

I. B. SAGER.
RECORDING DEVICE FOR WEIGHING SCALES.

No. 411,837.

Patented Oct. 1, 1889.

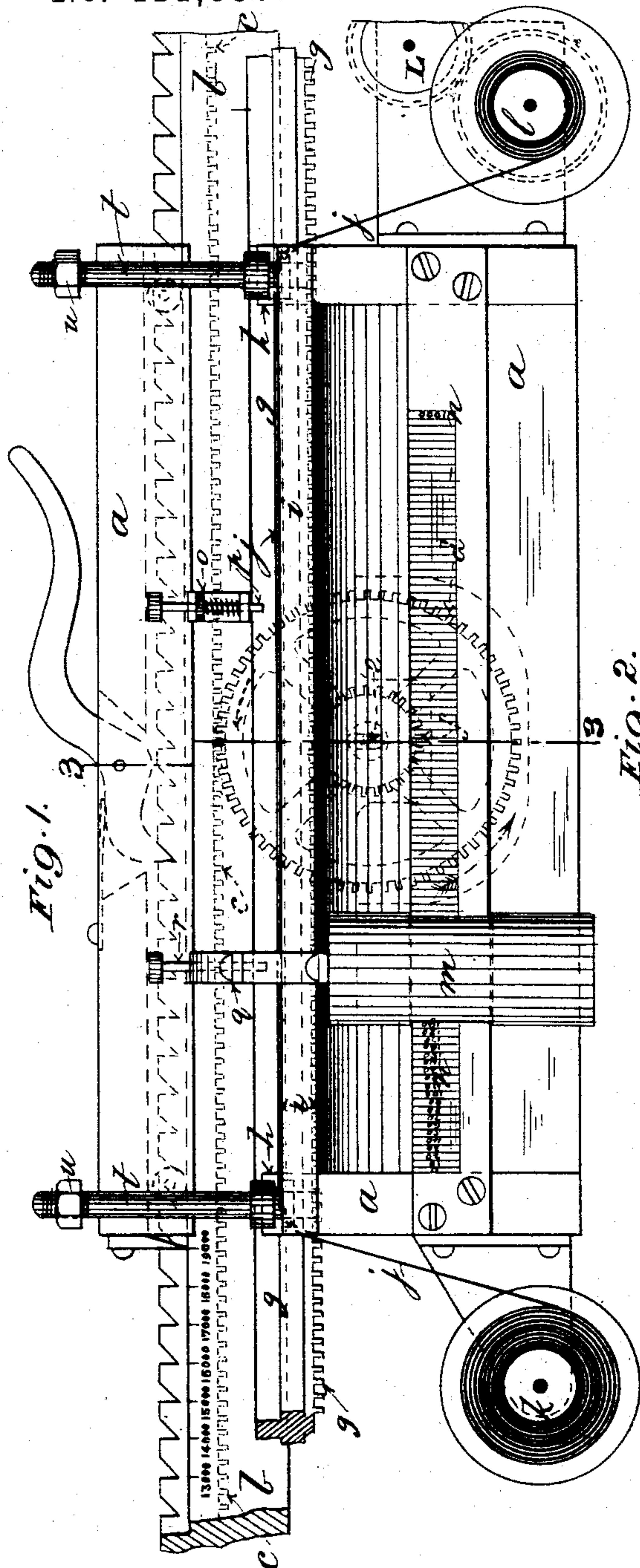


Fig. 1.

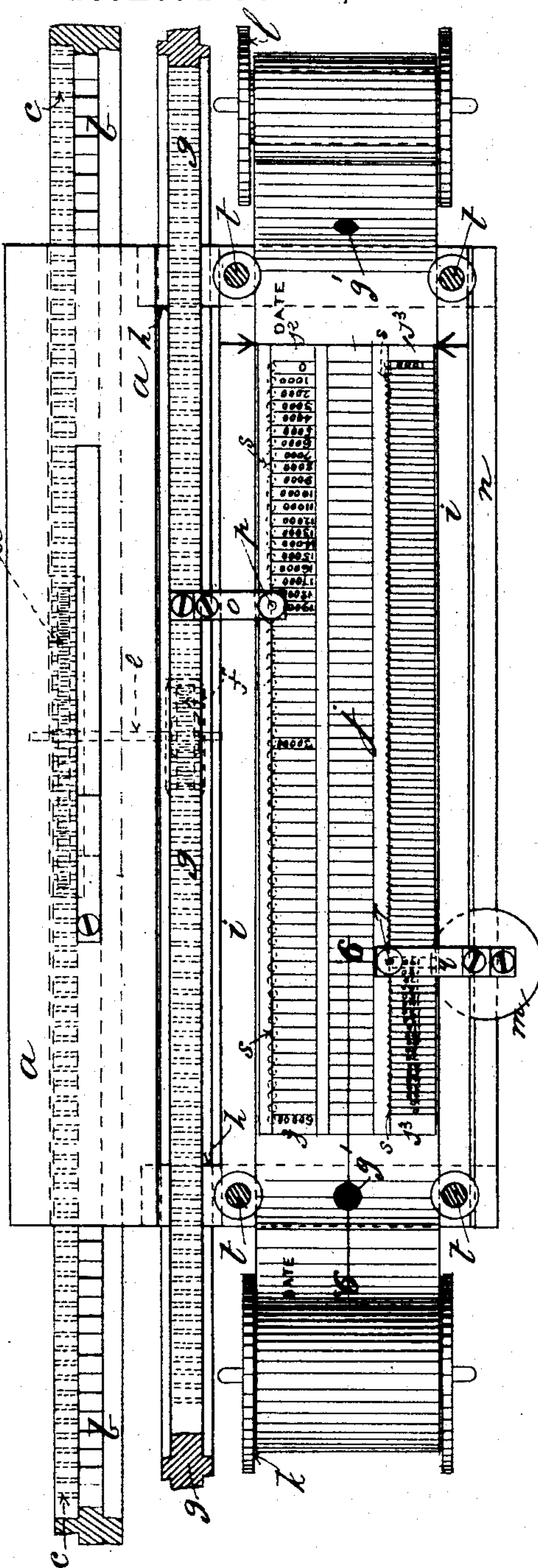
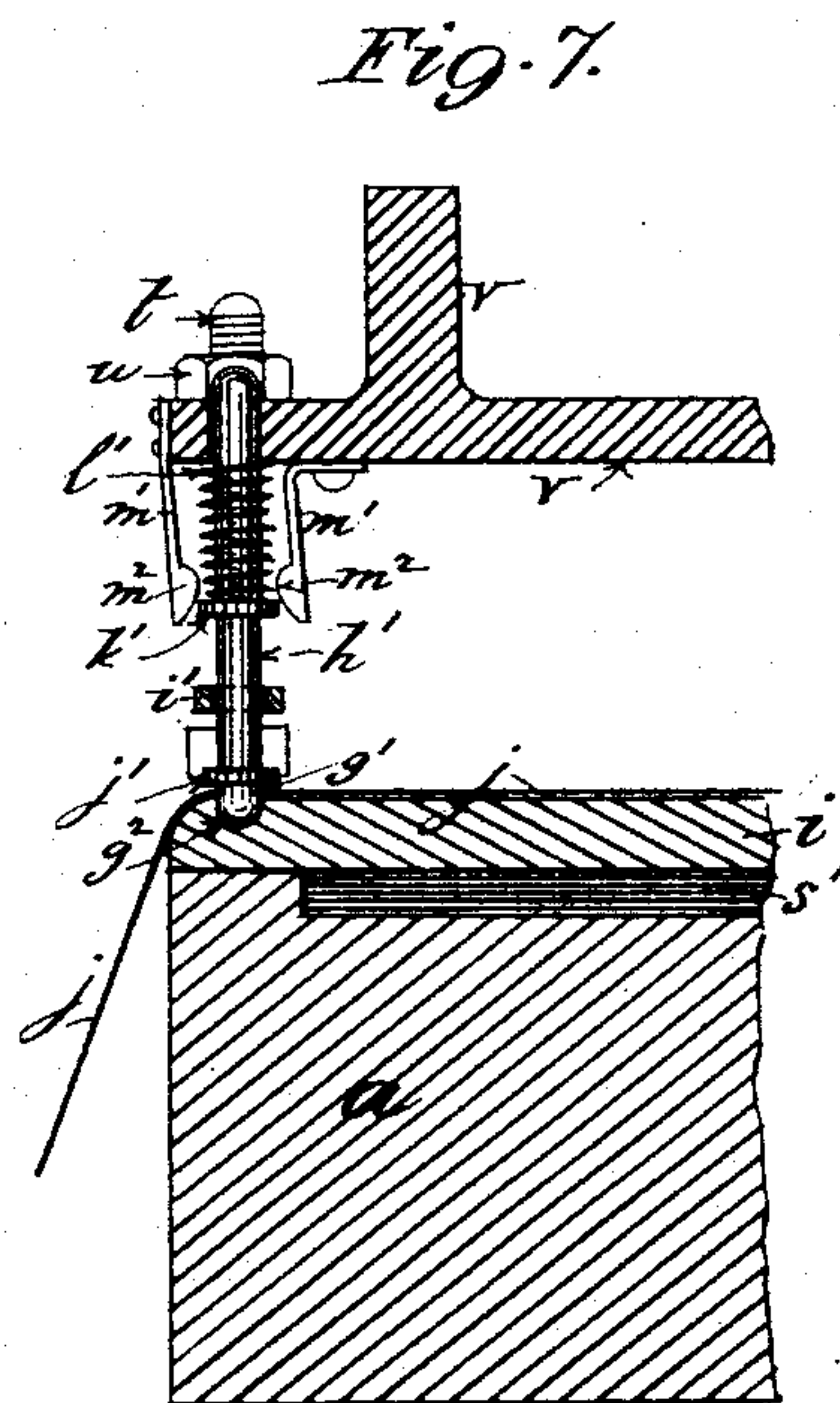
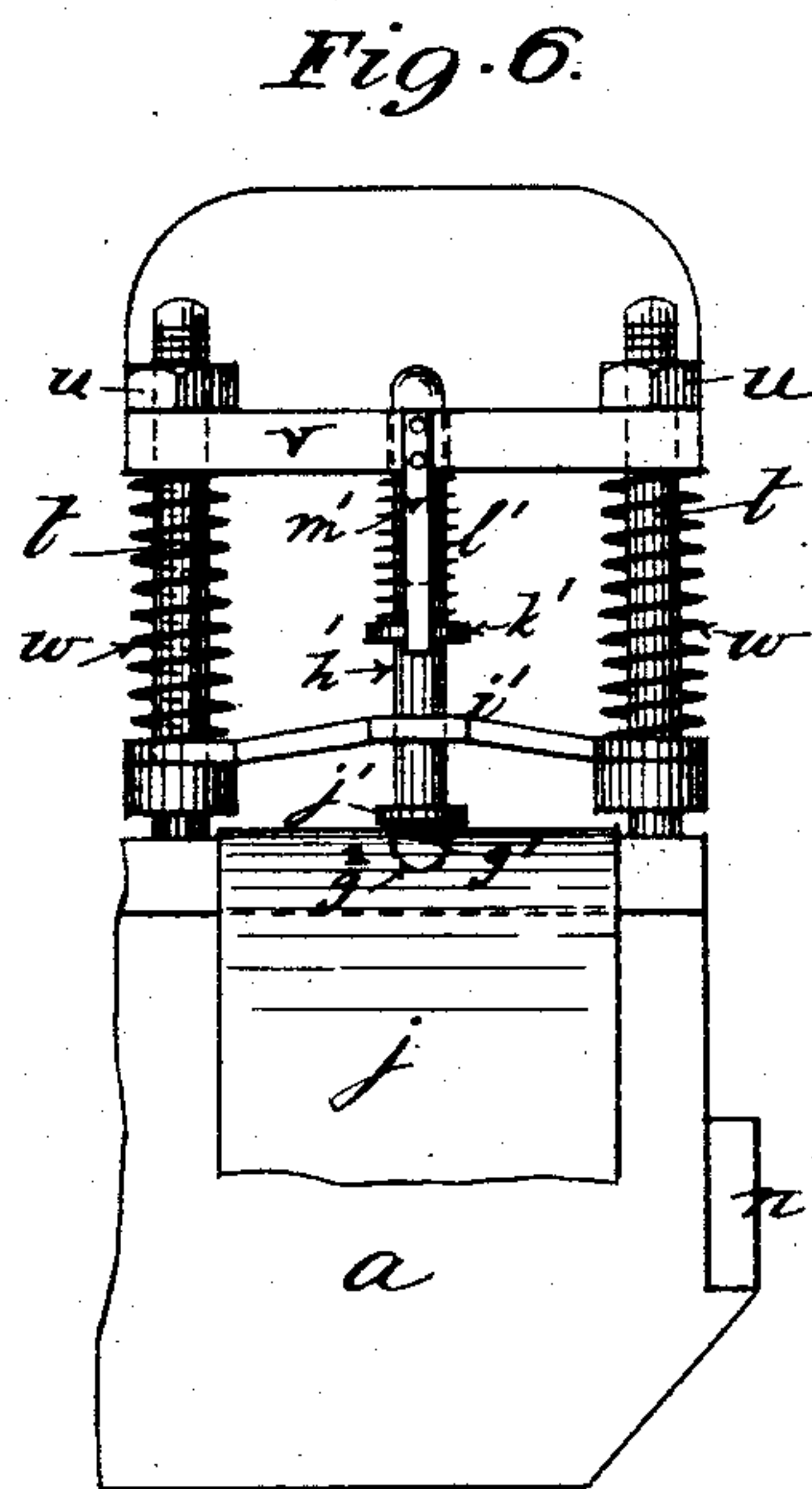
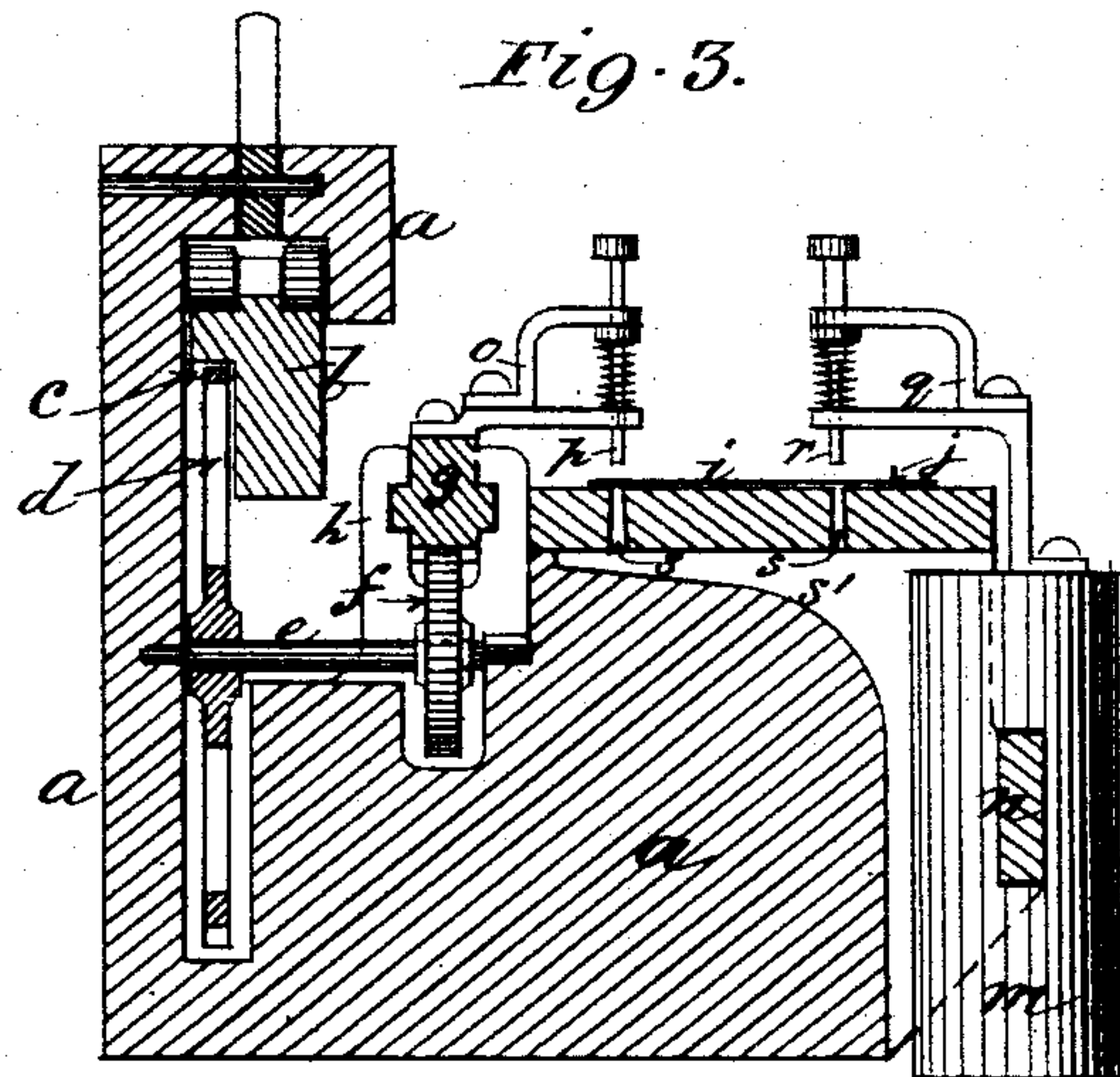


Fig. 2.

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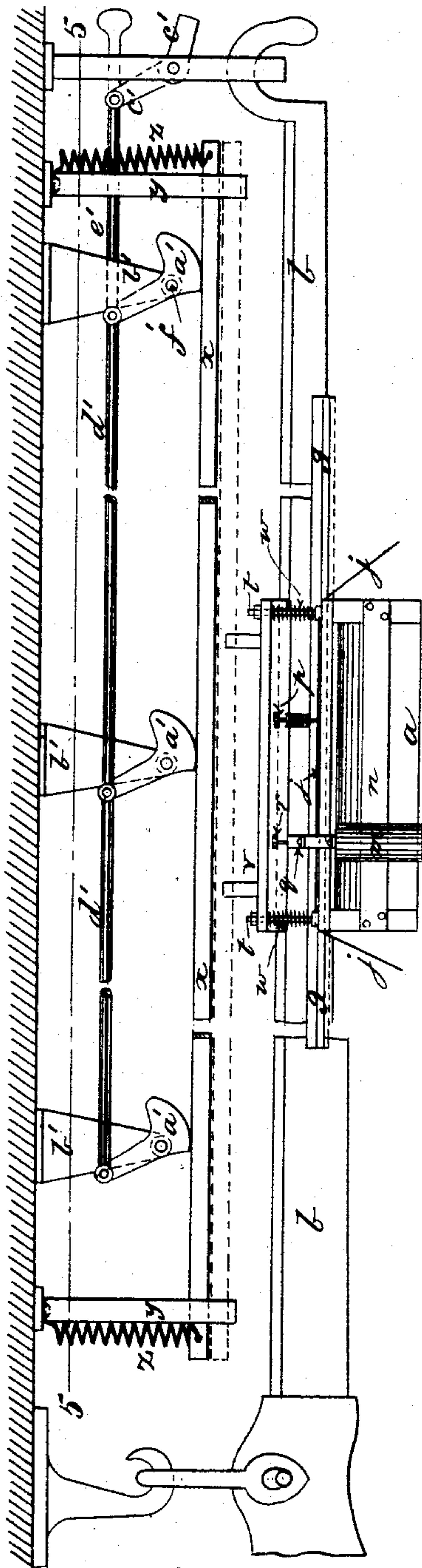
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his attorney

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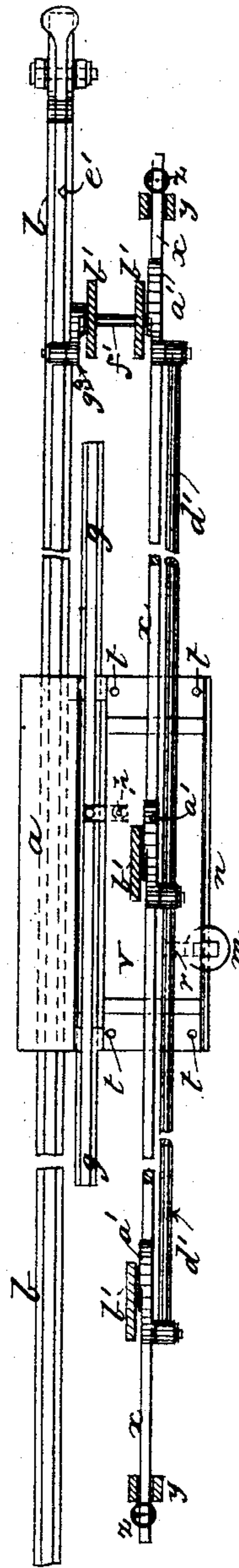
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Fig. 4.



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Fig. 5.



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UNITED STATES PATENT OFFICE.

ISRAEL B. SAGER, OF EAST ST. LOUIS, ILLINOIS.

RECORDING DEVICE FOR WEIGHING-SCALES.

SPECIFICATION forming part of Letters Patent No. 411,837, dated October 1, 1889.

Application filed March 22, 1889. Serial No. 304,262. (No model.)

To all whom it may concern:

Be it known that I, ISRAEL B. SAGER, a citizen of the United States, residing at East St. Louis, in the county of St. Clair, State of Illinois, have invented a certain new and useful Improved Recording Device for Scales, of which the following is a full, clear and exact description.

My invention relates to improved means for recording the weighings on scale-beams, and has for its object to obtain consecutive uninterrupted records of any desired number of separate weighings with accuracy and dispatch.

It consists in a poise sliding on the scale-beam and having toothed wheels engaging, respectively, in a toothed rack on the beam, and a toothed bar carrying a punch or punches for indicating separate weighings on a consecutive series of tickets, combined with a punching device and other features of novelty, as hereinafter claimed.

In the accompanying drawings, Figure 1 represents a front elevation of a poise and its appendages, omitting the punching and ticket-locking device, constructed according to my invention and applied to a scale-beam, the scale-beam and toothed bar being broken away; Fig. 2, a plan of the same, and Fig. 3 a transverse section thereof on line 3 3 on Fig. 1; Fig. 4, a similar view to Fig. 1, drawn to a reduced scale, the scale-beam and rods d' and x partly broken away, showing the punching mechanism; and Fig. 5, a sectional plan thereof on line 5 5 on Fig. 4; Fig. 6, a detached sectional view taken longitudinally through the poise on line 6 6 on Fig. 2, showing the ticket locking and releasing device; and Fig. 7, an end elevation thereof.

The same letters of reference denote the same or like parts in all the figures.

a represents the poise, which is mounted and slides on the scale-beam b in the usual and well-known manner, the scale-beam b being in the present instance presumably graduated from zero by increments of one thousand pounds to sixty thousand pounds. On one side of the beam b is a toothed rack c , into which gears a toothed wheel d , fixed on one end of a spindle e , which is mounted in bearings transversely within the poise a . On

the other end of the spindle e is fixed a toothed wheel or pinion f , which engages in a toothed bar g , mounted horizontally and parallel with the scale-beam b in guide-bearings h at the ends of the poise a . This toothed bar g is movable in the guide-bearings n , so that the pinion f causes the travel thereof. On this movable toothed bar g is mounted one of the recording-punches p , as will hereinafter more fully appear. Adjacent to the bar g , and parallel therewith, is arranged horizontally for the entire length of the poise a a table i of suitable width, over which passes a paper strip j , which is wound upon and fed from a spool k , located near one end of the table i , and mounted with its spindle in any suitable frame-work secured to the poise a , the free end of the strip j being preferably attached to a second spool l , similarly arranged at the other end of the table i , and rotated by any ordinary automatic spring device, also carried by the poise a , as indicated at L at right of Fig. 1 by dotted lines. The surface of the paper strip j exposed to view on the table i is marked with divisions and numbers corresponding with the weighings to be recorded, a blank space being left at one or both ends, as indicated in Fig. 2 by the word "date" for the insertion of the date and other desired memoranda. The inner column j^2 of divisions adjacent to the bar g is graduated in a reverse direction to the divisions on the scale-beam b from zero by increments of one thousand pounds to sixty thousand pounds, the distance between consecutive divisions being determined by the relative diameters of the toothed wheels d and f , according to the length given to the poise a .

The divisions of the outer column j^3 of the paper strip j are graduated in the same direction as those on the beam b from zero by increments of ten pounds to one thousand pounds, and are indicated by the weight or counterpoise m , which is adjusted by hand horizontally, and parallel with the front of the poise a along a bar n , the latter being fixed at each end to the poise a and marked on its face with graduated divisions corresponding with those of the outer column. It will thus be seen that after having utilized the scale-beam b in indicating or weighing

the larger numbers or thousands the counterpoise a becomes a continuation of said beam b for indicating and weighing the less numbers (one to one thousand,) and a second counterpoise m is used therewith.

To the bar g is fixed a bracket o , (see Fig. 3,) carrying a vertically-arranged spring-punch p , hereinbefore referred to, which is located over the inner column j^2 , or that division on the paper strip j corresponding with the division on the scale-beam b , as indicated by the poise a —that is to say, when the poise a indicates the nineteen-thousand-pound division on the beam b , as shown in Fig. 1, the punch p will be over the nineteen-thousand-pound division on the paper strip j , and so on throughout the entire scale. To the weight m is fixed a similar bracket q , carrying the vertically-arranged spring-punch r , which overhangs and commands the outer column j^3 , or that division on the paper strip j from zero to one thousand pounds.

Through the table i , immediately beneath and corresponding in number with the divisions of the inner and outer columns, respectively, are clearing-holes s for the punches p and r , the holes s opening at the under side of the table i into a space s' beneath.

In operation, assuming that a weight of nineteen thousand one hundred and ninety pounds is to be recorded, the paper strip j being unwound from the spool k and adjusted to its proper position on the table i , as indicated by the arrow-heads in Fig. 2, the poise a is drawn along the beam b from the zero-mark to the nineteen-thousand-pound division, as seen in Fig. 1, and in so doing the toothed rack c rotates the toothed wheels d and f in the direction of the arrow in Fig. 1, which moves the bar g longitudinally in a reverse direction to that of the poise a , and brings the punch p from zero to a position over the nineteen-thousand-pound division of the inner column on the paper strip j , the weighing being then completed by adjusting the weight or counterpoise m along its graduated bar n in the same direction as the poise a until its punch r is over the one-hundred-and-ninety-pound division of the outer column, when by depressing the punches p and r they are forced through the paper strip j at the nineteen-thousand-pound and one-hundred-and-ninety-pound divisions, respectively, and the record of the weighing thereby effected. On the release of the punches p and r by their springs the paper strip j is wound upon spool l until the punched columns of divisions are clear of the table i and a second series thereof exposed to view, when the operation can be repeated for a second weighing, and so on successively according to the extent of the paper strip j .

For operating the punches p and r simultaneously there are preferably fixed to the table i , near each corner, upright guide bolts or rods t , having upper nuts u , and passing

freely through an overhead platen v , (see Figs. 4, 5, 6, and 7,) which is normally held against the under sides of the nuts u at its highest position above the table i , and the heads of the punches p and r by spiral springs w , which are placed around the bolts t between the table i and the under side of the platen v . Above the platen v is arranged horizontally, and of a length corresponding with the scale-beam b , a rectangular or other suitably-shaped bar x , which is guided vertically between uprights y , fixed to the overhead framing of the scale, the bar x being normally held at a certain height clear of the platen v by springs z , located between the bar x and overhead framing. Bearing on the upper edge of the bar x are the cam-shaped ends of vertically-arranged levers a' , which are fulcrumed to hangers b' , fixed to the overhead frame, the other arms of the levers a' being coupled together, and to the locking-lever c' of the scale-beam b by rods $d' e'$, an intermediate spindle f' , and a crank-arm g^3 , the whole operating so that on throwing over the lever c' for locking the scale-beam b the cam-shaped levers a' depress the bar x , which descends upon and depresses the platen v in whatever position the poise a is located along the beam b , whereby the platen v descends upon and forces the punches p and r simultaneously through the paper strip j . On throwing back the lever c' for releasing the scale-beam b the springs w and z return the platen v and the bar x , respectively, to their elevated positions, so as to leave the punches p and r free to be withdrawn by their springs from the paper strip j .

For holding the paper strip j when each successive length or series of its division-columns is brought into the proper position for registering on the table i and releasing the paper after a weighing has been registered a hole g' is formed through the paper strip j between each successive series of divisions, the hole g' being in line with a corresponding hole g^2 , formed in the table i , adjacent to the feed-spool k . Over the hole g^2 is a vertically-arranged bolt h' , which works freely through the overhead platen v and through a lower guide i' near the table i . On the bolt h' , between its lower end and the guide i' , is a collar j' , and between the guide i' and the platen v a second collar k' , between which and the platen v is placed a spiral spring l' , having a downward pressure on the bolt h' , and adjacent to said collar k' , at opposite parts of its circumference, are arranged spring-bars m' , depending from the platen v , and provided at their lower free ends with catches m^2 , which normally close together toward the bolt h' , adjacent to its collar k' . As the platen v is being raised by its springs w and the punches p and r withdrawn from the paper strip j , the spring-catches $m^2 m^2$, which have previously passed on the descent of the platen v beneath the collar k' of the bolt h' ,

raise the latter until its collar j' is stopped by the guide i' , when the platen v continuing to rise the spring-catches $m^2 m^2$ are forced apart by the collar k' , and the bolt h' thereby lowered by its spring l' onto the paper strip j , which in the meanwhile, on the withdrawal of the punches p and r and bolt h' , has commenced to travel along the table i , and so removed the hole g' from the vicinity of the bolt h' that the bolt h' will be supported on the paper strip j against the pressure of the spring l' until the hole g' in the paper strip arrives beneath the bolt h' , when the latter will be forced by the spring l' downward through the hole g' into the cavity g^2 , and thereby prevent any further movement of the paper strip j during the next operation of the punches p and r , and so on throughout the entire series of tickets for each successive weighing.

I claim as my invention—

1. In a recording-scale, the combination of a scale-beam, a poise arranged thereon, a sliding bar mounted on the poise, a punch mounted on the sliding bar, and gearing which connects the sliding bar with the scale-beam, substantially as and for the purposes described.

2. In a recording-scale, the combination, with the scale-beam having a tooth-rack thereon, of a poise arranged on the beam and provided with ways, a sliding rack-bar mounted in said ways and carrying a recording device, a shaft journaled on said poise, and gear-wheels secured to the shaft, one of said gear-wheels engaging the rack on the scale-beam and the other the sliding rack-bar on the poise, substantially as and for the purposes described.

3. In a recording-scale, the combination of a scale-beam, a graduated poise arranged thereon, a sliding bar mounted on the graduated poise, gearing which connects the sliding bar with the scale-beam, a punch mounted on the sliding bar, a second poise arranged on the graduated poise, and a second punch mounted on the second poise, substantially as and for the purposes described.

4. In a recording-scale, the combination of a scale-beam, a graduated poise arranged thereon, a sliding bar mounted on the graduated poise, a punch mounted on the sliding bar, gearing which connects the scale-beam and sliding bar, and a table arranged on the graduated counterpoise parallel with the sliding bar and beneath the punch thereon, substantially as and for the purposes described.

5. In a recording-scale, the combination of a scale-beam, a graduated poise arranged thereon, a sliding bar carried by the graduated poise, a punch mounted on the sliding bar, a second poise mounted on the graduated poise, a punch mounted on the second poise, and a punch-table arranged on the graduated poise parallel with the sliding bar and beneath the

two punches, substantially as and for the purposes described.

6. In a recording-scale, the combination of a scale-beam, a graduated poise arranged thereon, a sliding bar mounted on the graduated poise, a punch mounted on the sliding bar, gearing which connects the scale-beam and sliding bar, a table arranged on the graduated counterpoise parallel with the sliding bar and beneath the punch thereon, and strip-rollers journaled in brackets on the scaled counterpoise, substantially as and for the purposes described.

7. In a recording-scale, the combination of a scale-beam, a poise mounted thereon and provided with a recording device, a spring actuated or retracting platen arranged over the recording device, a locking-lever for locking the scale-beam, and mechanism for actuating the spring-platen or retracting-platen from the locking-lever, substantially as and for the purposes described.

8. In a recording-scale, the combination, with the scale-beam, of a poise arranged thereon and provided with a recording device, a table mounted on the poise and having a cavity in its face, a spring-bolt mounted in guides on the poise and registering with said cavity, a spring actuated or retracting platen for controlling the recording device and spring-bolt, a locking-lever for locking the scale-beam, and mechanism for actuating the retracting-platen from the locking-lever, substantially as and for the purposes described.

9. In a recording-scale, the combination of a scale-beam, a counterpoise arranged thereon, a table arranged on the counterpoise, strip-rolls journaled on the counterpoise, a paper strip supported on said table and provided at intervals with holes in line with a cavity in the table, a spring-bolt adapted to enter said opening and stop the passage of said paper strip, a locking-lever for locking the scale-beam, and mechanism for actuating said spring-bolt from the locking-lever, substantially as and for the purposes described.

10. In a recording-scale, the combination, with the scale-beam, of a poise arranged thereon and provided with a recording device, a table mounted on the poise and having a cavity in its face, a spring-bolt mounted in guides on the poise and registering with said cavity, said bolt having collars above and below said guides, a spring actuated or retracting platen provided with spring-catches adapted to engage the collars on the bolt and control the action of said bolt, a locking-lever for locking the scale-beam, and mechanism for actuating the retracting-platen from the locking-lever, substantially as and for the purposes described.

11. In a recording-scale, the combination, with the scale-beam, of a poise arranged thereon, a table mounted on the poise, a vertically-movable spring-actuated platen arranged

horizontally above the table, a spring-supported bar arranged above and parallel with said platen, cam-levers fulcrumed to stationary supports, and a scale-beam-locking lever
5 connecting said cam-levers for operating said cams to depress the spring-supported bar and platen, substantially as and for the purposes described.

In testimony whereof I have affixed my signature, in presence of two witnesses, this 13th day of March, 1889.

ISRAEL B. SAGER.

Witnesses:

PAUL BAKEWELL,
S. L. SCHRADER.