

(No Model.)

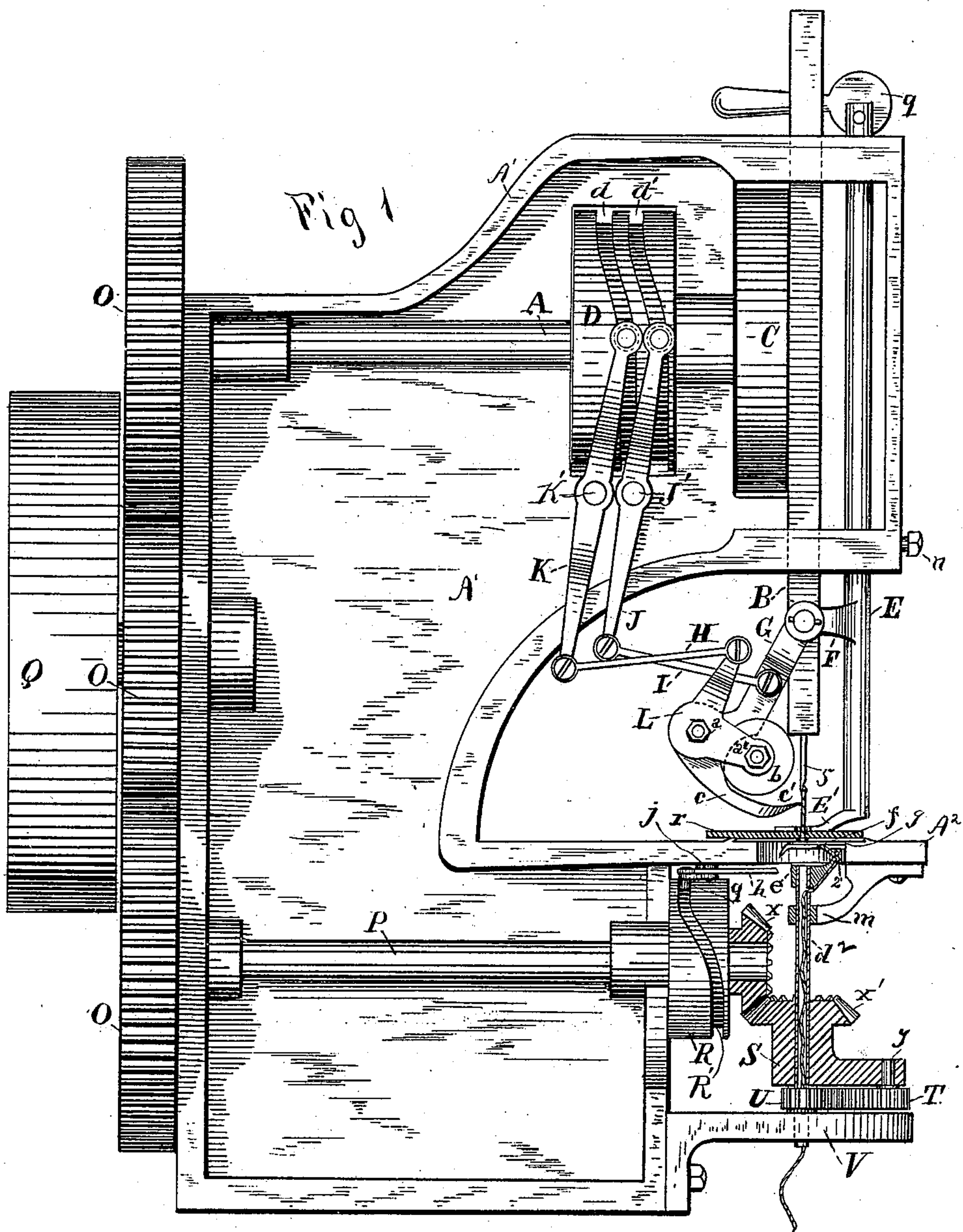
2 Sheets—Sheet 1.

G. R. PEARE.

MACHINE FOR STAYING LAYERS OF FLEXIBLE MATERIAL.

No. 333,249.

Patented Dec. 29, 1885.



Witnesses:
A. L. White
H. Brown

Inventor:
G. R. Peare
by Wright & Brown
Atty.

(No Model.)

2 Sheets—Sheet 2.

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Fig 2

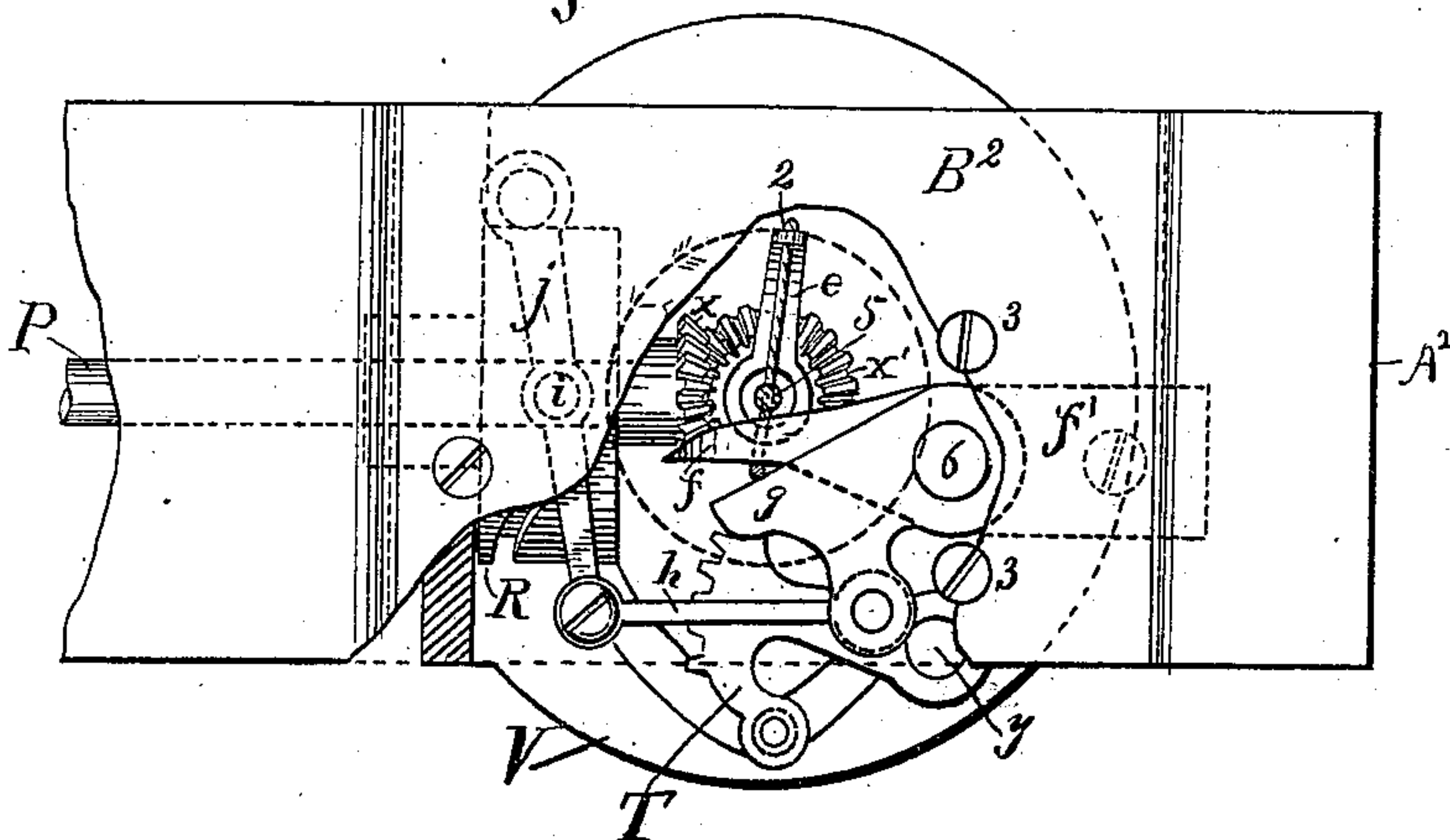
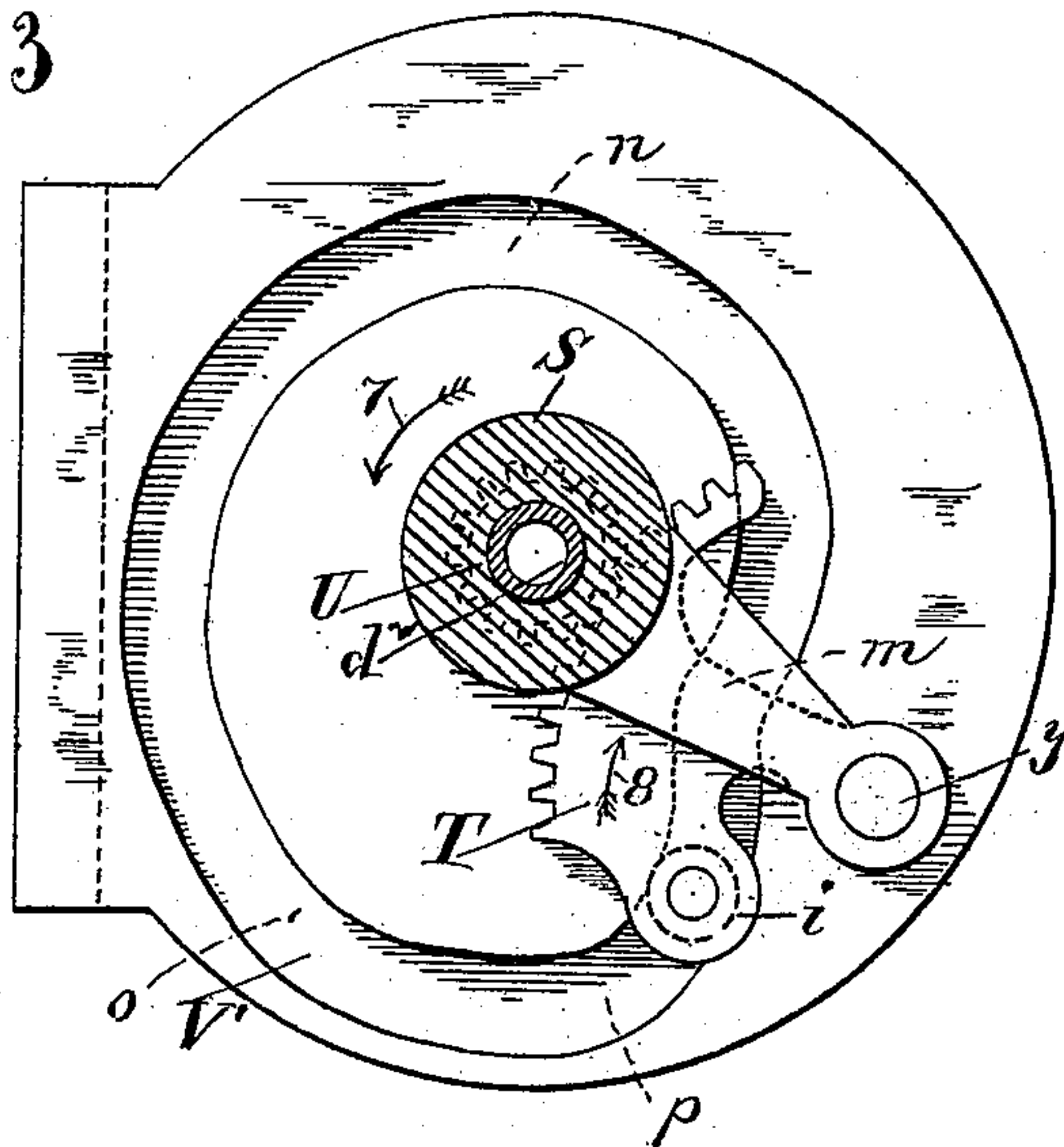


Fig 3



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UNITED STATES PATENT OFFICE.

GEORGE R. PEARRE, OF LYNN, MASS., ASSIGNOR TO THE GUTTA PERCHA
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MACHINE FOR STAYING LAYERS OF FLEXIBLE MATERIAL.

SPECIFICATION forming part of Letters Patent No. 333,249, dated December 29, 1885.

Application filed May 18, 1885. Serial No. 165,920. (No model.)

To all whom it may concern:

Be it known that I, GEORGE R. PEARRE, of
Lynn, in the county of Essex and State of
Massachusetts, have invented certain new and
5 useful Improvements in Machines for Staying
Layers of Flexible Material, of which the fol-
lowing is a specification.

This invention relates to mechanism for
forming flexible stays or lengths of cord or
10 thread in superposed layers of unvulcanized
rubber cloth intended for belting, the ends of
said stays being laid upon the surfaces of the
belting before vulcanization and secured to
said surfaces by the vulcanizing process as
15 described in Letters Patent to John Murphy,
dated September 4, 1883, No. 284,221.

The invention consists, as a whole, in the
combination, with a reciprocating needle, of a
take-off hook and a pair of cutters above the
20 work-support and a looper and a pair of cut-
ters below the work-support, whereby the
thread is drawn in loops through the work
and severed above and below the same to form
independent stays with projecting ends, as I
25 will now proceed to describe.

Of the accompanying drawings, forming a
part of this specification, Figure 1 represents
a side elevation of my improved machine.
Fig. 2 represents a plan view of a portion of
30 the cloth-plate or horn. Fig. 3 represents a
plan view of the mechanism for giving an ir-
regular movement to the looper.

The same letters of reference indicate the
same parts in all the figures.

35 In the drawings, A' represents the head or
frame of the machine, having a projecting
horn or work-support, A².

B represents the needle-bar, having a hooked
needle, 5.

40 A represents the shaft that operates the
needle-bar, said shaft having the needle-cam
C, which reciprocates the needle-bar verti-
cally in a manner well understood.

E represents the presser-bar, having the
45 presser-foot E', and capable of moving verti-
cally in guides in the frame A'. To an arm,
F, on the presser-bar E is pivoted a lever, G,
the lower end of which is formed at c' as a
take-off hook to enter the loop of thread drawn
50 upwardly through the work by the needle, and
at c as a shearing-blade.

L represents a bell-crank lever pivoted at a
to the lever G, and b is a circular cutting-
blade attached to the lever L by a bolt and a
nut, a', thereon, so that the blade can be loos- 55
ened and turned to present fresh portions of
its cutting-edge. The blade b co-operates with
the blade c, the two forming a pair of shears
or scissors.

D represents a disk on the shaft A, having 60
cam-grooves d d'.

J K represent levers pivoted at J' K' to
fixed studs on the frame A', and having roll-
ers on their upper ends engaged with the cam-
grooves d d'. Rods I H connect the lower 65
ends of the levers J K, respectively, with the
hook-lever G and the cutter-lever L.

P represents a shaft connected with the shaft
A by gears O O O. To the shaft P, under
the work-support, are affixed a disk, R, hav- 70
ing a cam-groove, R', and a bevel-gear, x.

f represents a shear-blade affixed to the horn
below the work-supporting surface thereof,
(the shank f' of said blade being secured to
the horn, as shown in dotted lines in Fig. 2.) 75
Said blade stands in close proximity to the
needle 5 when the latter is depressed.

g represents a movable shear-blade, pivoted
at 6 to the fixed blade f, the two blades having
intersecting cutting-edges and constituting a 80
pair of shears. The blade g is oscillated by
means of a lever, j, pivoted at one end to the
horn and engaged by a roller, i, with the
cam-groove R', and rod h, connecting the
swinging end of said lever with the blade g, 85
the lever j being oscillated by the disk R and
imparting its movement to the blade g through
the rod h.

d² represents a vertical tube journaled in
bearings formed in a plate or bracket, V, at- 9c
tached to the frame A', and an arm, m, at-
tached to the horn A². The thread used by the
machine passes upwardly through this tube
nearly to its upper end, and then passes through
a side opening in the tube, and through an 95
eye, 2, in the end of a looper-arm, e, affixed
to the upper end of the tube and moving
therewith. From the looper-arm the thread
passes inwardly, so that it will be brought
across the needle at each descent of the latter, 100
as hereinafter described. A crank, S, is mount-
ed to rotate loosely on the tube d², and is

provided with a bevel-gear, x' , meshing with the bevel-gear x on the arbor P.

T represents a gear-segment formed on an arm which is pivoted at y to the crank S. Said segment meshes with a pinion, U, affixed to the tube d^2 , and is provided with a stud or roller, i , which projects into a cam-groove, V', in the fixed plate or bracket V. The crank S is continuously rotated upon the tube d^2 by the shaft P and bevel-gears x x' , and the segment T, while being revolved or carried around by the crank, is given an irregular independent movement on its pivot by the cam-groove, which causes it to give an irregular rotary movement to the tube d^2 and looper-arm e , as hereinafter described.

The operation is as follows: The needle having drawn up a loop of thread through the work, as shown in Fig. 1, the hook-lever G and cutter-lever L are moved forward until the hook c' (which is bent or offset so that its point only comes within the path of the needle) removes the loop from the needle, and causes the loop to encircle the cutting portion c . The lever K is then moved independently by its cam-groove, to cause the blade b to move toward the co-operating cutting portion c , thus severing the loop. The crank S is continuously rotated by the mechanism above described in the direction indicated by the arrow 7 in Fig. 3. The cam-groove V', with which the segment is engaged by the roll i , is formed to gradually recede from the axis of the crank along the parts marked m n o , and is about concentric with said axis from o to p , and approaches the axis abruptly from p to m . This form of the cam causes the segment to turn rapidly on its pivot in the direction indicated by the arrow 8, Fig. 3, while the roll i is moving from p to m of the cam-groove, and thus give the pinion U, tube d^2 , and arm e a complete rotation while the needle is resting at its lowest point of movement, thereby inserting the thread between the two shear-blades f g and into the throat or hook of the needle, the thread being thus simultaneously put into position to be drawn up by the needle and to be cut. While the needle is rising to draw up the loop and descending to take the next loop the roll i of the

segment is moving through the parts m n o , which reverse its independent motion on its pivot and cause the pinion U, tube d^2 , and looper e to rotate backwardly with relation to the movement of the crank. The result of this is that the said pinion, tube, and looper actually stand at rest until the needle again reaches its lowest point, when the pinion is again rapidly rotated by the cam portion o m . After the needle in its upward movement has nearly drawn up the loop the shear-blade g is moved over the blade f by its operating devices and caused to sever the thread, the needle having a sufficient upward movement after the thread is cut to cause it to pull upwardly the longer of the two ends formed by the cutting action, thus making said ends of uniform length.

I claim—

1. The combination of the needle and a looping device therefor, the take-off lever having the take-off hook and cutting-edge, and pivoted to the presser-bar, the cutter-lever pivoted to the take-off-hook lever, and mechanism, substantially as described, for oscillating said levers, as set forth.

2. The combination of the needle and its operating mechanism, the shears or cutters under the work-support, the mechanism for operating said cutters, the looper-arm, and mechanism, substantially as described, for rotating said looper while the needle is depressed to present the thread to the cutters and needle, as set forth.

3. In a machine for staying layers of flexible material, the combination, with the needle and mechanism to operate it, of the rotary tube or arbor d^2 , having the pinion and looper-arm, the continuously-rotated crank journaled in said tube, the segment-gear pivoted to said crank and meshing with said pinion, and the cam-groove in a fixed plate receiving a roll on said segment, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 17th day of April, 1885.

GEORGE R. PEARE.

Witnesses:

C. F. BROWN,
A. L. WHITE.