(No Model.) 3 Sheets—Sheet 1.

H. FAIRBANKS.

PRINTING REGISTER FOR WEIGHING SCALES.

No. 597,640. Patented Jan. 18, 1898.

WEIGHT CHECK.
Date ... May 6/96.
1350 Lbs
Load. Coal.

FIG. 1.

FIG. 2.

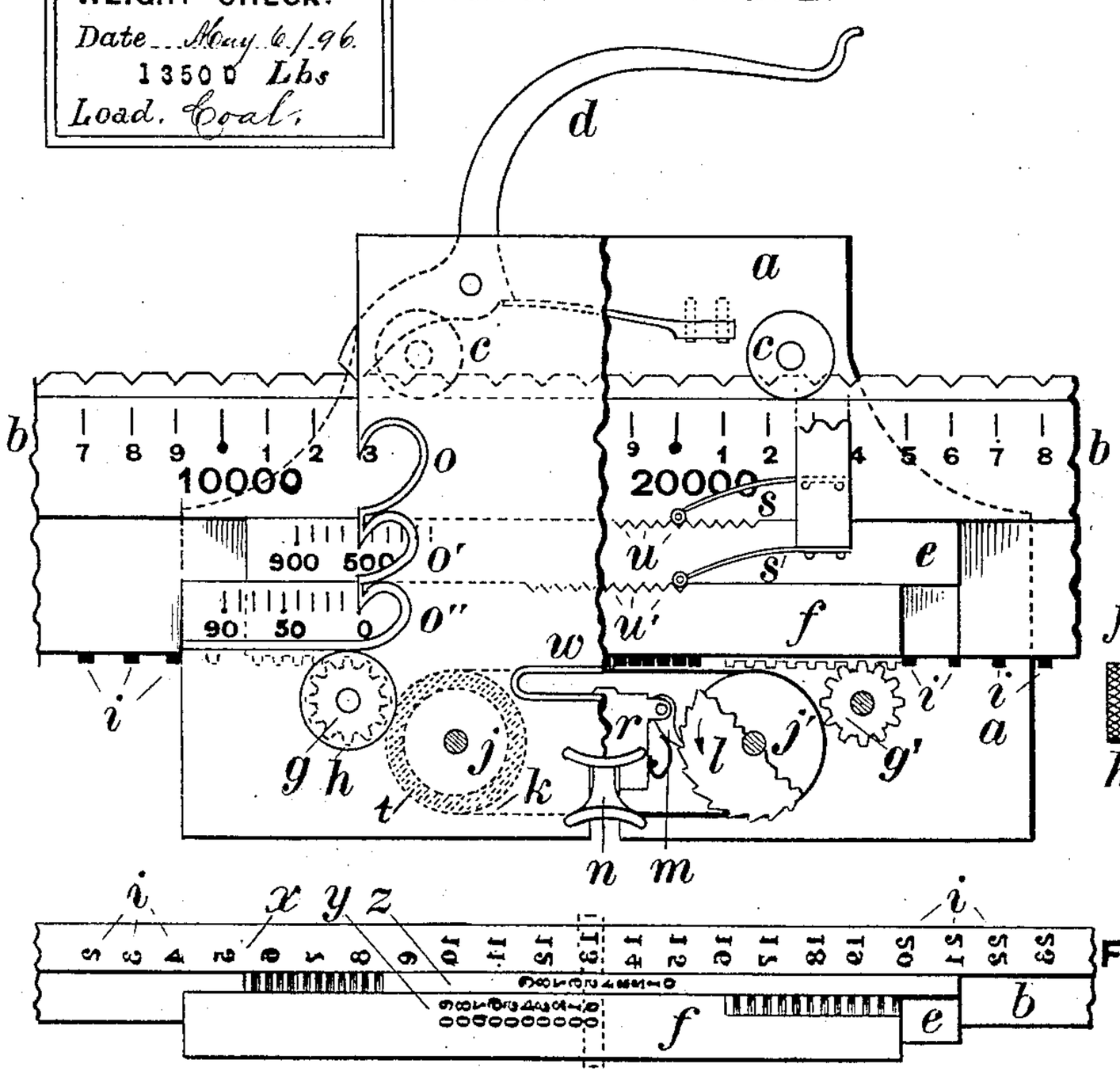


FIG. 3.

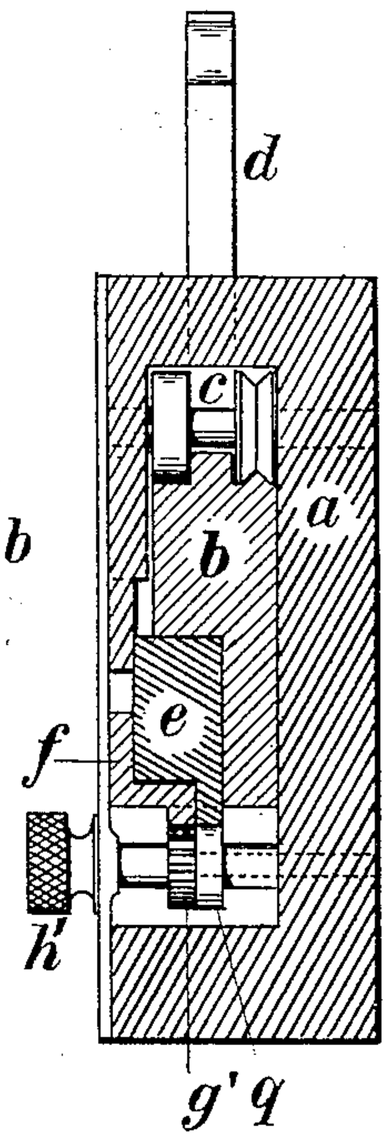


FIG. 4.

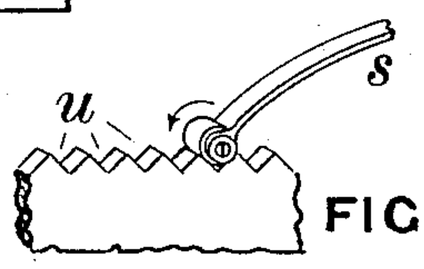


FIG. 5.

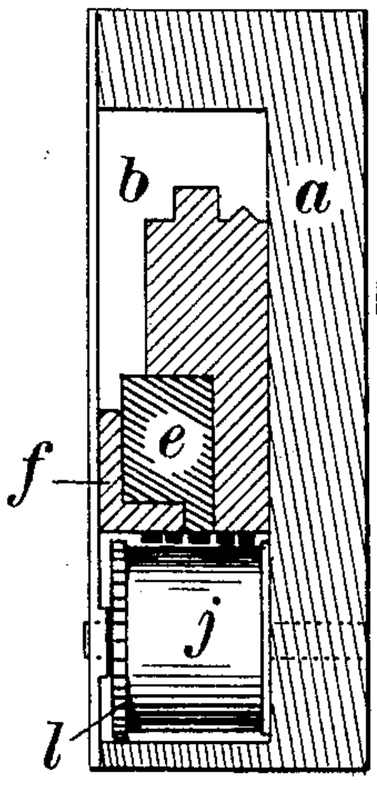


FIG. 6.

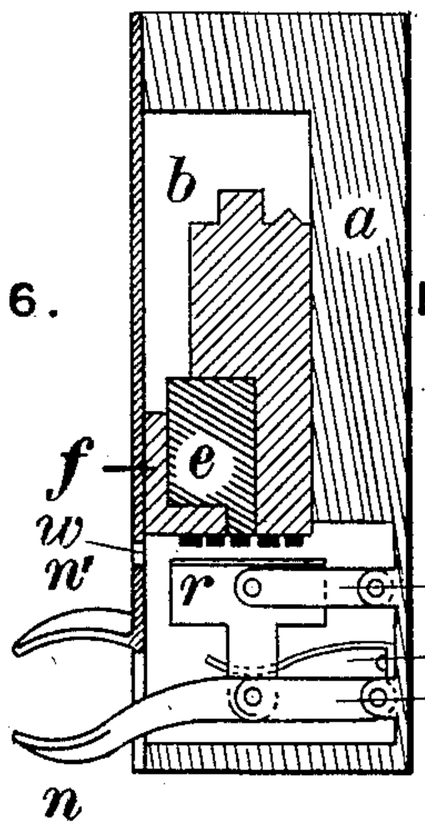


FIG. 7.

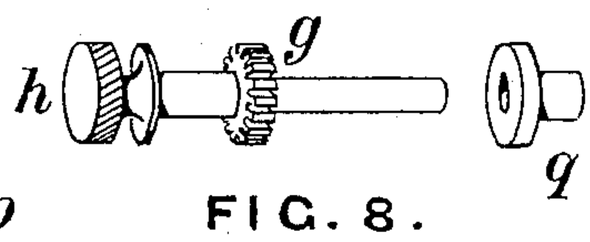


FIG. 8.

WITNESSES:

C. H. Horton

Albert L. Farwell

INVENTOR

Henry Fairbanks

(No Model.) 3 Sheets—Sheet 2.

H. FAIRBANKS.

PRINTING REGISTER FOR WEIGHING SCALES.

No. 597,640. Patented Jan. 18, 1898.

FIG. 9.

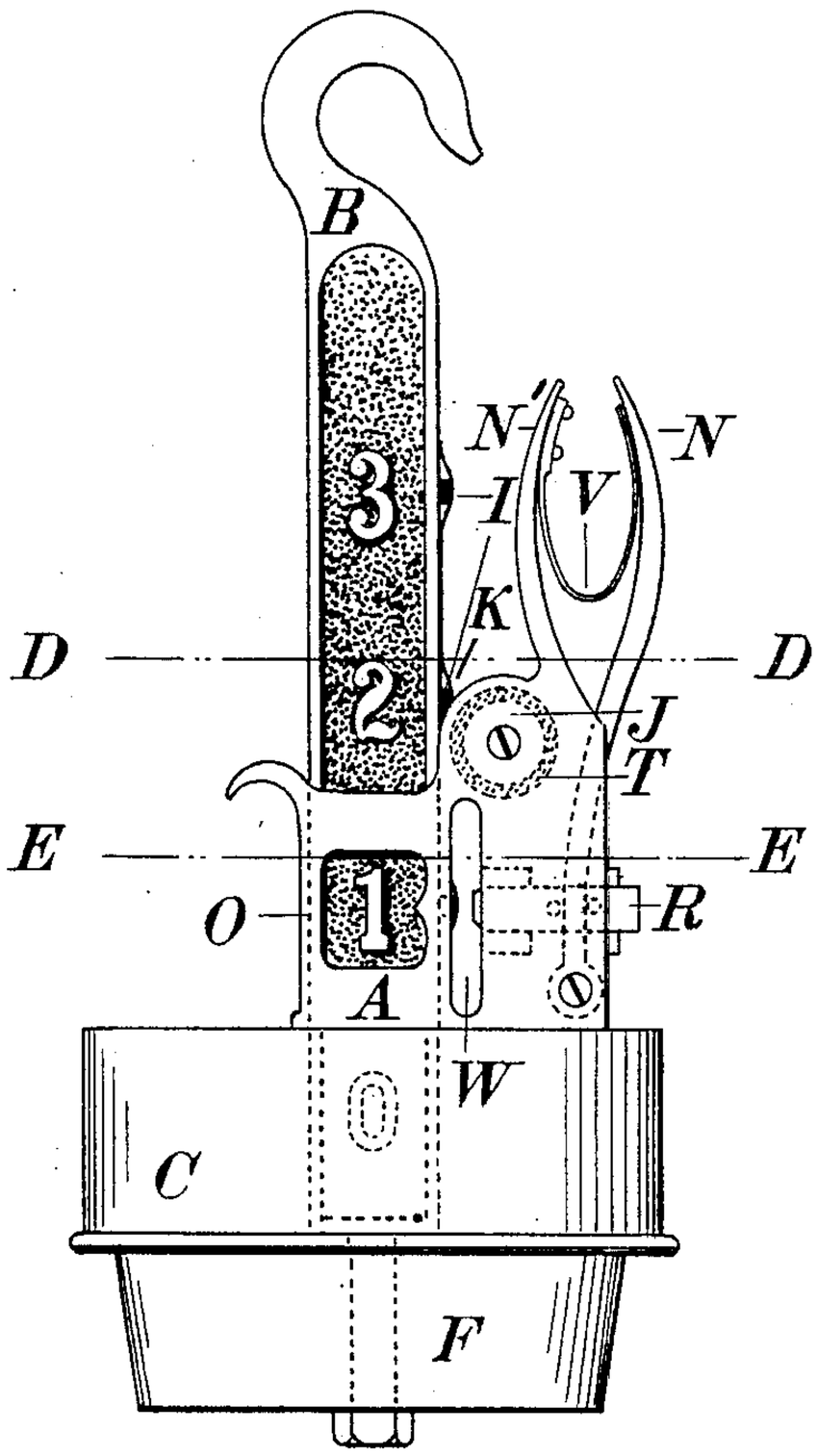


FIG. 10.

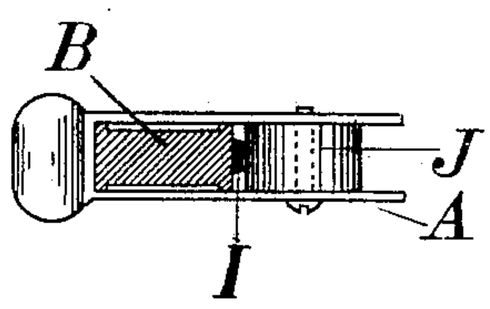
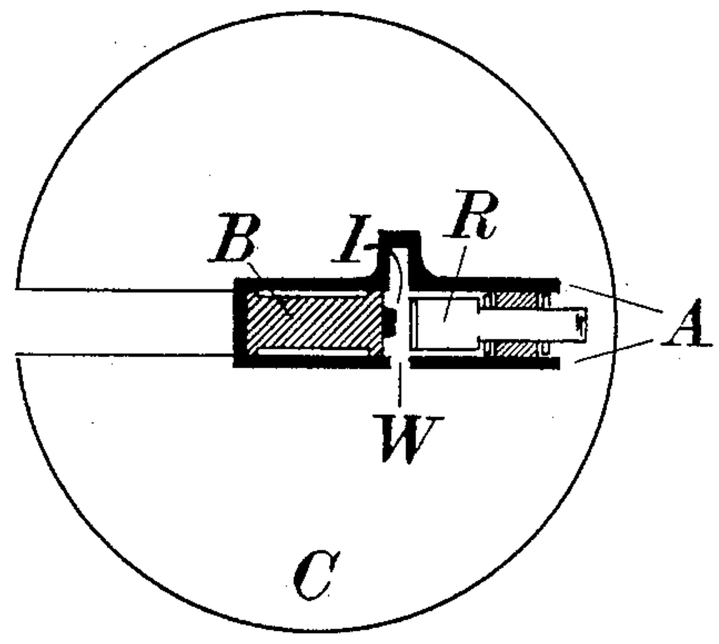


FIG. 11.



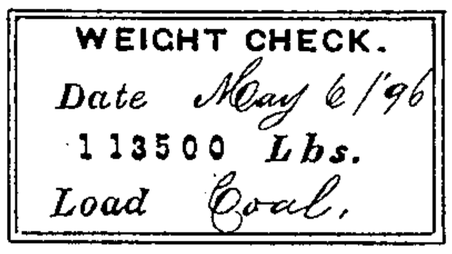


FIG. 12.

WITNESSES:

C. H. Norton

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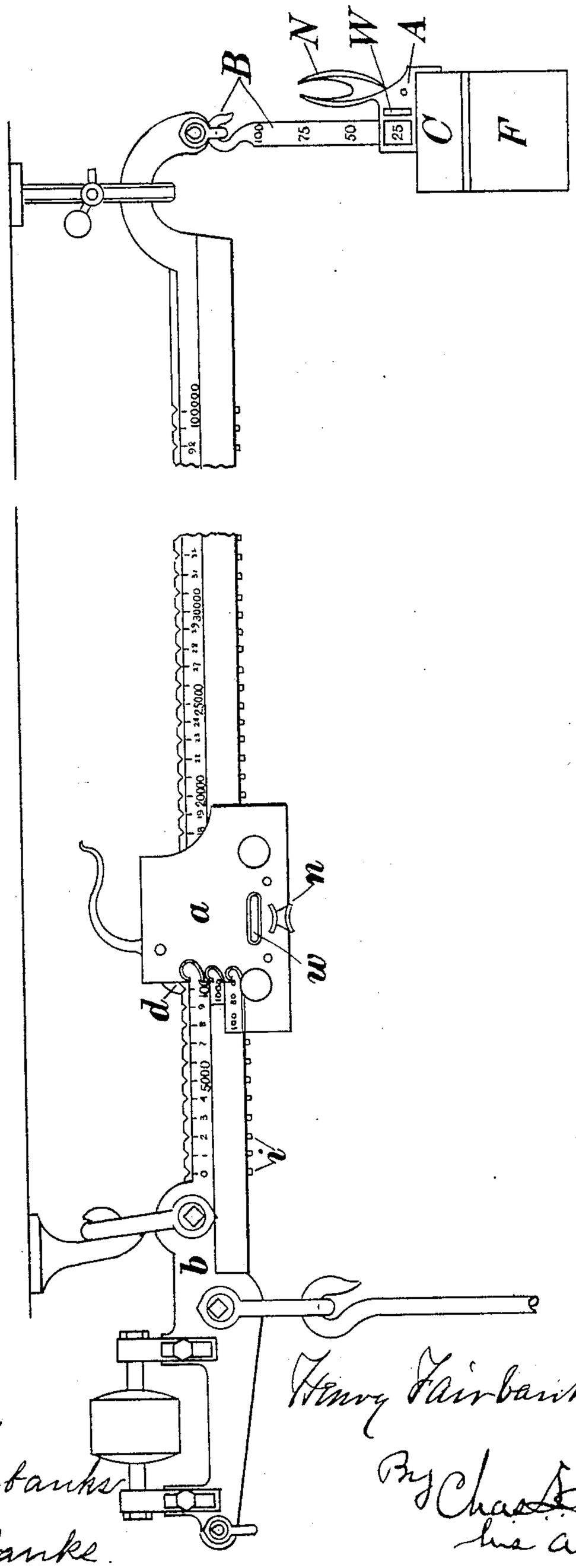
(No Model.) 3 Sheets—Sheet 3.

H. FAIRBANKS.

PRINTING REGISTER FOR WEIGHING SCALES.

No. 597,640. Patented Jan. 18, 1898.

Fig. 13.



WITNESSES:

Marion Fairbanks

Lucy Fairbanks.

Henry Fairbanks.

INVENTOR

By Chas. S. Sturtevant

his attorney

UNITED STATES PATENT OFFICE.

HENRY FAIRBANKS, OF ST. JOHNSBURY, VERMONT.

PRINTING-REGISTER FOR WEIGHING-SCALES.

SPECIFICATION forming part of Letters Patent No. 597,640, dated January 18, 1898.

Application filed May 29, 1896. Serial No. 593,625. (No model.)

To all whom it may concern:

Be it known that I, HENRY FAIRBANKS, of St. Johnsbury, in the county of Caledonia and State of Vermont, have invented certain new and useful Improvements in Printing-Registers for Weighing-Scales, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to mechanism, in connection with the sliding poise and the counterpoise of weighing-scales, by means of which the weight of loads is most conveniently ascertained and the same printed upon suitable tickets, making in addition to the reading which the attendant may note a permanent record in which mistakes are impossible.

My device includes improved methods of moving and steadying the poise-slides by which the smaller divisions of weight are ascertained, an improved method of mounting and of keeping moist the printing-ribbon through which the printing-numerals make their impression on the tickets, improved lever mechanism moving the printing slide or platen, and improved guide-recesses and arrangements for combining the records made by the poise and the counterpoise printing.

In the drawings, Figure 1 shows the ticket or weight-check as it would be printed on the poise standing in the position shown. Fig. 2 is a side view of the poise, poise-slides, and printing mechanism and of a portion of the scale-beam. Fig. 3 is an end view of the same, partly in section, showing the beam, the frame of the poise, the rollers by which this poise rides upon the beam, and below the pinion by which one of the poise-slides is moved when the milled head is turned and the friction-roller on which one end of the other poise-slide is supported. Fig. 4 shows the under side of the scale-beam and the two poise-slides and the arrangement of printing-numerals upon them; Fig. 5, the arrangement of spring and roller steadying each poise-slide. Fig. 6 is an end section of the poise, poise-slides, and printing mechanism near the center and showing the ink-ribbon roll in its relation to the printing-numerals. Fig. 7 is another end view and section of the same at a point near its center and showing the printing lever, platen, and type in their relative position. Fig. 8 illustrates the milled head, pinion, and friction-roller by which at each end of the poise one poise-slide is moved and the other is supported. Fig. 9 is a side view of the counterpoise and its printing mechanism. Fig. 10 is a partial section at the line D D, showing ink-roll J. Fig. 11 is a section through the weight-follower in the line E E, showing the ticket-recess W in its relation to the printing-numerals and platen. Fig. 12 shows the ticket as printed by both the poise and the counterpoise printers. Fig. 13 is a view of the complete apparatus, showing the beam, poise, and counterpoise combined.

The construction here illustrated has a capacity of three hundred and ninety-nine thousand nine hundred and ninety-nine pounds, and its minimum indication is ten pounds.

Similar letters of reference indicate similar parts in all the figures.

b is the scale-beam, upon which the heavy poise *a* is carried by the steel rollers *c c* and held accurately in place by the latch *d*, engaging the proper notch of the beam. These notches are graduated from "0" to "99," and the increasing leverage as the poise moves out gives each a weight value of one thousand pounds. This poise is "sealed" to the beam—that is, it is adjusted accurately and secured or sealed when it is brought to exactly the right weight when used with the notches to balance the right number of pounds in the load. This term "sealed" is a technical one used by scale-makers and is used in the appended claims as meaning substantially the same as "adjusted." Upon the under edge of this scale-beam are type-numerals *i i*, running from "1" to "99" and arranged to stand in the decimal place of thousands upon the tickets when printed, this printing corresponding to the reading indicated by the point *o*. The heavy poise carries a graduated bar arranged to move through it parallel to the scale-beam, as actuated by the pinion *g* engaging a rack on its under side when turned by the milled head *h*. This bar, which I designate a "poise-slide," is graduated at the point *o* from "0" to "900" and is of such weight that hundreds of pounds are properly indicated by this graduation. Corresponding to

these one-hundred-pound marks are ten notches *u u* on the upper edge of this poise-slide, into which the spring *s* presses a small steel roller, which steadies this slide accurately at the proper mark. The under side of this poise carries a series of printing-numerals from "0" to "9," which are at the same level as those on the under edge of the scale-beam and in position so that the figure impressed shall stand in such decimal relation with those impressed by the beam as properly to indicate hundreds when those indicate thousands. Carried by the poise in front of this poise-slide is another made one-tenth as heavy, (designated by *f*.) This also has ten marks numbered from "0" to "90" by tens and read at the point *o''* and ten corresponding notches at *u'*, which the spring-roller *s'* enters and steadies at the proper point. Upon the under side of this poise-slide *y* of Fig. 4 are printing-numerals ranging by tens from "00" to "90," these being at the same level as those on the beam *b* and the other poise-slide *e* and adapted to properly print the tens which are to be read with the thousands and hundreds, and stand in the proper decimal relation to be so read. The milled head *h'* through the pinion *g'* moves the light poise-slide *f*. It will be understood that the two milled heads *h h'* are arbors carrying each a pinion adapted to engage one slide and a loose friction-roller to support the free end of the other poise-slide.

In the front of the poise is a recess *w*, adapted to receive and guide the ticket or weight-check (shown in Fig. 1) and to bring the right portion of this ticket under the line of printing-numerals carried by the beam and the two poise-slides. Below this is the small elastic-faced moving piece *r*, of the proper size to present its face to and press the ticket upon a single row of printing-numerals, which serves as a platen and rises with parallel motion guided upon the centers *p p'* when the lever *n* is pressed upward toward the stationary handle or thumb-piece *n'*. This lever-handle or thumb-piece *n'* is arranged on the side toward which the handle which actuates the platen moves and is in such relation thereto that the two may be grasped by the hand and the printing action effected by the compressing motion without tending to displace the parts of the scale. Between the elastic face of this platen *r* and the printing-numerals an endless ink-ribbon *k* is carried, being stretched over rollers *j j'*, to which a slight motion is given each time the lever *n* is released by means of the pawl *m* engaging the ratchet *l* on the roller *j'*. The other roller *j* has a thick covering of spongy elastic felt saturated with the printing-ink. The ticket-recess is so shaped and arranged that the ticket slides to its place between the ink-ribbon and the platen and is pressed against the ribbon which covers the face of the printing-numerals.

It will be noticed that the main poise is of greater length than either of the poise-slides, and of just so much greater length that in the outer limit of the movement of said poise-slides they will not pass beyond the planes of the extremities of poise *a*. This makes a simple compact structure, the casing or framework of the main poise substantially entirely inclosing the poise-slides, the means for operating said poise-slides—that is, the milled nuts, &c.—passing out through the front wall of the main-poise casing. Furthermore, to increase the compactness of the structure the beam is recessed, so that the poise-slide *e* fits snugly against it, and said poise-slide *e* is also recessed to receive the horizontal of the angular poise-slide *f*, and thus in the printing action the poise-slides *e f* have a firm backing against the shoulders forming the upper sides of the recesses on the beam and slide *e*, respectively.

From the tip of the scale-beam hangs the counterpoise hook and stem B, carrying the weight-bottom F, upon which weights, as C, are placed, drawing in this scale one hundred thousand pounds. Above these weights and resting on them is the weight-follower A, sliding on the counterpoise-stem B and showing through its opening O the proper figure to be read as indicating the hundreds of thousands of the load. This stem B also carries printing-numerals L, corresponding to the figures shown in front, and the weight-follower A has a properly-shaped ticket-recess W and corresponding with it an elastic-faced sliding platen R, moved by the lever N, arranged to press the ticket in the recess against the printing-numerals of the stem B.

The action of the lever N, actuating the platen R, is similar to that described in connection with the lever *n* above referred to, and there coöperates with the said lever N another handle N' upon the side toward which the first handle moves. Thus the printing action of the counterpoise is also effected by the compressing motion of the two handles without displacing any of the parts of the scale.

The weight-follower may carry a traveling ink-ribbon; but if the counterpoise-weights are likely to be little used it will be sufficient to have a piece of ink-ribbon stretched over the type-faces and to arrange an inking-roller J with a thick cover of spongy felt T to moisten the ribbon over the printing-numerals each time the weight-follower is moved. The ticket-recess W is made of the same width of the one *w* in the sliding poise, but is so much less deep that the numeral is printed at the left of those printed in the poise, and, read with them, stands in the place indicating hundreds of thousands.

When a load is to be weighed upon this scale, the two poise-slides are set at zero and the poise moved out in the usual manner upon the scale-beam and latched in the notch one short of the one in which it would carry down the beam, weights being added upon the counterpoise, if necessary, and the num-

ber of thousands of pounds in the load is indicated. Then the heavier poise-slide is moved by its milled knob until with increasing leverage it will almost carry down the beam, in which position it correctly shows the hundreds which are to be read with the thousands. Then the smallest poise-slide is moved until the load is balanced, and its position indicates the tens of pounds to be read with the thousands and hundreds. The attendant not only reads and makes note of the weight indicated, observing the three points *o*, *o'*, and *o''*, adding what the counterpoise-weight may draw, but inserts the prepared ticket in the recess of the poise and presses the printing-lever *n* toward *n'*, and also inserts the same end of this ticket into the recess in the weight-follower of the counterpoise and prints there the proper figure in its proper place.

The scale illustrated is a heavy one; but it will be understood that this invention may be adapted to a great variety of modifications of large and small scales. The poise might carry three poise-slides, perhaps for units, tens, and hundreds, or it may have but one. The counterpoise may be dispensed with and all the load registered upon the beam and poise. For most uses it seems desirable to print with color, and since an ink-ribbon cannot be wound from one roller to another without changing the effective weight of the poise I have adopted the short endless ribbon and have provided for keeping it supplied with ink by the saturated felt cover of one roller. In some places, however, as in dusty mills, it may be better to print by indenting the ticket, this being made of suitable cardboard and the printing-numerals sharp-faced and of steel or bronze, in which case the ink-ribbon and the rollers which carry it may be omitted, the other mechanism being unchanged. Instead of placing the printing-numerals on the under edge of the scale-beam it may be better to have a flange project from the beam in front and parallel with its top and to print from the lower side of this flange.

I am aware that various weight-printing devices have been proposed, some of them bringing the several lines of figures into decimal relation, and I do not claim this arrangement broadly. I know, too, that something like the poise-slide here shown has been used, but moved in a different way and without the spring and roller for steadying it at proper points, and I do not claim what is not new. Ink-ribbons have been used, but always winding from one roller to another in order to give length enough to hold a supply of ink, and it is believed that the use of a short endless ribbon combined with a thick cylinder of saturated spongy felt is new, as also that of a stationary strip of ribbon over type inked by a felt roller. A weight-follower under which the weights upon the counterpoise are placed is not new; but it is new to combine this with printing-numerals, and also it is believed to be new to combine the printing-record of the poise and counterpoise into one line of figures properly recording the weight balanced by the two combined.

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

1. In a printing-register for weighing-scales, a scale-beam carrying a series of printing-numerals upon its lower side corresponding to its graduation and adapted to indicate the decimally-higher figures of the record of weight in combination with a moving poise sealed to the said graduation, and provided with a recess to receive the ticket, one or more poise-slides arranged to move in the said poise parallel to the beam, having printing-numerals upon their lower side, suitable to indicate the decimally-lower figures of the record, for each poise-slide a milled knob standing out from the front of the poise, and adapted to turn a pinion which engages a rack of this slide, whereby the load upon the scale is most conveniently weighed, and at the same time the numerals indicating its weight are brought into line in decimal relation to print correctly, and a lever arranged to press the same against the said line of printing-numerals, as herein set forth.

2. In a printing-register for weighing-scales, a scale-beam carrying a sliding poise, printing-numerals on the lower side of this scale-beam, a poise-slide carried by the poise provided with a rack and arranged to move parallel with the beam, printing-numerals on the lower side of this poise-slide, adapted to print the decimally-lower figures of the recorded weight, notches in the scale-beam corresponding to its graduation, and a spring-latch in the poise engaging those notches, in combination with notches in the said poise-slide, into which a small roller is pressed by a spring, whereby this poise-slide while free to move, always rests at points where its printing-numerals are in line with those upon the lower side of the scale-beam and a shaft in the poise and provided with a pinion engaging the said rack to operate this slide, substantially as set forth.

3. In a printing-register for weighing-scales, a scale-beam having a series of printing-numerals corresponding to the graduations for weight, a sliding poise provided with a device for pressing a suitable ticket against the said printing-numerals, and a recess into which the ticket slides, of the proper form and depth to bring the printed figures to the predetermined position on the ticket, and in combination with these a counterpoise adapted to receive additional weights, printing-numerals on the stem of this counterpoise, a weight-follower sliding on this stem and resting on the weights that it carries, this weight-follower provided with a device for pressing the same ticket aforesaid against the printing-numerals on the said stem, and with a recess for this ticket of such depth in relation

to the corresponding recess in the sliding poise that the counterpoise-figures are impressed at the left of the poise-figures, in position to give them their proper decimal force when the two sets are read together, as herein fully set forth.

4. The combination with a scale-beam graduated and correspondingly notched to indicate the larger divisions of weight, of a sliding poise carried by said beam, sealed to said graduation and provided with a spring-latch engaging the beam-notches to hold it in its adjusted position, a notched poise-slide carried by the poise parallel with the beam, graduated to indicate the smaller divisions of weight, and provided with a rack, a pinion engaging said rack and provided with an operating-knob, and a spring provided with a friction-roller working in said slide-notches; said notches corresponding to its weight-graduation, substantially as and for the purpose set forth.

5. The combination with the sliding poise for the beam, of the parallel poise-slides each provided, at opposite ends, with a rack, transverse shafts mounted in the poise and provided with pinions engaging the respective racks and with antifriction-rollers on which the non-toothed edges of the other slides rest, and means for rotating said shafts, substantially as described.

6. The combination with a counterpoise adapted to receive additional weights and provided on its stem with printing-numerals, of a weight-follower movable vertically on the stem and provided with a ticket-recess and means for pressing the ticket against said numerals, substantially as described.

7. The combination with the counterpoise adapted to receive additional weights and provided on its stem with printing-numerals and an inking-ribbon crossing said numerals, of a weight-follower movable vertically on the stem and provided with a ticket-recess and a platen for pressing the ticket against the ribbon over the numerals, substantially as described.

8. The combination with the counterpoise adapted to receive additional weights and having its stem provided with printing-numerals on one edge and with corresponding indicator-numerals on one side, of the sliding weight-follower on said stem and provided with a ticket-recess to register with the printing-numerals and with a reading-opening to register with the indicating-numerals, and a platen mechanism carried by the follower to press the ticket toward the printing-numerals, substantially as described.

9. The combination with the counterpoise adapted to receive additional weights and having its stem provided with printing-numerals, and an inking-ribbon covering said printing-numerals, of the vertically-sliding weight-follower mounted on said stem and provided with a ticket-recess to register with said numerals, a platen for forcing the ticket toward the numerals, and an inking-roller carried by the follower and engaging the ribbon to ink it whenever the follower is moved along the stem, substantially as described.

10. In a printing-register for weighing-scales, a scale-beam carrying a series of numerals upon its lower side, a poise movable on said beam, a poise-slide supported by said poise moving through it parallel to the scale-beam and provided with printing-numerals on its under side, a pinion engaging a rack on the poise-slide, and means for operating said pinion to move the slide, substantially as described.

11. In a printing-register for weighing-scales, a scale-beam carrying a series of printing-numerals upon its lower side, a poise on said beam, a poise-slide supported by the main poise and moving through it parallel to the scale-beam and provided with printing-numerals on its lower side, a second poise-slide also supported and guided on the main poise and held between the wall of said main poise and the first poise-slide and having a projection lying under and backing against the first poise-slide and also provided with printing-numerals on its lower side, and means for manipulating said poise-slides, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 22d day of May, A. D. 1896.

HENRY FAIRBANKS.

Witnesses:
C. H. HORTON,
ALBERT L. FARWELL.