

No. 741,688.

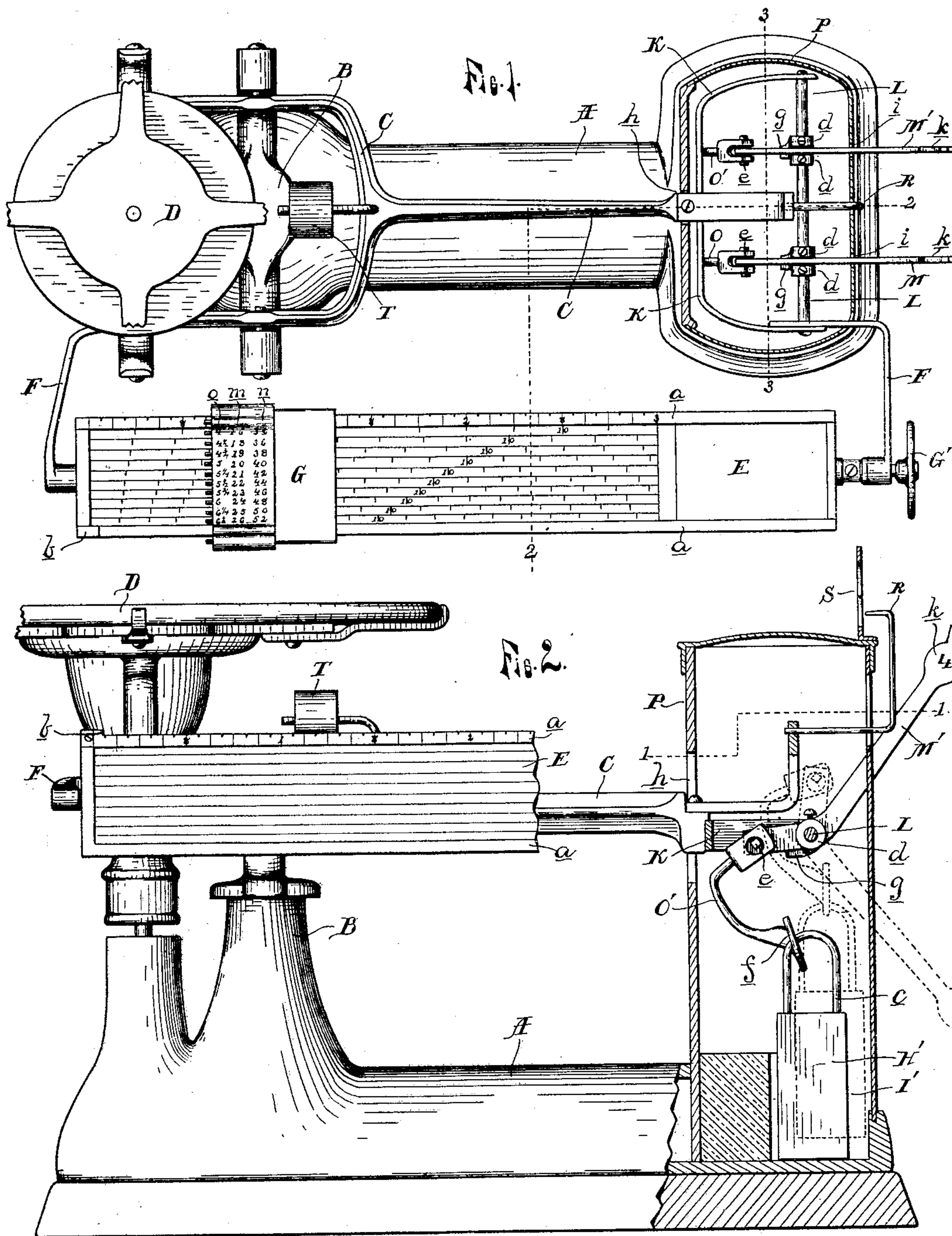
PATENTED OCT. 20, 1903.

J. H. MILBURN.
SCALE.

APPLICATION FILED JULY 14, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES.

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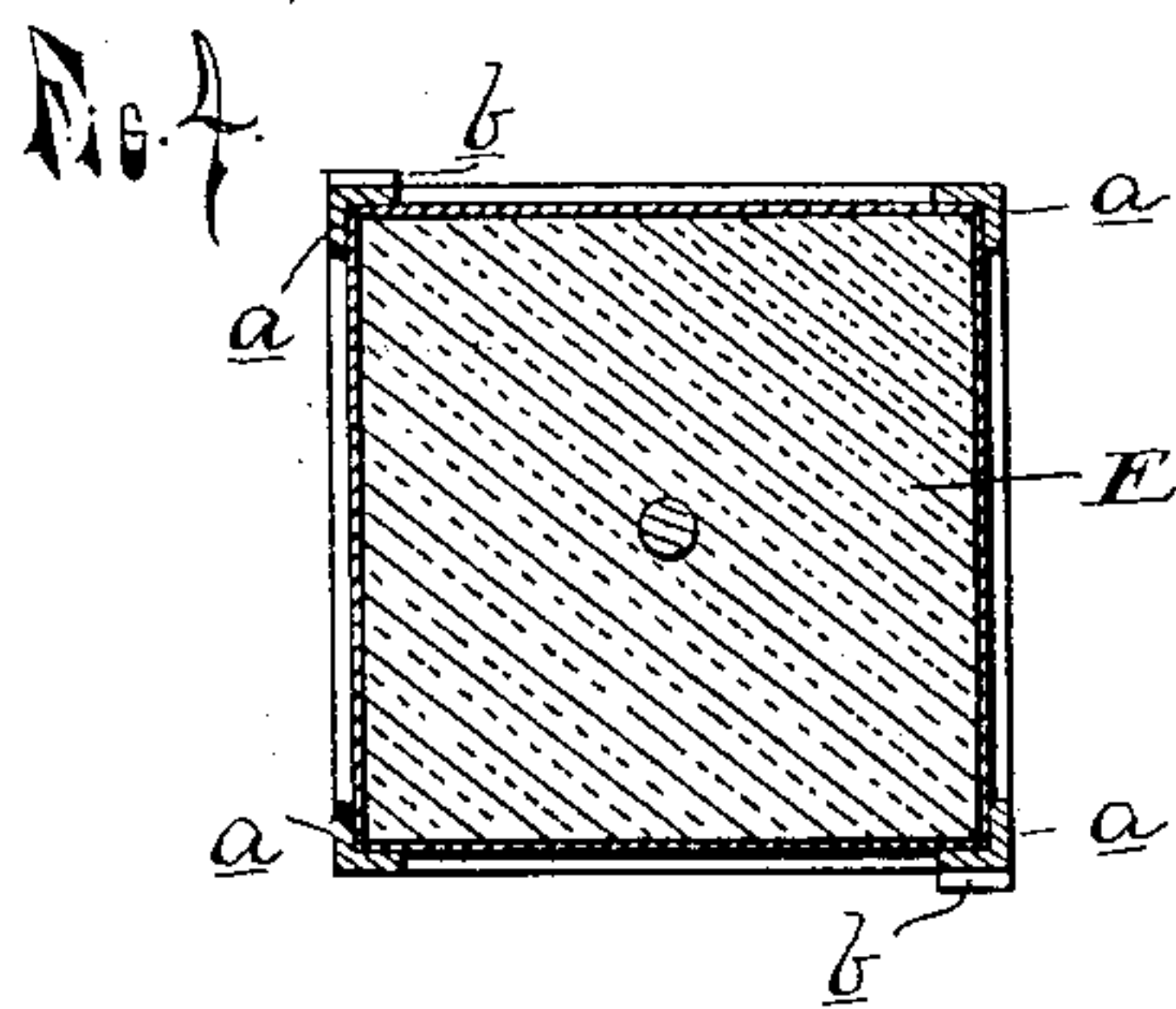
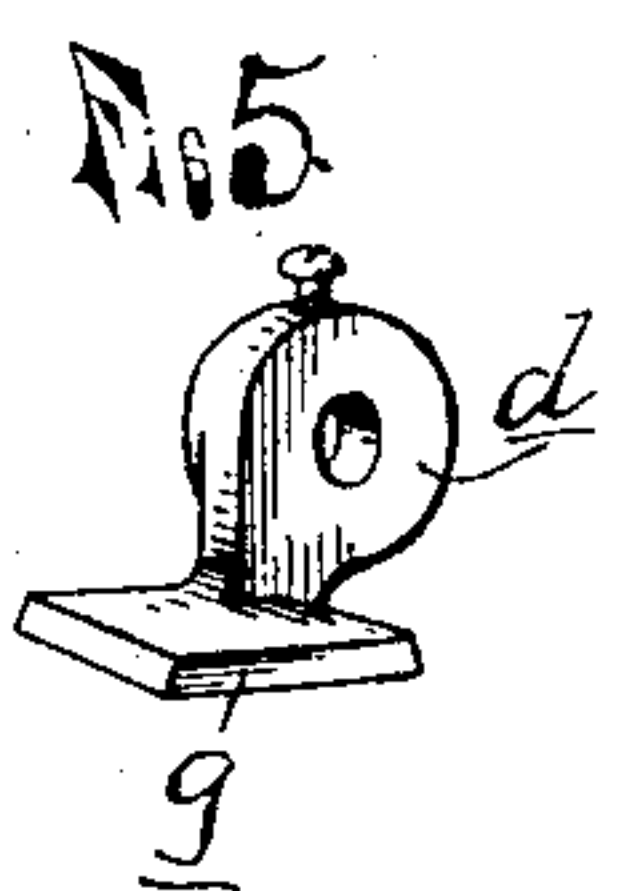
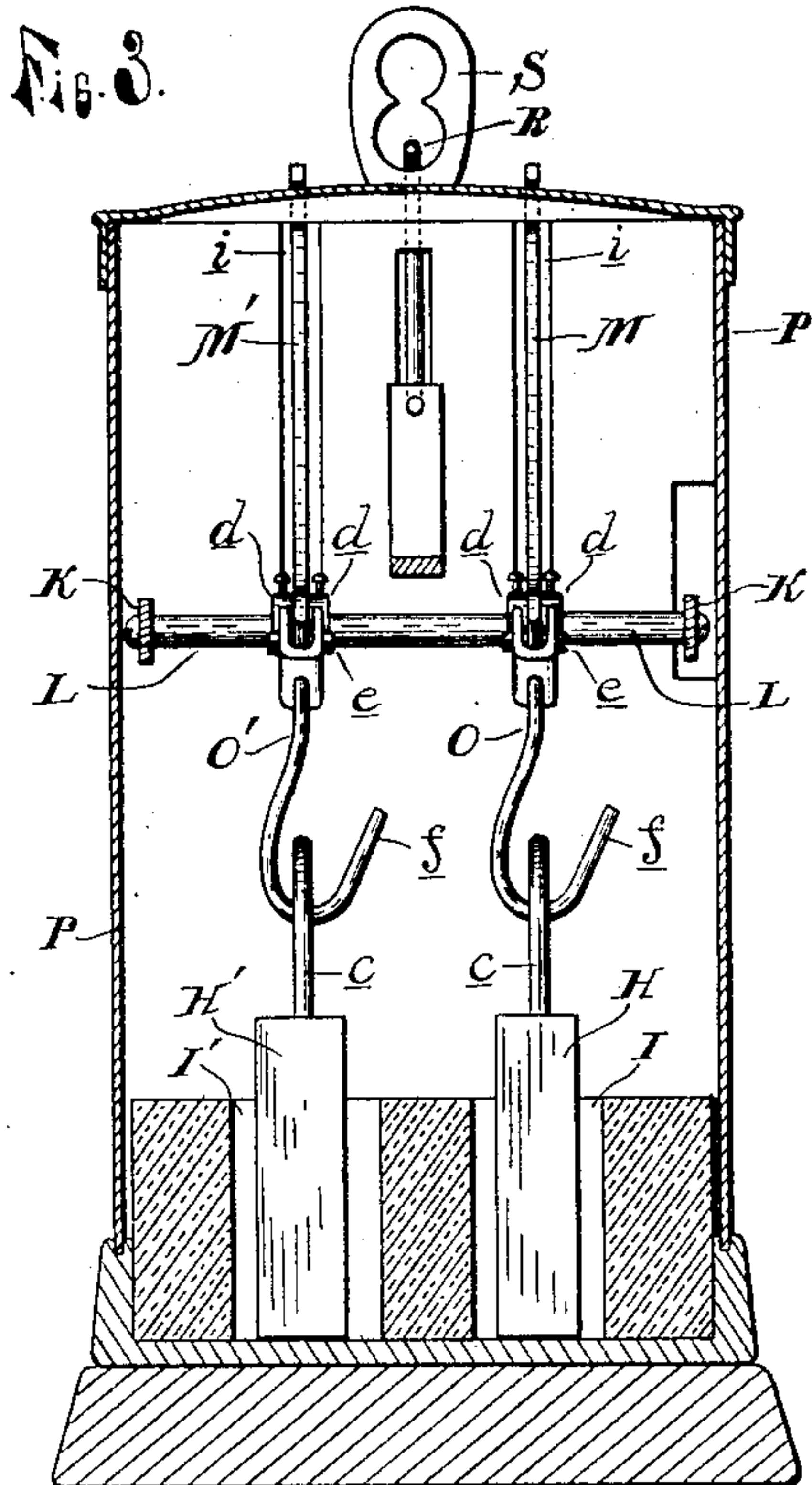
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UNITED STATES PATENT OFFICE.

JOHN HOGARTH MILBURN, OF DETROIT, MICHIGAN.

SCALE.

SPECIFICATION forming part of Letters Patent No. 741,688, dated October 20, 1903.

Application filed July 14, 1902. Serial No. 115,438. (No model.)

To all whom it may concern:

Be it known that I, JOHN HOGARTH MILBURN, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Scales, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to weighing-scales of the character in which removable counterpoise-weights suspended from the end of a scale-beam are employed to increase the capacity of the scale beyond that obtained by
15 a sliding poise on the scale-beam.

The object of my invention is to provide against the errors and inconveniences arising from the use of manually-removable counterpoise-weights; and to this end my invention
20 consists in the novel construction and operation of non-removable counterpoise-weights so connected with the beam and with a mechanical device that by the operation of such mechanical device the weight is transferred
25 from the beam to the frame of the scale or other support independent of the beam, the mechanical device constituting a visual indicator which makes the operative or non-operative condition of each counterpoise at all
30 times manifest to the eye, all as more fully hereinafter described, and shown in the accompanying drawings, in which my invention is shown applied to a well-known form of counter-scale and in connection with a computing
35 scale-beam attached thereto.

In the drawings, Figure 1 is a top plan of a scale embodying my improvements, a portion of the scale being shown in horizontal section on line 1 1 in Fig. 2. Fig. 2 is an elevation
40 of the scale, partly in vertical section, along line 2 2 in Fig. 1. Fig. 3 is a cross-section on line 3 3, Fig. 1. Fig. 4 is a cross-section of the computing scale-beam, and Fig. 5 is a detached perspective view of the lever-stop.

45 A is the scale-base, B the beam-supporting standard, C the pivotal frame, supported by the knife-edge journals in bearings of the standard B, and D a disk on the short arm of the pivotal frame for supporting the article to
50 be weighed, all the parts being of known construction and operation.

E is a computing scale-beam of rectan-

gular cross-section and provided at the end with suitable trunnions, by means of which the beam is rotatably journaled in the ends
55 of the brackets F, which are secured to or formed integrally with the pivotal frame and support such beam directly in front thereof.

G is a sliding poise sleeved upon the beam E, and G' is a hand-wheel secured upon one
60 of the trunnions for the purpose of rotating the beam on the trunnions.

The beam E is preferably of wood or other light material, and the corners have metal strips *a* applied thereto, which metal strips
65 are suitably graduated to indicate the weight by the position of the sliding poise, a suitable stop *b* being formed at one end of the strips to mark the zero position of said poise. The sides of the beam bear the usual computing
70 scale-charts, held in place thereon by the strips *a*, and the sliding poise bears figures registering with horizontal graduations of the computing-charts to indicate the price
75 per pound for each horizontal graduation of the beam, all in the manner well known in the construction of such beams. Instead of
80 this computing-beam the scale, however, may be provided only with the ordinary weighing-beam and sliding poise.

H H' are two counterpoise-weights, each provided with a bail *c*, and I I' are pockets
85 formed on the scale-base below the end of the pivoted frame in which said weights are contained.

K is a yoke or fork secured to or integrally formed with the pivotal frame C, and L is a transverse bar secured in said fork. Upon
90 this transverse bar are pivotally secured the locking-levers M M', free to move in vertical planes, each lever being held in position upon the bar L by means of collars *d*, secured upon the transverse bar. The levers M M' have
95 short arms, which carry knife-edge bearings *e*, and from these are suspended the hangers O O', terminating in hooks *f*, which engage into the bails *c* of the counterpoises, respectively, in such manner that in the position of the parts as shown in full lines in Fig. 2 the
100 hooks *f* are out of operative engagement with the bails of the counterpoises, while in the dotted position they engage with and hold them suspended from the beam. In either position of the levers the beam is free to os-

cillate into balance. In either one of these two positions the levers are held in position by stops *g*, which may be formed on or secured to the cross-bar *L* or one of the collars *d*, between which the levers are held. It will be noticed that when the levers are depressed, as shown by the dotted lines, the knife-edge pivots *e* on the short arms move above the pivotal points of the levers and slightly past them, and the levers are thereby locked in position on the beam, while the hangers and weights are freely suspended from the beam free to oscillate with the beam.

The counterpoise-weights and their operating mechanism are preferably inclosed in a housing *P*, provided with a suitable vertical slot *h*, through which the pivotal frame projects into the housing, and with the slots *i*, through which the ends of the levers are made to project sufficiently to be readily shifted by the operator, as will be necessary to throw any of the desired counterpoises in or out of operative connection with the beam. As shown in the drawings, the levers carry disks *k*, with numbers indicating the number of weight units they represent.

A suitable balance-indicator is formed by means of a pointer *R*, connected to the pivotal frame and extending through the housing to a balance-mark *S* on top of the housing, and suitable means, such as the usual balance-weight *T*, are provided to adjust the balance of the scale.

I have shown but two counterpoises, which are placed on opposite sides of the axis of the pivotal frame; but it will be readily seen that there is ample room for the usual number.

My invention prevents the annoyances and errors incidental to the use of loose counterweights, which frequently are lost or misplaced or become mixed up, leading to error on the part of the operator. With my device the levers are a manifest visual indicator both for the dealer and the purchaser during the whole operation of weighing. A further advantage is that my invention shortens the time required for weighing with the aid of the counterpoise.

Compared with such scales in which the counterpoises are made to slide on separate arms of a beam and are kept on a zero-mark when not in use it will be seen that my construction relieves the beam of the extra weight placed on the beam by such construction and, besides, avoids the errors arising from a possible accidental displacement of such sliding counterpoises. No such accidental displacement can take place on my construction, as it will be readily seen that the levers *M M'* must be in one or the other of the two positions.

My invention does not involve any radical change in the construction of existing scales to which it may be applied, and it is of especial advantage for converting such scales into computing-scales by the addition of a computing scale-beam, as it permits of support-

ing a computing-beam directly in front of the oscillating frame or beam proper without regard to the disposition of the counterpoise, the manual handling of which would be seriously interfered with if suspended from the end of the scale-beam in the usual manner, as such computing-beam would prevent proper access and hide the counterpoises from view. In computing the value of the merchandise weighed on the scale the lever indicates the particular counterpoise the money value of which is to be added and which is represented in the columns of figures *m* and *n* on the sliding poise for the different prices per pound marked in the column *o*, remains in full view during the operation, and thus makes a manifest impression upon the eye and mind and prevents error.

Having thus fully described my invention, what I claim is—

1. The combination with the scale-beam and frame of the scale, of a lever pivotally carried on the end of the scale-beam and adapted to be supported thereon in alternative positions into which it may be moved, a counterpoise suspendable from one end of said lever and adapted to be raised and lowered by the movement of said lever from one position into its other position and a support on the frame of the scale with which said counterpoise is adapted to alternatively engage in lowering the same, whereby in one position of said lever the counterpoise is supported in operative engagement with the scale-beam and in the alternative position of said lever the counterpoise is supported on the frame of the scale independently of said lever and scale-beam.

2. The combination with the scale-beam and frame of the scale, of a lever pivotally secured to the scale-beam at one end and adapted to be supported thereon in alternative positions into which it may be moved free to swing with the scale-beam, a hanger pivotally suspended from one end of the lever and adapted to be alternatively raised and lowered by the movement of the lever into its alternative positions on the scale-beam, a counterpoise suspendable from said hanger free to rise out of operative engagement with said hanger, and a support on the frame of the scale below the hanger adapted to support the counterpoise out of engagement with the hanger in the lowered position of the hanger.

3. The combination with the scale-beam and frame of the scale, of a lever pivotally secured to the scale-beam on one side of said beam in a vertical plane, a hanger pivotally suspended from one end of said lever and adapted to be raised and lowered by said lever, a stop carried by the scale-beam and adapted to maintain said lever in alternative raised and lowered positions of the hanger free to swing with the scale-beam, a counterpoise suspendable from the hanger and a support for the counterpoise on the supporting-

base of the scale adapted to support the counterpoise independently of said hanger and lever in the lowered position of the hanger.

4. The combination with the scale-beam and frame of the scale, of a cross-bar carried by the scale-beam, one or more levers pivotally supported upon said transverse bar independently of each other free to swing with the scale-beam in alternative positions into which each lever is adapted to be moved, hangers suspended from the ends of said levers and adapted to be raised and lowered by the movement of the levers, counterpoises suspendable from the ends of the hangers free to permit a limited vertical movement of said hanger independently of said counterpoises and supports for said counterpoises on the frame of the scale adapted to support the counterpoises out of operative engagement with the hangers in the lowered positions of the hangers.

5. The combination with the scale-beam and frame of the scale, of a lever pivotally secured to the scale-beam at one end free to swing in a vertical plane with the scale-beam, a stop carried by the beam and adapted to support said lever in alternative positions into which it may be moved, a hanger suspended from one arm of said lever, said arm in one position of the lever held substantially parallel with the beam and in the other position substantially at right angles thereto and supporting the hanger in an elevated position, a counterpoise suspendable from the end of the hanger by a vertical sliding connection with said hanger and a support on

the base of the scale adapted to support said counterpoise out of operative engagement with the hanger in the lowered position of the same.

6. The combination with the scale-beam and frame of the scale, of a lever pivotally secured to the scale-beam at one end thereof free to swing with the scale-beam, a stop carried by the scale-beam and adapted to maintain said lever in alternative positions into which it may be moved, a hanger pivotally suspended from one arm of said lever, said arm in one position of the lever being held substantially in line with the scale-beam and supporting the hanger in a lowered position and in the other position of the lever supporting said hanger in an elevated position, a counterpoise suspendable from the end of the hanger free to rise out of engagement therewith, a support on the scale-frame beneath the counterpoise adapted to support the same out of operative connection with the scale-beam in the lowered position of the hanger and a housing supported by the scale-frame and into which the end of the scale-beam carrying the counterpoise freely projects, said housing provided with a slot through which the free arm of the lever projects outwardly beyond the end of the scale-beam in either position into which it may be moved.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN HOGARTH MILBURN.

Witnesses:

JOSEPH A. NOELKE,
OTTO F. BARTHEL.