

No. 770,907.

PATENTED SEPT. 27, 1904.

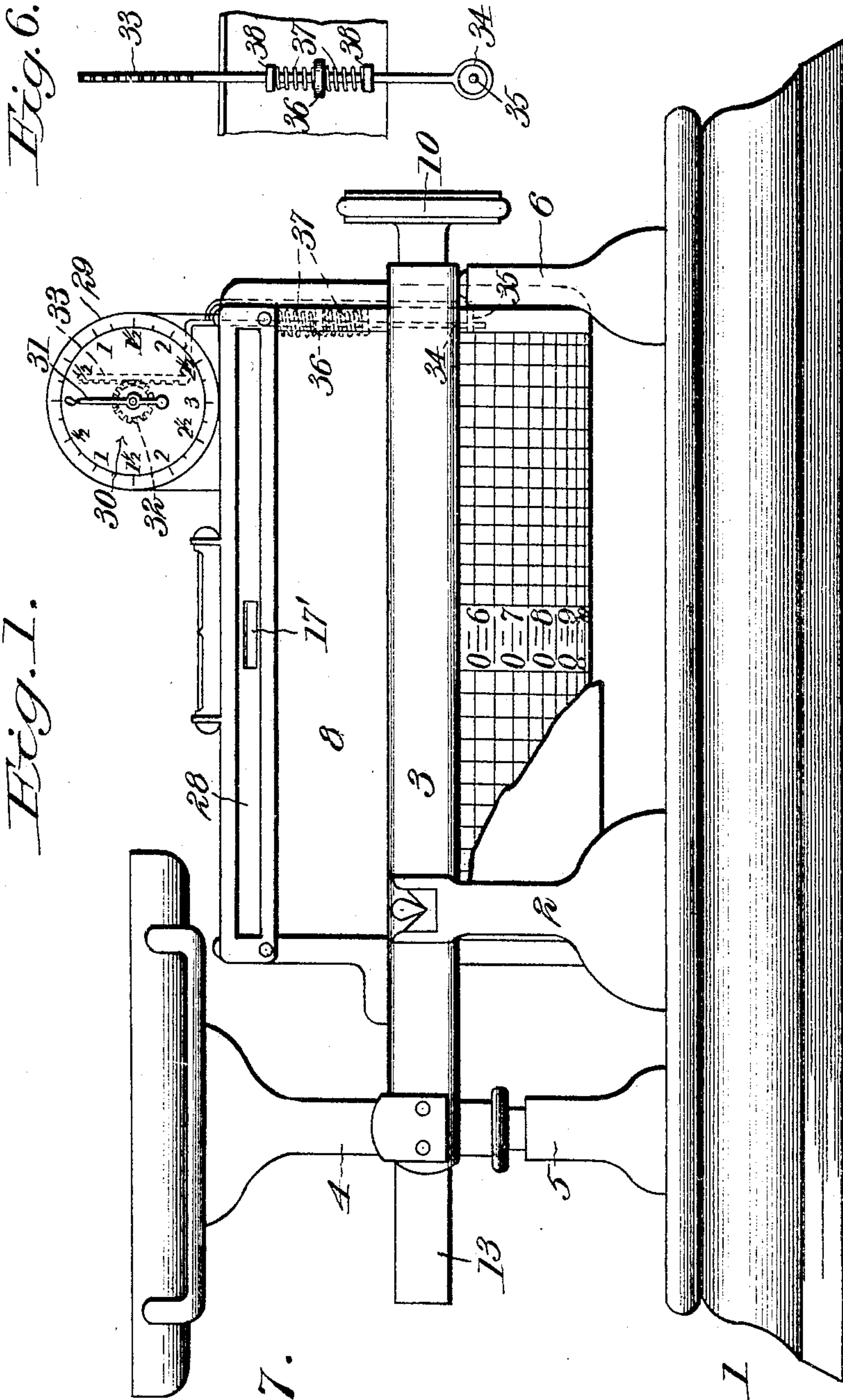
L. T. JOHNSON.

PRICE SCALE.

APPLICATION FILED JULY 22, 1903.

NO MODEL.

3 SHEETS—SHEET 1.

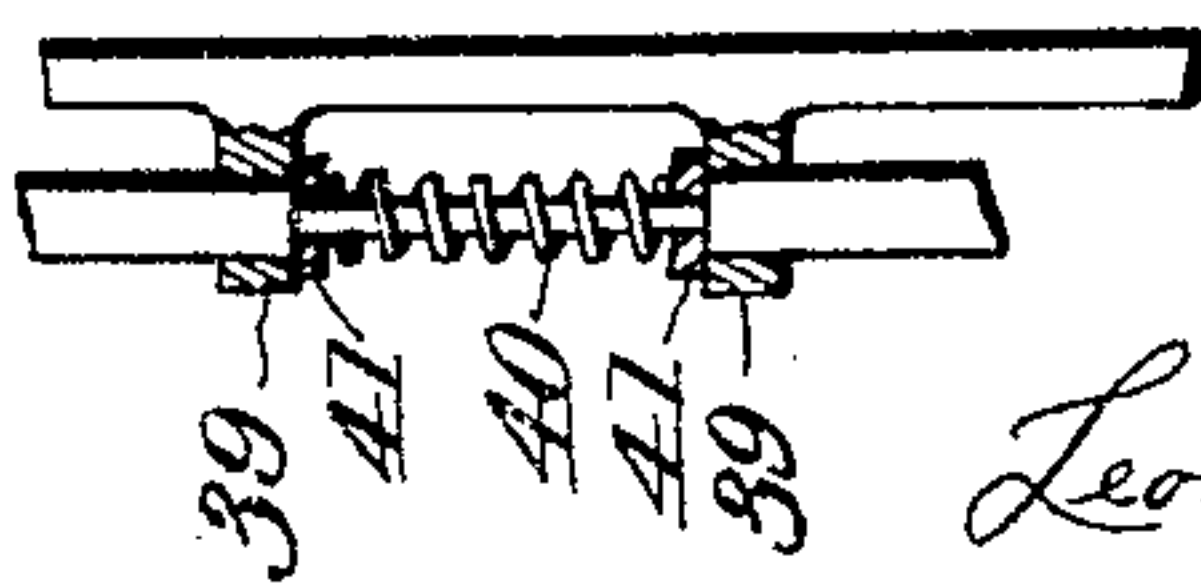


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Fig. 7.



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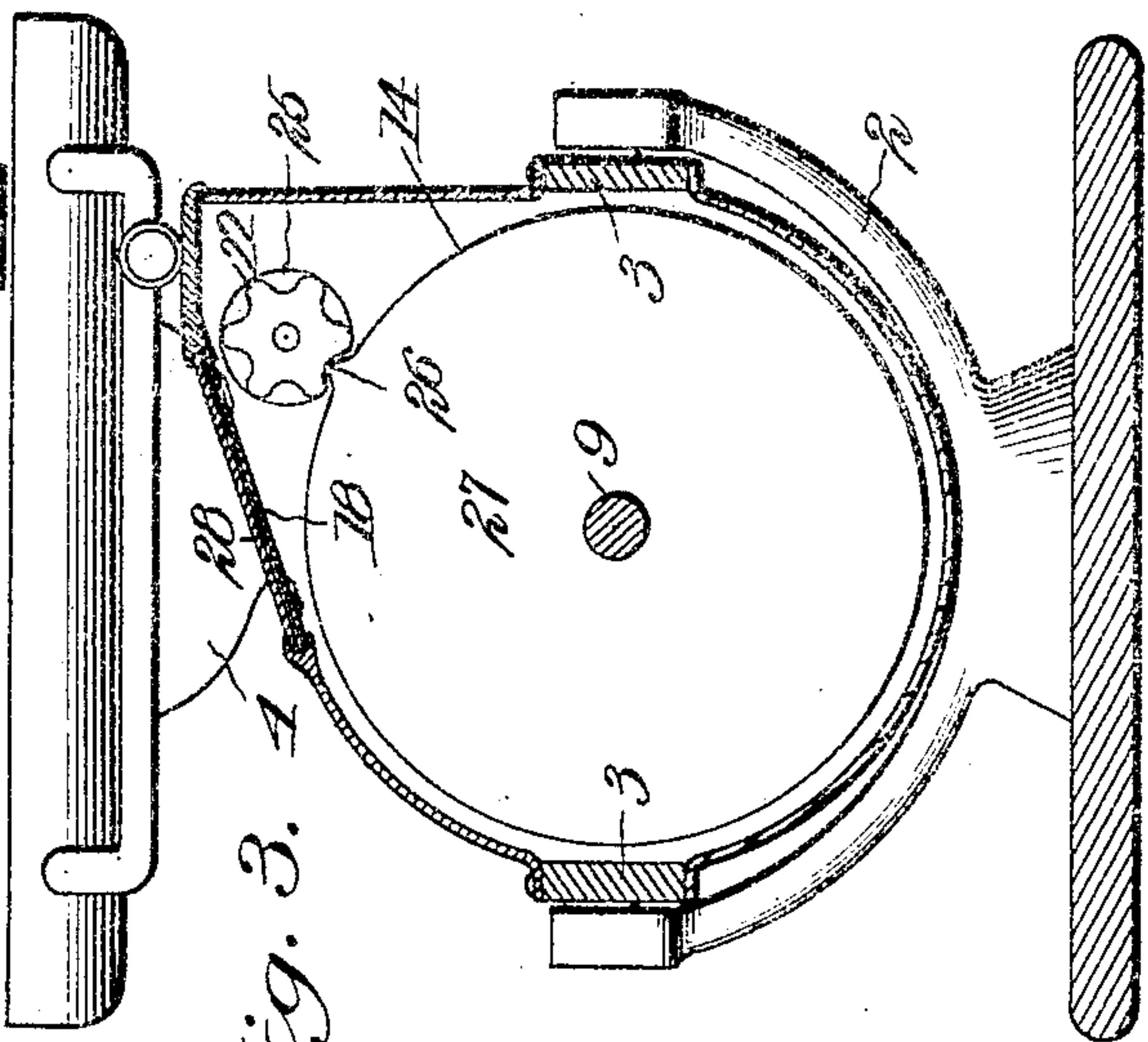
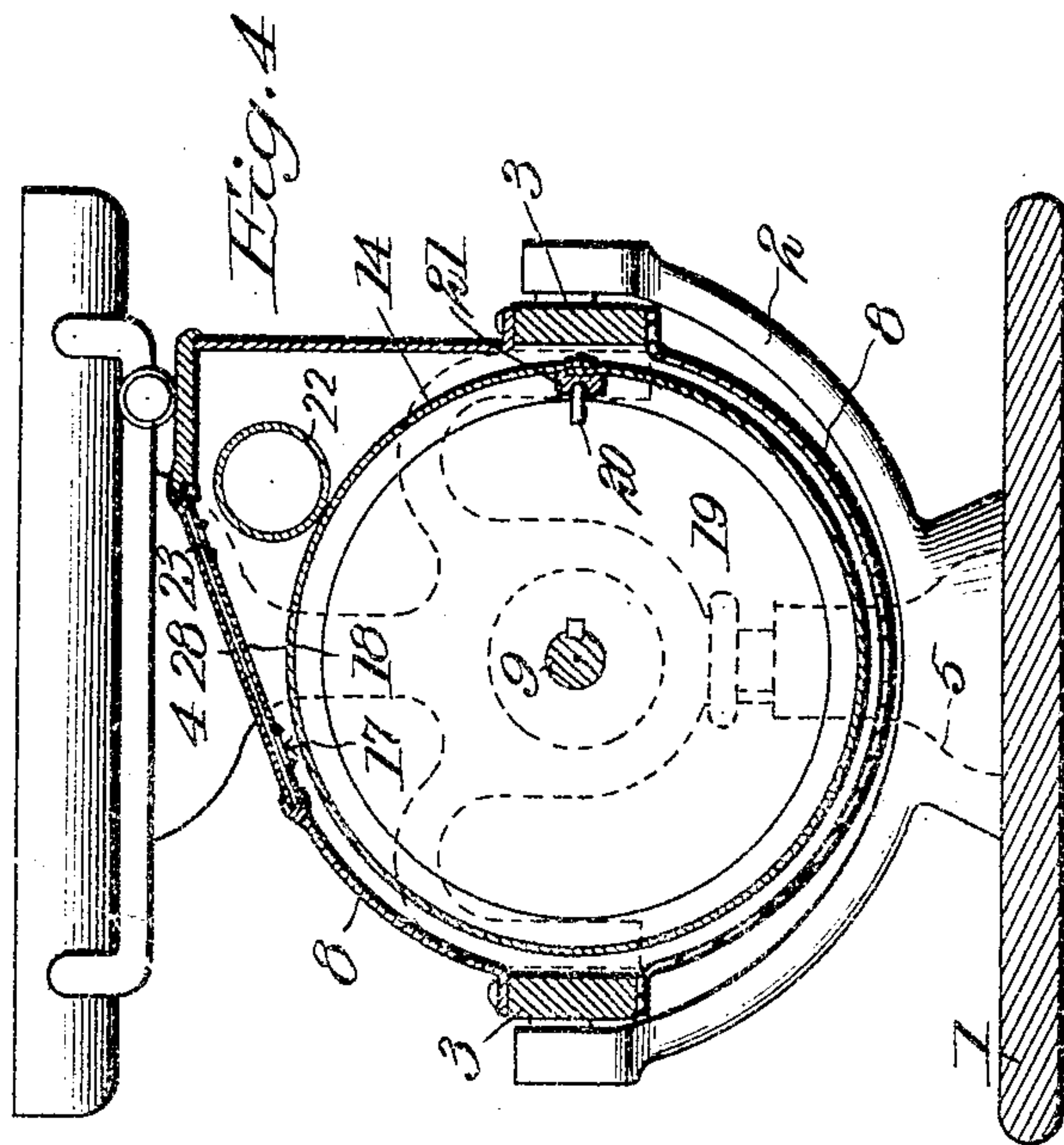
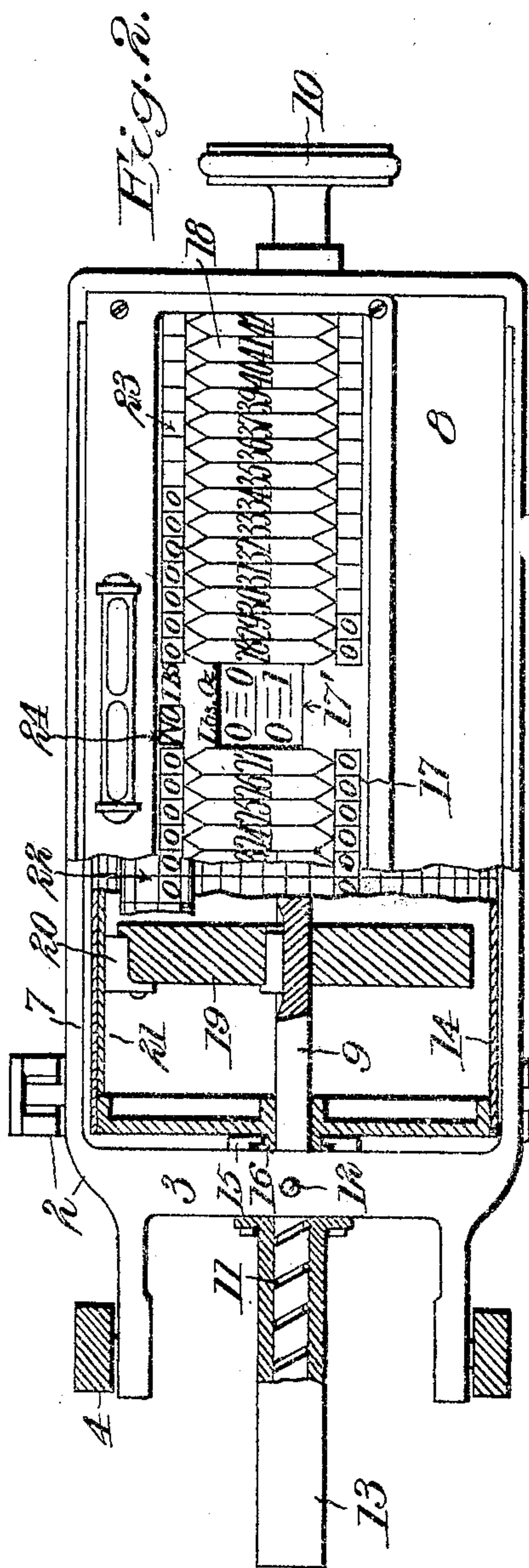
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APPLICATION FILED JULY 22, 1903.

NO MODEL.

3 SHEETS—SHEET 2.



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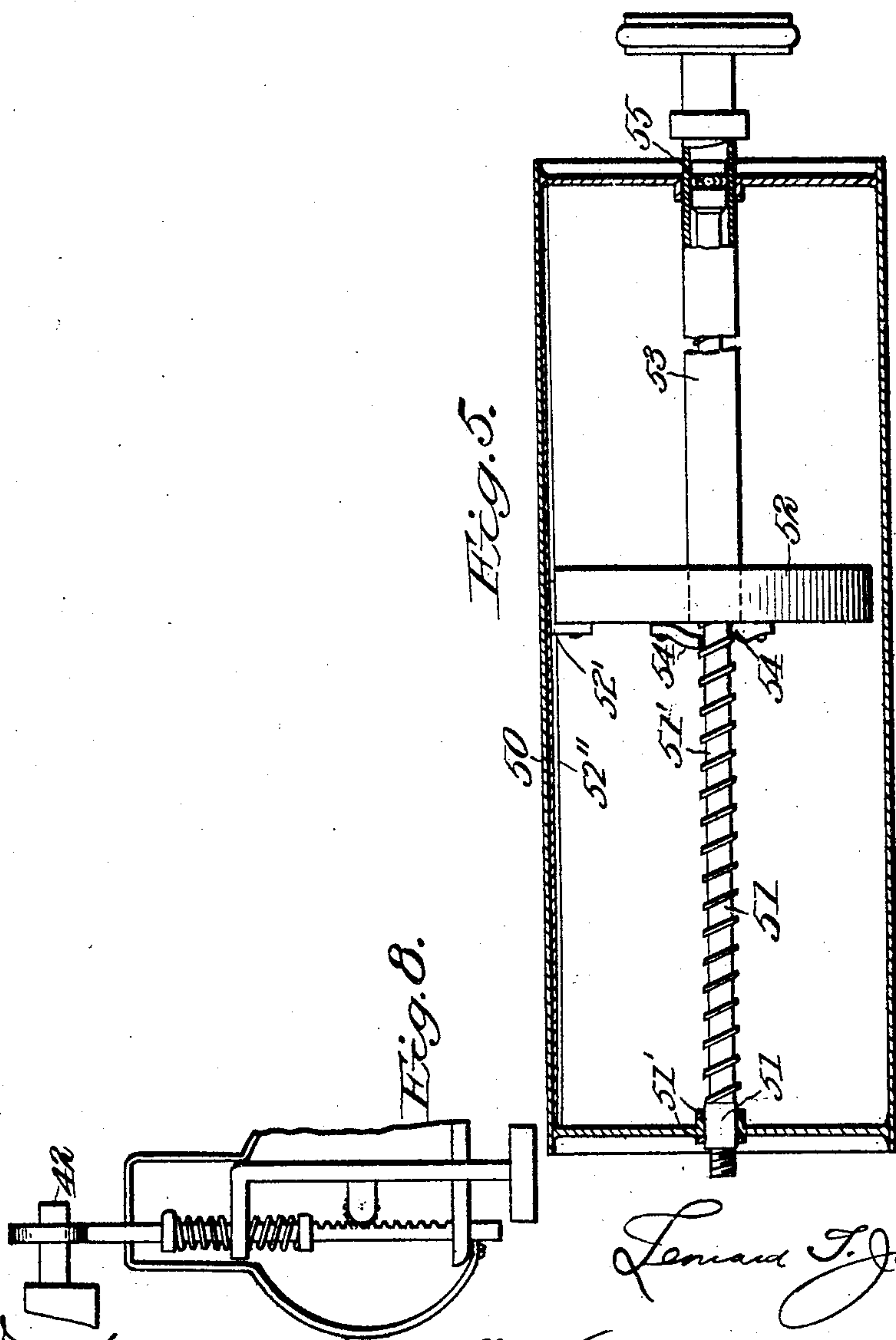
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L. T. JOHNSON.  
PRICE SCALE.

APPLICATION FILED JULY 22, 1903.

NO MODEL.

3 SHEETS—SHEET 3.



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# UNITED STATES PATENT OFFICE.

LEONARD THEODORE JOHNSON, OF BOSTON, MASSACHUSETTS.

## PRICE-SCALE.

SPECIFICATION forming part of Letters Patent No. 770,907, dated September 27, 1904.

Application filed July 22, 1903. Serial No. 166,583. (No model.)

*To all whom it may concern:*

Be it known that I, LEONARD THEODORE JOHNSON, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Price-Scales, of which the following is a specification.

This invention relates to improvements in price-scales; and the object is to provide an increased indicating capacity for the price-scale without affecting the compactness thereof by adding materially to its size and weight and to provide means for quickly and conveniently effecting the simultaneous movement of the poise and value-indicating mechanism.

A further object is to provide a simple and effective device for automatically indicating short and over weight.

With the above object in view the invention consists in the novel features of construction hereinafter fully described, particularly pointed out in the claims, and clearly illustrated by the accompanying drawings, in which—

Figure 1 is a side elevation, partly in section, of a scale constructed in accordance with my invention; Fig. 2, a top plan view, partly in section, of the beam and indicating members carried thereby; Fig. 3, a transverse sectional view showing the operative connection between the two value-indicating cylinders; Fig. 4, a similar view showing the operative connection between the poise and the value-indicating cylinder operated thereby; Fig. 5, a longitudinal sectional view through the large value-indicating cylinder, showing another modified structure for actuating the poise and cylinder; Fig. 6, a sectional detail view of the springs for restoring the short and over weight mechanism, showing the arrangement thereof; Fig. 7, a similar view of a modified construction, and Fig. 8 a detail view showing a modified arrangement of the short and over weight device.

Referring now more particularly to said drawings, 1 designates the base, 2 a bifurcated fulcrum-stand for the intermediately-pivoted beam 3, 4 the pan-supporting arm, which is pivotally mounted upon the beam upon one side of the pivot of the latter and

having a stem movable in a hollow post 5, raised from the base, and 6 a post raised from the base and designed to limit the downward movement of the poise end of the beam, all of this structure constituting a well-known type of scale and forming no part of my present invention, which may be used in connection with the scale-beam of many other types of weighing-scales.

In carrying out my invention I form the beam 3 or that part thereof upon which the poise ordinarily operates as a substantially rectangular casting 7, to which a substantially cylindrical casing 8 is secured. Extending through said casing and mounted to rotate in and to move longitudinally through the end bars of said casting 7 is a poise-rod 9, which projects through the outer end bar of the casting and is provided on said projecting end with a knob or disk 10, by means of which it may be conveniently rotated. Said rod at its opposite end projects through the inner end bar of the casting and is formed with a spiral groove 11, into which a stud 12, carried by the casting, projects. The grooved end of the rod is protected by a casing 13, secured to casting 7. Through the medium of the groove and stud the rotation of said poise-rod by means of the knob or disk effects also a longitudinal movement thereof relatively to the beam.

Mounted in the casing 8 is a value-indicating cylinder 14, which is supported by the poise-rod upon which it may freely rotate, being held from longitudinal movement thereon by a plate 15, attached to the casting and engaging in a grooved collar 16, carried by the cylinder, or by any other preferred construction. This cylinder has about its circumference the values for quantities up to two pounds at various prices per pound in half-ounces, and also carries about its circumference at its center weight graduations in pounds and ounces up to two pounds. The values show in a longitudinally-extending slot 17, formed in the upper portion of casing 8, at the lower edge of a plate 18, upon which are arranged various prices per pound up to eighty cents per pound. The weight graduations show in a slot 17', formed above slot 17, as shown in Fig. 2.



Positioned within cylinder 14, and rigidly attached to the poise-rod, is a poise 19, having attached thereto a knife-edge steel plate 20, which slides in a grooved track 21, secured to the inner side of the cylinder. Thus the poise may move longitudinally with relation to the cylinder, but is locked from independent rotation, so that by rotating the poise-rod the poise is moved longitudinally upon the beam and the cylinder simultaneously rotated to bring the values before the slot 17, indicating the values of the quantity weighed at the different prices per pound carried by plate 18.

In order to increase the indicating capacity of the scale without making the cylinder so long or so large as to be objectionable, I provide an auxiliary cylinder 22, which is mounted to rotate in the casing 8 above and slightly to the rear of the center of cylinder 14. This cylinder is provided about its circumference with values for two, four, six, eight, ten, and twelve pounds and at its center with corresponding weight graduations. When the cylinder is rotated, the values appear in a longitudinally-extending slot 23 in casing 8 above the price-per-pound plate 18, and the weight graduations in a slot 24 above the slot 17'. Cylinder 22 is provided at one end with a gear 25, with which a single tooth 26 upon a disk 27, carried by the end of the cylinder 14, meshes, the arrangement being such that cylinder 22 is revolved one-sixth of a complete revolution upon a complete revolution of cylinder 14. Thus for two pounds cylinder 14 is revolved once, for four pounds twice, and so on, the values for from one ounce to two pounds being indicated by cylinder 14 and from two pounds to twelve pounds by cylinder 22. The values of cylinder 14 show below the price-per-pound scale and the values of cylinder 22 above said scale, so that to ascertain the value for an even number of pounds above one pound it is simply necessary to read the figures above the desired price, and for the value for any quantity up to two pounds in ounces and half-ounces to read the value below the price on the price-plate. To ascertain the value for a certain number of pounds above one pound and a certain number of ounces or fraction thereof, it is necessary to simply add the values shown above and below the particular price per pound. The cylinders are made of light material, so that they may be quickly and readily rotated by the knob.

Plate 18 and the several slots in the casing are covered by a transparent plate 28.

For indicating short and over weight I provide the following automatically-operating device. Referring to Figs. 1 and 6, 29 indicates a casing supported upon casing 8 and provided with a dial 30, having two sets of graduations thereon, those to the left of the center of the dial being used to indicate in ounces short weight and those to the right over-weight. Movable upon the face of said dial

is a pointer 31, mounted upon a shaft upon which a pinion 32 is secured within the casing. Meshing with said pinion is a rack-bar 33, which is extended downward through casing 8 at the ends of the cylinders 14 and 22 and having a loop 34 formed on its lower end, into which a pin 35, carried by the post 6, extends through an opening in the casing. Said bar slides in a guide-lug 36, projecting from casing 8 and arranged above and below said lug, and bearing at one end thereagainst are springs 37, which are coiled about the bar and bear at their opposite ends against collars 38 on said bar. When the scale is set for weighing, the outer end of the beam moves downwardly, but rack-bar 33, by contact with pin 35, is held from movement, so that the continued downward movement of the beam through the medium of the pinion and rack effects the rotation of said pointer to the left, indicating short weight, and at the same time compressing the upper coiled spring. The pointer will remain in this position until the beam swings upwardly and relieves the spring, when said spring will restore the rack-bar and pointer to normal position. The continued upward movement of the beam caused by placing more of the article being weighed in the pan than necessary effects a reverse movement of the pointer, indicating overweight, and at the same time compresses the lower spring 37. As soon as the excess quantity has been removed said spring restores the pointer to zero, indicating equilibrium.

As indicated in Fig. 7, instead of using two springs 37 two lugs 39 may be provided for the bar to work in, between which a spring 40 may be arranged, the ends of the spring bearing against two collars 41, loose on said bar and positioned between the two lugs.

In Fig. 8 the indicator-casing is mounted on a support attached to the base 1, the loop of the rack-bar receiving a pin 42, carried by the end of the scale-beam, this being a reversal of the arrangement shown in Figs. 1 and 6.

In Fig. 5 the cylinder 50 is rotatively attached to a rod 51, projecting thereinto and formed with a spiral groove 51', while the weight 52 is attached to a poise-rod 53, which projects to the exterior of the cylinder and is provided with an operating-knob. The poise 52 has a sliding connection with the cylinder through the medium of a projection 52', carried by the former, which moves in a groove or track 52'', formed in the latter. The cylinder is held from longitudinal movement on rod 51 by two collars. Said rod is hollow to receive the rod 51, upon which it rotates and moves longitudinally and is provided with projections 54, which engage in said groove 51' and give to the rod and weight a longitudinal movement when said rod is rotated and effect also the rotation of the cylinder. Rod 51 is formed near its free end with



a ball-race, in which antifriction-balls 55 are placed, said balls being thus interposed between rod and hollow poise-rod, the rod 51 being thus supported and at the same time friction between it and the hollow poise-rod being reduced.

I do not limit my invention to the style of scale here shown and described, as it may be applied to other forms of scales, nor do I limit it to a scale of the capacity indicated, as this may be varied and the invention used in connection with both large and small scales.

The openings in the lugs 39 are large enough for the bar to move therethrough in either direction; but the collars are larger than the openings in said lugs, whereby a certain movement of the bar in either direction will cause the one or the other of the collars to compress the spring.

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

1. In a scale, means for effecting a longitudinal movement of the poise upon the beam, comprising in combination with the beam and poise, a rod carried by the beam and extending longitudinally thereof and formed with a spiral groove about its circumference, and a tubular poise-rod arranged to have a rotary and longitudinal movement upon said rod and having projections engaging in said spiral groove and having the poise attached thereto.

2. In a price-scale, the combination with the scale-beam, of a rod carried by said beam formed with a spiral groove about its circumference, a value-indicating cylinder rotatively attached to said rod, a price-index carried by said beam contiguous to said cylinder, a tubular poise-rod arranged to have a rotary and longitudinal movement upon said rod and having members engaging in said groove and an operating end projecting from the cylinder, and a poise carried by said poise-rod within the cylinder, having a sliding connection with the latter.

3. In a price-scale, the combination with the beam, of a rod carried by said beam and formed with a spiral groove about its circumference, a value-indicating cylinder attached to said rod, a price-index carried by said beam contiguous to said cylinder, a tubular poise-rod arranged to have a rotary and longitudinal movement upon said rod and having members engaging in said groove and an operating portion projecting from the cylinder, antifriction-balls arranged between the rod and tubular poise-rod, and a poise carried by the poise-rod within the cylinder.

4. In a price-scale, the combination with the beam, of a rotatable value-indicating cylinder carried thereby, a price-index carried by the beam contiguous to said cylinder, a longitudinally-movable, rotatable poise-rod carried by the beam and extended axially through said cylinder, a grooved track upon the inte-

rior of the cylinder, and a poise secured to said rod within the cylinder having a projection engaging in said grooved track.

5. In a price-scale, the combination with the beam, of two rotary value-indicating cylinders carried thereby having values for different quantities, means for operating the cylinder having values for smaller quantities, an operative connection between said cylinders whereby a certain rotation of the cylinder having the values for smaller quantities effects a partial rotation of the cylinder having the values for larger quantities and a price-index arranged contiguous to said cylinders.

6. In a price-scale, the combination with the beam, of two rotary value-indicating cylinders carried thereby having values for different quantities, means for operating the cylinder having values for smaller quantities, an operative connection between said cylinders whereby a certain rotation of the cylinder having the values for smaller quantities effects a partial rotation of the cylinder having the values for larger quantities, and a price-index arranged in such position that the values carried by one cylinder are displayed above and the values upon the other cylinder below said index.

7. In a price-scale, the combination with the beam, of a value-indicating cylinder carried by said beam having values for fractions of a pound up to a certain quantity, a value-indicating cylinder carried by the beam having values for pounds for quantities above the capacity of the first-mentioned cylinder, a price-index between the display-points of said cylinders so as to coact with the values carried by both cylinders, means for rotating the cylinder having the values for the smaller quantities, and an operative connection between said cylinders whereby a certain rotation of the cylinder having the smaller capacity effects a partial rotation of the cylinder having the larger.

8. In a price-scale, the combination with the beam, of a device for indicating short and overweight comprising a graduated dial and index one of which is movable relative to the other in one direction to indicate short weight and in a reverse direction to indicate overweight, a longitudinally-movable operating member for the movable part operated by the movement of the beam, and a spring placed under tension by the movement of said operating member in either direction for restoring the parts.

9. In a price-scale, the combination with the beam, of a device for indicating short and overweight comprising a dial graduated in ounces and fractions thereof on both sides of its vertical center, a pointer movable upon said dial having a gear, a longitudinally-movable rack-bar meshing with said gear and operated by the movement of the beam, and a spring placed under tension by the movement of said bar in either direction for restoring the parts.



10. In a price-scale, the combination with the beam, of two rotary value-indicating cylinders, a price-index arranged between the display-points of the two cylinders to coact with  
5 the values carried by both cylinders, and means for rotating said cylinders.

11. In a price-scale, the combination with the beam, of two rotary value-indicating cylinders carrying computations, those on one cylinder being multiples of those on the other,  
10 means for revolving the cylinder having the smaller values, and an operative connection

between said cylinders whereby a certain rotation of the cylinder having the smaller values effects a partial rotation of the one having  
15 the larger values.

In testimony whereof I have signed my name to this specification in presence of two witnesses.

LEONARD THEODORE JOHNSON.

Witnesses:

F. D. MICHAELS,  
GOODWIN CREASON.