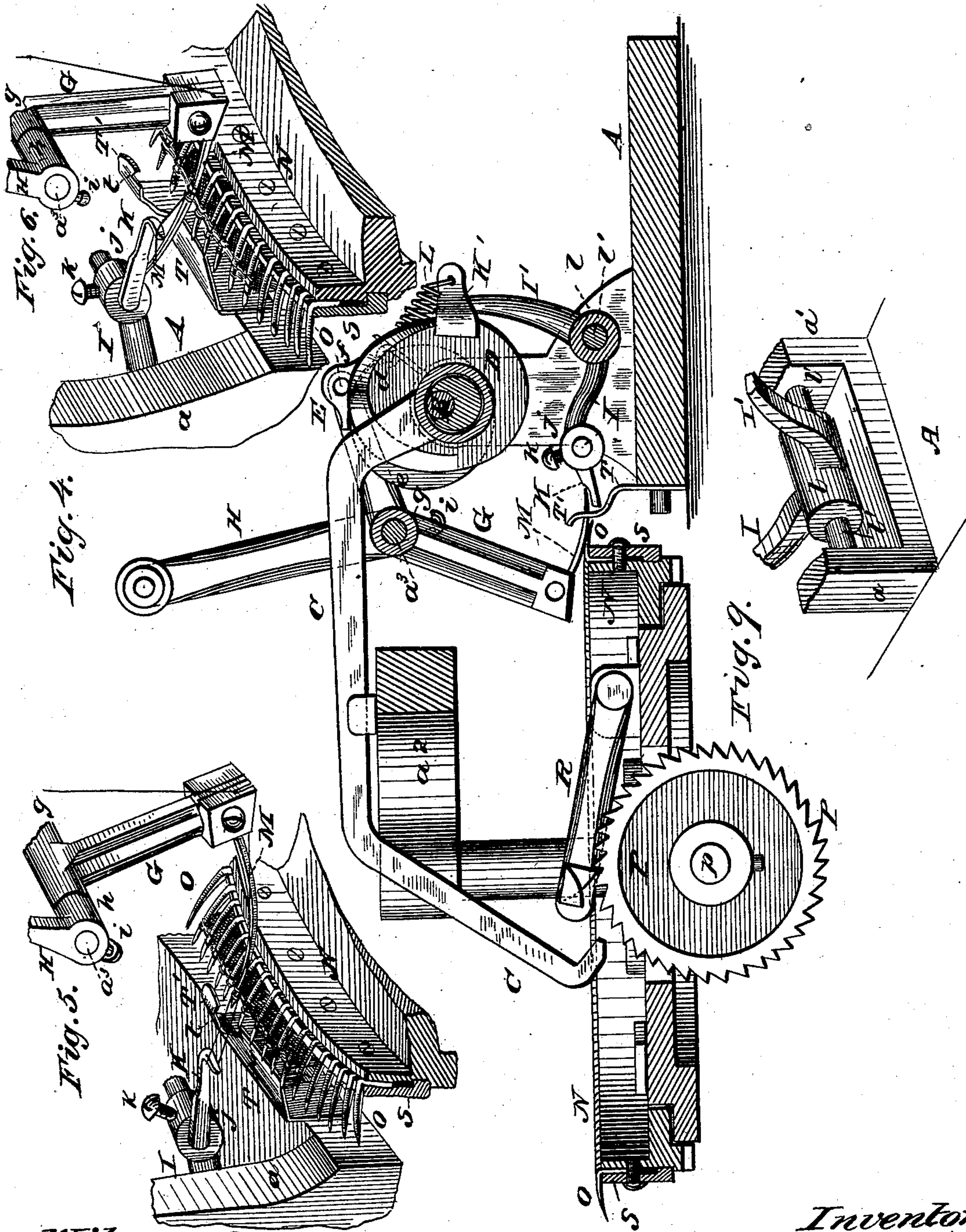
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Witnesses:

Feb. f. Dietrich

P. Dietrich

Inventor:

William Pearson,  
by Lewis Packer & Co.  
his Attorneys.



# UNITED STATES PATENT OFFICE.

WILLIAM PEARSON, OF LINWOOD, PENNSYLVANIA.

## MACHINE FOR UNITING KNIT FABRICS.

SPECIFICATION forming part of Letters Patent No. 273,143, dated February 27, 1883.

Application filed December 23, 1880. Renewed December 8, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM PEARSON, of Linwood, in the county of Delaware and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Uniting Knit Fabrics; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a plan or top view of my machine. Figs. 2 and 3 are side elevations, representing opposite sides of the same. Fig. 4 is a longitudinal vertical section laid through the center of the circular needle-disk. Fig. 5 is a perspective detail view of the needle, looper, gage-plate, and the co-operating part of the circular needle-disk, showing the needle and needle-arm at the end of their back-stroke. Fig. 6 is a similar view of the same parts, showing the needle and needle-arm at the end of their forward thrust. Fig. 7 is a perspective view of the male cam with its slide for operating the needle-arm. Fig. 8 is a longitudinal section through one of the impaling-needles with its "brass" or fastening-plate on an enlarged scale, and Fig. 9 is a perspective detail view of the shaft and sliding sleeve which carries and operates the looper-arm and looper.

Similar letters of reference indicate corresponding parts in all the figures.

My invention relates to machines for uniting or seaming the edges of knit or other looped fabrics, technically called "looping-frames;" and it consists, first, in the arrangement of the needle which operates in conjunction with the looper so as to reciprocate from the base or butt-end of the needles upon which the pieces of fabric to be united are impaled toward their point; and, secondly, in the needle operating as above described, in combination with the tension mechanism and the looper, substantially as hereinafter more fully set forth, and particularly pointed out in the claims.

In the accompanying three sheets of drawings, A represents the stationary base or frame of the machine, which is cast with rigid posts  $a$   $a'$ , forming boxes or bearings for the driv-

ing-shaft B. Post  $a'$  has an arm,  $a^2$ , which supports the box and vertical pintle of the rotating needle-disk, to be hereinafter described.

The driving-shaft may be operated either by a crank,  $b$ , or by a drive-pulley,  $c$ . Upon the shaft are keyed an eccentric for operating the dog C, and a combined eccentric and cam, D, by which the needle-bar and looper-arm are operated. This last-named cam has a swell,  $d$ , on one side and a flange,  $e$ , on the opposite side, upon which rides a slide or shoe, E, made with a stud,  $f$ , upon which one end of the bent needle-bar G is pivoted. Said needle-bar has its fulcrum upon an arm,  $a^3$ , which projects laterally from arm  $a^2$ , the needle-bar being made with a sleeve,  $g$ , which is placed over and rocks upon the arm or pintle  $a^3$ . It is prevented from slipping off or from lateral displacement by the sleeve or collar  $h$  of the tension-arm H, which is fixed upon the outer end of arm  $a^3$  by the screw  $i$ .

I is the looper-arm, in one end of which is a sleeve,  $j$ , for the insertion of the looper K, which is held in place by the jam-screw  $k$ . The looper has a head suitable for catching and holding the loop of thread carried through the fabric by the needle, and the arm I has a sleeve,  $l$ , which is placed upon a rod,  $l'$ , between the two posts  $a$  and  $a'$ , the sleeve being shorter than the rod, so that a compound movement may be imparted to it and its arm I—i. e., a vibrating and a sliding motion—by means of the combined eccentric and cam D, in the following manner: Sleeve  $l$  has another arm,  $l'$ , (see Fig. 4,) set at about right angles to the looper-arm I, and provided with a shoe, K', at its upper end, which rides upon the rim of the eccentric, against which it is held by the spring L. The eccentric gives a vibrating motion to the shoe and arm, and as the swell  $d$  reaches the shoe this is pushed to one side, causing the looper-arm I and looper K to be pushed to one side, or move crosswise to the needle, and pull the thread from the work as the needle withdraws, as will be hereinafter more fully described. Spring L restores the looper to its former position after the swell  $d$  on the eccentric has passed the shoe of the looper-arm.

The curved needle M is suitably secured to



the end of the vibrating needle-arm G, which extends out over the circumference of the rotary disk N, which is equipped with a fringe of needles, O. The annular disk N is rotated 5 intermittently by the dog C, which engages with a ratchet-wheel, P, keyed upon one end of a shaft, p, below the disk, at the other end of which is a pinion, Q, which meshes with a circumferential row of teeth or cogs on the under side of the disk. 10

R is a pawl which engages with the ratchet-wheel P, as shown. Other mechanism for rotating the needle-disk O may, however, be employed, if desired, without deviating from the spirit of my invention, as I do not limit myself to any particular means for imparting an 15 intermittently-rotary motion to the needle-disk.

The shape and construction of the needles which constitute the fringe around the disk will readily be understood by reference to Fig. 8 of the drawings, from which it will be seen that they are made with a rill or groove, o, extending from the point or outer end of the needle back to the point where the needle projects 25 from the periphery of the disk. In other words, that part of the needle (denoted by the letter n) which is clamped between the raised section m of the brass clamping-plates S is solid and not grooved, which of course greatly adds to its strength and rigidity at this point, or at its base. 30

Upon the front side of the stationary base, facing the rotary disk, is the combined guide and gage plate T, which is adjustable upon the 35 base. This plate has a projecting lip, T', which is curved up over the fringe of needles, and has a notch, t, for the purpose hereinafter stated in describing the operation of the machine, which is as follows: 40

The work to be seamed is set up upon the impaling-pins O in substantially the same manner as knitted work is set up upon the needles of a knitting-machine, there being a pin 45 for every loop through which the needle is to be passed at the place of such passage. The needle is then threaded, the thread passing between the tension-disks at the upper end of the arm H, which is adjusted (by means of its collar h and screw i) upon the arm a<sup>3</sup> in such a manner that the thread carried by the needle will slacken as the needle-point passes in its forward stroke or thrust the middle part of the groove o of the impaling pins or needles, 50 but become tightened at the beginning and termination of the forward and back strokes, this being effected by the vibrations of the needle-arm and the relative position of the needle-arm and tension-arm.

It will be observed that the needle with the thread enters the groove in the impaling-needles from the base or butt-end and not from the point, as in all other machines of this class as heretofore constructed. The advantage of 65 this is obvious. Where, as in other machines, the thread-needle enters the fabric to be se-

cured from or in the direction of the point of the needles upon which the work is set up, it is apt to miss the impaling-needle and its loop if either of the needles are bent, however slightly. Thus a stitch is dropped and the machine has to be stopped, as the dropping or missing of a single stitch in the row will cause the whole seam to unravel; but by my improvement the elastic curved needle entering 70 the fabric from the base or butt-end of the needles upon which it is set up is guided with the thread by the groove in the impaling-needle in, under, or over the loop supported thereon with absolute certainty, and if any of the impaling-needles should be bent upward that will not affect the operation of the machine, as they will still meet the elastic thread-needle and mutually straighten each other out, while if they are bent in a downward direction they will be 85 straightened out by coming into contact with the combined guide and gage plate T previous to meeting the thread-needle, so that in either case the loop will be entered or passed and no stitch dropped. This certainty of operation of my machine is further enhanced by the arrangement of the tension, as hereinbefore described, which provides, by slackening the thread, for a large and loose loop at the moment the needle is ready to enter it, but tightens up the work as the needle withdraws. As 90 the looper, after forming the loop, slides to one side and releases the loop by slipping it over its head, the loop-thread is held in place by the notched lip T' of the guide-plate, and this plate, it will be seen, also serves as a gage by pushing the fabric back from the points of the needles, the corner of the plate where the fabric meets it being beveled or rounded to afford an easy entrance of the fabric into the space 95 between the plate and the rotating disk where the seaming takes place.

In machines as heretofore constructed the thread-needle, working from the point of the impaling-needles, pushes the work back upon the latter toward their base, making it more difficult to slip it off after seaming, and often causing bending of the needles during that operation—objections which I overcome in my machine, in which the work is seamed nearer the points of the impaling or supporting needles 100 than at their base, so that the work may readily be slipped off after seaming.

I do not limit myself to the precise construction of details, as hereinbefore shown; but 105

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. In a machine for sewing the seams of knit or looped fabrics, a reciprocating needle entering the fabric to be seamed from the base or butt end of the pins or needles upon which said fabric is impaled, as set forth. 110

2. The combination, in a machine for sewing the seams of knit or looped fabrics, of the reciprocating needle entering the fabric from the base end of the impaling-pins, the looper, the 115



cam that operates them, the intermittingly-rotating needle-disk, and an arm for supporting the tension device so adjusted with reference to the needle and looper as to cause the needle-thread to slacken and remain stationary as the  
5. needle-point takes the loop of the needle-thread, but to tighten at the termini of the forward and backward strokes of the needle, as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

WILLIAM PEARSON.

Witnesses:

LOUIS BAGGER,

JAMES H. MANDEVILLE.