

No. 636,404.

Patented Nov. 7, 1899.

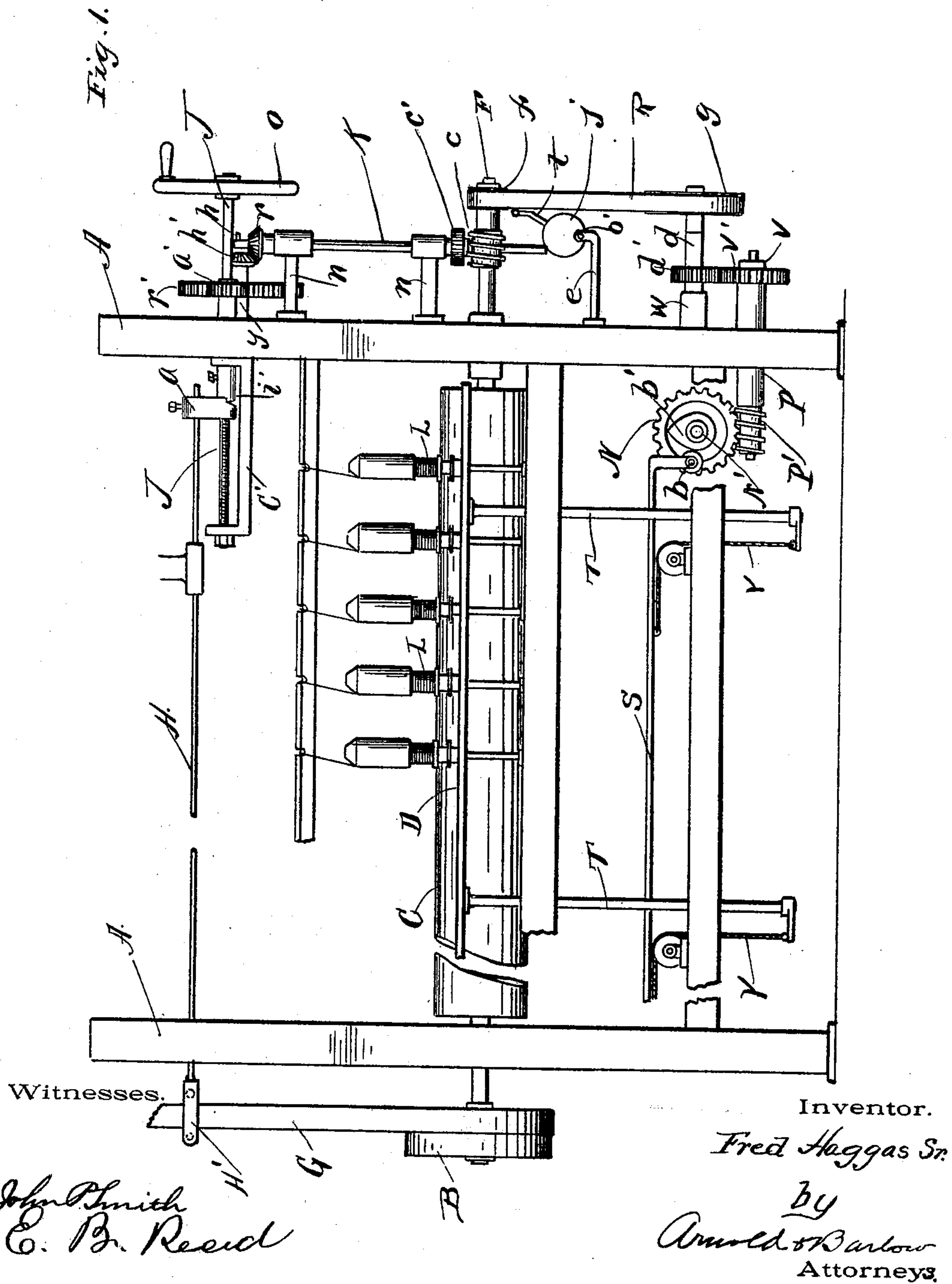
F. HAGGAS, SR.

STOP MOTION FOR SPINNING AND TWISTING MACHINES.

(Application filed Feb. 23, 1899.)

(No Model.)

2 Sheets—Sheet 1.



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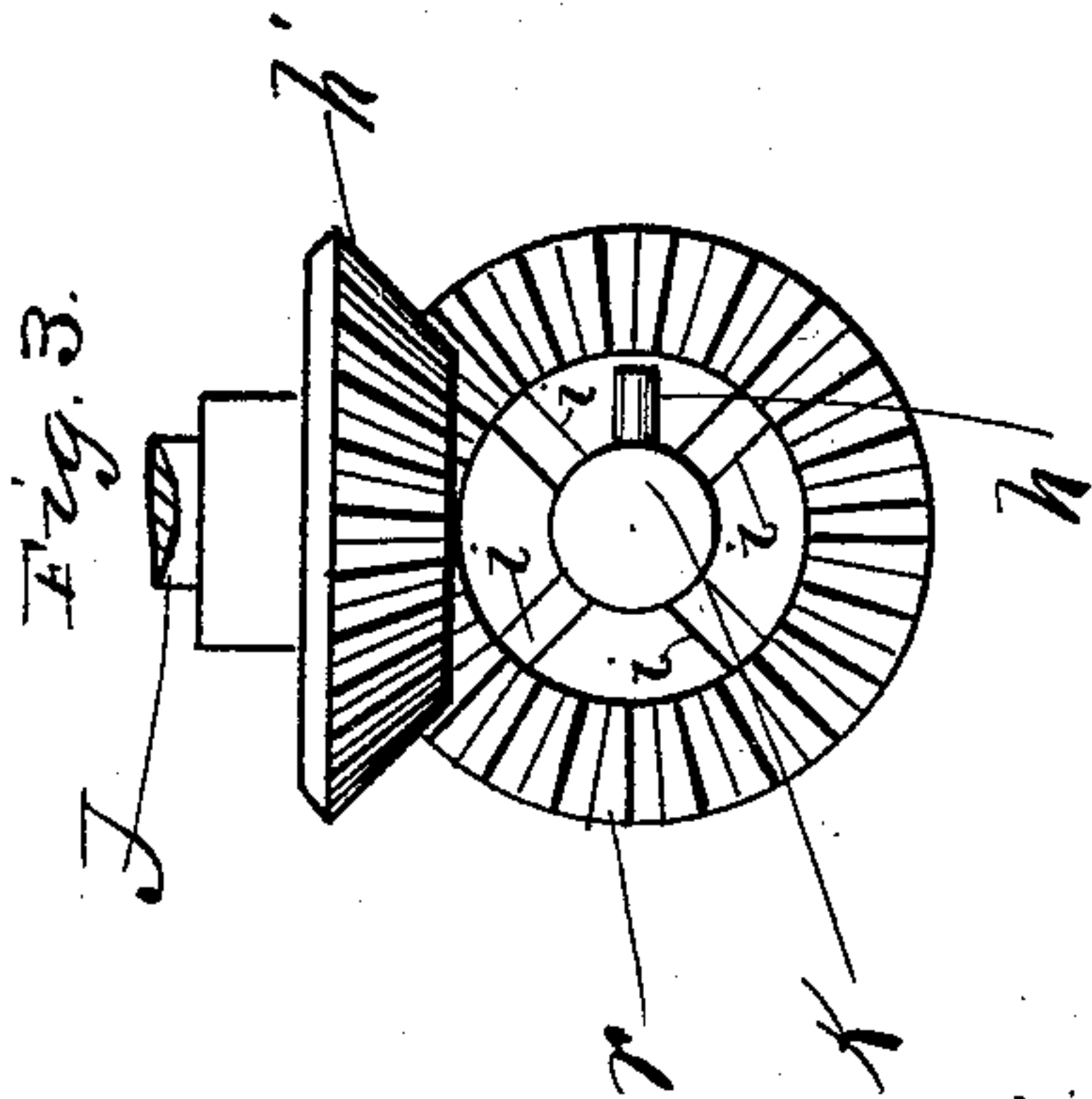


Fig. 4.

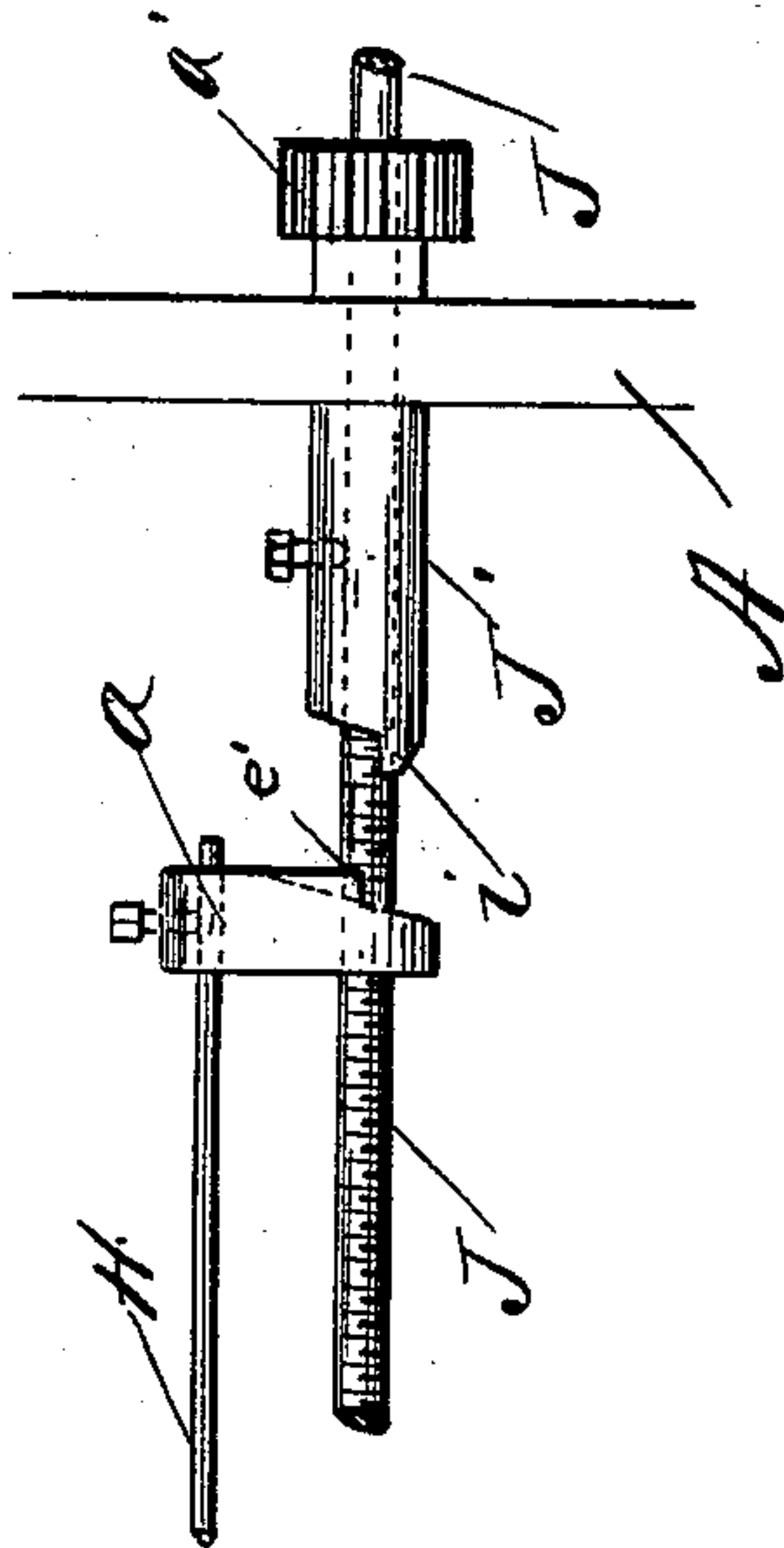
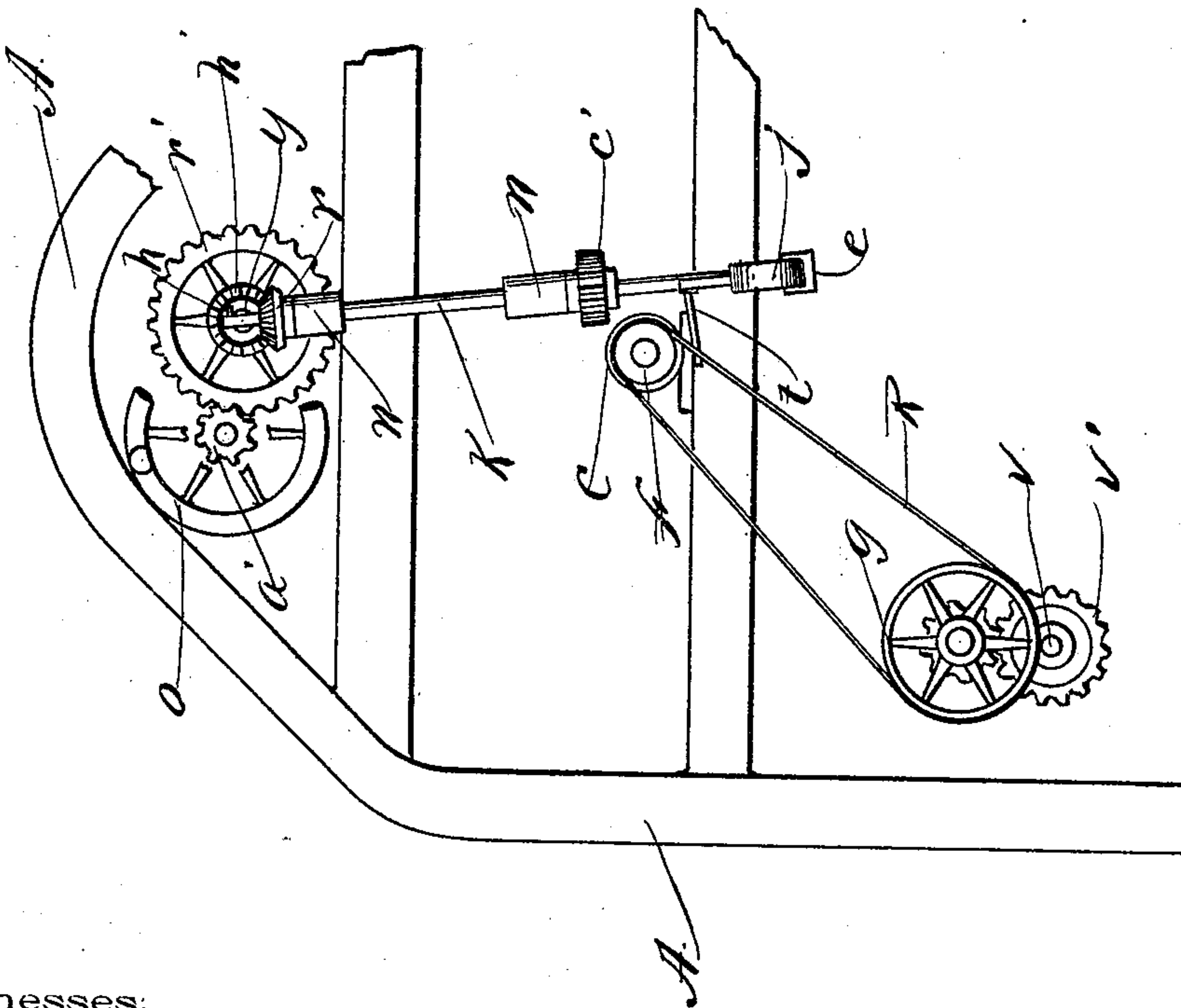


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

FRED HAGGAS, SR., OF PROVIDENCE, RHODE ISLAND.

STOP-MOTION FOR SPINNING AND TWISTING MACHINES.

SPECIFICATION forming part of Letters Patent No. 636,404, dated November 7, 1899.

Application filed February 23, 1899. Serial No. 706,474. (No model.)

To all whom it may concern:

Be it known that I, FRED HAGGAS, Sr., of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Stop-Motions for Spinning and Twisting Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to the class of stop-motions used on spinning-frames, twist-ers, and like machines.

The object of the invention is to produce a stop-motion that will operate to stop the machine if the belt that drives that part of the mechanism that governs the laying of the thread on the cop or bobbin breaks or runs off of the pulleys.

Figure 1 is a front elevation of a portion of a spinning-frame, showing the devices used in the stop-motion. Fig. 2 shows an end view of the machine, mainly of the parts connected with the stop-motion. Fig. 3 is an enlarged top view of a part of the stop-motion mechanism. Fig. 4 is a side view of a part of the starting and stopping mechanism of the machine.

In the drawings, A A denote the end frames of the machine.

C is the band-cylinder held on the shaft F, which runs in bearings in the end frames.

B indicates the driving-pulleys fast on one end of the shaft F, and G is the belt that runs the machine.

H is the shipper-rod, with the belt-guide H' on its outer end.

D is the ring or cop rail, according to the make of the machine, that governs the laying of the thread on the cop or bobbin L. A rising-and-falling motion is given to this rail D through the vertical rods T T and the chains Y Y, which connect the rods to the horizontal rod S. The rod S is turned down at one end and has a friction-roll *b* pivoted to it, which bears on a cam *b'*, that is held on a cross-shaft N'. The cross-shaft N' is moved by a worm-gear N, fast on it, that engages in a worm P', held on a short shaft *v*, that extends through the end frame in a long bear-

ing P, fast to the end frame. The outer end of the shaft *v* has a gear *v'* fast on it, that engages with a gear *d'*, fast on a sleeve *d*, held to turn on a stud *w*, also fast in the end frame. A pulley *g* is made fast on the outer end of the sleeve *d* and is connected by a belt R to a small pulley *f*, fast on one end of the cylinder-shaft F. In this way motion is conveyed from the shaft F through the cam *b'* to the rod S and the rail D.

The usual starting and stopping of the machine is done through the shipper-rod H, which has the belt-guide H' on its outer end, and a short arm *a*, having a hole with a screw-thread in it, on its inner end. A screw-shaft J, having one bearing in the end frame and another bearing in a standard C', attached to the end frame, has a screw-thread made on it that fits in the thread in the arm *a*. The outer end of the shaft J has a hand-wheel *o* made fast on it, by turning which the shipper-rod H can be moved endwise either way to move the belt G to start or stop the machine. A notch *e'* is made in the end of the arm *a*, (see Fig. 4,) and a projection *i'* made on end of the collar J', fast on the screw-shaft J, to catch in the notch *e'* when the arm *a* is nearly to the hub to stop the shaft J before the arm *a* is jammed against the collar J'. A small gear *a'* is held on the shaft J near the frame, (see Fig. 2,) and a larger gear *r'*, held on a stud *y*, fast in the end frame, engages with it. This larger gear *r'* has a bevel-gear *h'* fast on its outside, which engages with a bevel-gear *r*, held loosely on a vertical shaft K. The shaft K is held to turn and slide in stands *n n*, fast on the end frame.

As before stated, the stop-motion is to prevent the breaking or running off of the belt R from spoiling the cop by winding the thread in a ridge. The way this is done is this: A forked stand *e*, (see Fig. 1,) fast in the end frame, has a cam *j* pivoted in the fork at *o'*, and a small arm *t* projects out from the cam *j* and rests lightly against the belt R when that belt is in place. The lower end of the vertical shaft K rests on the face of the cam *j* and is held up by the cam so long as the cam is held up by the arm *t* resting against the belt R. While the shaft N is held in this way the worm-gear *c'*, fast on it, will be held up from engaging with the worm *c*, fast on the

cylinder-shaft F; but if the belt R breaks or is thrown off the pulleys the cam *j* and arm *t* will turn over from their own weight and allow the shaft K to drop and bring the worm-gear *c'* into gear with worm *c*, which will put the shaft K in motion, and when that shaft drops a pin *h* in its upper end (see Fig. 3) drops into one of the slots *i* in the top of the gear *r*, which starts that gear and the gear *h'*, that is in gear with it, which by means of the gear *r'*, attached to it, starts the gear *a'* and the screw-shaft J and screws the driving-belt, by means of the shipper-rod, onto the loose pulley and stops the machine. By reason of the great speed usually given to the band-cylinder and the increase of that speed by the gears on the stud and screw-shaft the stopping of the machine when the lower belt fails is accomplished at once before any damage can be done.

The invention is applicable to spinning-frames, twistors, and to most kinds of machines using a reciprocating rail to lay the thread on the cop or bobbin.

Having thus described my improvements, I claim as my invention and desire to secure by Letters Patent—

1. In a stop-motion for spinning-machines, twisting and like machines, the combination with the main shaft, of a pulley fast on said shaft, a belt connecting said pulley with a

lower pulley, said lower pulley, means for turning the lower pulley, a cam with an arm arranged to rest against said belt, a worm fast on the main shaft, a vertical shaft held to slide in stands on the frame, a worm-gear on said vertical shaft, a bevel-gear held loosely on the upper end of the vertical shaft, a vertical bevel-gear held on a stud and engaging with the loose bevel-gear, a spur-gear fast on said vertical bevel-gear, a gear held on a horizontal shaft and engaging with the spur-gear, and mechanism connecting said horizontal shaft with the driving-belt, substantially as described.

2. In a stop-motion for a machine of the character described the combination of a shipper-rod, and arm fast thereon, and having a hole in its free end with a screw-thread made in it, and a notch made below said hole, a shaft having a screw-thread made on it, fitting in the hole in said arm, a collar fast on said shaft and having a projection on its inner end arranged to catch in said notch, and stop the shaft, with means for turning said shaft, substantially as described.

In testimony whereof I have hereunto set my hand this 18th day of February, A. D. 1899.

FRED HAGGAS, SR.

In presence of—

BENJ. ARNOLD,
E. B. READ.