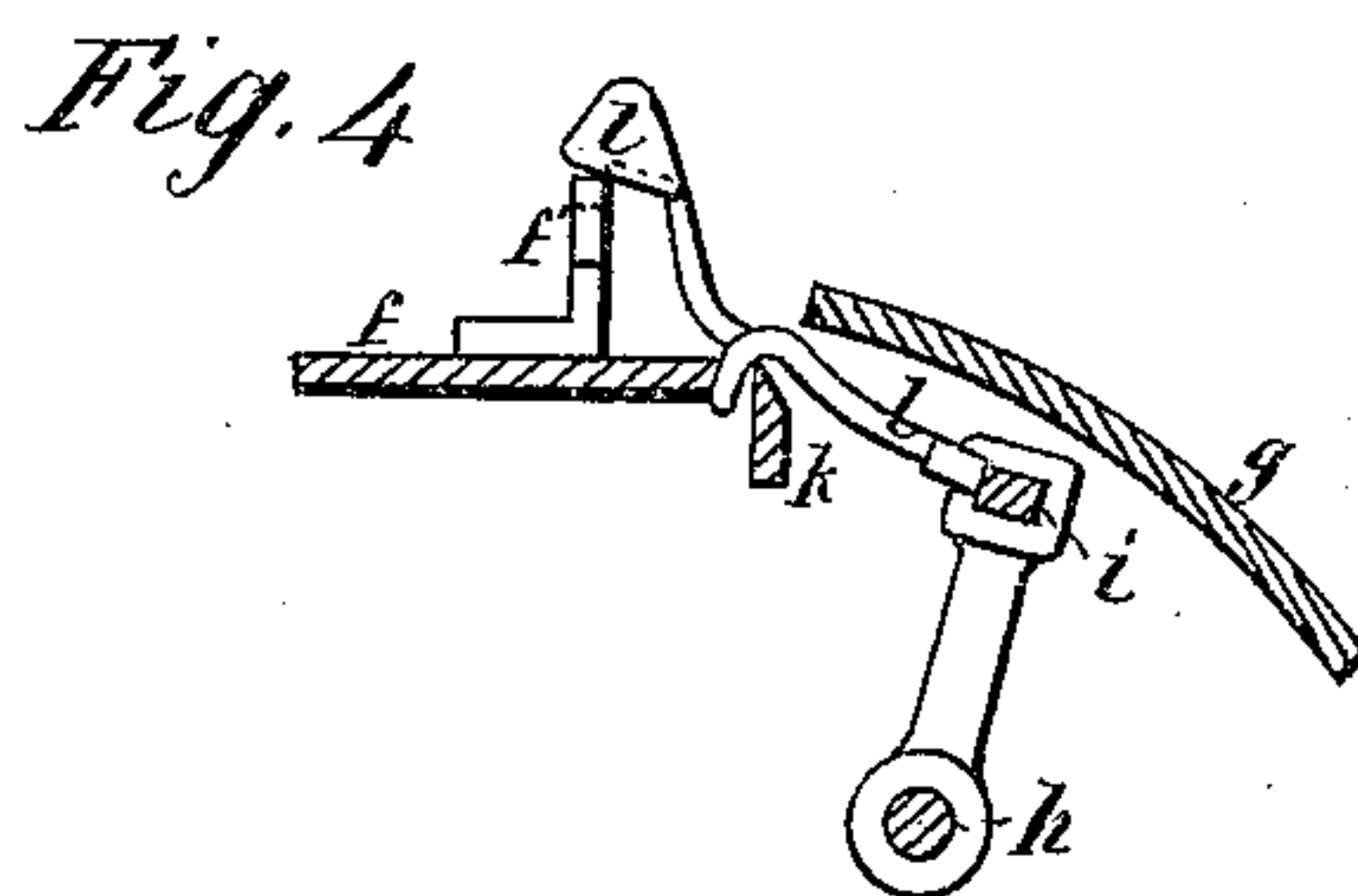
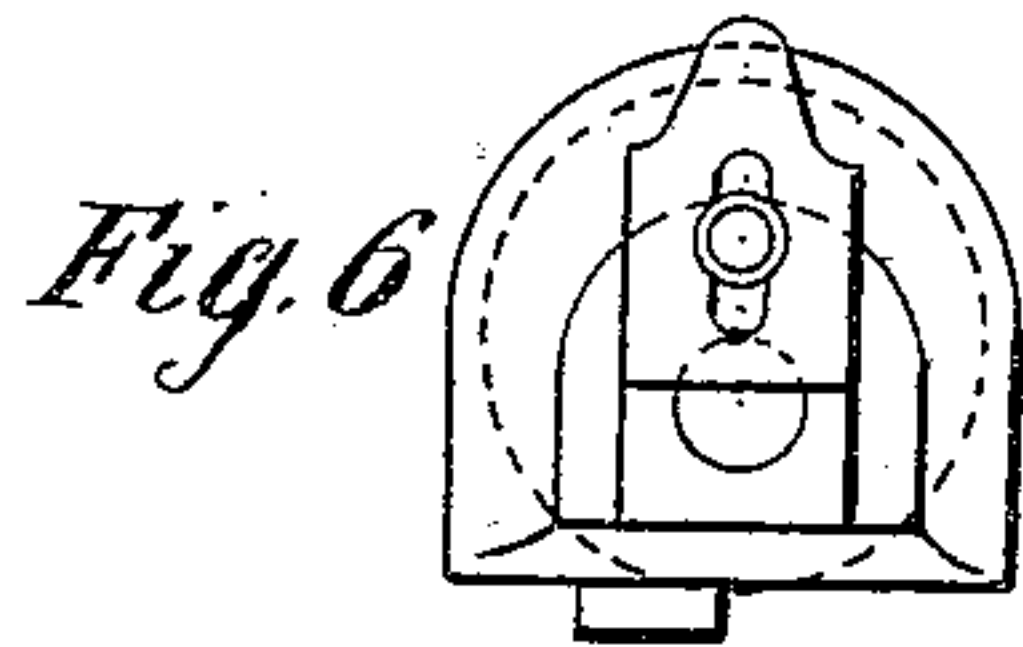
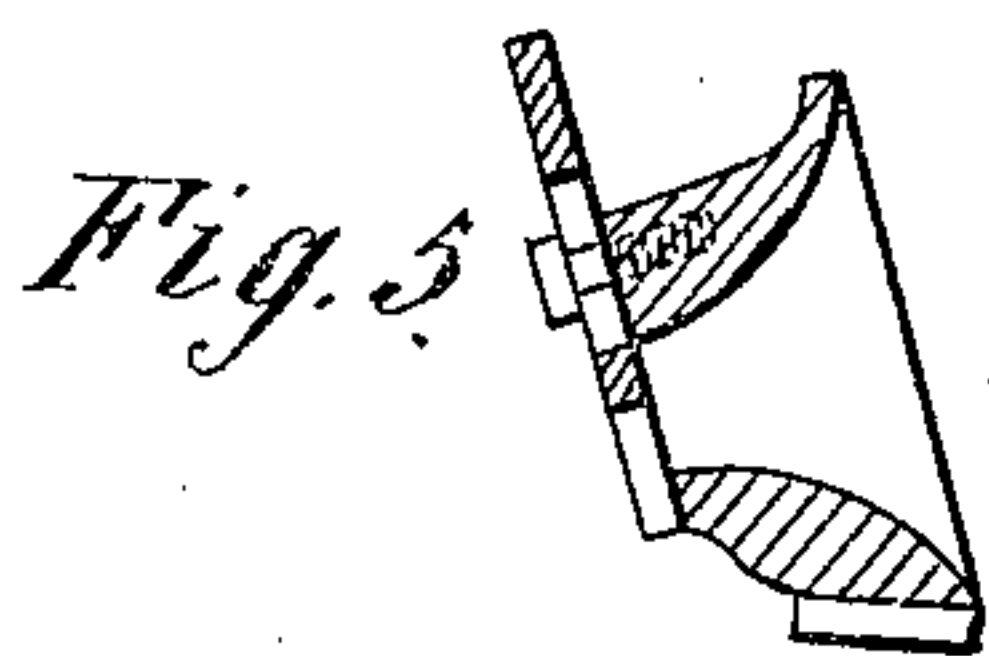
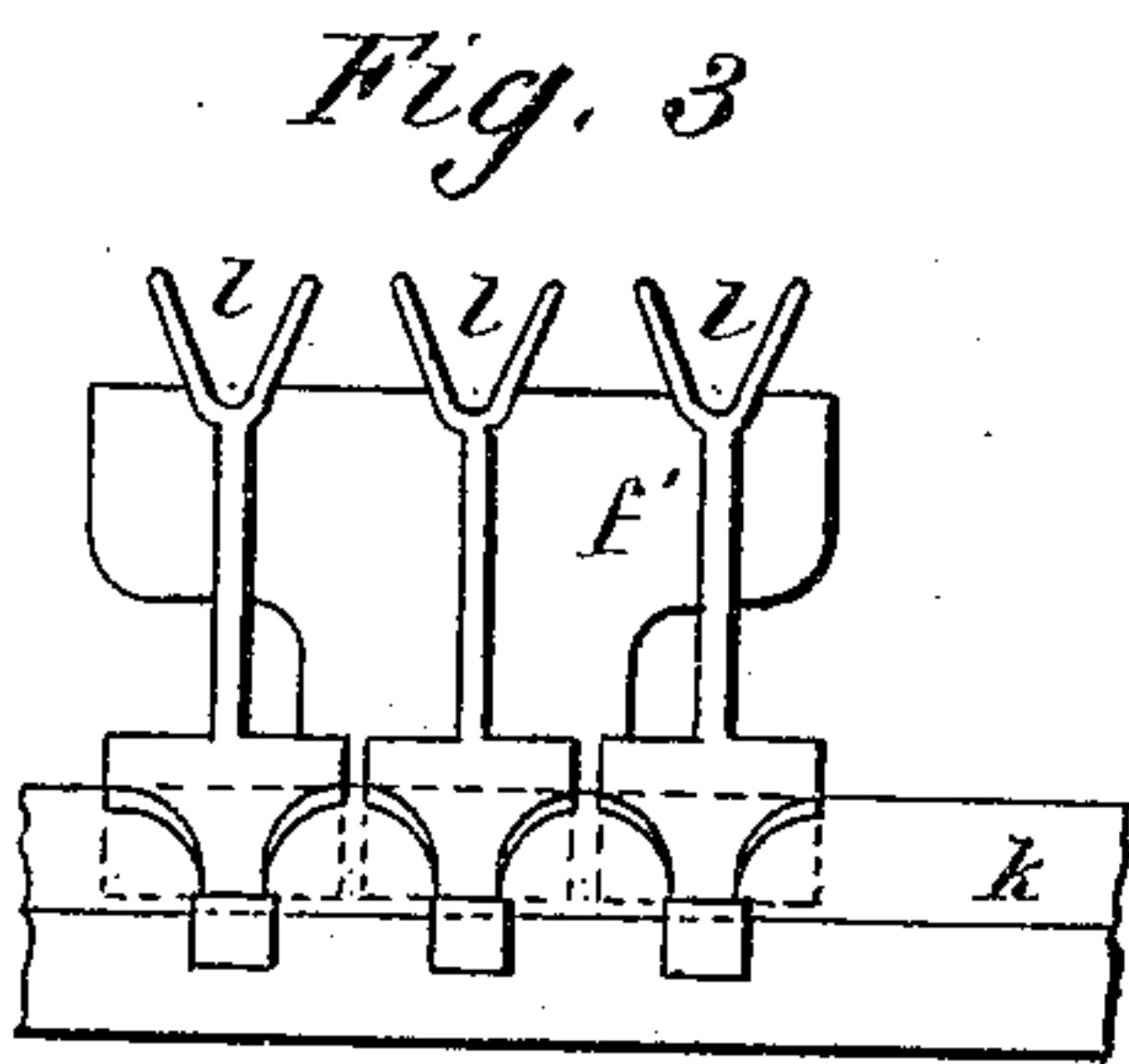
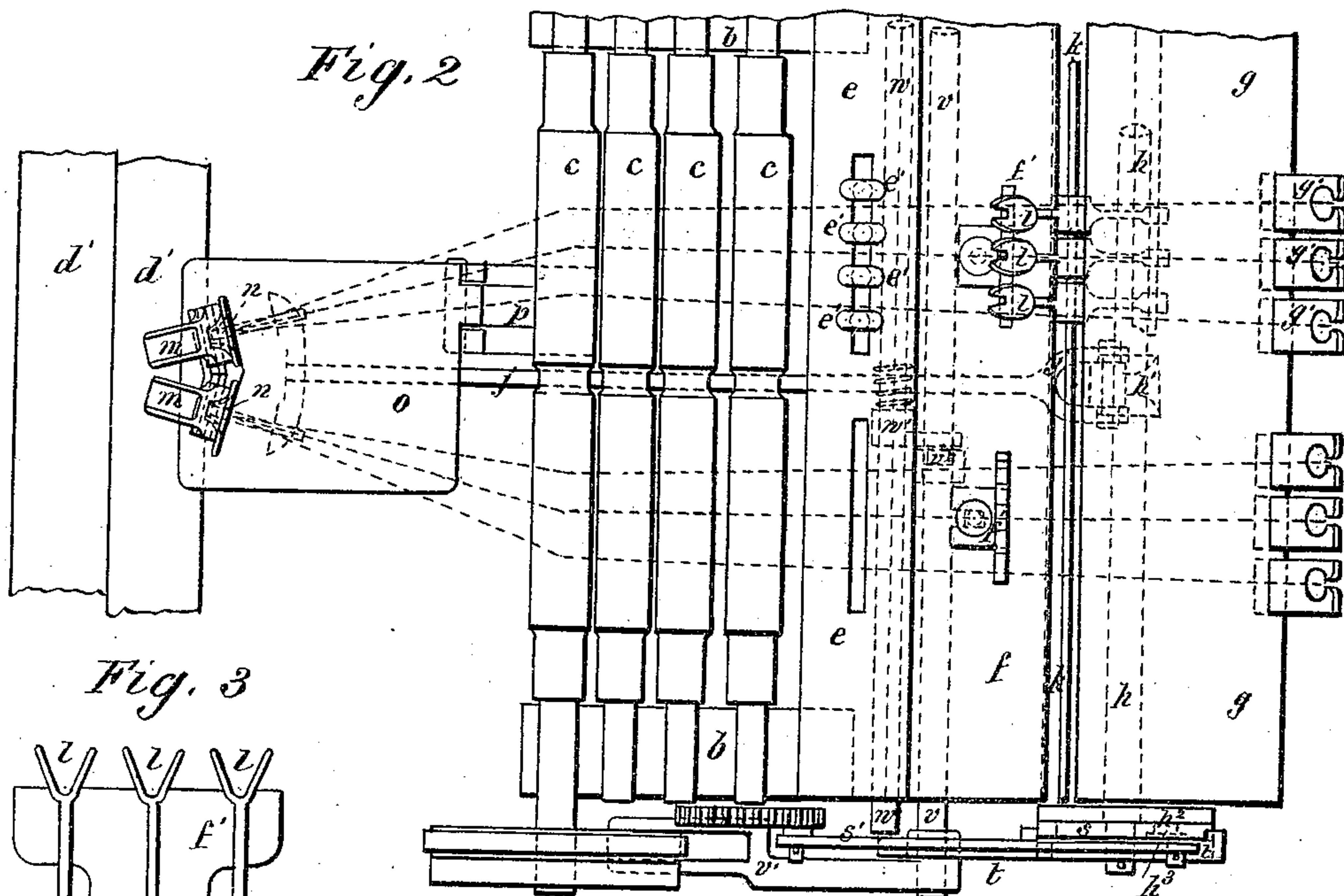
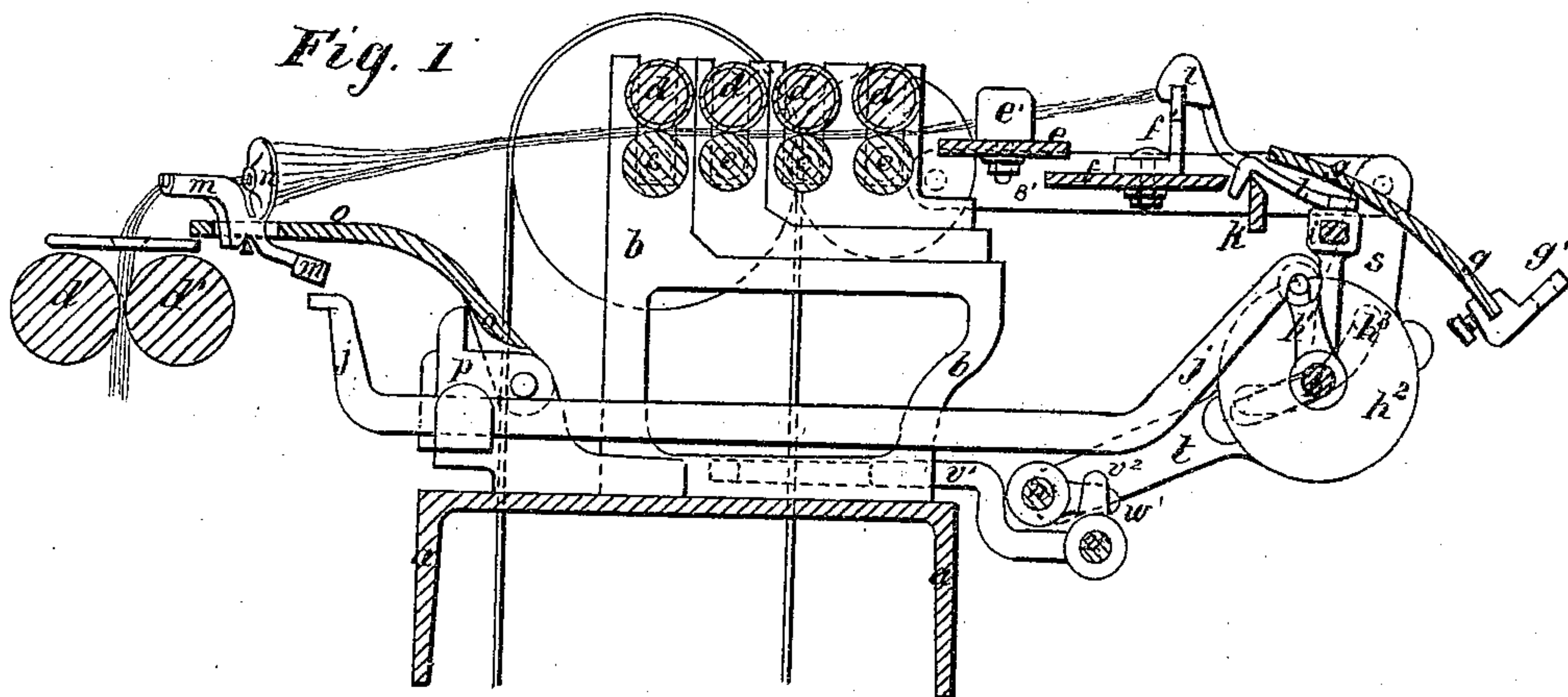


## Drawing-Frame.

No. 128,999.

Patented July 16, 1872.



*Witnesses*

H B Barlow Sen.  
H B Barlow Jr -

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# UNITED STATES PATENT OFFICE.

SAMUEL BROOKS AND JOHN STANDISH, OF WEST GORTON, ENGLAND.

## IMPROVEMENT IN DRAWING-FRAMES.

Specification forming part of Letters Patent No. 128,999, dated July 16, 1872.

*To all to whom it may concern:*

Be it known that we, SAMUEL BROOKS, of West Gorton, near Manchester, in the county of Lancaster, in England, machine-maker, and JOHN STANDISH, of the same place, mechanic, have invented certain new and useful "Improvements in Machinery for preparing Cotton and other fibrous substances;" and we hereby declare the following to be a full, clear, and exact description thereof, reference being had to the annexed drawing forming part of this specification.

Our invention relates to the construction and arrangement of devices constituting the stop-motion of drawing-frames, with a view to rendering their operation more perfect than heretofore.

### *Description of the Drawing.*

Figure 1 is a sectional elevation of part of a drawing-frame to which our improvements are applied, and Fig. 2 is a plan of the same. Figs. 3 and 4 are detached views of parts of our apparatus.

*a* is the roller-beam; *b*, the stands; *c c*, the fluted rollers; *d d*, the top rollers; *d'*, the calender-rollers; *e*, the rail or plate in which the guide-studs *e'* are fixed. *f* is a plate placed rather below the plate *e*, and *g* is the curved plate over which the slivers pass as they are drawn out of the cans. *h* is the oscillating shaft, and *i* the oscillating rail of the back stop-motion. The parts above enumerated are made in the ordinary manner, excepting that the front edge of the plate *f* is beveled, the object of which will be explained hereafter. To the lower edge of the curved plate *g* are fixed the guides *g'*, which are all made in separate pieces, so that the distance between them may be adjusted to distribute the slivers over the bosses of the drawing-rollers. Between the ends of the plates *f* and *g* is the knife-edge rail *k*, which extends the whole length of the frame in order that the spoons *l*, which fit upon it, may be placed in any position. The peculiar construction of the spoons is shown best in Figs. 2 and 3. The part through which the sliver passes is V-shaped and rounded at the bottom, whereby the spoon is adapted to every size of sliver. The bottom of the spoon is partly cut away in front to increase the friction of the slivers on the spoons,

and thereby to allow the same spoons to be used for different thicknesses of sliver. When the slivers are carried forward by the drawing-rollers the spoons *l* are held against the rest *f'* fixed on the plate *f*. These rests are made with recesses corresponding in shape to the bottom of the spoon, and the distance between the recesses is a little greater than the largest part of the spoons, to prevent them crowding together. The front angle of the spoon, fitting on the knife-edge rail *k*, is made flat so that it may bear against the beveled edge of the plate *f* when the tail of the spoon has been pushed forward by the oscillating rail *i*, or other equivalent, as shown in Fig. 4. To the vibrating shaft *h* is fixed the lever *h'*, the upper end of which is provided with trunnions, on which the forked end of the connecting-rod *j* fits. This rod passes, as usual, under the drawing-rollers, and it is provided at the other end with two inclines, which act on the tails of the spoons *m* of the front stop-motion when two such spoons are used, as shown in Fig. 2; but when only one spoon is used the end of the rod *j* is made as usual. In the front stop-motion the spoon *m* and the trumpet-mouth *n* are made in one piece, so that the trumpet-mouth, being placed almost immediately over the knife-edge or fulcrum on which it vibrates, may assist in balancing the spoon and render it more accurate in its action. In a double drawing-head, as shown in Fig. 2, each being supplied with three slivers, as indicated by the dotted lines, the three slivers from each boss are taken through one spoon, *m*, and these spoons are placed diagonally so that the six slivers may be united in passing between the calender-rollers *d'*; the object of using two spoons, whether of our improved description combined with the trumpet-mouth or of the ordinary description, is also to render their action more accurate. The knife-edges of the spoons *m* are cast with the curved plate *o*, which is hinged to the bracket *p*. On the oscillating shaft *h* is fixed a disk, *h'*, in which is a pin, *h''*, taking into a curved slot in the boss of the lever *s*, the upper end of which is connected by the link *s'* to a crank-pin projecting from the face of a pinion fixed on the back drawing-roller. The end of the shaft *h* passes through the said curved slot, and also through a straight slot in the lever *t*, the boss of which



as clips fitting on the boss of the lever *s*, so that when the lever *s* is moved by the link *s'* the lever *t* is also actuated. The strap-fork *v*<sup>1</sup> is fixed to the rod *v*, and this rod is pushed sidewise when required by the rod *w*, around which a spring is coiled, as shown in Fig. 2. The rod *w* has a finger *w'* which acts when required on the finger *v*<sup>2</sup> on the rod *v*.

The mode of operation is as follows, and the drawing represents the parts in the positions they occupy when the slivers are all passing through their respective guides and spoons from the cans to the calender-rollers: The tail ends of the spoons *l* and *m* are held up, and the rail *i* and inclines on the connecting-rod *j* are free to oscillate to and fro under them. As soon as one or more of the slivers fails to pass through one of the spoons *l*, the propensitating weight of the tail end causes the spoon to assume the position shown in Fig. 4. The end of the tail then drops and comes in line with the oscillating rail *i*, which, in moving toward the knife-edge rail *k*, presses the flat edge of the spoon against the beveled edge of the plate *f*, thereby preventing the advance of the rail *i*, and instantly arresting the motion of the oscillating shaft *h*, but the back drawing-roller continues to revolve, and the links *s'* acting on the lever causes the curved slot in the boss thereof to move on the pin *h*<sup>3</sup>, and this action of the lever *s* draws the end of the lever *t* beyond the end of the rod *w*, which, being pushed forward by the spring coiled around it, then acts on the rod *v*, on which is fixed the strap-guide *v*<sup>1</sup>, thereby causing the driving-strap to be moved from the fast to the loose pulley. The attendant then replaces the missing sliver or slivers, and the spoon *l* being again brought forward by the sliver, as shown in Fig. 1, allows the oscillating rail *i* to move to and fro under the tail end of the spoons *l* as before. In like manner, when one or more slivers fail between the front drawing-rollers *c* and the calender-rollers *d'*, the tail end of the spoon *m* falls, and the incline on the end of the connecting-rod *j* comes against it, thereby pressing the front of the spoon against the edge of the plate *o*, and arresting the motion of the oscillating shaft *h*; this stoppage throws the driving-strap from the fast to the loose pulley in the manner above described.

Figs. 5 and 6 represent a trumpet-mouth with a sliding plate, preferably used in lieu of the trumpet-mouth marked *n* in Figs. 1 and 2.

This trumpet-mouth is secured to the plate *o*, and it is provided with a slotted sliding plate which is set and secured by means of a screw so as to regulate the opening according to the thickness of the sliver passing through it.

We do not claim a knife-edged rail or support for the spoons *l* or *m*, nor adjusting the aperture of the trumpet to adapt it to slivers of varying thickness, but merely our improved construction and arrangement of parts for the purpose in view.

Having thus stated the nature of our invention, and described the manner of performing the same, we declare that what we claim herein as new, and desire to secure by Letters Patent of the United States, is—

1. The rests *f'* attached to the plate *f*, and provided with notches to adapt them to receive and support the spoons *l* of the back stop-motion, as shown and described.

2. A series of sliver-guides, *g'*, attached to the plate *g*, as shown, whereby each may be adjusted laterally independently of the others, as set forth.

3. The combination of the strap-guide *v*<sup>1</sup>, shafts *v w* provided with tappets, the lever *t* and lever *s*, as shown and described, to cause the shifting of the driving-strap from the fast to the loose pulley.

4. The spoons *l* arranged to slide or be adjusted laterally on the knife-edged rail *k*, as shown, for the purpose specified.

5. In combination with the strap-guide *v*<sup>1</sup>, tappet-shafts *v w*, the slotted levers *s* and *t* connected, as described, the shaft *h*, levers, *h*<sup>1</sup>, and rail *i*, connecting-rods *j*, and spoons *m* and *l* of the front and back stop motion, all arranged to operate as specified.

6. The spoons *l*, of the back stop motion, made of a V-shape and round at the bottom, and cut out or left open at the front, as shown and described for the purpose specified.

7. In combination with the trumpet, constructed as specified, the vertically-moving slide secured by a set-screw working in the slot thereof, all as shown and described.

In testimony whereof we have hereunto set our hands before two subscribing witnesses.

S. BROOKS.

JOHN STANDISH.

Witnesses:

H. B. BARLOW, Sr.,

H. B. BARLOW, Jr.