

(No Model.)

2 Sheets—Sheet 1.

J. THORP.  
COMBING MACHINE.

No. 464,718.

Patented Dec. 8, 1891.

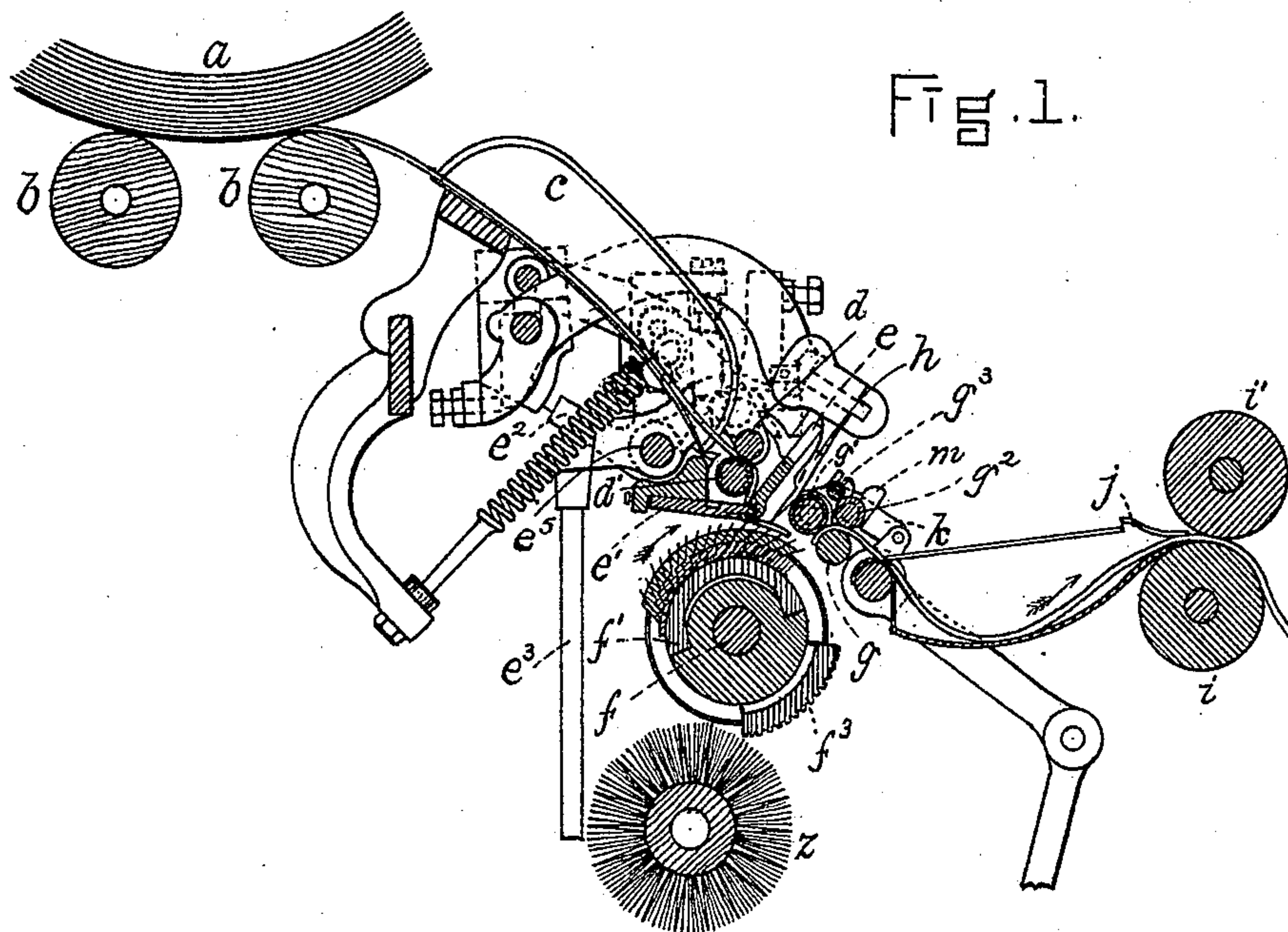
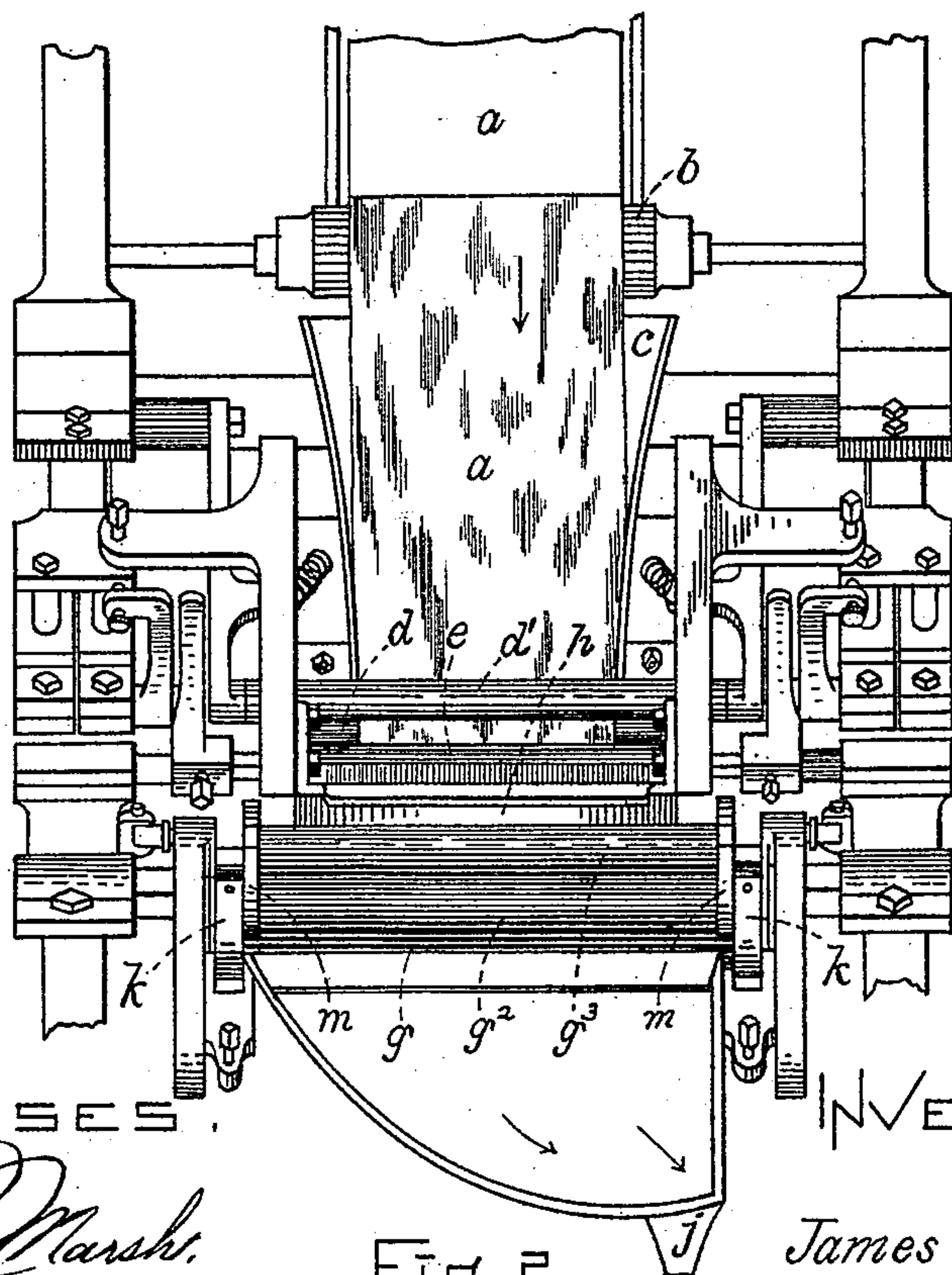


Fig. 1.



WITNESSES.

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*Francis C. Starnwood*

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*by H. E. Lodge Atty.*

Fig. 2.

(No Model.)

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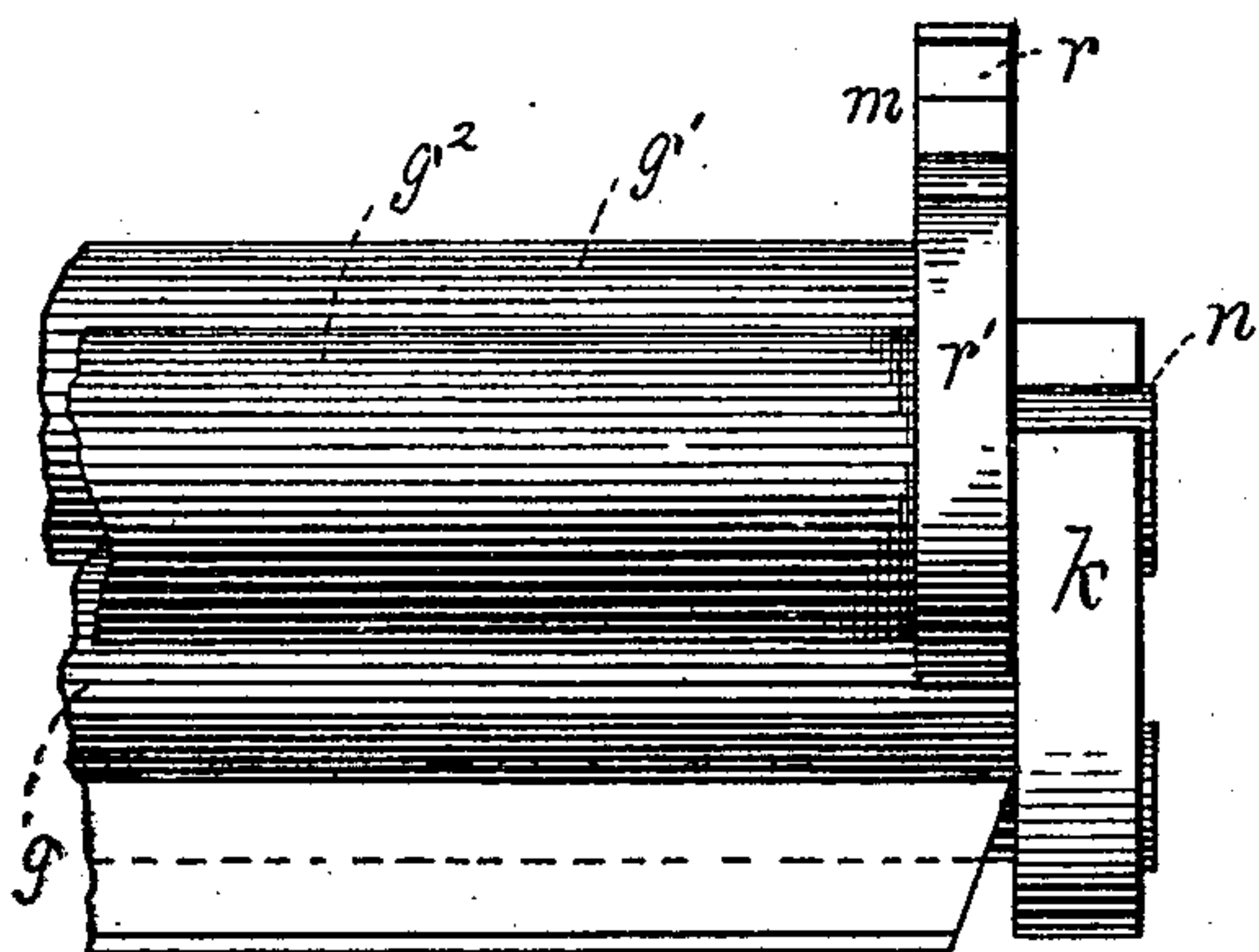


Fig. 3.

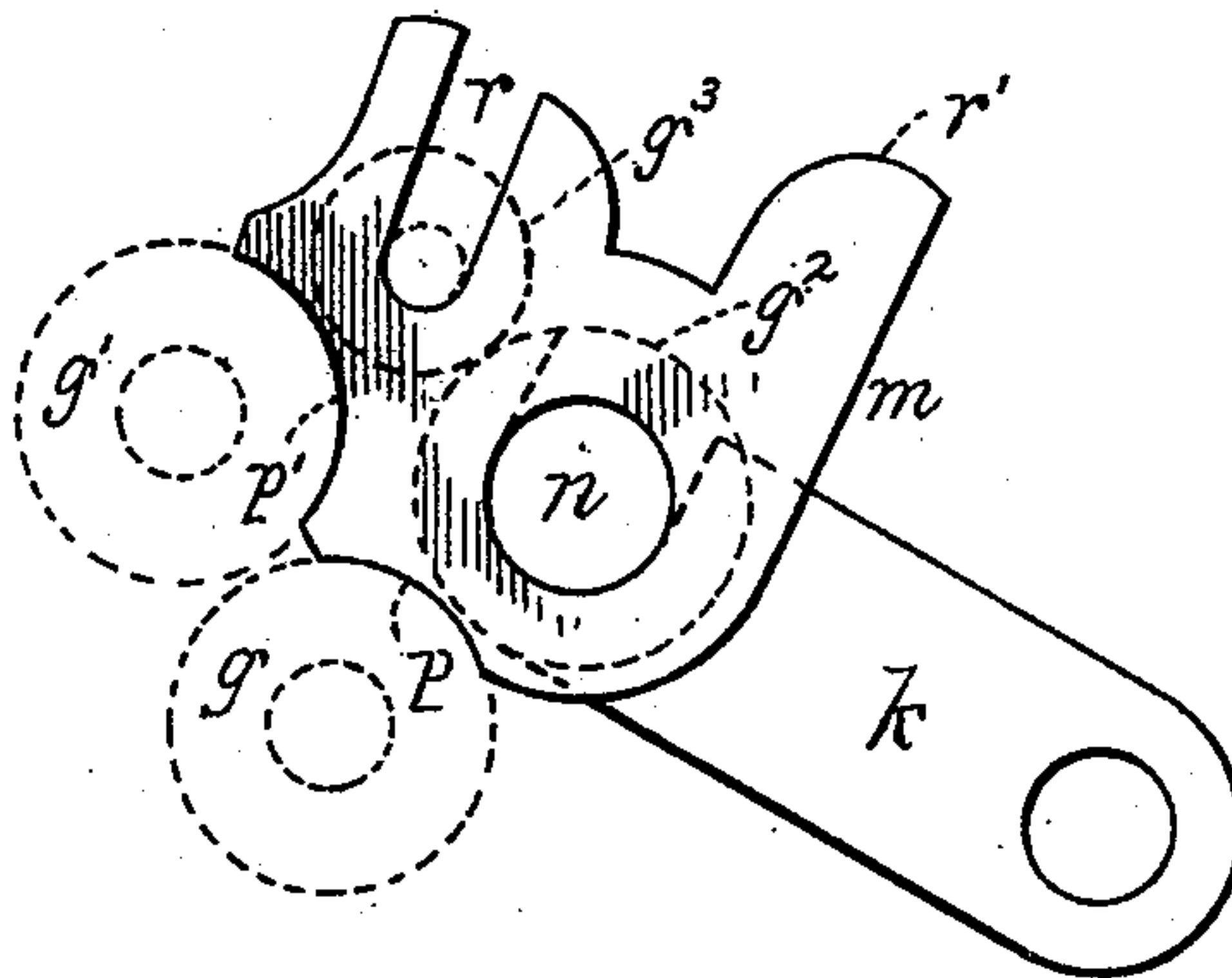


Fig. 4.

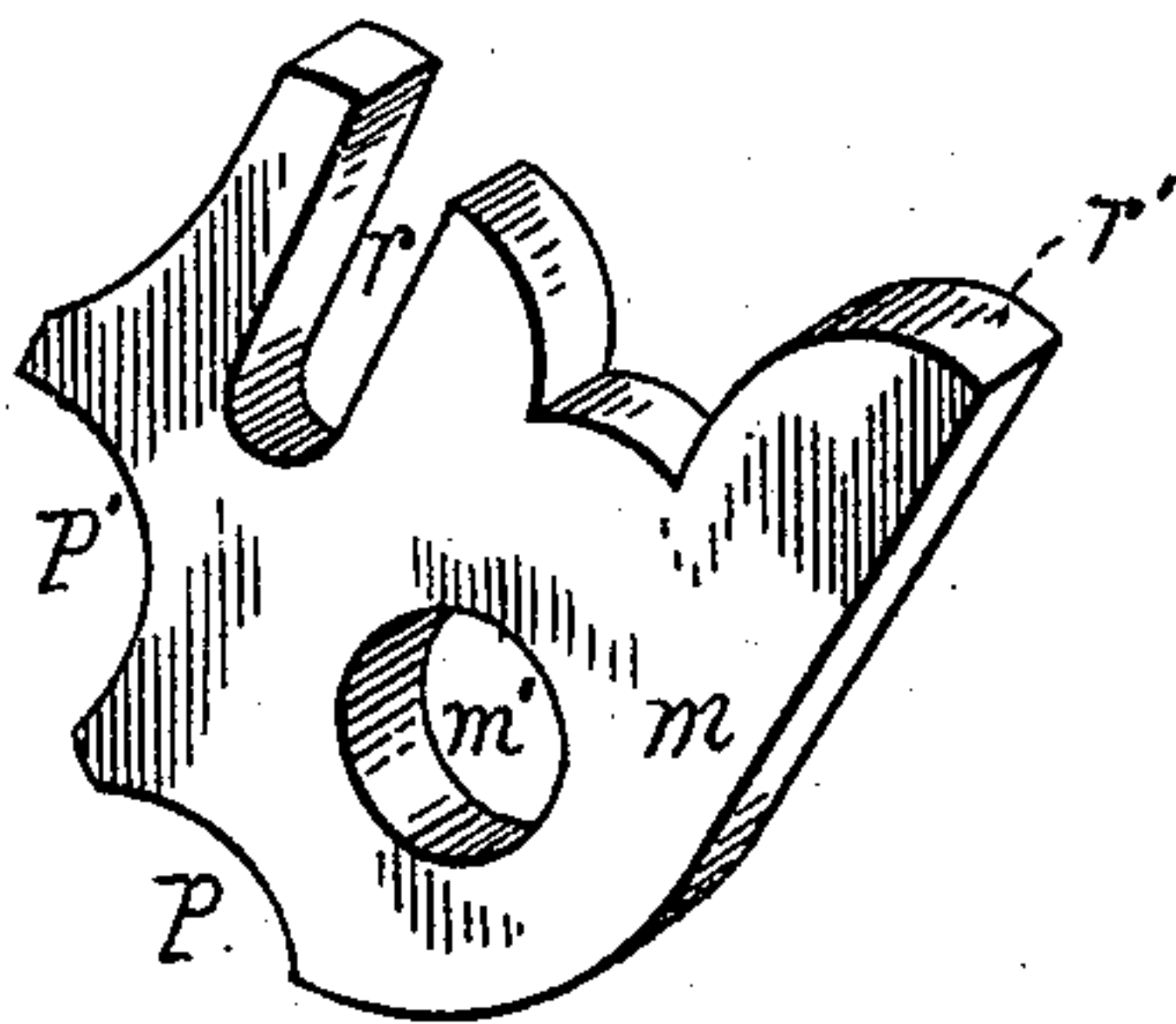


Fig. 5.

WITNESSES.

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# UNITED STATES PATENT OFFICE.

JAMES THORP, OF LAWRENCE, MASSACHUSETTS.

## COMBING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 464,718, dated December 8, 1891.

Application filed May 4, 1891. Serial No. 391,548. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES THORP, a citizen of the United States, residing at Lawrence, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Combing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in 15 combing-machines in which a delivery-roller has been used in connection with a stationary clearer. It is a common occurrence for the short-cotton fiber or fly to lap on the ends of the delivery-roller and cause waste to be made, 20 or in the event of small pieces of the same becoming separated or dropping off when the machine is in operation to cause bunches in the yarn.

The object of my invention is to prevent 25 such results as are occasioned by the collection of these short fibers, and I accomplish this by mounting a protector or shield at each end of the delivery-roll, as will be more fully hereinafter described.

30 A further feature in my invention consists in the employment of a revolving clearer in lieu of the ordinary stationary clearer now in use.

These improvements are adapted, particularly, to that class of combing-machines termed 35 the "Heilmann comber," the construction and operation of which are well known.

The drawings herewith presented represent in Figure 1 a sectional elevation transversely 40 of a Heilmann combing-machine to which my invention is applied. Fig. 2 is a perspective plan view of a "head," so termed in a Heilmann comber. Fig. 3 is an elevation of the top and bottom detaching-roller, together with 45 the delivery-roller in part with a shield in position, the clearer being omitted. Fig. 4 is an end elevation of the same. Fig. 5 is a perspective view of the shield or protector, full size.

50 As before premised, my invention is especially adapted to be applied to a Heilmann

combing-machine. Hence I shall briefly describe its more prominent features in order to explain more clearly where my improvements are attached, as likewise their peculiar functions, when the machine is in operation. 55

The lap of cotton *a* is supported upon two rollers *b b*, and motion is given to these rollers to cause the fleece of cotton to unwind, and which passes down the conductor *c* to the feed- 60 rollers *d d'*, respectively designated as the top and bottom, the under one being fluted, the upper one covered. From the feeding-rollers the fleece passes between the top and bottom jaws of the nipper, the top jaw *e* being termed the 65 "nipper-blade," and the bottom one *e'* the "cushion-plate," as it is covered with cloth and leather. Motion is given to the nipper-blade from a cam (not shown) at one end of the machine and transmitted through the lever *e<sup>2</sup>*, rod 70 *e<sup>3</sup>*, shaft *e<sup>5</sup>*, and a second operating-lever (not shown in the drawings) which is connected with the rod *e<sup>3</sup>* at the end represented as cut off. The cushion-plate is hung upon the shaft 75 *e<sup>5</sup>*. The feed-rollers having presented a certain portion of the fleece to the nipper *e e'*, the latter closes and moves backward until the protruding portion of the fleece is presented to the combs on the combing-cylinder 80 *f'*, which is mounted on the shaft *f*. Said cylinder is furnished on one part of its circumference with a series of combs, while on the opposite side there is a fluted segment *f<sup>3</sup>*, which acts in connection with the roller *g'*, 85 termed the "top detaching-roller."

A top comb is shown at *h*, its function being to comb the tail ends of the fibers and to prevent any fibers being drawn forward except those the front ends of which have been straightened and cleansed by the action 90 of the cylinder-combs. These comb ends, as the nipper moves forward and opens, are seized by the top detaching-roller *g'*, which is now in contact with the fluted part *f<sup>3</sup>* of the cylinder *f'*. As they revolve together 95 they draw out and separate from the fleece the long cotton, the short fibers or waste in the tail ends of the fibers being prevented coming forward by the top comb, which drops among the fibers for this purpose. This 100 completes the combing of one length of fibers, but the fibers previously combed require



piecing up to the fresh ones that come forward. Consequently in anticipation of these coming forward the motion of the lower detaching-roller  $g$  is reversed and made to return those previously combed, so that the fibers which have just been combed are placed so as to overlap those immediately before, and by this means a continuous fleece or sliver is produced. The fibers thus treated are passed forward to the rollers  $i$   $i'$  and pulled by them through a trumpet-tube  $j$ .

Co-operating with and above the lower detaching-roller is positioned a roller  $g^2$ , termed the "front delivery-roller," since it guides and directs the sliver forward and into the receiver to the trumpet-tube. Said roller  $g^2$  is mounted at each end in pivotal standards, one of which is shown in Fig. 1 at  $k$ . Heretofore said roller has been surmounted by a stationary cover, styled a "clearer," (not shown,) but likewise mounted in the standards  $k$ . The duty of this device was to collect and retain the short fibers produced by the combing which are not removed by the revolving brush  $z$  from the cylinder-combs. A roller  $g^3$ , which I term a "rotary clearer," is substituted for this stationary clearer, and is mounted in the shields hereinafter to be described, one at each end thereof. Furthermore, the faces of the detaching and delivery rolls are not continued closely up to their supporting standards; but the journal or reduced portions form a space into which this waste fiber collects, while the upward draft created by the revolving brush  $z$  tends to drive such particles out upon the front of the machine, and they collect about such journal portions.

In the course of the operation of the combing-machine this waste cotton or fly collects about the ends of the rollers  $g$   $g'$   $g^2$ , as likewise at the ends of the stationary clearer, and after a time laps over upon the faces and engages with the fleece, causing the sliver to break down. If not causing a break down, such fly or waste may become disengaged from the place where it has collected, and, dropping off, enters the sliver and produces bunches and unevenness in the yarn, which subsequently show as defects in the woven fabric. My object is to shield or cover the ends of such rollers  $g$   $g'$   $g^2$  between their supporting standards and their active surfaces between which the fleece is passing. If this is done, no chance is given the waste cotton or fly to collect in these places. The ends of said rollers are kept perfectly clear, while the upward draft through the spaces, which now exist at the reduced extremities of said rollers, are filled, and the fly is prevented from coming forward upon the face of the machine. This shield or protector is shown in Fig. 5 at  $m$  as composed of a casting of a thickness adapted to completely fill the now-existing space between the standard  $k$  and the reduced parts or journals of said rollers. The front delivery-roller  $g^2$  is journaled at  $n$ , and the shield  $m$  is bored at  $m'$  and adapted to be

slipped over the end of said roller. The under back portions of said shield are cut away at  $p$   $p'$ , and are of a curvature to correspond with the top and bottom detaching-rollers  $g$   $g'$ , on which they rest. The rear upper part of said shield is slotted at  $r$  to receive the end of the clearer-roller  $g^3$ . A projecting front piece  $r'$  is cast thereupon to enable the operator to grasp and swing said shield into a forward position to enable the clearer-roller to be removed and freed from the waste cotton which may have collected thereupon. Thus by mounting this shield or protector upon the ends of the delivery-roller, the end spaces between the latter and its standard is filled up. Further, it enables the shield to be attached to the machine without any change in its parts, moreover places such shield in close proximity to the detaching-rollers upon which it rests in order to cover the reduced portions at the ends of said rollers adjacent to their active faces, and serves as a support for the revoluble clearer. The attachment is small, light, compact, and easily applied to any machine of a construction similar to the class in which the Heilmann comb belongs, and in which its efficiency is very marked as regards obviating break-downs and bunches in the threads.

What I claim is—

1. In a combing-machine, a shield or protector adapted to rest upon the top detaching-roller, the bottom detaching-roller, and the front delivery-roller at a point just beyond the termination of their active contiguous faces, substantially as set forth and explained.

2. In a combing-machine, a removable shield or protector, as described, mounted upon the ends or hubs of the front delivery-roller, contiguous to the top and bottom detaching-rollers, and pierced to serve as the journal-support for a clearer, substantially as stated.

3. In a combing-machine of the class specified, the combination, with the top and bottom detaching-rollers, the delivery-roller, and their end supports or standards, of a shield or protector, as described, mounted upon the hub of the delivery-roller, resting upon the detaching-rollers and adapted to cover the reduced end portions just beyond the active faces of said rollers, substantially as described.

4. The combination, with the detaching-rollers  $g$   $g'$  and their standards, the delivery-roller  $g^2$ , its pivotal standard  $k$ , and a clearer-roller, of a rocking shield or protector mounted upon one end of the delivery-roller and resting upon the reduced part of said rollers between the standards and the main body of said rollers, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES THORP.

Witnesses:

GEO. HUNTLEY,  
GEORGE SCHRAM.