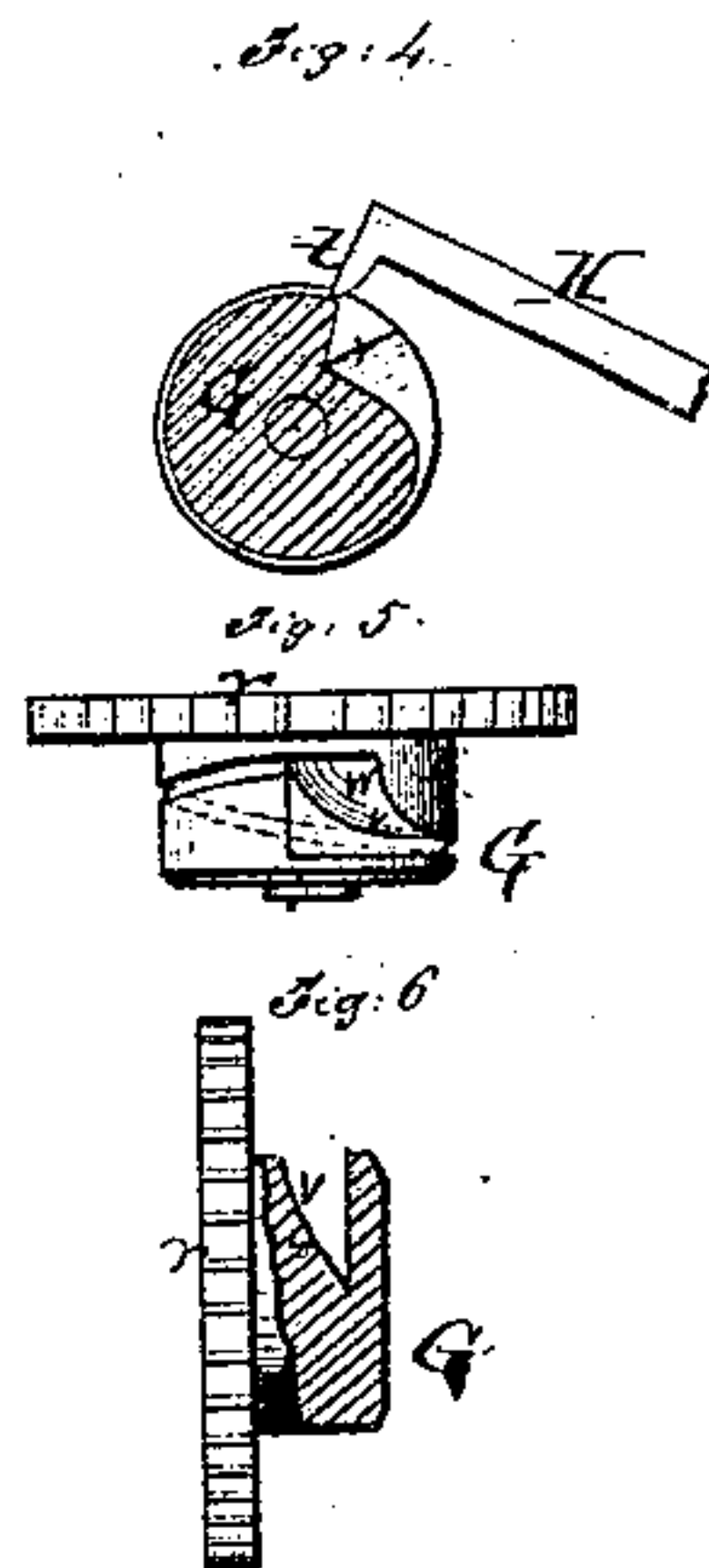
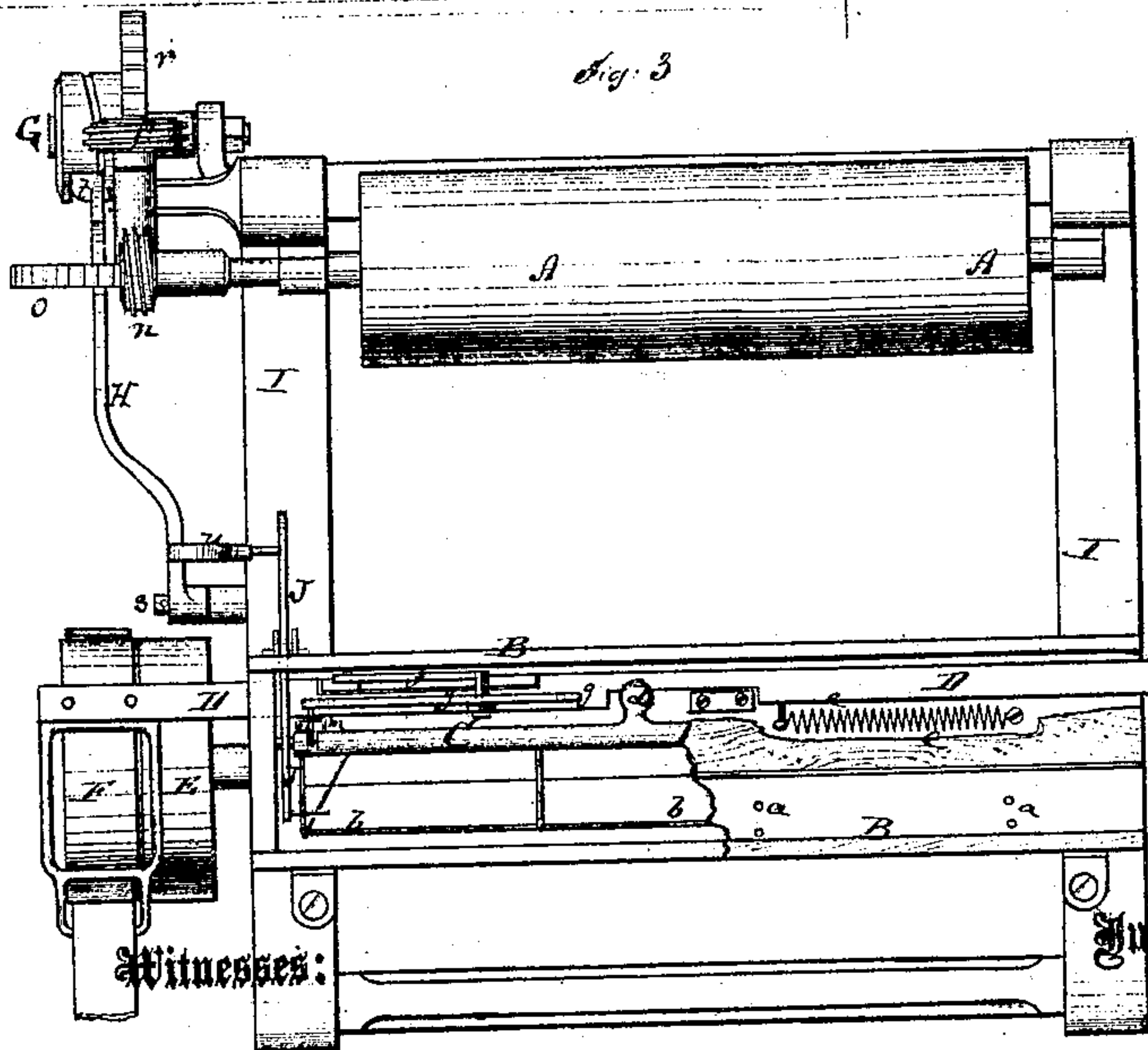
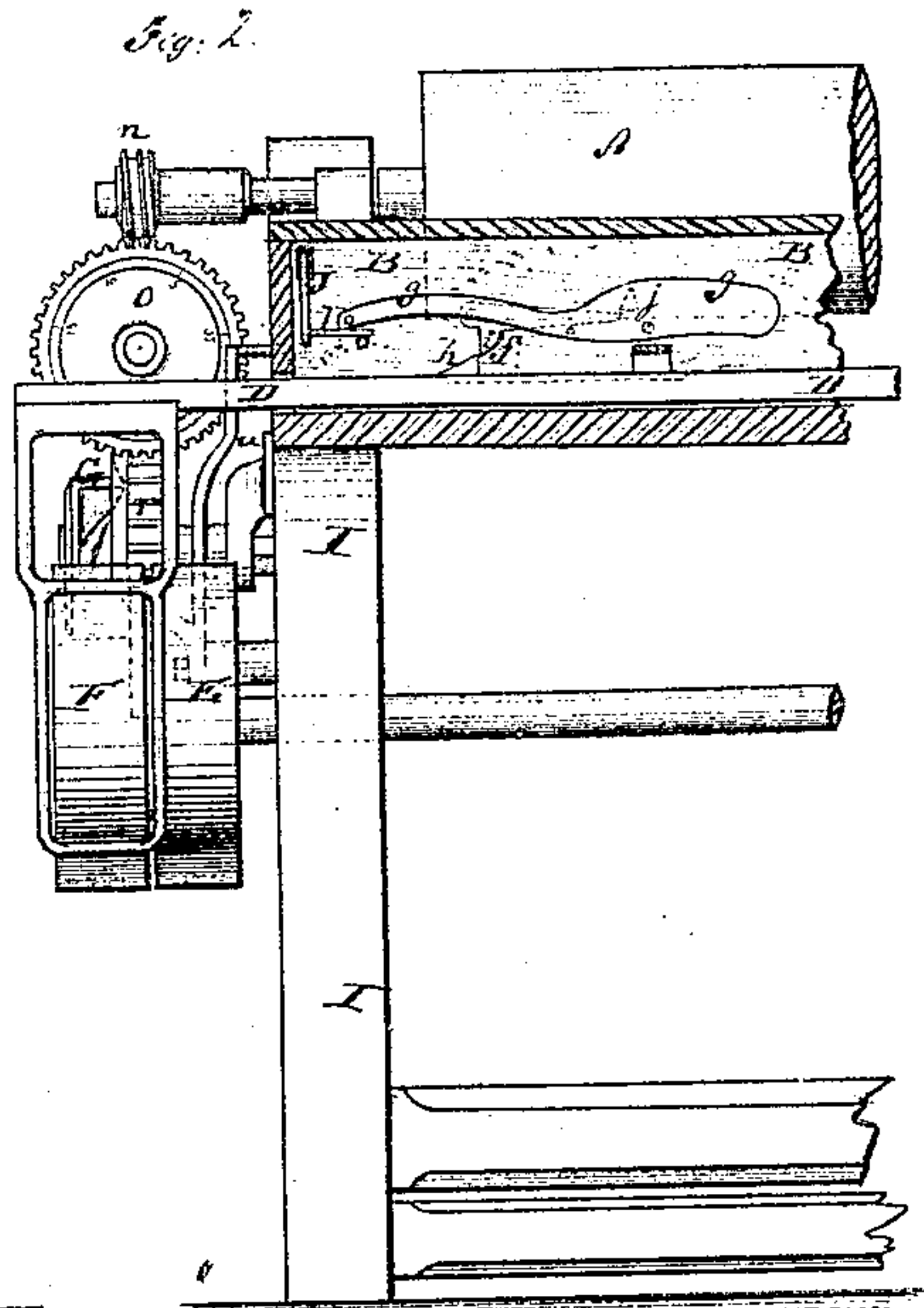
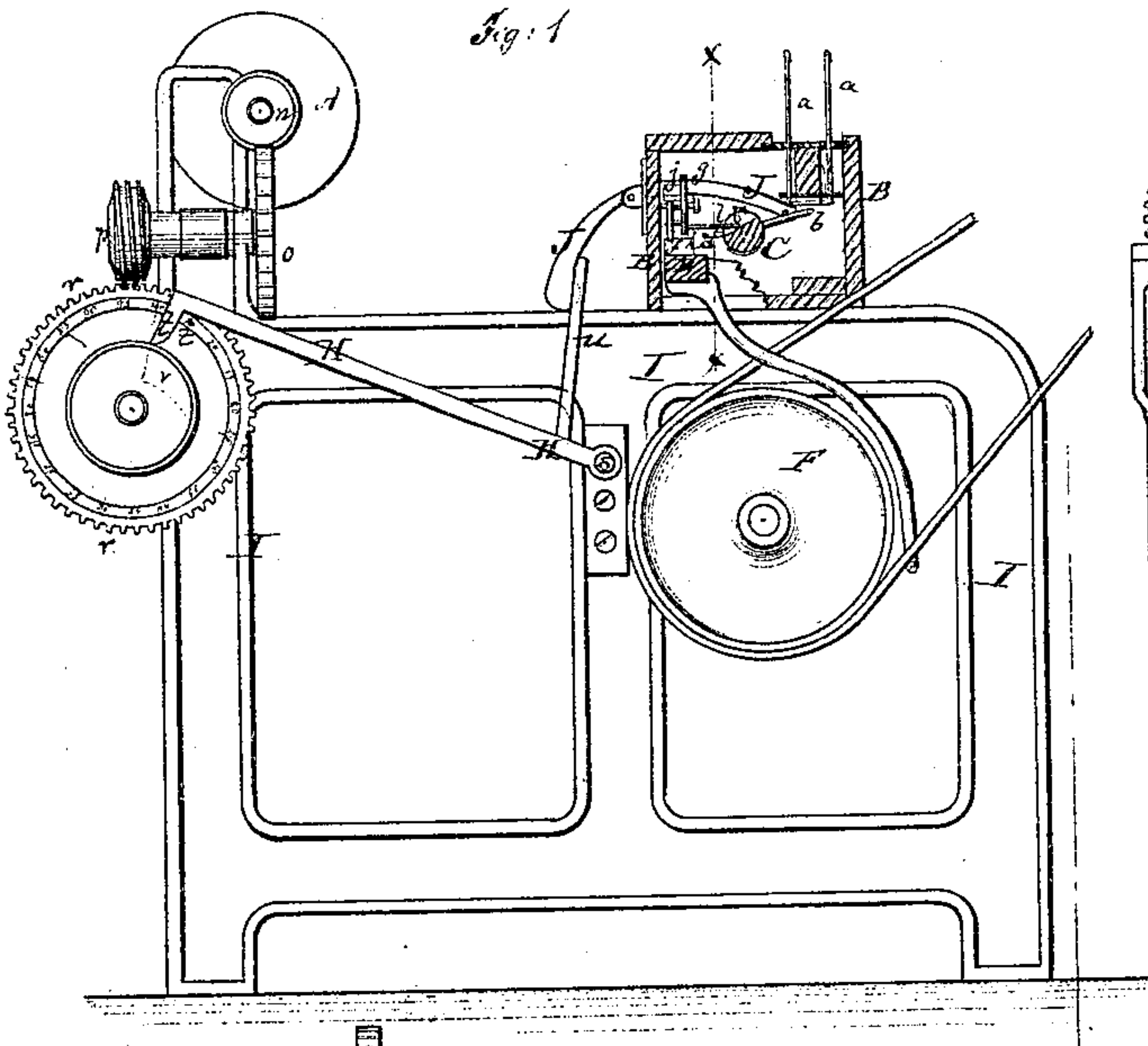


*L. Abbott,*

*Warping Mach.*

*No. 104,920.*

*Patented July 5, 1870.*



Witnesses:

*Chas. Nield*  
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Inventor:

*L. Abbott*

PER

*Munn & Co.*  
Attorneys.



# United States Patent Office.

LEVI ABBOTT, OF LEWISTON, MAINE, ASSIGNOR TO THE LEWISTON MACHINE COMPANY, OF SAME PLACE.

Letters Patent No. 104,920, dated July 5, 1870.

## IMPROVED WARPING-MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, LEVI ABBOTT, of Lewiston, in the county of Androscoggin and State of Maine, have invented a new and improved Warping-Machine; and I hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 represents a side elevation, partly in section, of my improved warping-machine.

Figure 2 is a detail longitudinal section of the same, taken on the plane of the line *xx*, fig. 1.

Figure 3 is a plan or top view, partly in section, of the same.

Figure 4 is a longitudinal section of the main cam for setting the belt-shippers to the loose pulley.

Figure 5 is a plan or edge view of said cam.

Figure 6 is a transverse section of the same.

Similar letters of reference indicate corresponding parts.

The object of this invention is to construct a measuring and stop-motion attachment for a warping-machine, whereby the operation will be arrested immediately after the requisite amount of thread has been wound upon the measuring-roller, or by the breaking of a thread.

The invention consists chiefly in the use of a peculiar cam, which is provided with a groove for adjusting a lever, by means of which the rock-shaft that locks the shipper, and that is also under the influence of the drop-wires, is moved to carry the belt upon the loose-pulley.

The invention consists also in the lever attachment, by means of which the operation is carried on.

A in the drawing represents the measuring-roller of a warping-machine.

B is the drop-wire box, in which *aa* are the drop wires.

In the drop-wire box is hung the rock-shaft C, which carries the projecting frame *b*, and the weight *d*, the latter serving to hold the frame *b* elevated under the wires *a*.

The shipper-bar D is fitted into the box B to slide therein, and is, by a spring, *e*, set automatically, so as to carry the belt upon the loose pulley E.

The device for holding the belt upon the tight pulley F consists of two levers, *f* and *g*, that are pivoted in the drop-wire box, and of a catch or ear, *h*, on the shipper-bar. The catch *h* fits against an arm, *i*, that projects from the lever *f*, and crowds thereby the point of said lever under a lug, *j*, that projects from the lever *g*. A pin, *l*, projecting from one end of the lever *a*, fits under a catch-pin, *m*, of the rock-shaft C. This pin *m* serves thus to actually lock the shipper-bar, for, when the shaft C is swung by the dropping of a wire, *g*, so that the pin *m* will clear the pin *l*, the spring *e* will at once draw the bar D to carry the belt upon the loose pulley. This drop mechanism does not consti-

tute part of my invention, except in so far as it serves to produce the combination which I claim.

The measuring-roll A, upon which the warp is wound, carries a worm, *n*, meshing into a worm-wheel, *o*. The arbor of the wheel *o* carries another worm, *p*, meshing into a worm-wheel, *r*. This latter has its surface divided into equal spaces, which indicate the number of yards or other lengths wound upon the roller A. The face of the wheel O may also be similarly divided, to show the more minute subdivisions.

To the face of the wheel *r* is secured a cam, G, which has a grooved edge, to operate thereby a lever, H.

The lever H is pivoted at *s* to the frame I, which supports the entire machinery, and rests with its downward bent end, *t*, upon the edge of the cam G. It has a projecting arm, *u*, which is intended to operate a lever, J, that is pivoted to the drop-box, reaching into the same.

When the outer end of the lever J is swung up by the arm *a*, the inner end will be forced down upon the frame *b* of the rock-shaft, to depress the same, and thereby to release the shipper-bar in the same manner as though the same was released by the dropping of a wire, *a*.

The groove in the edge of the cam G is quite shallow, to merely guide the lever H in a lateral direction until the end T reaches a depression, *v*, in the edge of the groove, into which it drops, thereby throwing the arm *u* forward for elevating the outer end of the lever J.

The face *w* of the depression *v* is slanting, as shown in fig. 6, so that on the same the end *t* of the lever H is thrown outward while it descends. The effect of this combined lateral and vertical movement is the carrying of the arm *u* forward, and, at the same time, outward. The same will therefore raise the lever J, and immediately clear the same, allowing it to drop again into the former position, to enable the machine to immediately resume the operation. The shallow spiral groove will, during the operation, guide the arm *u*, behind the outer end of the lever, so that it will be ready again to elevate the same.

The depression *v* is so arranged that it will cause the stopping of the machine as soon as the requisite amount of material has been wound upon the roller A.

Having thus described my invention,

I claim as new and desire to secure by Letters Patent—

1. The cam G, provided with the spiral groove and slanting recess *v*, substantially as herein shown and described.

2. The combination of the measure-roller A and cam G, with the levers H J, rocker C, and drop-wires *a*, all arranged to operate substantially as herein shown and described.

Witnesses:

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