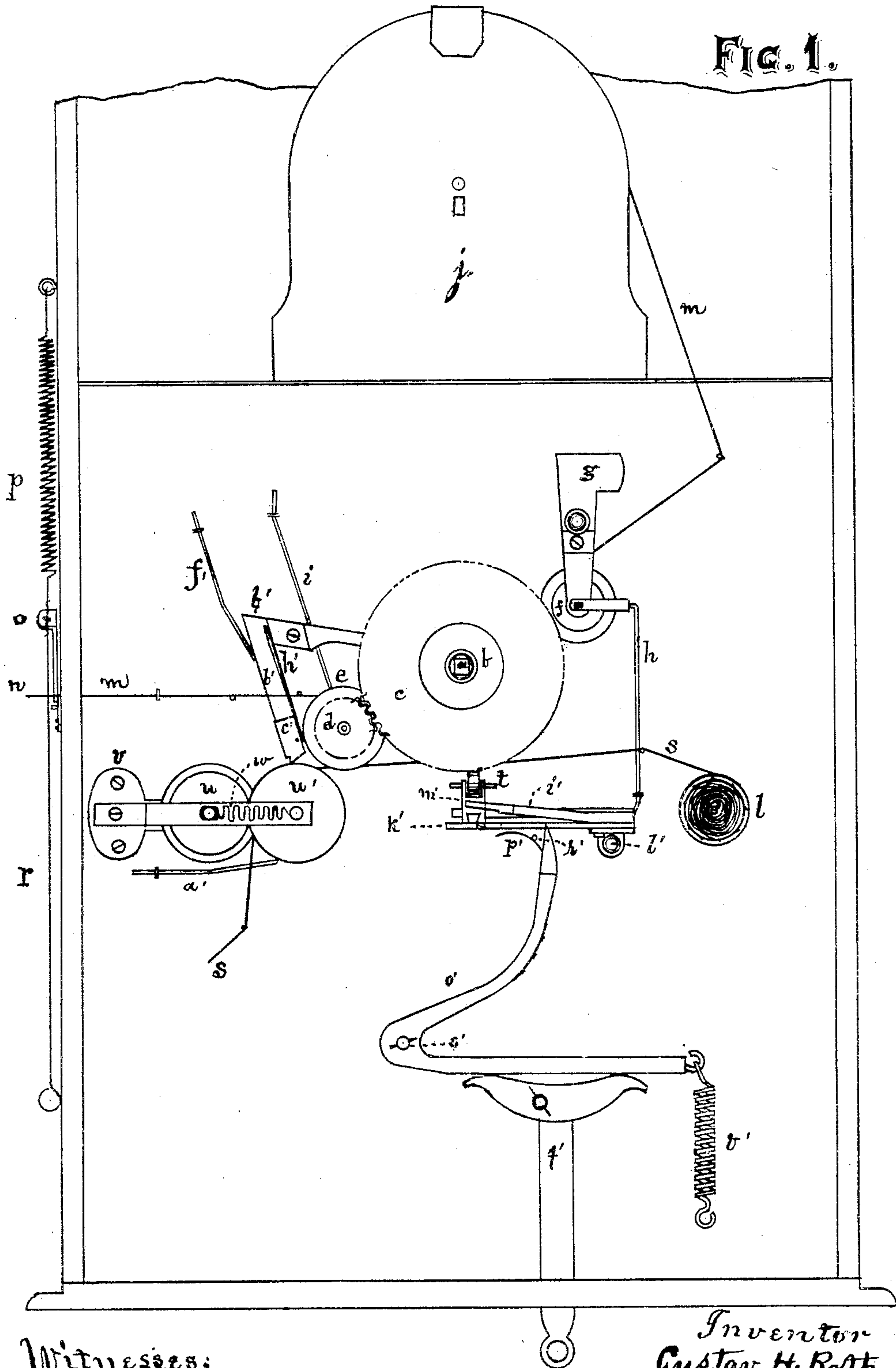


G. H. ROTH.
 Watchman's Detector.
 No. 213,135. Patented Mar. 11, 1879.

Fig. 1.



Witnesses:
 D. A. King
 C. D. Fornum

Inventor
 Gustav H. Roth
 Per F. L. King
 Atty.

G. H. ROTH
Watchman's Detector.

No. 213,135

Patented Mar. 11, 1879.

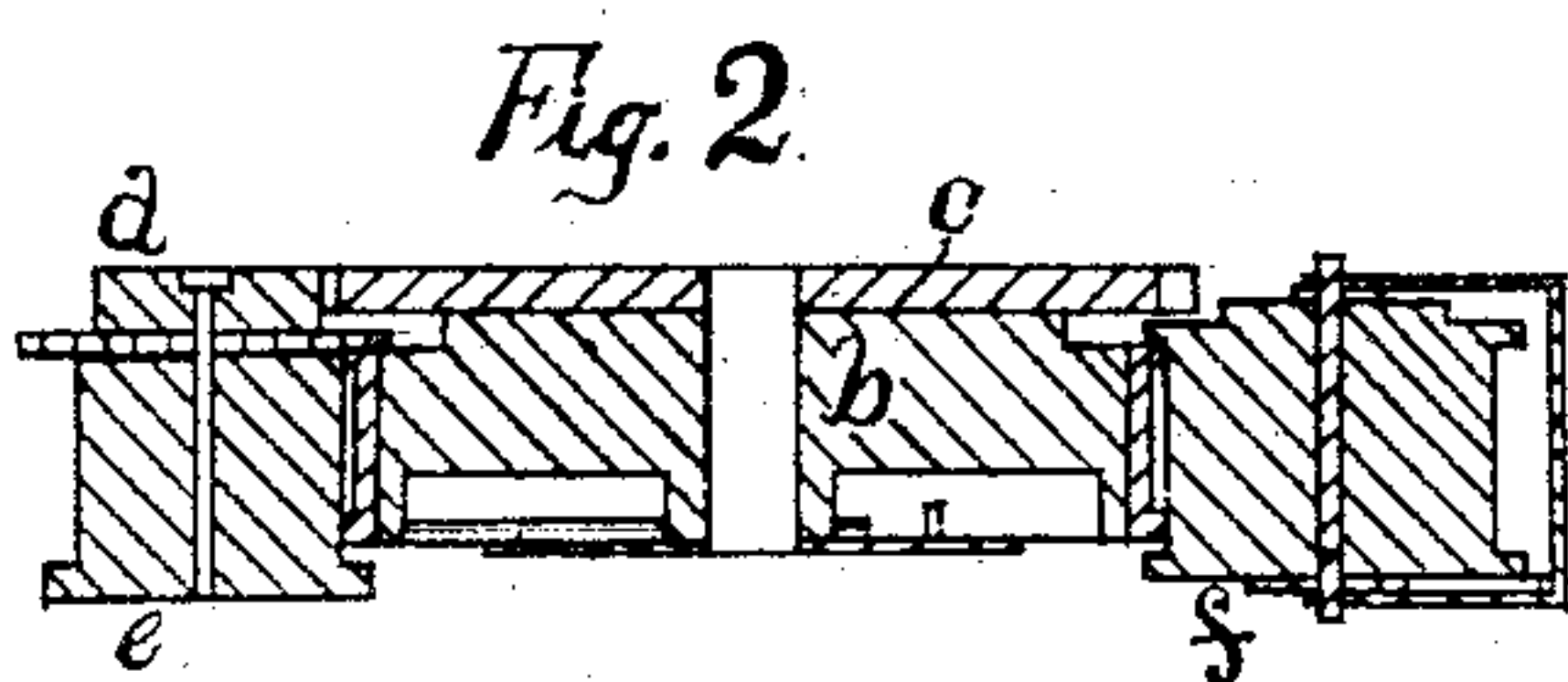
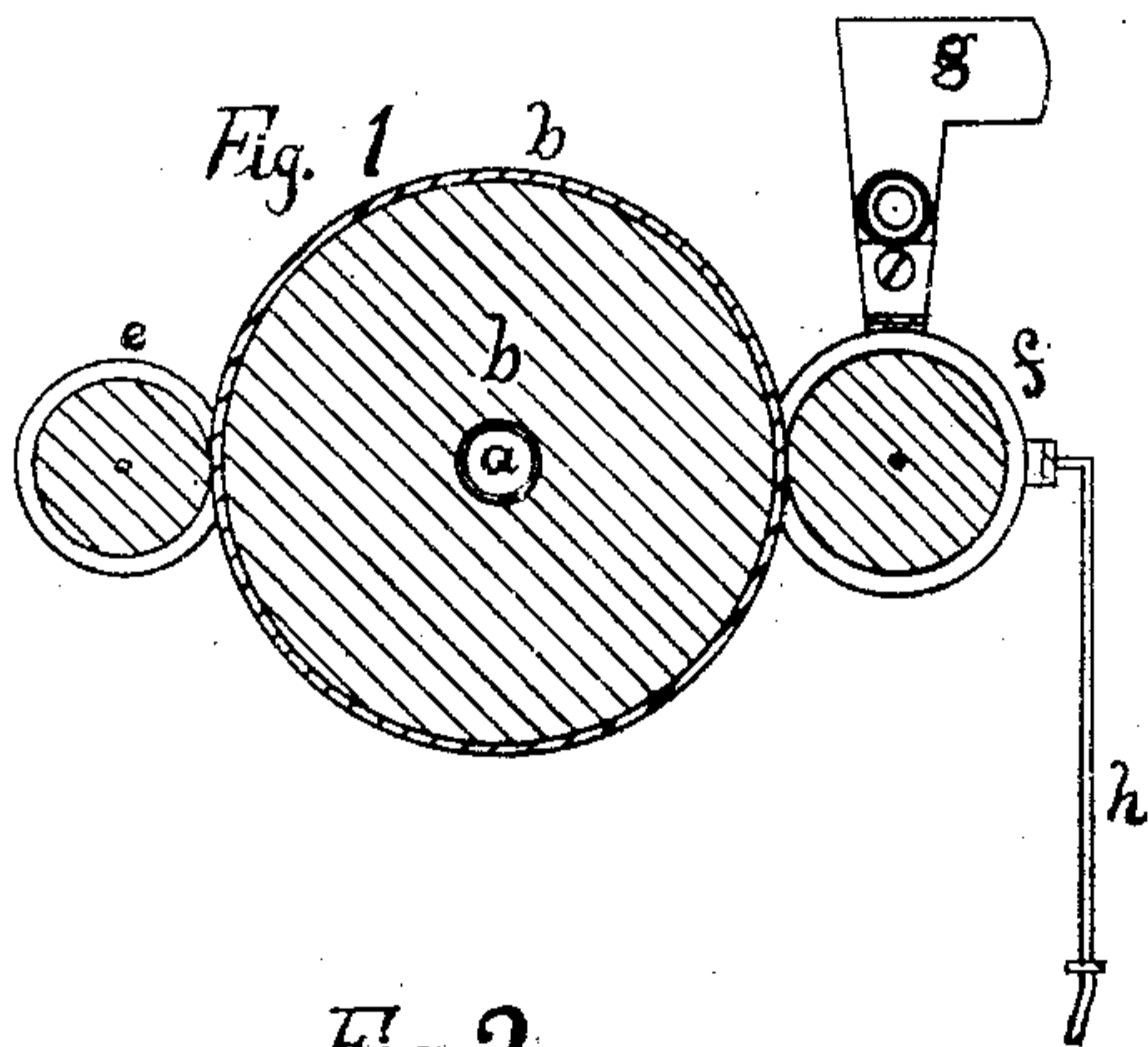
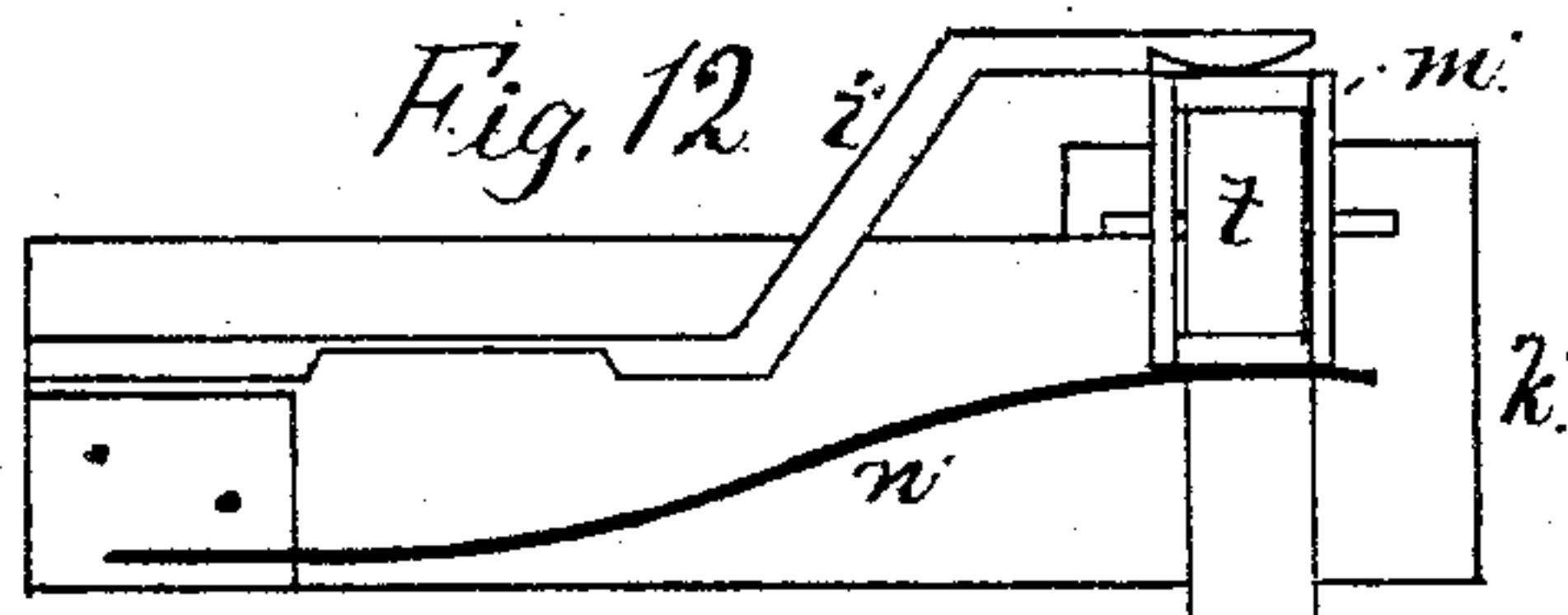
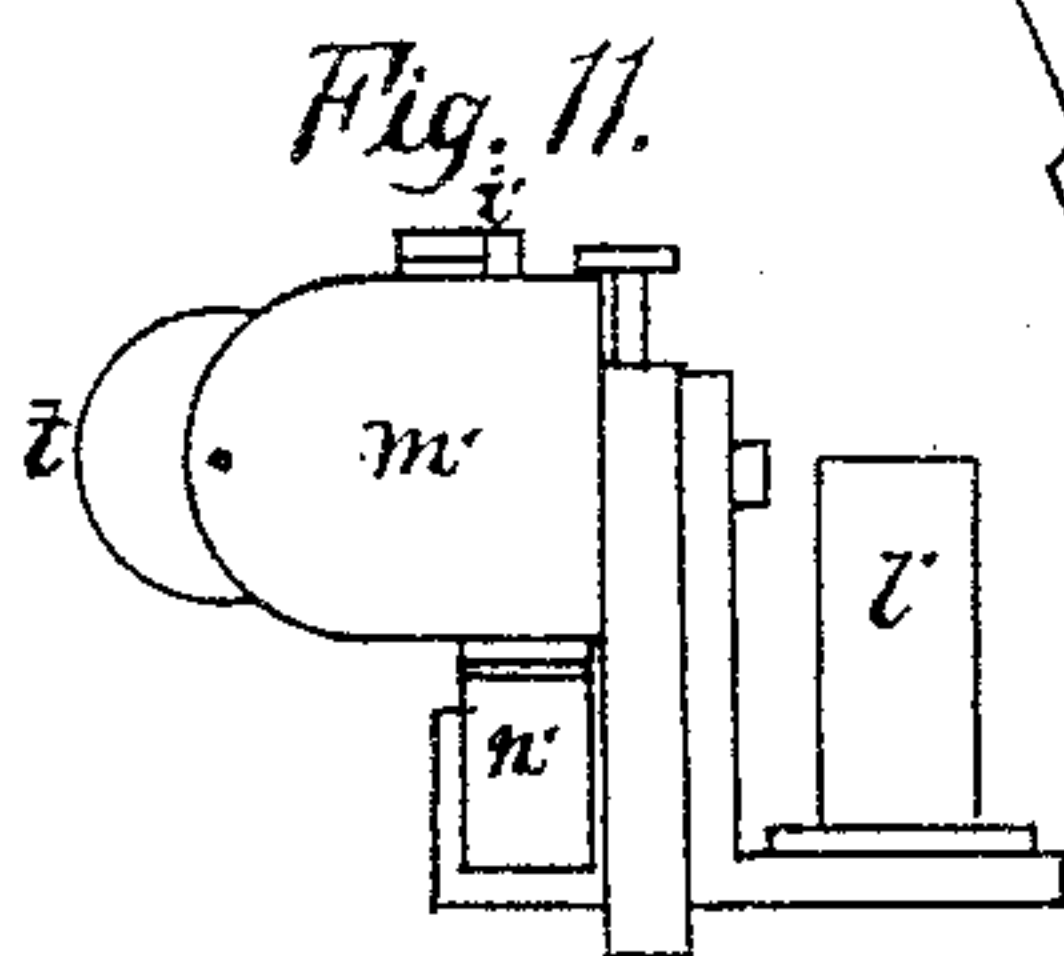
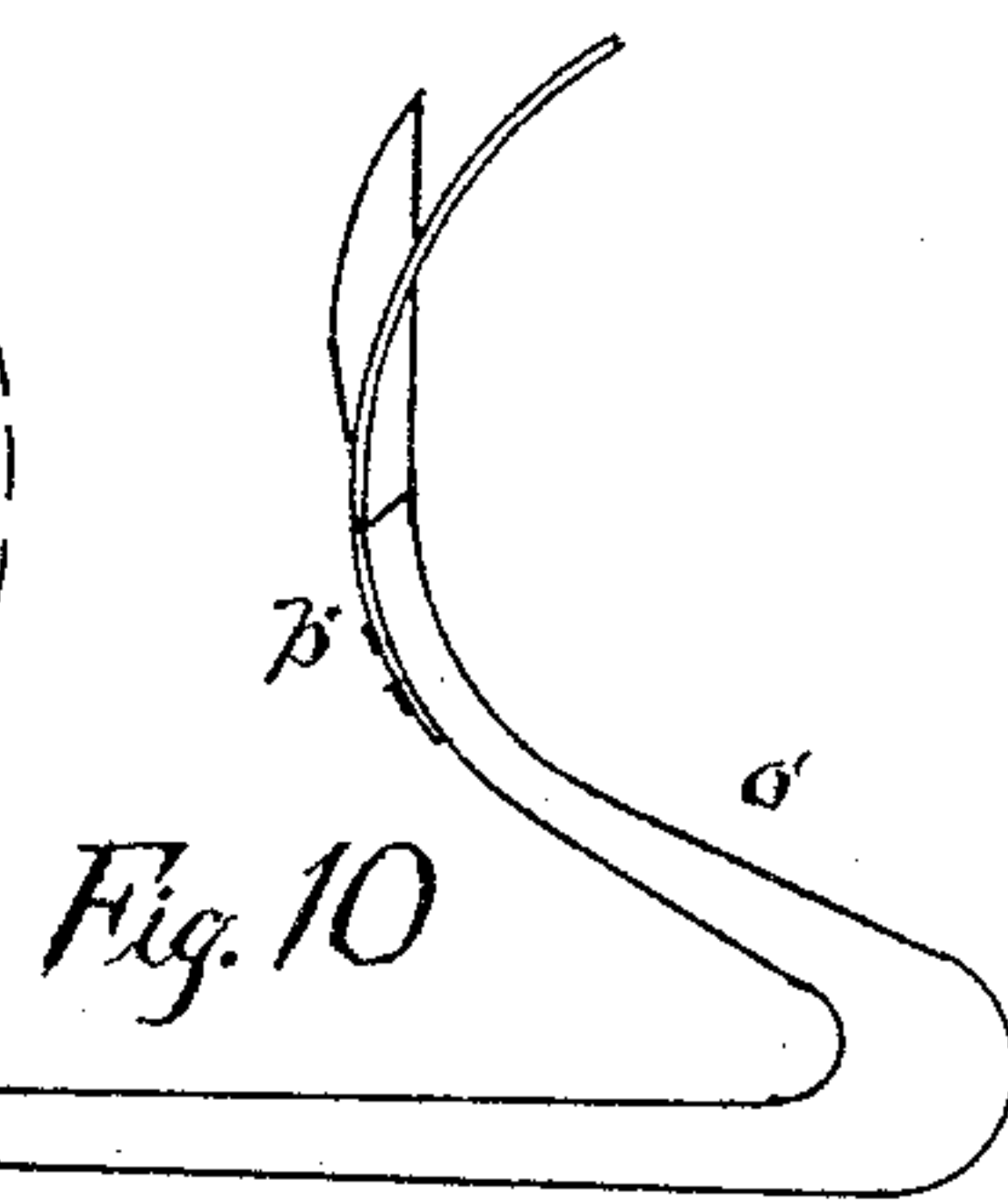
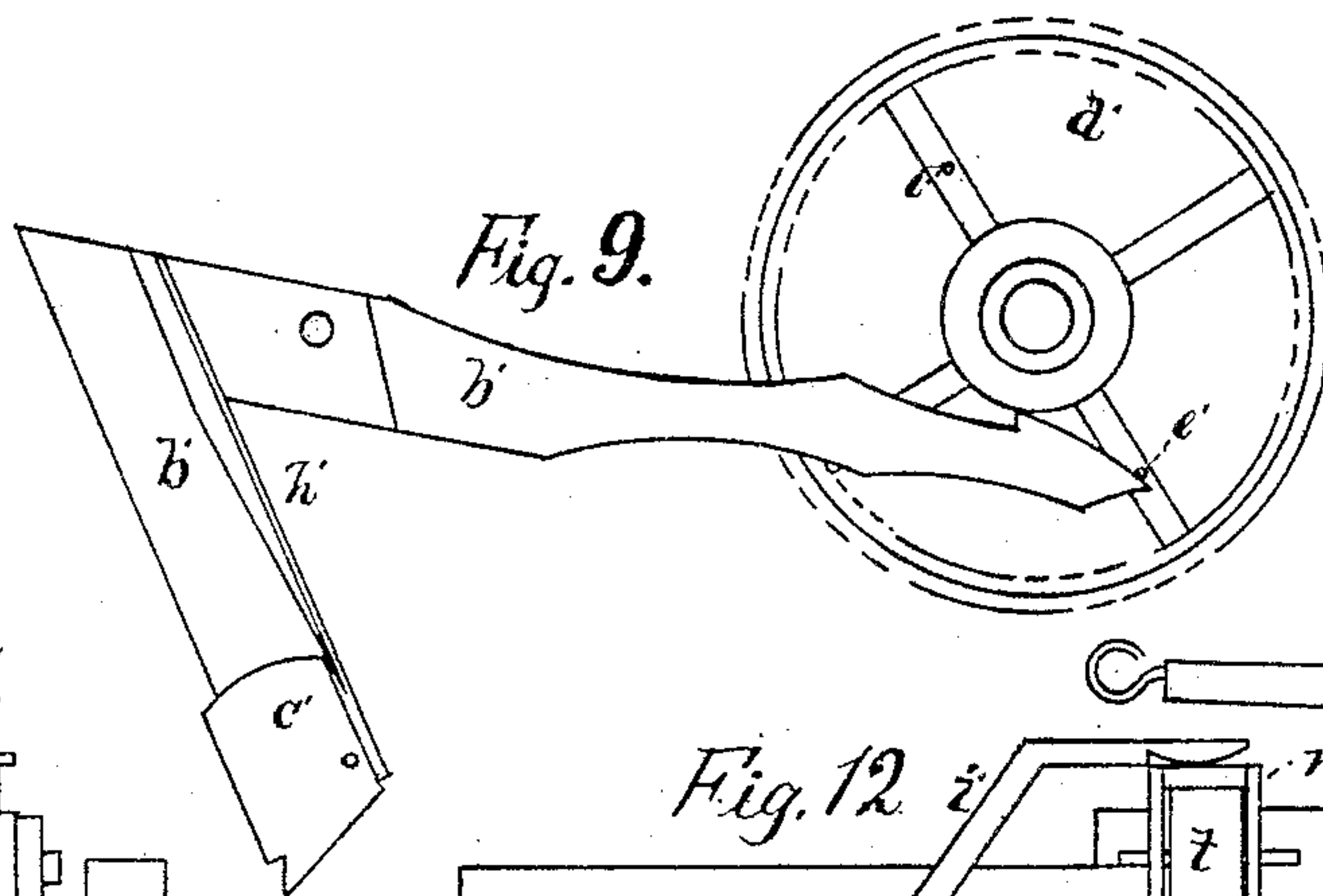
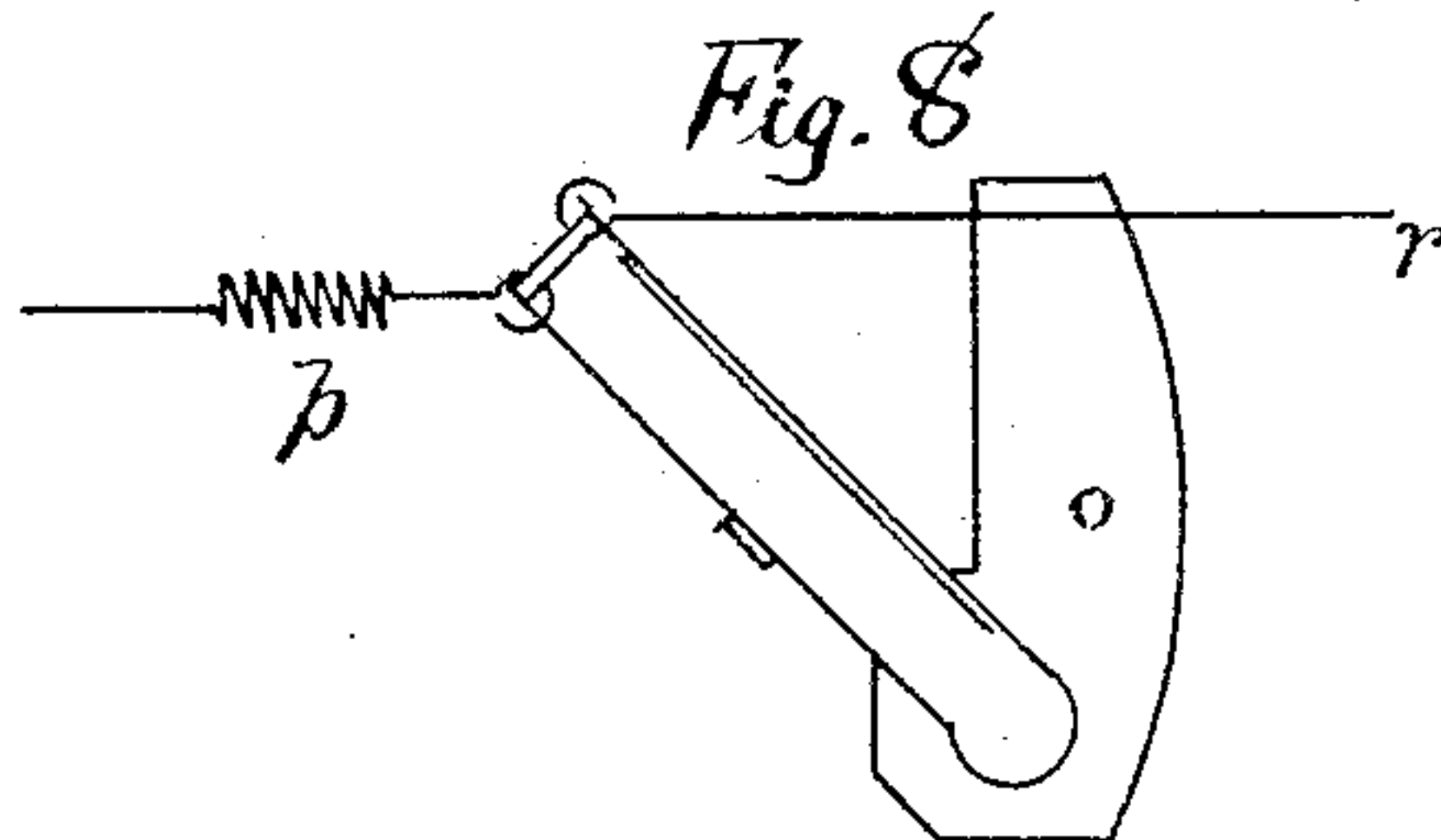
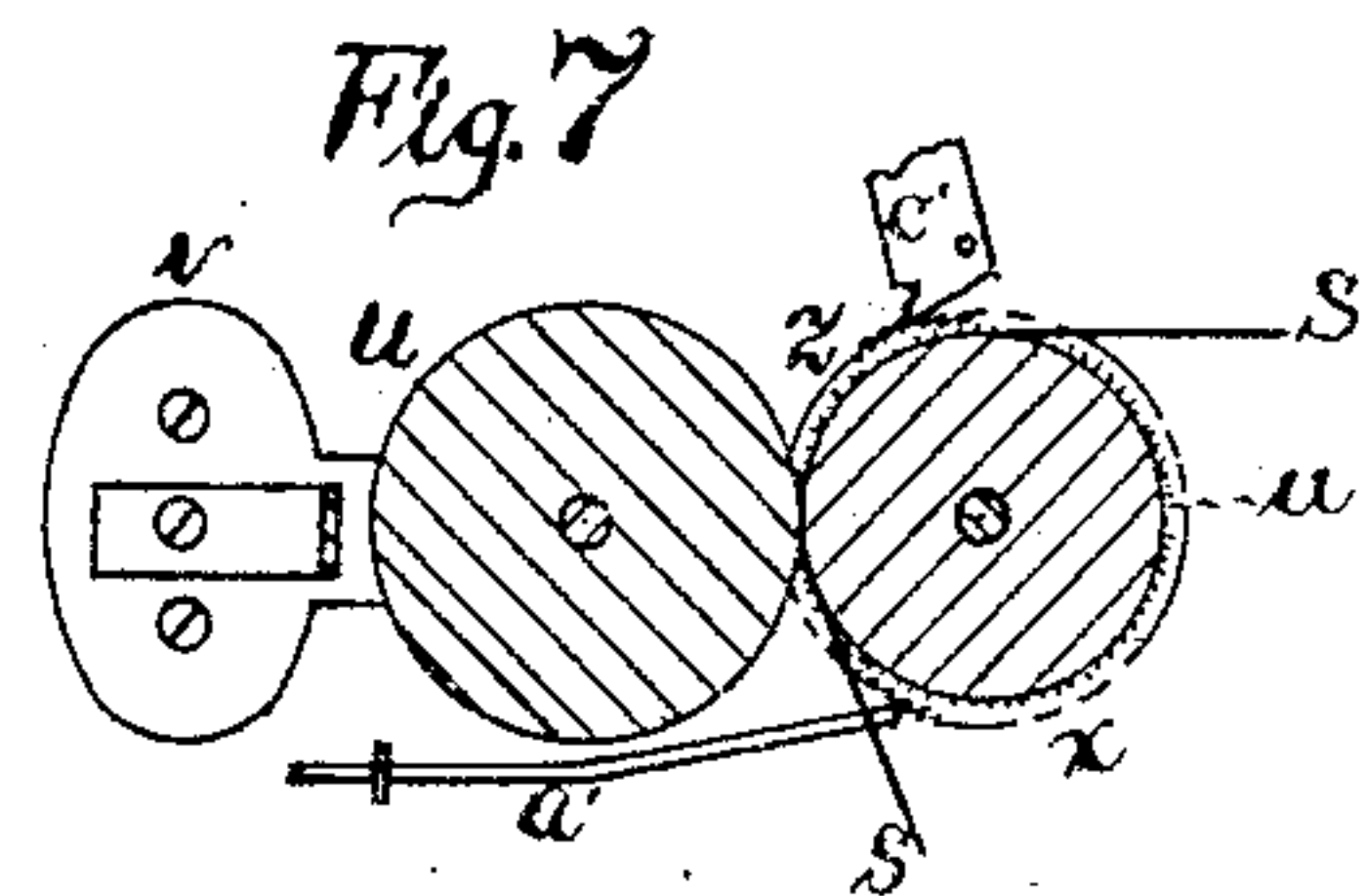
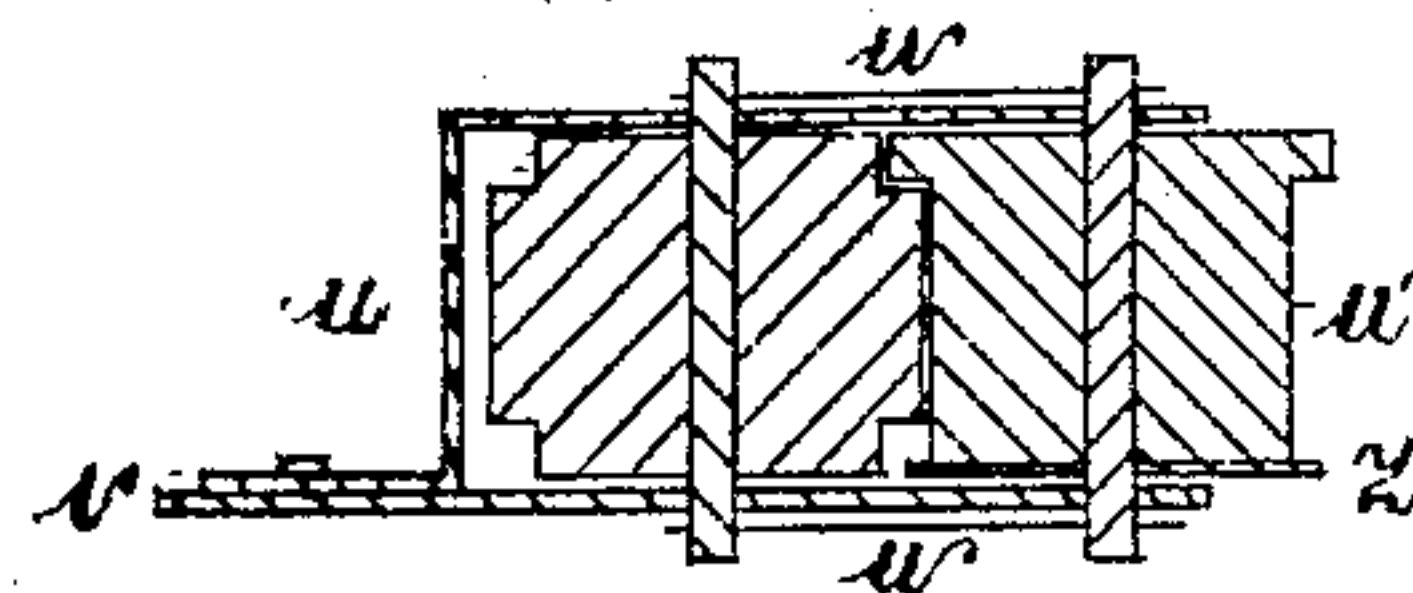
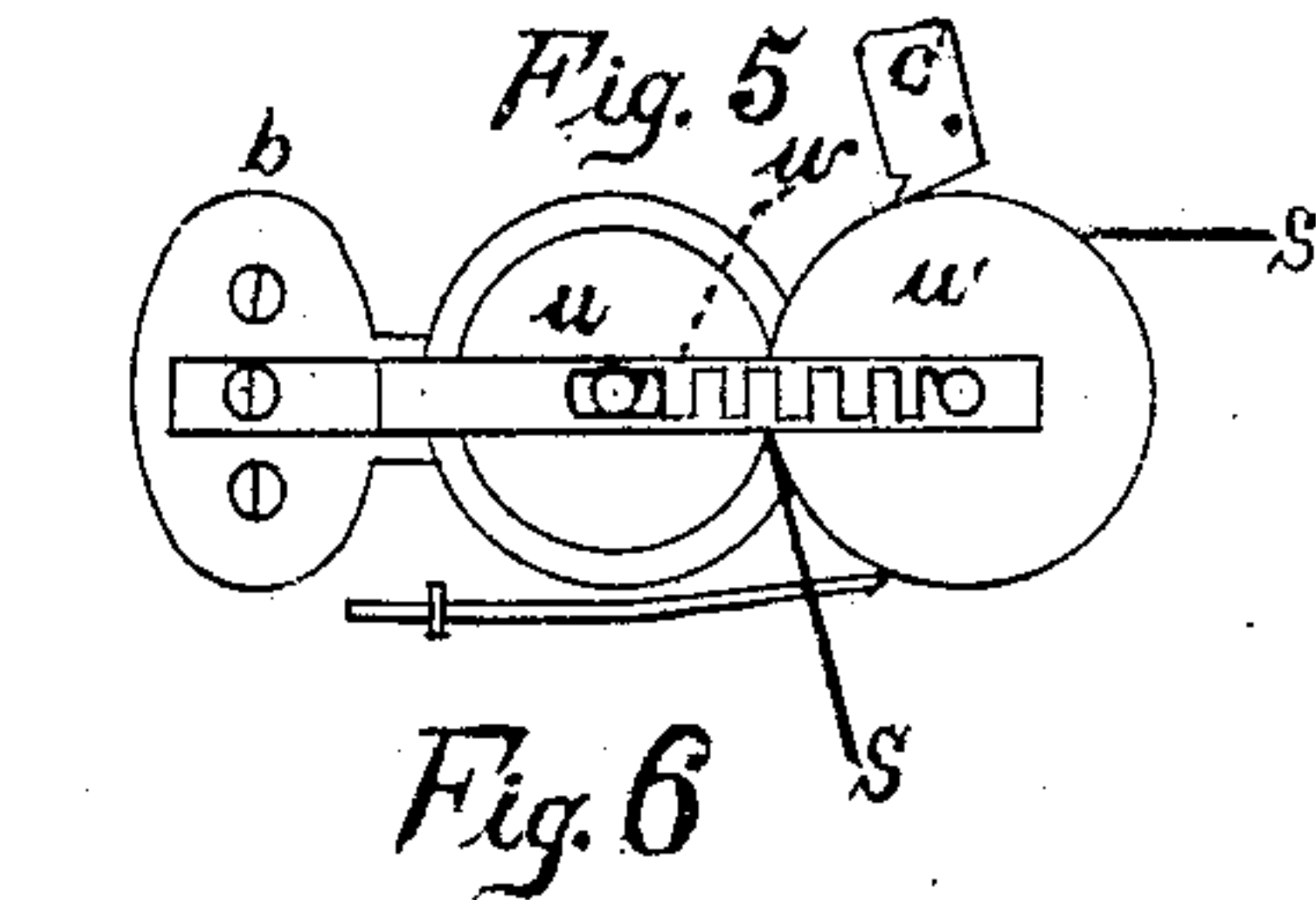
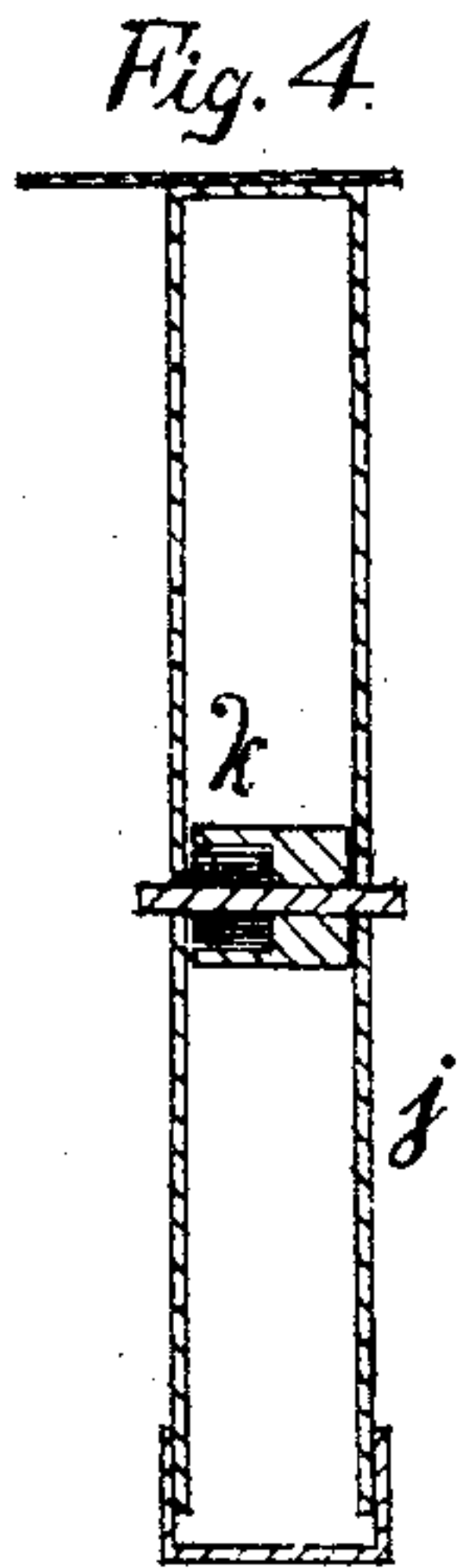
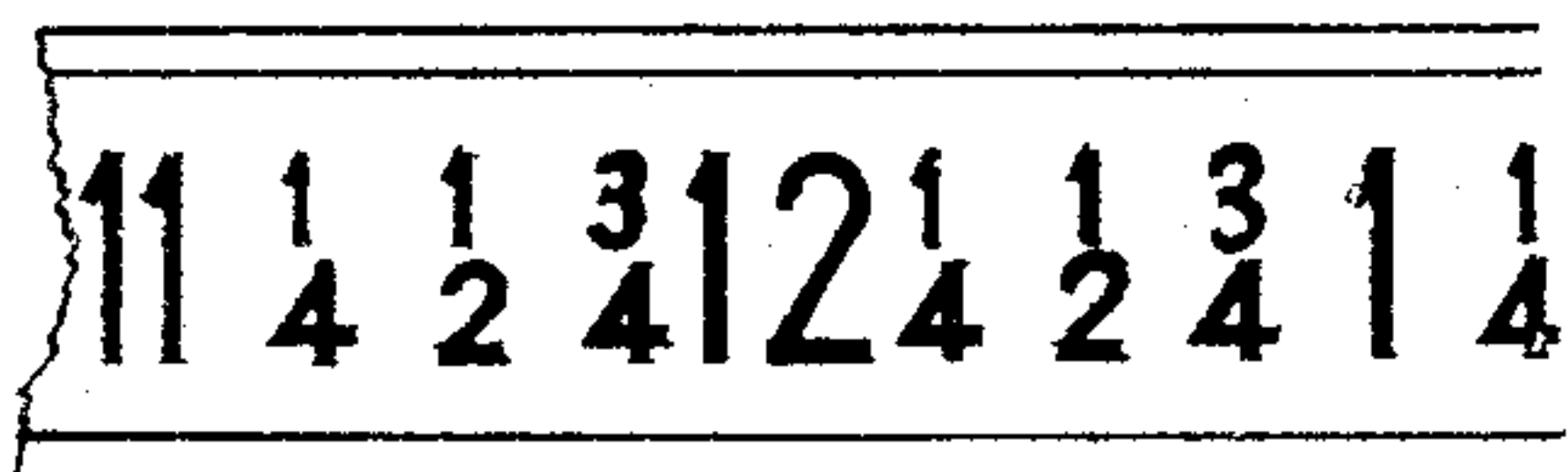


Fig. 3.



Witnesses
D. A. King
C. D. Farnum

Inventor
Gustav H. Roth
Per J. L. King Atty.

UNITED STATES PATENT OFFICE.

GUSTAV H. ROTH, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN WATCHMEN'S DETECTERS.

Specification forming part of Letters Patent No. **213,135**, dated March 11, 1879; application filed October 4, 1877.

To all whom it may concern:

Be it known that I, GUSTAV H. ROTH, of the city of Boston, county of Suffolk, and State of Massachusetts, have invented certain new and useful Improvements in Watchmen's Detectors; and I declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and the letters and figures of reference marked thereon, which make a part of this specification.

The object of my invention is to connect with the ordinary mechanism of a clock a registering device for printing upon a strip of paper appropriate letters or figures to indicate the time of day or night that the device may have been operated upon by the watchman, thus furnishing a printed record of the exact time the watchman is attending to the duties required of him by his employer.

In the accompanying drawings, Figure 1, Sheet 1, is a general plan of my improved device as it would appear upon the removal of the dial of the clock, its position being in front of the ordinary running-gear of the clock, which it is not deemed necessary to represent, except such parts as are immediately connected with this device.

a represents the ordinary post or arbor, carrying the hour-hand of the clock, made sufficiently long to admit the placing thereon of the printing-drum *b*. (Shown also in Figs. 1 and 2, Sheet 2.) Around the periphery of this drum a metallic band is placed, having thereon, at appropriate intervals, raised letters or figures to correspond with the hour as represented by the hands on the face of the dial, care having been taken to adjust the hands so as to correspond with the figures on the drum.

The hour-figures are made sufficiently long to nearly cross the bands, while within the space between the figures representing the hours, one-quarter, one-half, three-quarters, &c., may be placed smaller figures, to indicate the minutes. An enlarged developed section of this band is shown in Fig. 3, Sheet 2.

On the face of the drum *b* is placed the spur-gear *c*, and on each side of the drum *b* are placed two guide-rollers, *e* and *f*, provided with suitable flanges, for the purpose of holding in an appropriate manner the strip

of paper to be printed on. Sectional views of these rollers are shown in Figs. 1 and 2, Sheet 2.

The roller *f* is held in position in appropriate bearings in the hinged lever *g*, hinged, that it may the better adjust itself to its appropriate position, while the spring *h* is so arranged and adjusted as to give the necessary pressure. The adjustment of the roller *f* is fully shown in Fig. 1, Sheet 1, and Fig. 2, Sheet 2.

The roller *e* is adjusted, in an appropriate manner, upon the spring *i*, as shown in Fig. 1. The roller *e* carries upon its face the small spur-gear *d*, which meshes into the large gear *c*. The gear *d* is made smaller than the guide-roller *e*, and is rotated by the large gear *c*, for the purpose of creating a slight friction and strain upon the strip of paper which runs between the drum *b* and the roller *e*, in order to keep the paper tight upon the dial-band around the periphery of the drum *b*.

In the upper part of Fig. 1, Sheet 1, is the case *j*, a sectional view of which is shown in Fig. 4, Sheet 2. It is adjusted to its place by an appropriate slide attached to the case of the clock. This case is for the purpose of holding the roll of paper to be printed on.

In the sectional view, Fig. 4, Sheet 2, the spool *k* is shown, upon which the paper is rolled, and within which a spiral friction-spring is placed, in a similar manner and for a similar purpose as the one within the ribbon-spool *l*, Fig. 1, Sheet 1.

The spools in both cases are made hollow, and a small strip of suitable metal is rolled up and adjusted within the same for a friction-spring, for the purpose of retarding the motion of the spool and creating a slight strain upon the ribbon of the spool *l*, Fig. 1, Sheet 1, and spool *k*, Fig. 4, Sheet 2.

The strip of paper *m*, Fig. 1, Sheet 1, upon the spool within the case *j*, is drawn over the guide-roller *f*, and between the same and the dial-drum *b*, thence around the under side of the same, and up between the drum *b* and the guide-roller *e*, from which it is carried through appropriate guides to and through the side of the clock-case, as shown at *n*, that the printed record may be read upon the outside without opening the case of the clock.

On the outer side of the case the shears *o* (a side view of which is represented by Fig. 8, Sheet 2) are placed, for the purpose of cutting off the paper at pleasure.

The spring *p* is for the purpose of holding open the movable jaw of the shears, to enable the paper *m* to pass freely through between the jaws.

The wire *r*, adjusted to the movable jaw of the shears, is for the purpose of enabling a person to cut the paper when the clock is placed above reach.

Upon the spool *l*, Fig. 1, Sheet 1, is placed a ribbon, *s*, which is prepared with such coloring-matter as is generally used in the preparation of printing ribbons. This ribbon is passed through appropriate guides directly beneath the paper *m*, as it passes under the printing or dial drum *b* and between said drum and the roller *t*, from thence it passes between the guide and tension rollers *u u'*. The guide and tension rollers *u u'* are adjusted in appropriate bearings in the support or bracket *v*, the bearings for one of the rollers being so made as to admit of a slight lateral movement.

Upon each side of the bearings of the rollers *u u'*, and attached to the arbors of the rollers, is the serpentine spring *w*, which holds the rollers firmly together, and at the same time permits them to accommodate themselves to any slight inequalities in the ribbon *s*. These tension-rollers are best shown in Figs. 5, 6, and 7, Sheet 2, which show a plan, and longitudinal, and vertical section of the same.

Around the vertical center of the tension-roll *w*, (shown in Fig. 7, Sheet 2,) is placed a toothed friction-wheel, *x*, the teeth of which extend slightly beyond the periphery of the roll, for the purpose of holding securely the ribbon *s*. At one end of the same roll is placed another toothed or ratchet wheel, *z*. (Best shown in Fig. 6, Sheet 2.) Connected with this wheel is the pawl *a'*, which prevents the wheel from turning backward.

Above the tension-roll *w*, and connected with the ratchet-wheel *z*, is the self-acting click *c'*, attached to the angular lever *b'*. This lever is best shown in Fig. 9, Sheet 2, which also shows the hour-wheel of the clock, *d'*, upon the radial arms of which are placed one or more tripping-pins, *e' e'*, which, acting upon the lever *b'*, actuate the self-acting click *c'*, and thus turning the tension-roll *w* a gentle strain is given to the ribbon *s*.

The spring *f'*, Fig. 1, Sheet 1, presses against the angular lever *b'*, and forces it back into position whenever it is actuated by the pins *e'* and the arms of the hour-wheel. (Shown in Fig. 9, Sheet 2.)

The spring *h'* (best shown in Fig. 9) is for the purpose of pressing the self-acting click *c'* back into position after being actuated by the lever *b'*.

Fig. 12, Sheet 2, shows what may be termed the "printing-levers" *i'* and *k'*. (Shown also in Fig. 1, Sheet 1.) The lever *k'* is hinged upon the

post *l'*, Fig. 1, Sheet 1, upon which it is allowed a slight oscillating motion. Upon the other end of this lever, transversely arranged in an appropriate slide-bearing, *m'*, is the friction-roll *t*. On one side of the slide-bearing of the roll is the irregular spring-lever *i'*, the other end of which is firmly attached to the lever *k'*. Upon the opposite side of the slide-bearing *m'* is the spring *n'*.

In Fig. 1, Sheet 1, directly beneath the lever *k'*, is the irregular lever *o'*, another view of which is shown in Fig. 10, Sheet 2. This lever carries at the upper end the spring *p'*.

The post *r'*, Fig. 1, Sheet 1, is so placed that when the lever *o'* is in its normal position it presses the spring *p'* down from beneath the lever *k'*. The lever *o'* is hinged upon the post *s'*. Beneath the lower arm of this lever is the eccentric-lever *t'*, hinged upon an appropriate post, and extending downward through the bottom of the case of the clock.

At the extreme end of the horizontal arm of the irregular lever *o'* is the spring *v'*, one end of which being attached to the lever and the other to some appropriate part of the clock, draws the lever firmly down upon the eccentrics of the lever *t'*.

It will be seen that, by drawing the lower end of the lever *t'* either to the right or left, the same motion is imparted to the irregular lever *o'*—that is to say, the horizontal arm of the lever *o'* will be forced upward, giving an upward and longitudinal motion to the upper arm of the lever *o'* in a left-hand direction, and as it passes the post *r'* the spring *p'* is relieved, and, pressing upward, forces the lever *k'*, carrying the roll *t'*, upward against the ribbon-paper *m* and the lettered or figured band around the printing-drum *b*. At the same time the point of the lever *o'*, having passed above the irregular spring-lever *i'*, pressing against the angle of the same and moving longitudinally, imparts an inward motion to the lever *i'*, which forces the roll *t* across the face of the raised letters or figures on the band around the periphery of the printing-drum *b*, also pressing the ribbon *s* and paper *m* firmly against the face of the raised letters or figures on the band around the periphery of the drum *b*, and thus in a well-known manner prints upon the paper the letters or figures on the dial-band that happen to be next the wheel at the time.

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

1. In a watchman's detector connected with the ordinary running-gear of a clock, the combination, with the hour post or arbor of such clock, of the wheel *b*, carrying on its periphery a band having raised letters or figures thereon, indicating the hours by large figures, and the quarters by figures of less size, (best shown in the developed section, Sheet 2, Fig. 5,) made and adjusted substantially as described.

2. In a device for watchmen's detectors, the combination of the hour post or arbor *a* of the

clock, and carrying in unison therewith a wheel having around its periphery a band on which are raised letters or figures, indicating the hour and quarter-hours, with the paper ribbon *m* and printing-ribbon *s*, adjusted, arranged, and operating substantially as shown and described.

3. The combination of the guide-rolls *e* and *f* with the paper *m* and lettered dial-band, substantially as and for the purpose herein specified.

4. The combination, with the dial-drum carrying a lettered or figured band, as aforesaid, of the gears *d* and *e*, arranged and operating substantially as and for the purpose herein set forth.

5. The combination, with the hour-wheel of a clock carrying a lettered band or drum, as aforesaid, of the tripping-pins *e' e'*, lever *b'*, self-acting click *e'*, and the tension-rolls *u u'*, substantially as and for the purpose described.

6. In a device for a watchman's detector, connected with the ordinary running-gear of a clock, the combination of the hour-post *a*, wheel *b*, and figured band (best shown in the enlarged developed section, Sheet 2, Fig. 3) with the printing-wheel *t*, arranged, adjusted,

and operating substantially as shown and described.

7. The combination, with the roll *t* on the slide-bearing *m'*, of the levers *k'* and *i'*, substantially as described.

8. The combination, with the lever *o'*, spring *p'*, and post *r'*, of the levers *k'* and *i'*, slide *m'*, and friction-roll *t*, substantially as and for the purpose described.

9. The combination, with the tension-rolls, of the toothed wheels *x* and *z*, substantially as shown, and for the purpose described.

10. The combination of the figured band, a developed and enlarged section of which is given in Fig. 3, Sheet 2, wheel *b*, arbor *a*, spur-gear *c*, and paper ribbon *m* with the friction-roll *e* and spur-gear *d*, made, arranged, and operating substantially as and for the purpose herein set forth and described.

11. The combination of the shears *o*, springs *p*, paper *m*, and wire *r*, substantially as and for the purpose described.

GUSTAV H. ROTH.

Witnesses:

F. L. KING,

V. H. OSBORNE.