No. 656,348. Patented Aug. 21, 1900.

A. B. HAYDEN.

COMPUTING SCALE.

(Application filed Sept. 8, 1899.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 2.

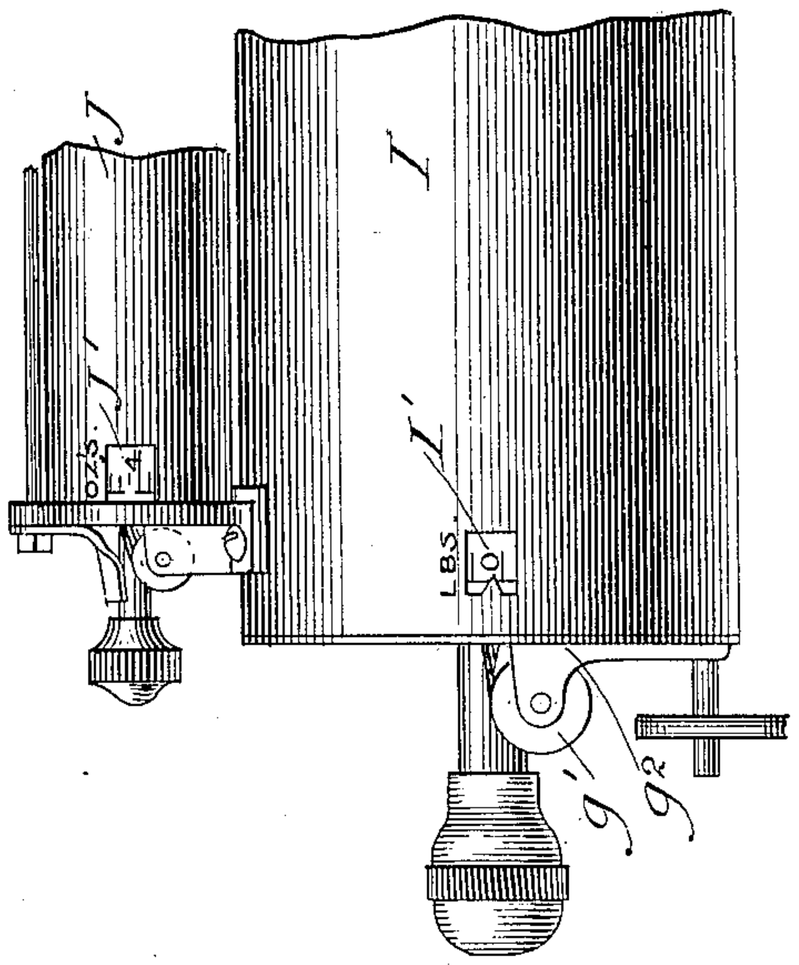
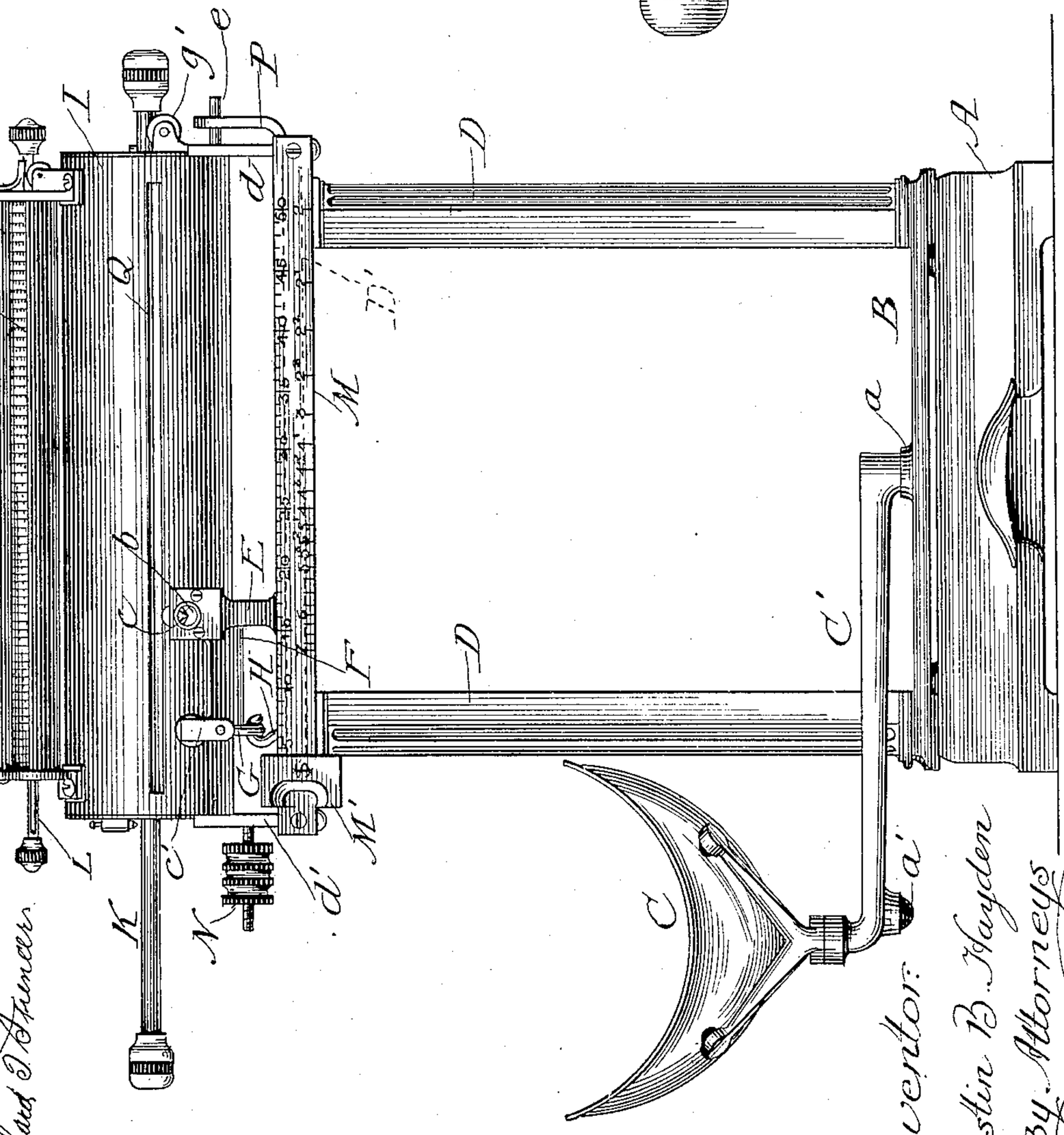


Fig. 1.



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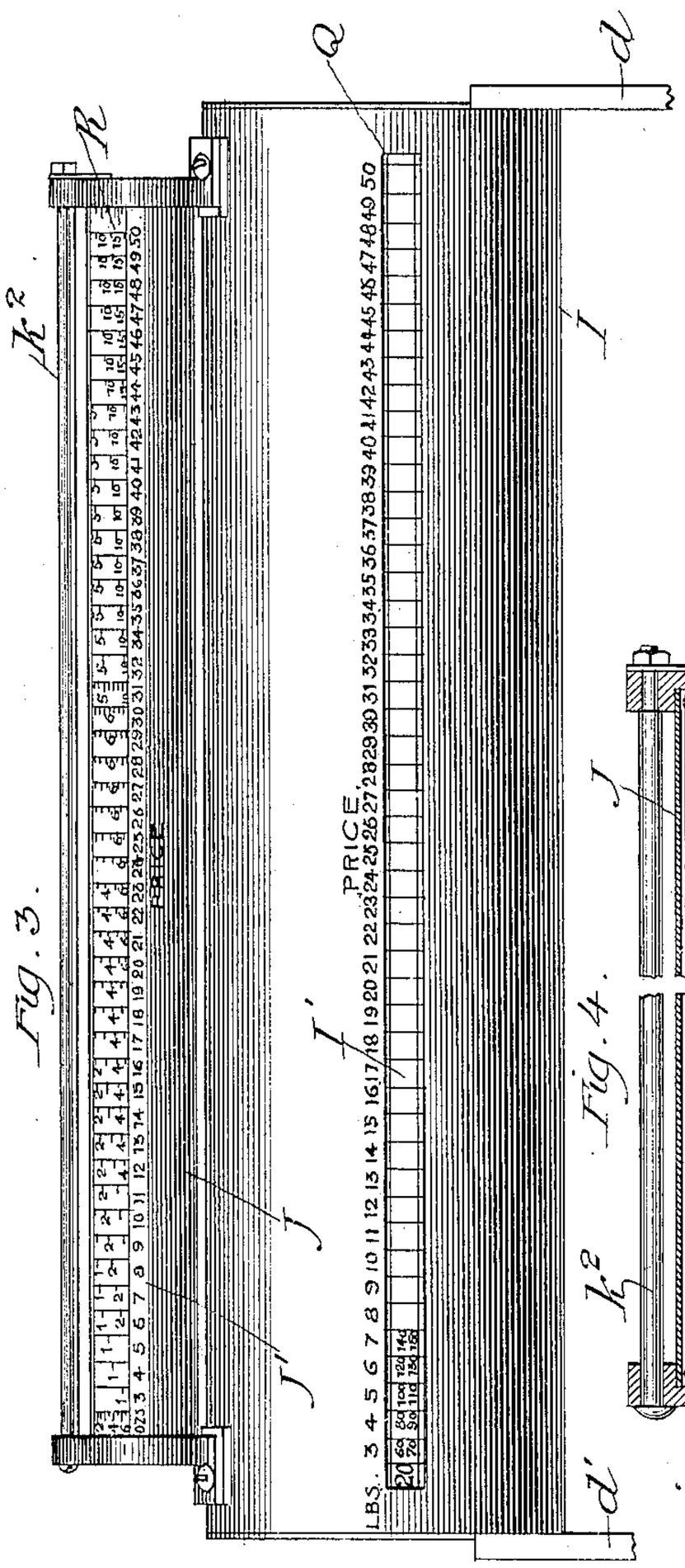

Fig. 3.

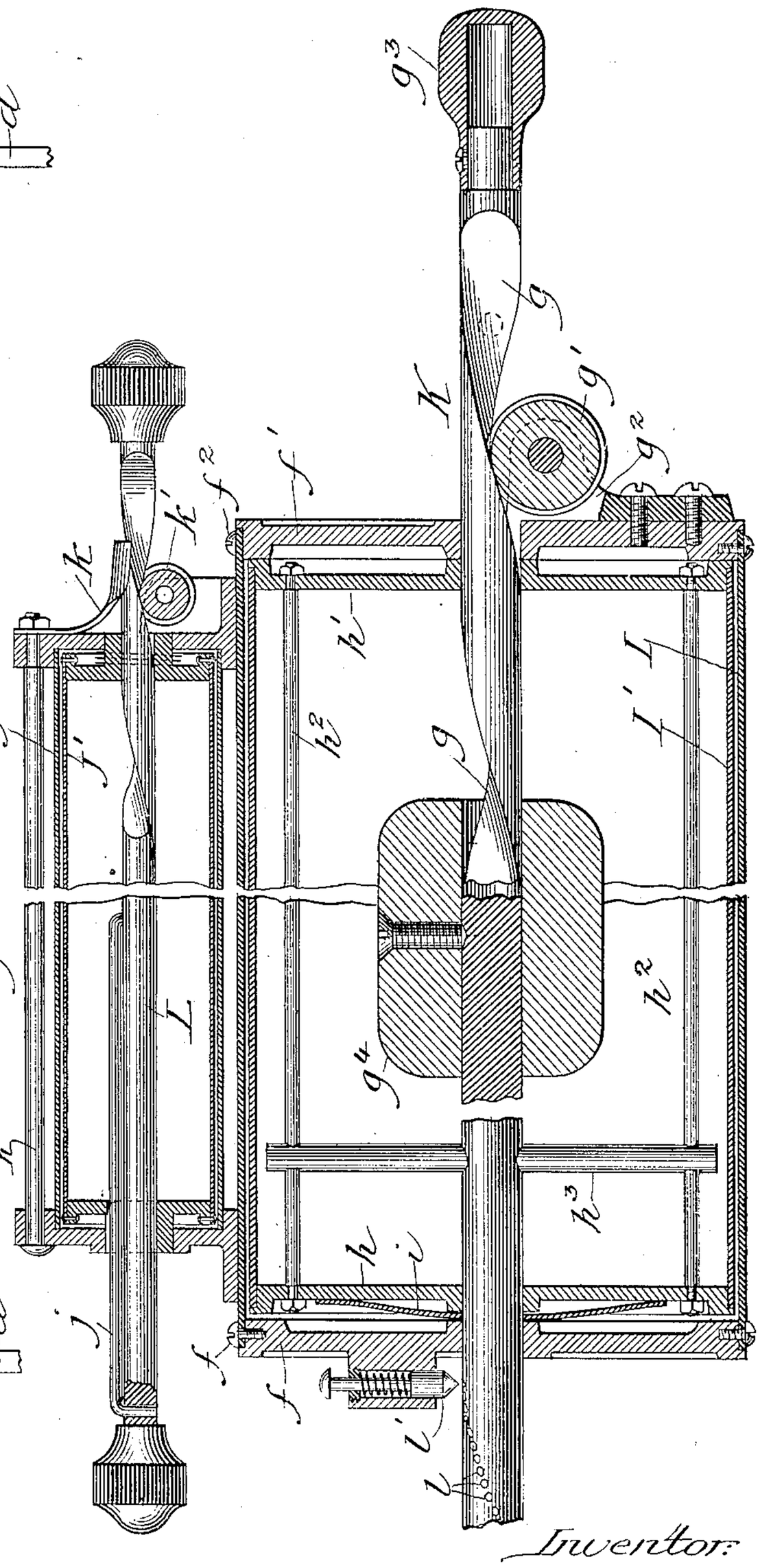

Fig. 4.

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(No Model.) 3 Sheets—Sheet 3.

Fig. 5

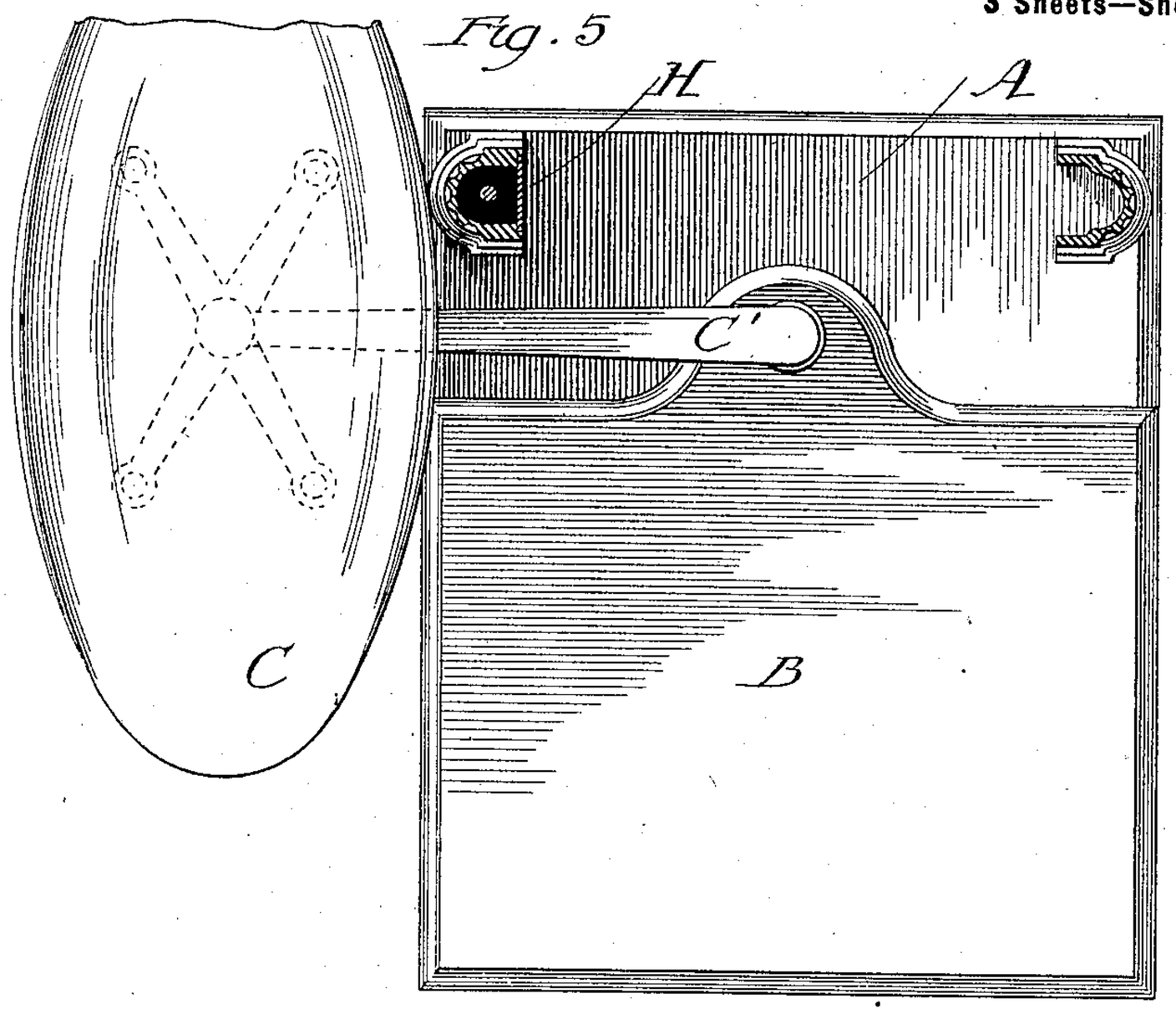

Fig. 8.

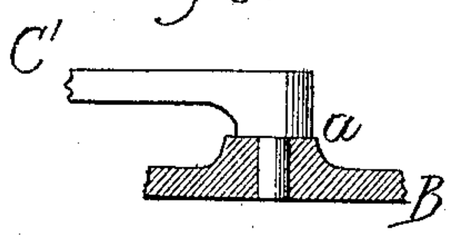

Fig. 6.

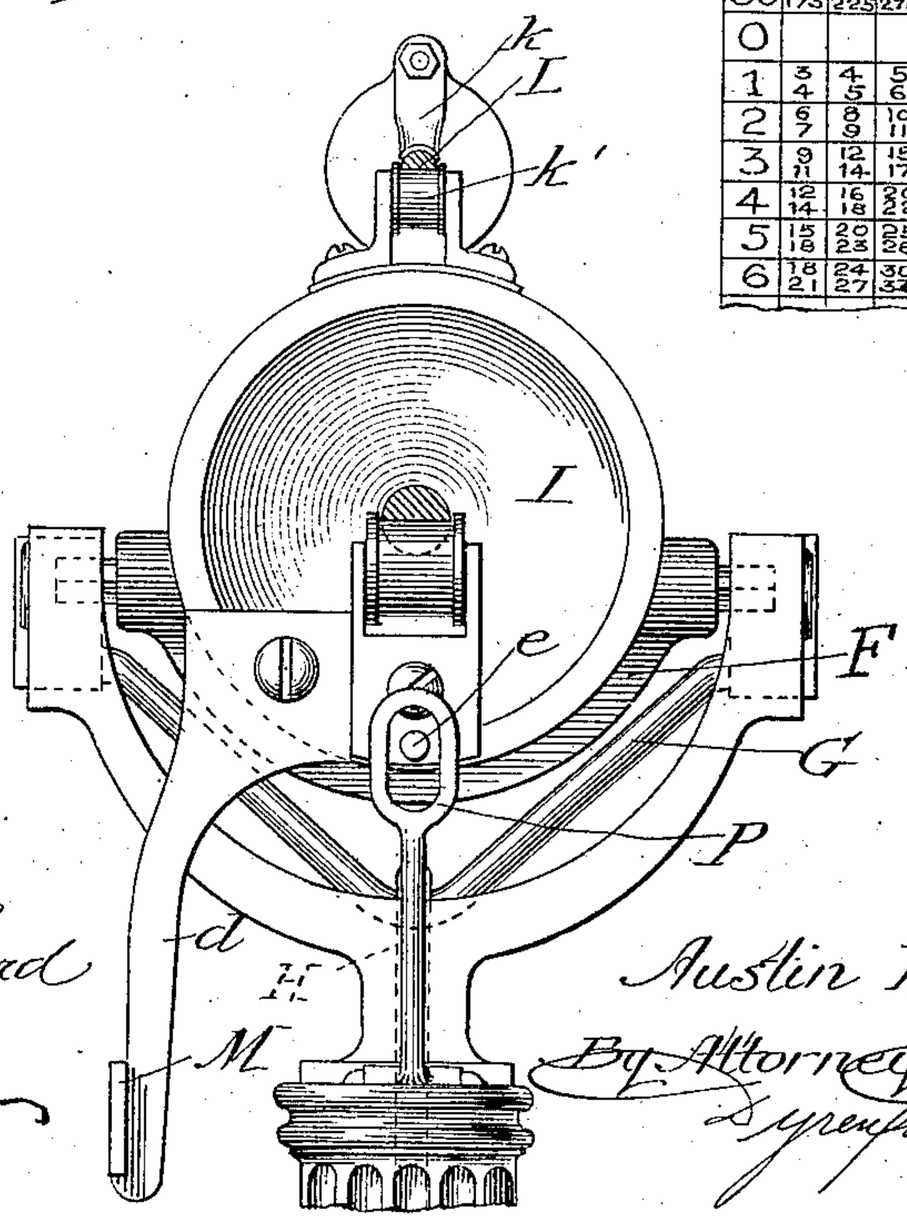

Fig. 7.

	3	4	5	6	7
47	141 165	188 212			
48	144 168	192 216	240 264	288 312	336 360
48	147 172	196 221	245 270	294 319	343 368
50	150 175	200 225	250 275	300 325	350 375
0					
1	3 4	4 5	5 6	6 7	7 8
2	6 7	8 9	10 11	12 13	14 15
3	9 11	12 14	15 17	18 20	21 23
4	12 14	16 18	20 22	24 26	28 30
5	15 18	20 23	25 28	30 33	35 38
6	18 21	24 27	30 34	36 39	

I'

Witnesses:

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Inventor:

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UNITED STATES PATENT OFFICE.

AUSTIN B. HAYDEN, OF CHICAGO, ILLINOIS.

COMPUTING-SCALE.

SPECIFICATION forming part of Letters Patent No. 656,348, dated August 21, 1900.

Application filed September 8, 1899. Serial No. 729,877. (No model.)

To all whom it may concern:

Be it known that I, AUSTIN B. HAYDEN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Computing-Scales, of which the following is a specification.

My invention relates particularly to an improvement in computing-scales of the beam type, my object being to enlarge greatly the weighing and computing capacity of scales of this type and at the same time to provide a compact and economical construction. I accomplish my purpose preferably by the employment of a cylindrical computing-beam containing a revoluble computing-cylinder and in combination therewith, as a means for rotating said computing-cylinder, a longitudinally-movable poise-rod. Preferably, also, the main cylindrical beam is surmounted by a smaller supplemental casing-cylinder containing a second computing-cylinder, the larger cylinder being graduated to one weight denomination, as pounds, and the smaller cylinder to a lesser weight denomination, as ounces.

In the accompanying drawings, which illustrate my invention in its preferred form, Figure 1 is a view in front elevation of a counter platform-scale embodying my improvements; Fig. 2, a fragmentary view, in rear elevation, of the two casing-cylinders and their contained computing-cylinders; Fig. 3, a view in front elevation of the detached cylinders; Fig. 4, a longitudinal sectional view of the cylinders; Fig. 5, a plan view of the platform and shiftable scale-pan employed; Fig. 6, an end view of the cylinders and attendant parts, showing the manner of mounting; and Fig. 7, a broken view showing a development of the surface of the larger computing-cylinder.

A represents the base or pedestal; B, the load-platform, supported on levers in the base A in the ordinary manner; C, a shifting scale-pan mounted in a novel manner on a swinging arm C′, pivoted at a point *a* at the rear of the central portion of the platform B and provided at its forward end with a supporting-lug *a*′, which rests upon the front part of the platform when the scale-pan is in use; D D, stationary end standards resting on the base A and connected at their upper ends by a cross-piece D′, (indicated by dotted lines in Fig. 1;) E, a fulcrum-stand for the beam supported from said cross-piece and provided with bearings *b;* F, a beam-chair provided with downturned knife-edges *c*, engaging the bearings *b*, and with upturned load-hanger knife-edges hidden by cap-pieces *c*′; G, a load-hanger provided at its ends with downturned bearings for the knife-edges at *c*′; H, a steelyard-rod joining the load-hanger G to the levers at the base A; I, the large casing-cylinder forming the main beam and containing the large computing-cylinder I′; J, the surmounting small casing-cylinder beam containing the supplemental computing-cylinder J′; K, the poise-rod for operating the large computing-cylinder; L, the poise-rod for operating the small computing-cylinder; M, an auxiliary bar-form tare-beam supported on brackets *d d*′, projecting from the ends of the cylinder I and provided with a poise M′; N, a scale-balancing weight, and P a beam-rack having a slot engaging with a pin *e* on the beam I and limiting the movement of said beam.

The beam I, Fig. 4, preferably is of the cylindrical form shown to afford a housing for the computing-cylinder I′, being conveniently formed from a sheet of metal rolled to the desired shape and secured to cylinder ends *f f*′ by screws f^2. The poise-rod K contains the axis of the cylinder I and projects through openings at the ends of said cylinder. The rod is provided at one end with a very high pitch spiral groove *g*, which moves over a roller *g*′, journaled in brackets g^2, projecting from one end of the cylinder. It is provided at its ends with removable hollow handles g^3 and between its ends with a poise g^4. These hollow handles serve to receive lead or the like in sealing the scale. The cylinder I′ is of a construction similar to the cylinder I. It is provided with ends *h h*′, connected by rods h^2. Its ends are provided with perforations for the poise-rod K, which latter is provided with a cross-rod h^3, fixed securely to it and provided at its ends with perforations forming slidable connection with the rods h^2. Thus it will be seen the poise-rod K is capable of longitudinal movement, and when so moved is caused to revolve, thereby causing the computing-cylinder I′

to revolve. A spring *i* serves to prevent any longitudinal play between the two concentric cylinders I and I′. Thus the cylinder rotates between two fixed transverse planes and does not move longitudinally in weighing. The cylinder I is provided at its front side with a longitudinal slot Q, whose upper margin is provided with a price-index indicating in cents the price per pound. The left-hand cylindrical column preferably is a pound-index, though, of course, in a different weight system an appropriate new unit would be selected. The cylinder I′ is provided with computations indicating the cost at various prices, these computed results being arranged in circumferential columns each beneath its appropriate price-index number and in longitudinal columns each opposite its appropriate pound-index number. Thus a price-index number heads each cylindrical column and a weight-index number appears at the left-hand end of each longitudinal column. Each horizontal column preferably contains at least two rows of numbers, the upper one containing the computations figured in whole cents per pound and the lower one figured in fractional cents per pound. The computation ordinarily is figured only to the half-cent per pound. The pound-index is shown with numbers from "1" to "50," and in Fig. 3 the cylinder I′ indicates twenty pounds, this being the position to which the cylinder is turned, while the poise K is moved to a position to balance twenty pounds at the platform. Fig. 3 also shows in the price-index the price in cents per pound extending from left to right, beginning with the number "3" and ending with "50." Further illustrating the manner of arranging the computations, at the right of the figure "1" of the pound-index and beneath the figure "3" of the price-index occurs the computations for one pound at three and three and one-half cents per pound. In the same manner the product of any given pound-number by a given whole price-number and also its product by the next half-cent higher appear opposite that pound-number and beneath the whole price-number. This fact being understood, it is unnecessary to indicate half-cents in the price-index. Further illustrating this point, opposite the figure "50" of the pound-index, Fig. 7, and below figure "4" of the price-index in the lower row of numbers occurs the computation "225," meaning two dollars and twenty-five cents, this being the cost of fifty pounds at four and one-half cents per pound. The computations are conveniently applied to the cylinder on an enameled surface supplied for the purpose.

The casing-cylinder J surmounts the cylinder I, and it and its contained computing-cylinder are quite similar to the cylinders I and I′. Here, however, a rod-like feather *j* serves to rotate the cylinder J′ as the poise-rod L is moved, and a spring *k* holds the poise-rod firmly in contact with its roller *k′*. A tie-rod k^2 is shown connecting the ends of the cylinder J. The cylinder J is provided at its front side with a slot R, which is relatively wider than the slot Q. Along its lower margin is a price-index containing numbers from "3" to "50," inclusive, these numbers representing the price per pound. The inner cylinder J′ is provided at its left-hand end with a circumferential column containing numbers indicating ounces, preferably from "1" to "32." Opposite each ounce-number are placed in appropriate circumferential columns computations for the various prices, fractional prices being disregarded, because of their insignificance. Each circumferential computation-column is graduated by short horizontal lines, each graduation indicating one cent. Thus above the figure "9" of the price-index, Fig. 3, occurs the figure "2," and below the figure "2" a graduation-mark indicating that one is to be added to the reading "2," making the cost of seven ounces at nine cents per pound equal three cents. Fig. 3 shows a reading of twenty pounds at the large cylinder and seven ounces at the small cylinder. The cost of twenty pounds at seven cents per pound, for instance, is one dollar and forty cents, and at seven and one-half cents one dollar and fifty cents. The cost of seven ounces at either of these prices is two cents, and this amount added to the cost of twenty pounds in either case gives the total cost.

It is to be observed that the scale described has a capacity of from one ounce to fifty-two pounds at a range in price of from three cents per pound to fifty and one-half cents per pound. In addition to this the supplemental beam M has a weighing capacity of fifty pounds. A machine of this capacity with numbers easily legible has a large cylinder about sixteen inches long and four and one-half inches in diameter and is readily accommodated on a counter.

The poise M′ may be set to balance the known weight of a jar, say, and the cylinder-poises may then be used for getting the net weight and the cost. Thus the use of loose weights is entirely avoided.

Fig. 2 shows the cylinders I and J provided at their right-hand ends (left-hand when viewed from the rear) with perforations permitting weight readings from the rear, the graduations being removed through an angular distance of one hundred and eighty degrees from those in front. In Fig. 4 the poise-rod K is shown provided with spirally-arranged indentations *l*, which may be engaged by a pointed pin *l′*, projecting through a lug on the cylinder end *f*. These indentions correspond to the pound-graduations of the cylinder I′, and by pressing the pin *l′* downward a precise reading is assured. The beam M is shown provided at its upper margin with pound-graduations and at its lower margin with graduations representing the price per pound when the number of pounds opposite

are sold for one dollar. No novelty is claimed for this method of graduation.

By means of the novel manner of mounting the scale-pan the pan can be used or pushed out of the way to clear the platform, as desired.

The knobs or handles of the poise-rods are preferably made rigid with the rods, and the operator exercises both a turning and a pushing force in moving the rods. This is not of great importance, as the feature of turning the computing-cylinder by means of a thrustingly-acting poise-rod passing through its center is believed to be broadly new and is a very important feature of the construction.

The feature of a practical construction of cylindrical computing-beam having the advantage of a greatly-increased computing capacity is of great importance, and the feature of combining a large computing-cylinder for a given weight denomination and a smaller computing-cylinder for a smaller weight denomination adds greatly to the utility of the scale. In this connection it may be remarked that the small cylinder suffices alone for weighing and computing a large proportion of the purchases commonly made. The feature of a circumferential pound-index and a double-row longitudinal column opposite each pound-index number made up of computations each in its appropriate circumferential column beneath the appropriate price-index number is important and is believed to be novel.

The beam improvements described are claimed wherever applicable to a beam-scale, and the term "weighing-platform" in the appended claims designates any suitable support for the load connected with the beam.

No limitation is intended by the detailed description given above except as shall appear from the appended claims.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a computing-scale, the combination with a base and beam-standard, of a computing-beam pivotally supported on said standard, a weighing-platform connected with said beam, a rotatable computing-cylinder provided with computations and rotating between fixed transverse planes, a longitudinally-movable poise-rod passing through horizontal perforations in adjacent ends of said beam and cylinder, and connecting means between the lateral or cylindrical surface of said rod and beam and said rod and cylinder for effecting a turning of the cylinder when the rod is moved longitudinally, substantially as and for the purpose set forth.

2. In a computing-scale, the combination with a base, a beam-standard, and a weighing-platform, of a computing-beam pivotally supported on said standard and provided with a horizontally-disposed price-index, a computing-cylinder journaled in said beam and provided with computations, a poise-rod passing through perforations in the ends of said cylinder and beam and provided with a spiral groove, means on said beam for engaging said groove to cause said rod to rotate when it is moved longitudinally, and connecting means between rod and cylinder permitting relative longitudinal movement and preventing relative angular movement of said parts, whereby a rotary movement is imparted to the cylinder when the rod is moved longitudinally, substantially as and for the purpose set forth.

3. In a computing-scale, the combination with the base beam-standard and weighing-platform, of a computing-beam pivotally supported on said standard, comprising a cylindrical casing provided with a price-index and with central perforations at its ends, a roller journaled at one end of said casing, a poise-rod extending through said perforations provided with a spiral groove resting on said roller, a computing-cylinder provided on its cylindrical surface with computations and at its ends with perforations receiving said poise-rod, and connecting means between poise-rod and computing-cylinder for turning the cylinder as the poise-rod is turned by said roller-and-groove connection in the longitudinal movement of the poise-rod, substantially as and for the purpose set forth.

4. In a computing-scale, the combination with the base beam-standard and weighing-platform, of a computing-beam pivotally supported on said standard, comprising a cylindrical casing provided with a price-index and with central perforations at its ends, a roller journaled at one end of said casing, a poise-rod extending through said perforations provided with a spiral groove resting on said roller, a computing-cylinder provided on its cylindrical surface with computations and at its ends with perforations receiving said poise-rod, longitudinal rods h^2 fixed within the computing-cylinder, and a cross-rod h^3 fixed to the poise-rod and slidably connected with said longitudinal rods, substantially as and for the purpose set forth.

5. In a computing-scale, the combination with the base beam-standard and weighing-platform, of a beam, a rotatable computing-cylinder journaled on said beam, a longitudinally-movable poise-rod provided with spirally-arranged indentations corresponding to the weight-graduations, and a pin connected with said beam for engaging said spirally-arranged indentations, substantially as and for the purpose set forth.

6. In a computing-scale, the combination with a base beam-standard and weighing-platform, of a beam pivotally connected with said standard, a rotatable computing-cylinder journaled in said beam, and a longitudinally-movable poise-rod connected with said cylinder and provided with hollow removable handles for the purpose of adjusting and sealing the scale, substantially as and for the purpose set forth.

7. In a scale, the combination with base,

beam-standard, beam and beam-poise, of a weighing-platform connected with said beam, a swinging arm pivotally connected at one end with said platform, and a scale-pan supported on said arm, substantially as and for the purpose set forth.

8. In a scale, the combination with base, beam-standard, beam and beam-poise, of a weighing-platform connected with said beam, a horizontally-disposed arm pivotally connected at one end with said platform and provided toward its free end with a rest, and a scale-pan supported on said arm, substantially as and for the purpose set forth.

AUSTIN B. HAYDEN.

In presence of—
EDWARD H. AMENDT,
D. W. LEE.