No. 742,425. PATENTED OCT. 27, 1903.

I. HEY.

COMBING MACHINE.

APPLICATION FILED MAR. 19, 1903.

NO MODEL. 3 SHEETS—SHEET 1.

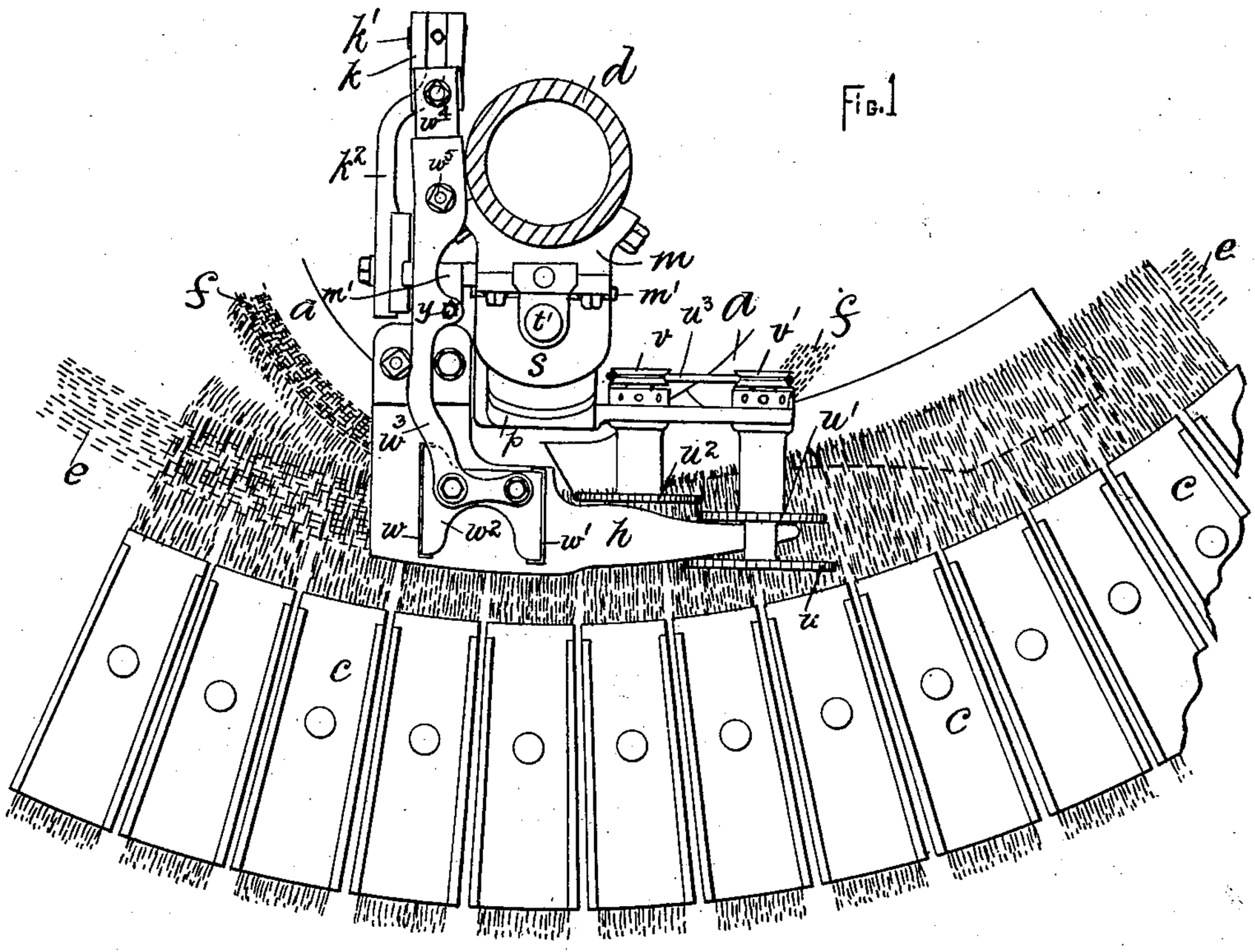

Fig. 1

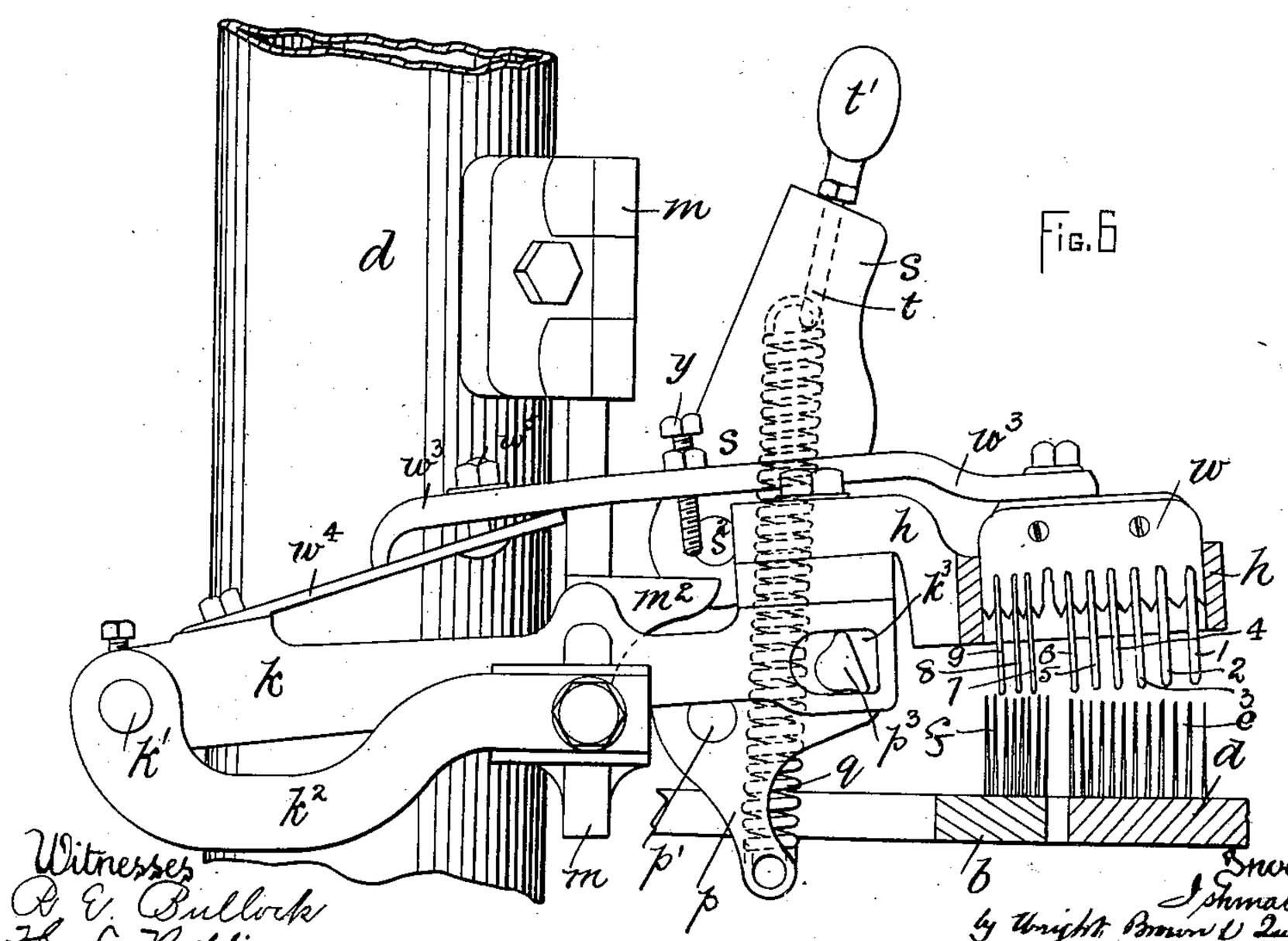

Fig. 6

Witnesses
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NO MODEL. 3 SHEETS—SHEET 2.

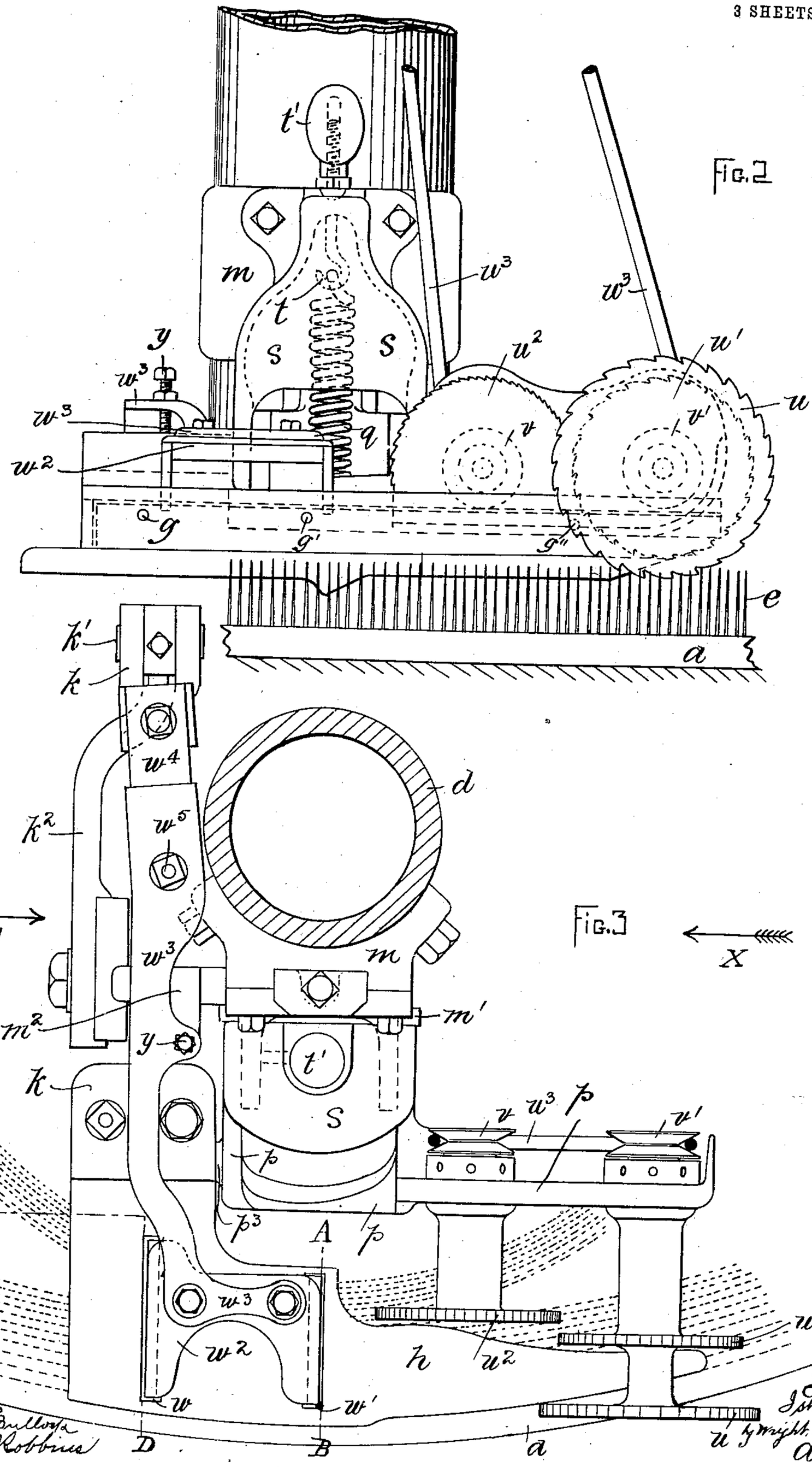

FIG. 2

FIG. 3

Witnesses:
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NO MODEL. 3 SHEETS—SHEET 3.

Fig. 4

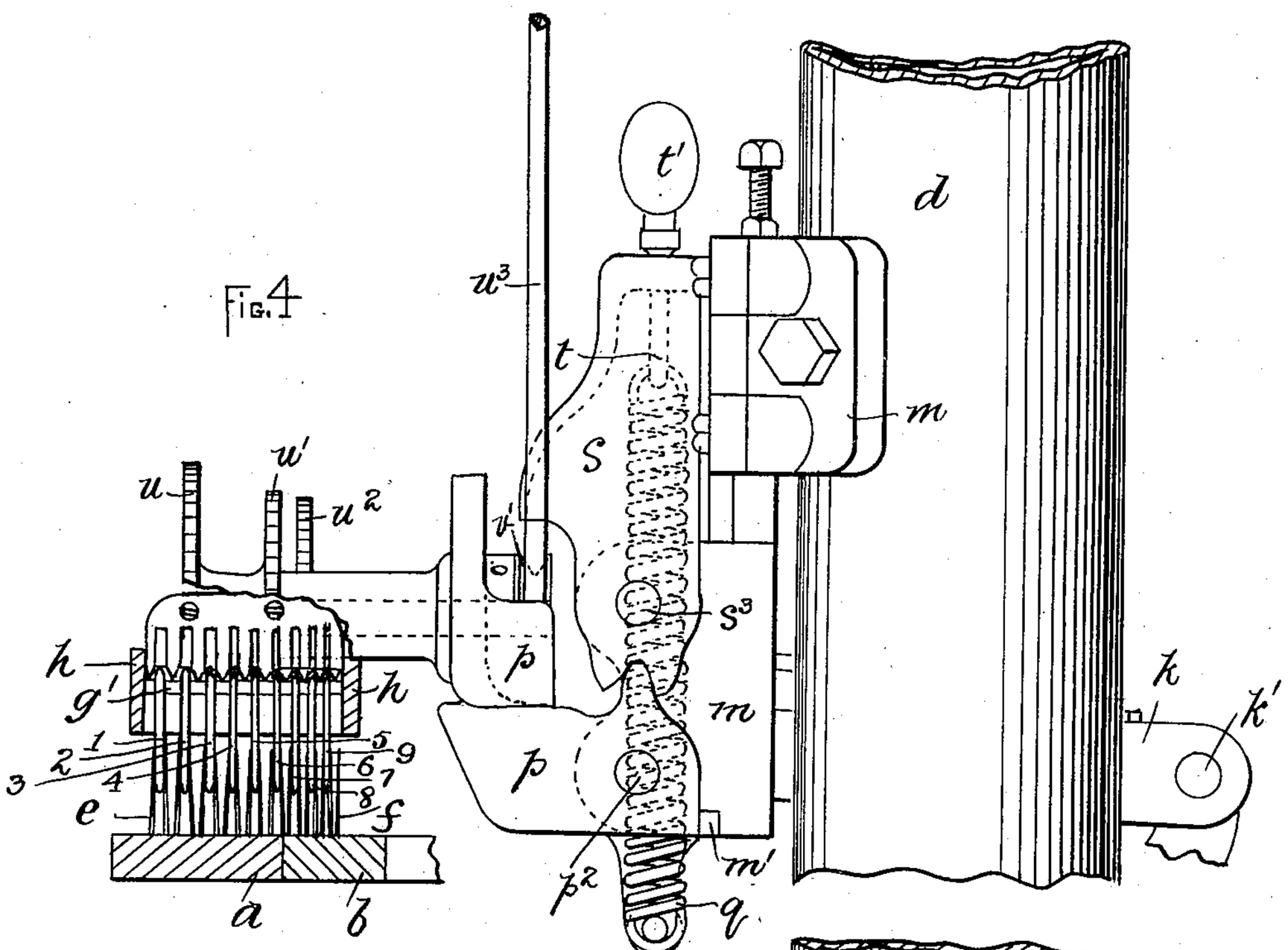
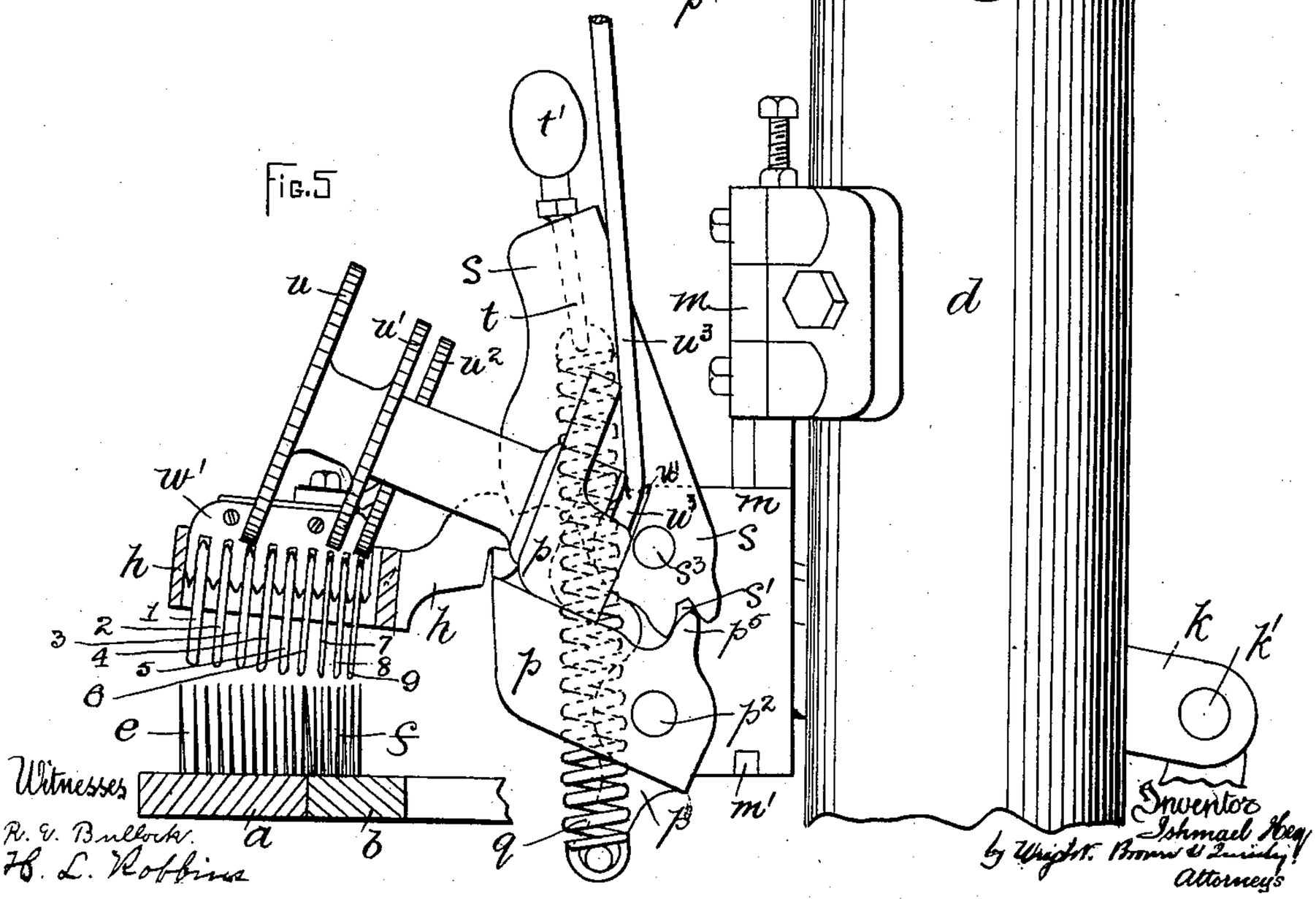


Fig. 5



No. 742,425. Patented October 27, 1903.

UNITED STATES PATENT OFFICE.

ISHMAEL HEY, OF LOWER LAITHE, ENGLAND.

COMBING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 742,425, dated October 27, 1903.

Application filed March 19, 1903. Serial No. 148,467. (No model.)

To all whom it may concern:

Be it known that I, ISHMAEL HEY, a subject of the King of Great Britain, and a resident of Lower Laithe, Oakworth, near Keighley, in the county of York, England, have invented certain new and useful Improvements in Machines for Combing Wool and other Fibrous Substances, of which the following is a specification.

This invention relates to machines for combing wool and other fibrous substances, said machines being of the type known as "Noble's combs." In such machines the combing operations are primarily effected by one circular comb being rotated in tangential contact with another circular comb.

My invention consists in improved means for forcing the fibrous substances upon the pins or teeth of the circular combs, said means comprising loosely-mounted blades mounted upon bearings or supports which are adapted to yield to permit all of the blades to move entirely clear of the pins or teeth of the combs, substantially as and for the purposes hereinafter described.

My improvements further comprise devices for enabling the readjustment of the blades and their accompanying parts to be easily and readily effected.

In the accompanying drawings, Figure 1 is a plan or view as seen from above of a sufficient portion of a combing-machine to show the application thereto of my invention. Fig. 2 is a front elevation illustrating my improved parts as in their operating positions. Fig. 3 is a view of the parts shown by Fig. 2 as seen from above. Fig. 4 is an elevation, partly in section on line A B, of parts shown by Fig. 3 as seen in the direction indicated by the arrow x, all parts being in their respective positions as when in effective operation. Fig. 5 is a similar view to Fig. 4, but shows the parts in position as when thrown out of effective operation. Fig. 6 is an elevation of parts shown by Fig. 3, partly in section on line C D, as seen in the direction indicated by the arrow y, the several parts being in their inoperative positions, as shown by Fig. 5. Figs. 2 and 6, inclusive, are drawn to an enlarged scale as compared with Fig. 1.

Similar letters and figures of reference indicate similar parts throughout the several views.

The large and small circular combs are indicated, respectively, at a and b. These and the feed-boxes c and the pillar d of the framework are all of the well-known kind and operate in the usual manner. Secured to the pillar d is a bracket m, to which is fixed a support k^2 for a lever k, pivoted at k' to said support. Secured to or fixed to the lever k are bearings h, having supporting-pins $g\ g'\ g''$, upon which are mounted a series of blades, numbered 1 to 9, inclusive, said blades being adapted to force the wool or fibrous substance down upon the teeth e and f, respectively, of the combs a and b. Also secured upon the bracket m is the lever p, pivoted at $p'\ p^2$ to said bracket, said lever being normally held against a stop-piece m' on said bracket m by a spring q. The lever p is provided with a projecting pin p^3, entering a slot or opening k^3 in the lever k, thereby enabling the lever p to keep the bearings h and blades 1 to 9 in their proper working position against the usual vertical pressure of the fibrous substances. If, however, any hard or foreign substance passes beneath the blades, so as to exert a force thereon greater than the pressure of the spring q, said pressure is overcome and permits the lever p to rock, so as to spring it over to the position shown in Fig. 5, which is the position opposite to that in which it is shown in Fig. 4. A lever s, pivoted at $s^2\ s^3$ to the bracket m, is formed with a space or recess s', which is engaged by a tooth p^5 on the lever p, whereby the lever s is also moved from the position it occupies, as shown in Fig. 4, to the position in which it is represented in Fig. 5. It will now be readily understood that the spring q serves to hold the parts in the positions shown in Fig. 4 or in the position shown in Fig. 5 by the contractile force of said spring in one position serving to raise the lever k, the bearings h, and the blades carried thereby clear of the pins in the combs and in the other position acting to hold the bearings h down with suitable force, so that the blades will press the fibers into the teeth of the combs.

A hook t is engaged with the upper end of the spring and is formed with a knob t', which may be screwed thereon, said knob resting upon the top of the lever s, the hook extending through an opening therein. By means of the said knob t' the tension of the spring may be adjusted as desired in order to meet the requirements of the fibrous substance under treatment.

The arrangement of the interengaged levers and the spring is such that the movement from one position to the other and return may be very quickly effected, so as to cause the spring to exert its force on either side of the centers p^2 and s^3, as viewed in Figs. 4 and 5.

The rotary disks u u' u^2 are mounted upon spindles fixed to the rocking lever p, so that they also may be raised thereby when the actions above described are brought about. In order that the driving belt or band u^3, which transmits motion to these disks u u' u^2, may not exercise any undesirable actions or force upon said parts, the driving-pulleys v v' are arranged, as shown, in close proximity with the pivotal bearings p' p^2 of the lever p.

As all the blades 1 to 9, inclusive, are free to slide laterally on the rising of their bearings h, as above described, they might become disarranged upon their supporting-pins g g' g'', so that it would be difficult to replace them in their proper respective positions between the rows of pins in the combs e f, as shown. To obviate this, I mount appropriately forked or gridded pieces w and w' in bearings w^2, secured to a lever-arm w^3, which latter has its outer end secured to a spring w^4 by the adjusting or regulating bolt w^5. By tightening the nut on this bolt the spring w^4 is caused to exert an increased pressure upon an arresting-screw y, said screw being mounted in the arm w^3 and adapted to come in contact with a projection m^2 on the bracket m, so that when the blades are in their effective operating position, as shown in Fig. 4, further downward movement of the arm w^3 is arrested. The spring w^4 is secured to the pivotal end of the lever k, and the forked pieces w w' are-adapted, when the parts are in the position shown in Fig. 4, to be held clear of the blades, so as to permit the latter to have lateral freedom of movement; but as soon as the bearings h begin to rise the prongs of the forked pieces enter the spaces between the blades, owing to the fact that the blades rise first, and thereafter lateral movement of the blades is prevented. After the first upward movement all of the parts continue to rise together and retain their relative positions after the arresting-screw y has moved entirely clear of the projection m^2. When the bearings h are again forced down, as by the attendant pushing the knob t' backward toward the pillar d, the arresting-screw y comes in contact with the projection m^2 in time to prevent the pieces w w' from descending far enough so that said pieces w w' would interfere with relative lateral movements of the blades.

Having now described the nature and object of my invention, what I claim is—

1. In a machine of the class described, a lever, bearings carried by said lever, a series of blades mounted upon said bearings and adapted to move laterally thereon, and an adjustable spring device for causing the blades to exert pressure upon the fibrous substances.

2. In a machine of the class described, a lever, bearings carried by said lever, a series of blades mounted upon said bearings and adapted to move laterally thereon, and a second lever, and a spring connecting the two levers, said spring being adapted to be moved from one side to the other of the pivotal points of the two levers, whereby said spring may cause the blades to exert downward pressure, or may hold said blades raised.

3. In mechanism of the class described, a series of blades, bearings for the same, lever devices for supporting said bearings, rotary disks mounted upon said lever devices, and means for transmitting motion to said disks substantially as herein set forth and described.

4. In a machine of the class described, a series of laterally-movable blades, vertically-movable bearings for said blades, and forked pieces adapted to enter between the blades when the bearings are raised, whereby the latter will be held against lateral movement when elevated.

5. In a machine of the class described, a series of laterally-movable blades, vertically-movable bearings for said blades, and forked pieces adapted to enter between the blades when the bearings are raised, whereby the latter will be held against lateral movement when elevated, an adjusting-screw being provided for arresting downward movement of the forked pieces during the latter part of the downward movement of the blades.

6. In mechanism of the class described, a series of blades, bearings for the same, spacing devices for said blades, lever devices for supporting said bearings, supports for said spacing devices, and spring attachments for said supports, substantially as herein specified.

7. In mechanism of the class described, a series of blades, bearings for the same, spacing devices for said blades, supports for said spacing devices, spring attachments for said supports, screw or bolt regulating means for said spring attachments, and lever mechanism for securing said spacing and other devices in position, substantially as herein specified.

8. In mechanism of the class described, a series of blades, bearings and lever devices for supporting the same, spring mechanism

for operating said lever devices, devices for effecting the holding and guiding of the blades in their respective positions and paths, and knob or handle devices arranged so that all the parts when thrown out of action may be easily returned, substantially as herein specified.

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

ISHMAEL HEY.

Witnesses:
JOHN WHITEHEAD,
PICKLES BAILEY.