

No. 753,222.

PATENTED MAR. 1, 1904.

A. R. BEAL.
PRICE OR MONEY WEIGHT SCALE.

APPLICATION FILED MAY 28, 1900.

NO MODEL.

2 SHEETS—SHEET 1.

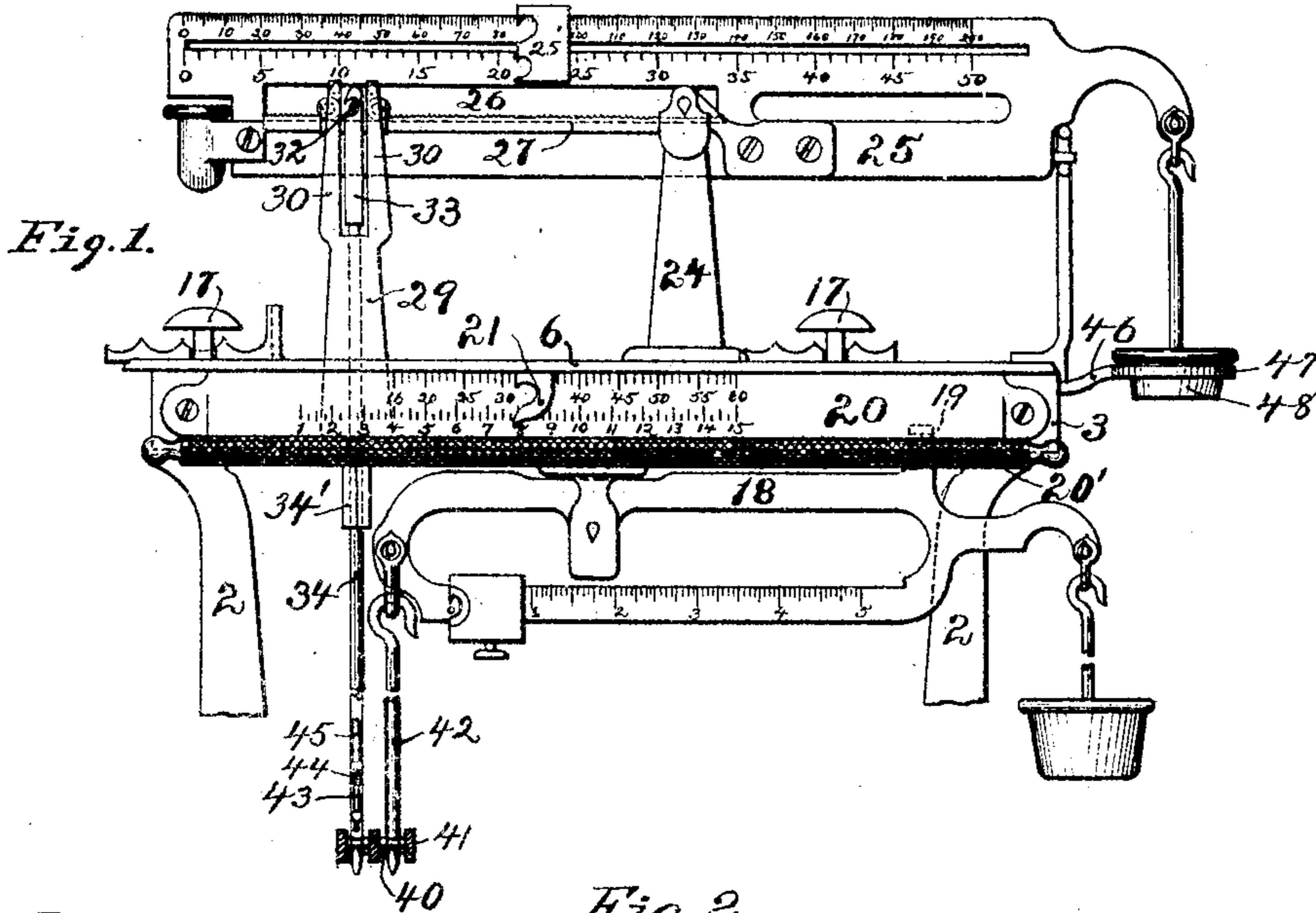


Fig. 1.

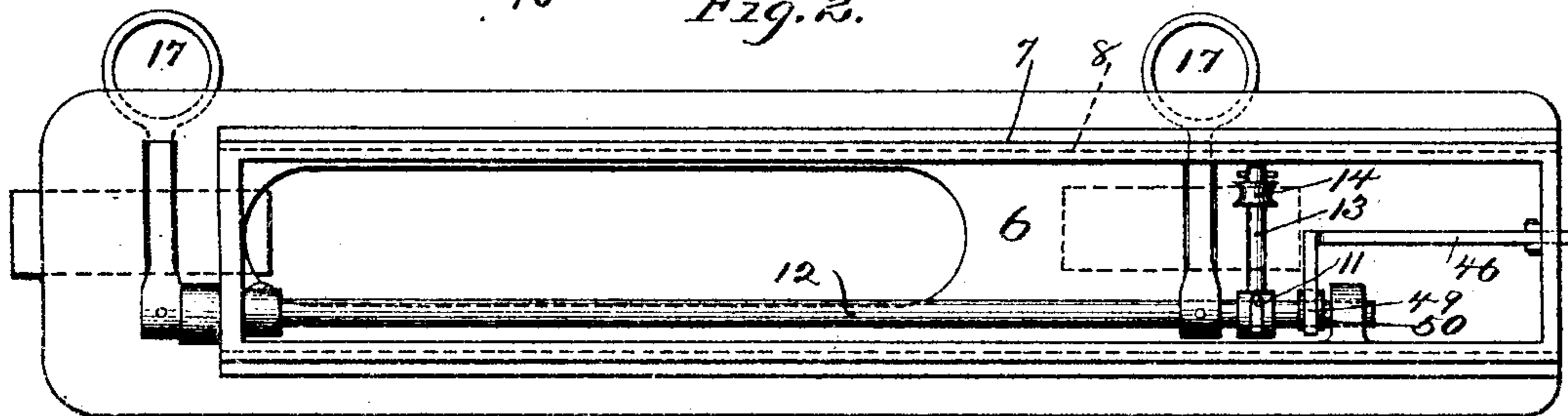


Fig. 2.

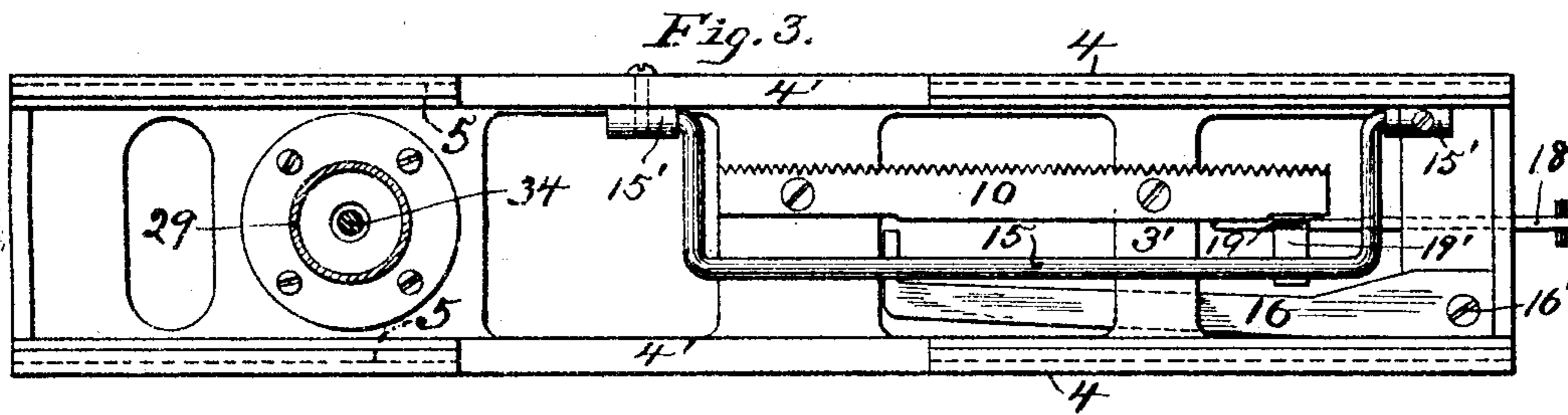


Fig. 3.

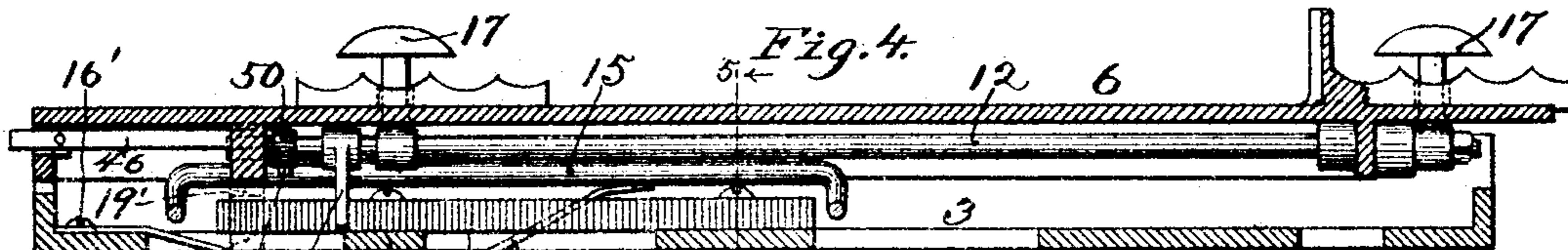


Fig. 4.

Witnesses: 19, 49, 11, 3, 10, 16, 5

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2 SHEETS—SHEET 2.

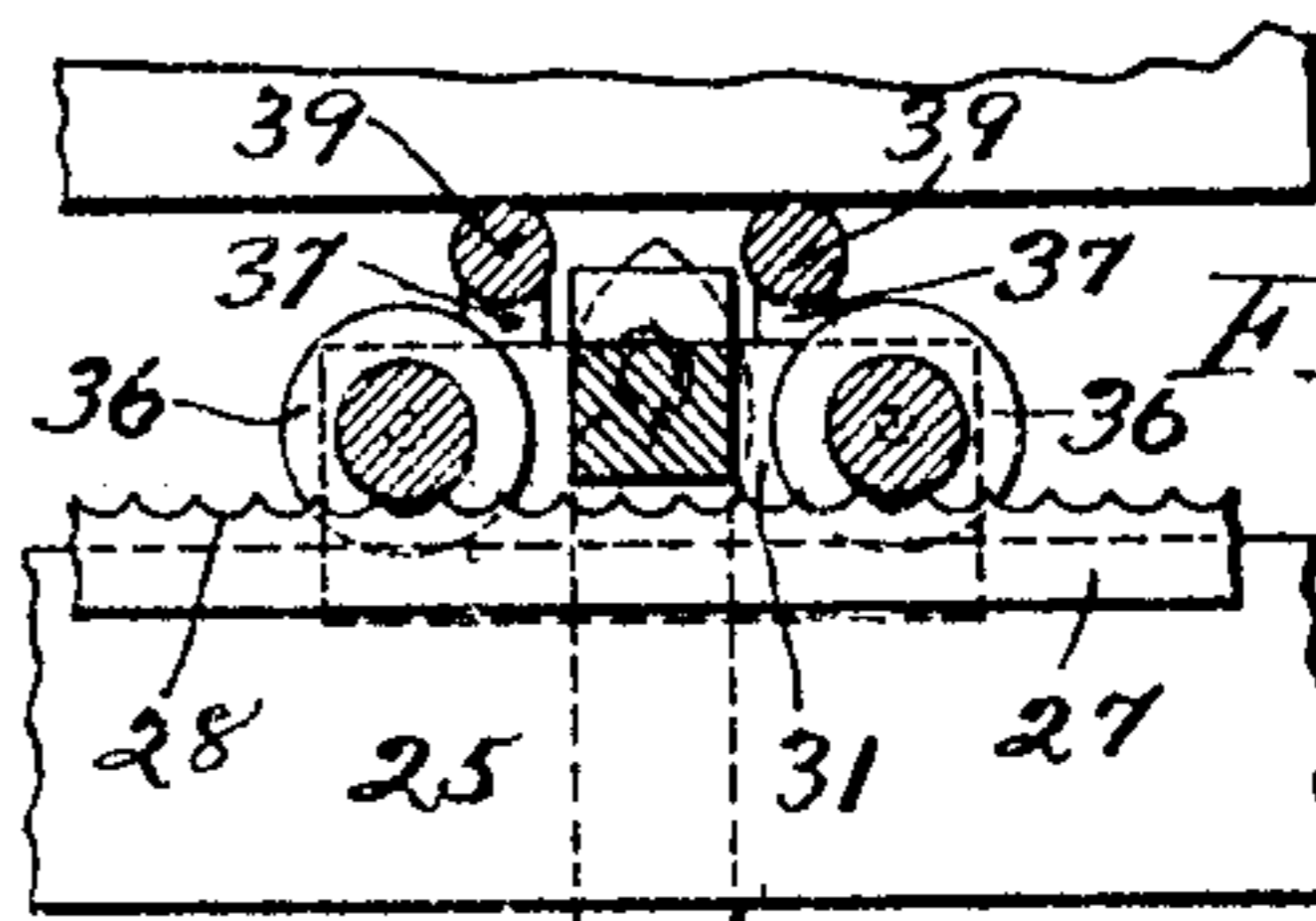
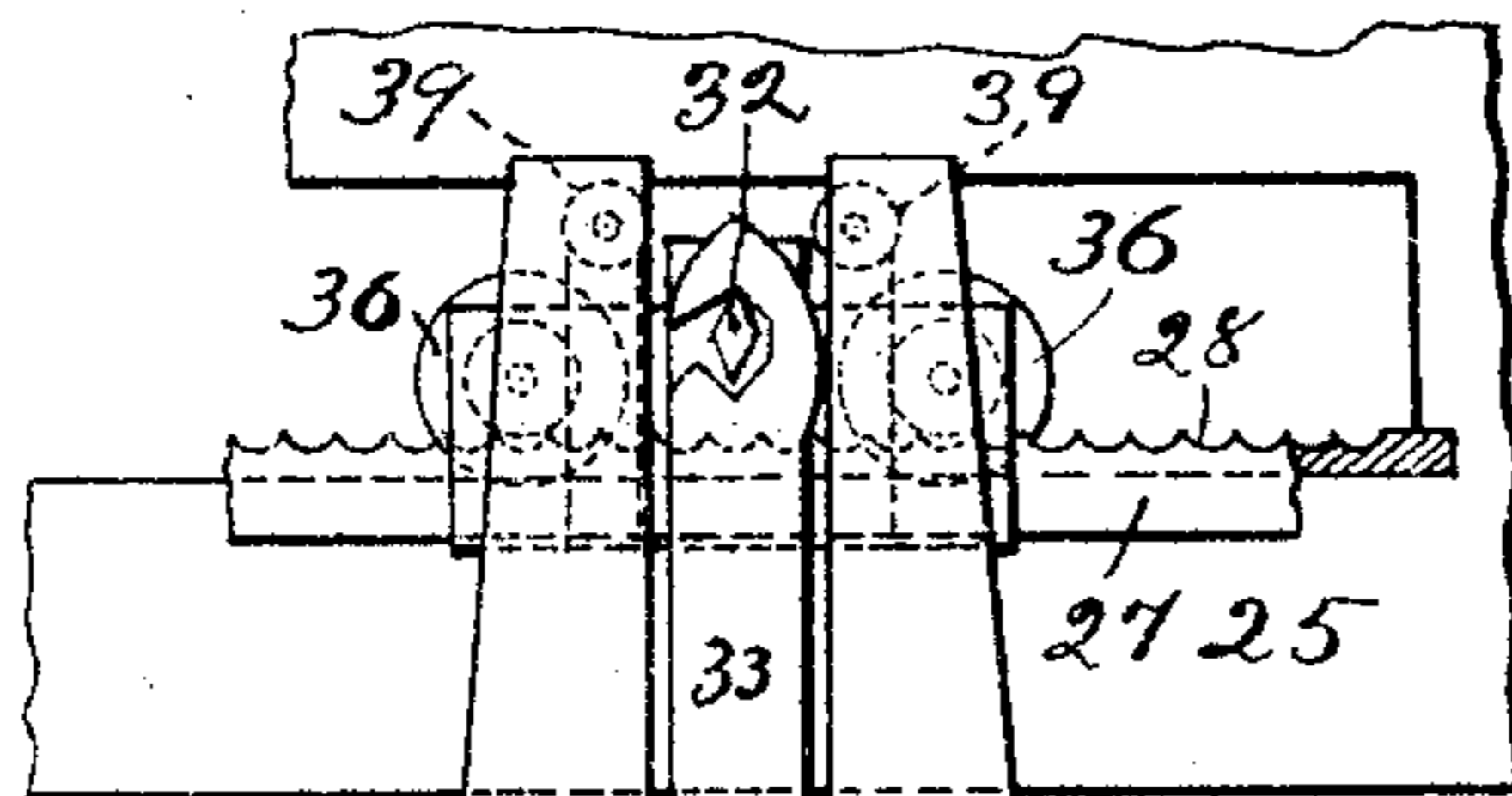
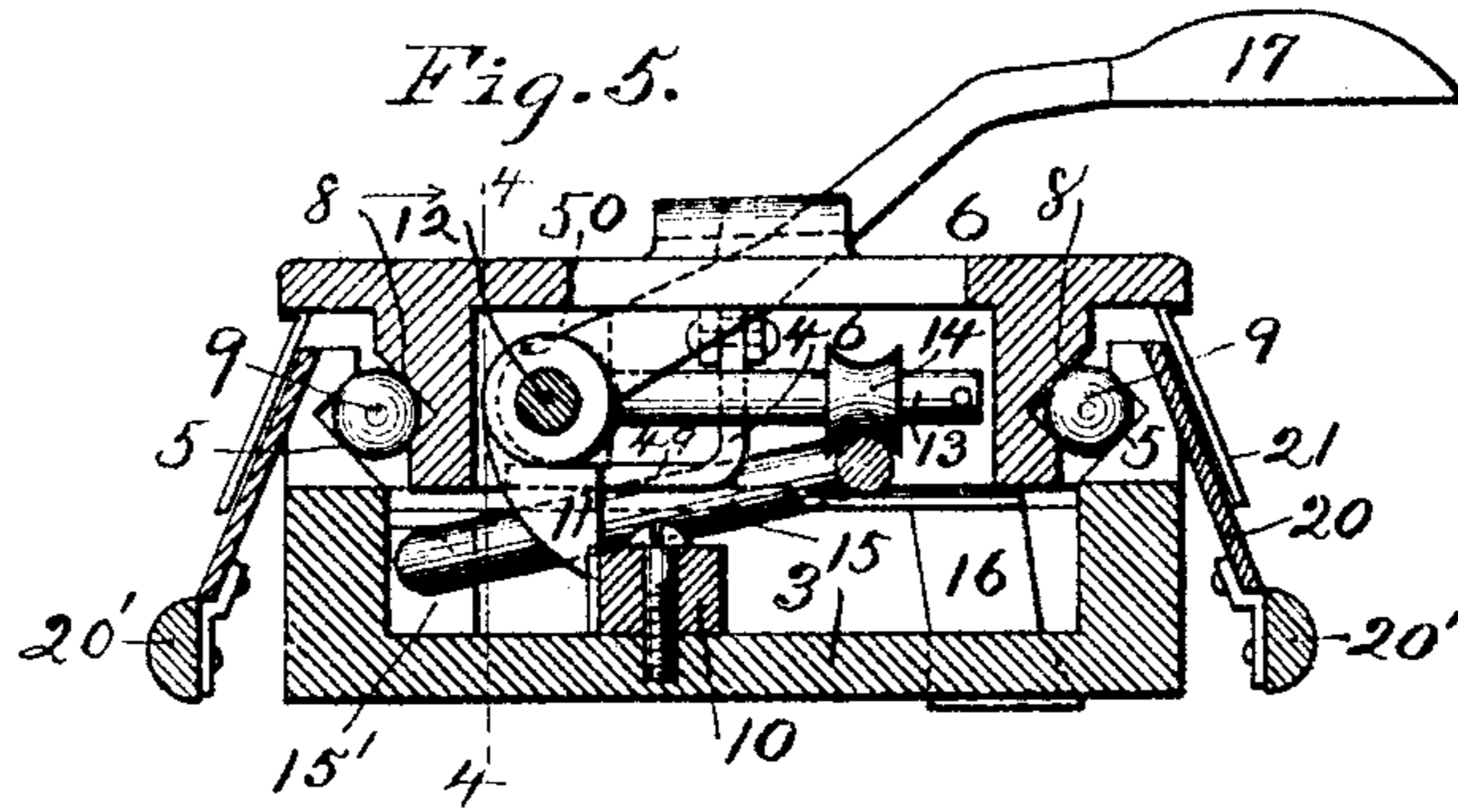


Fig. 6.

Fig. 7.

Fig. 10.

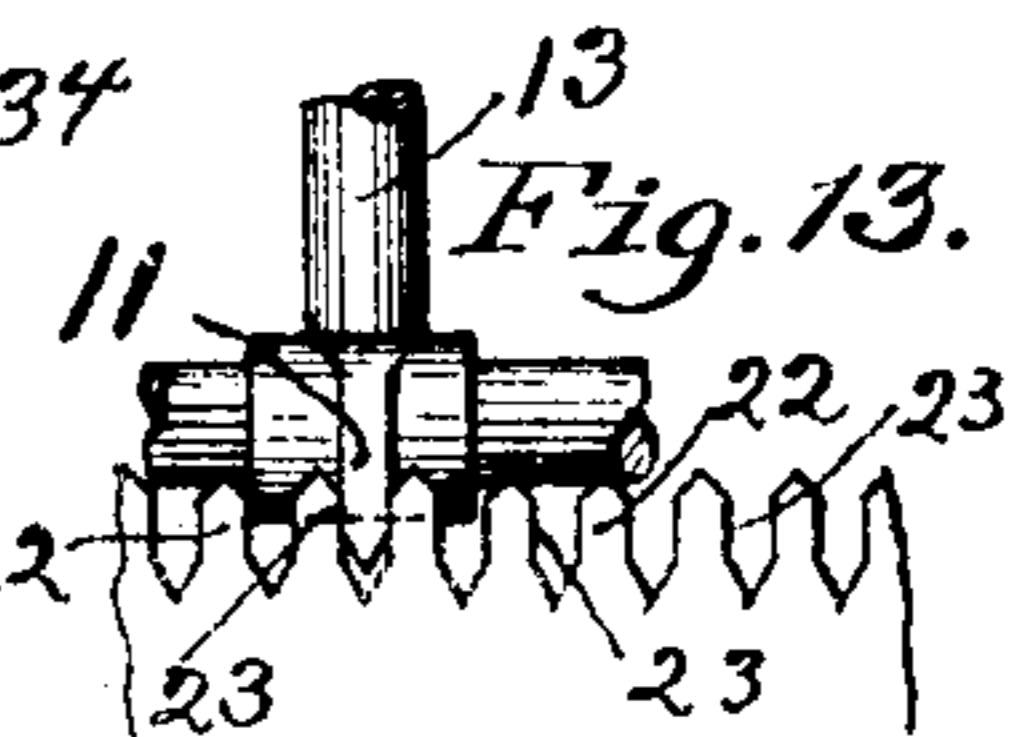
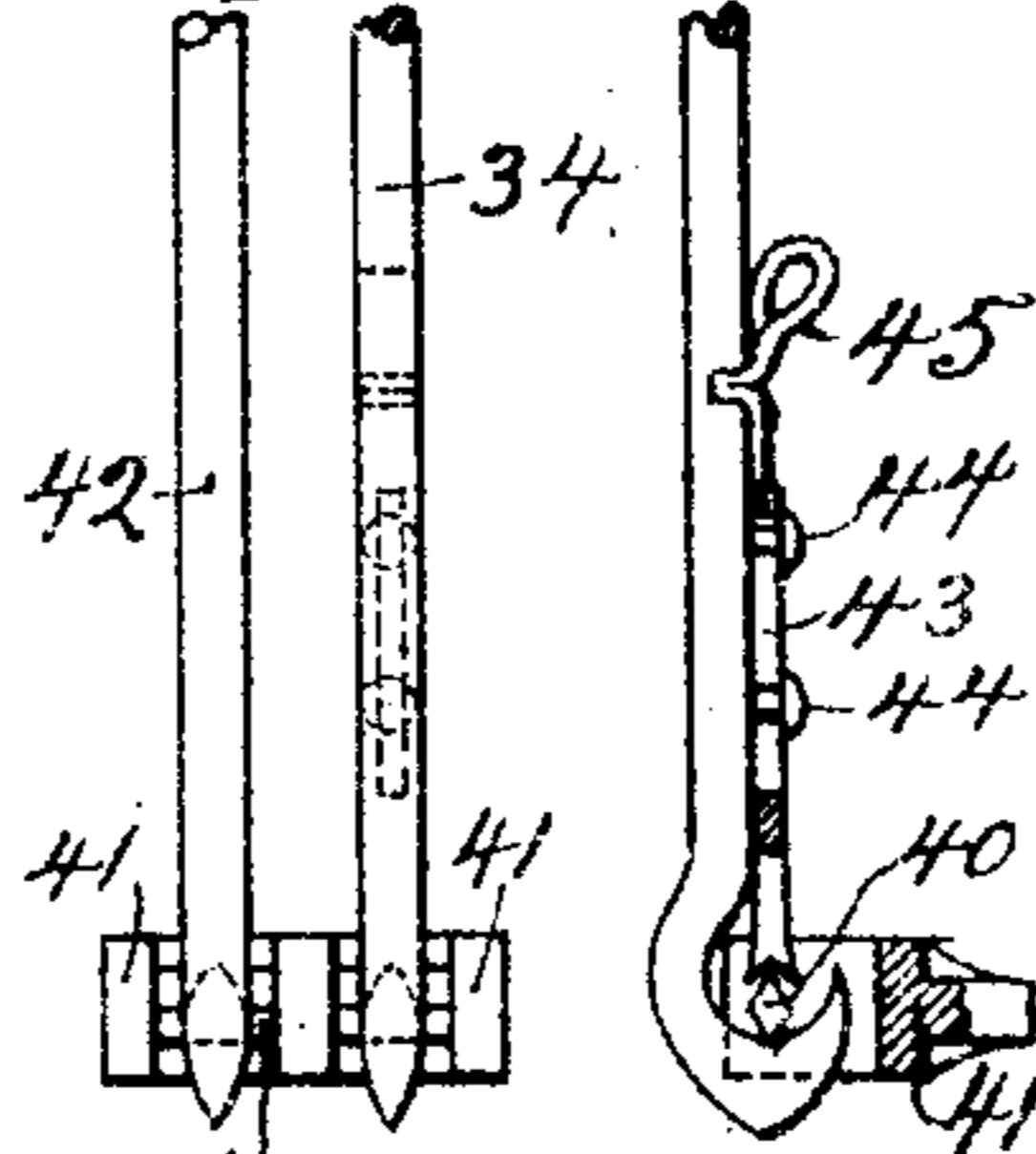


Fig. 13.

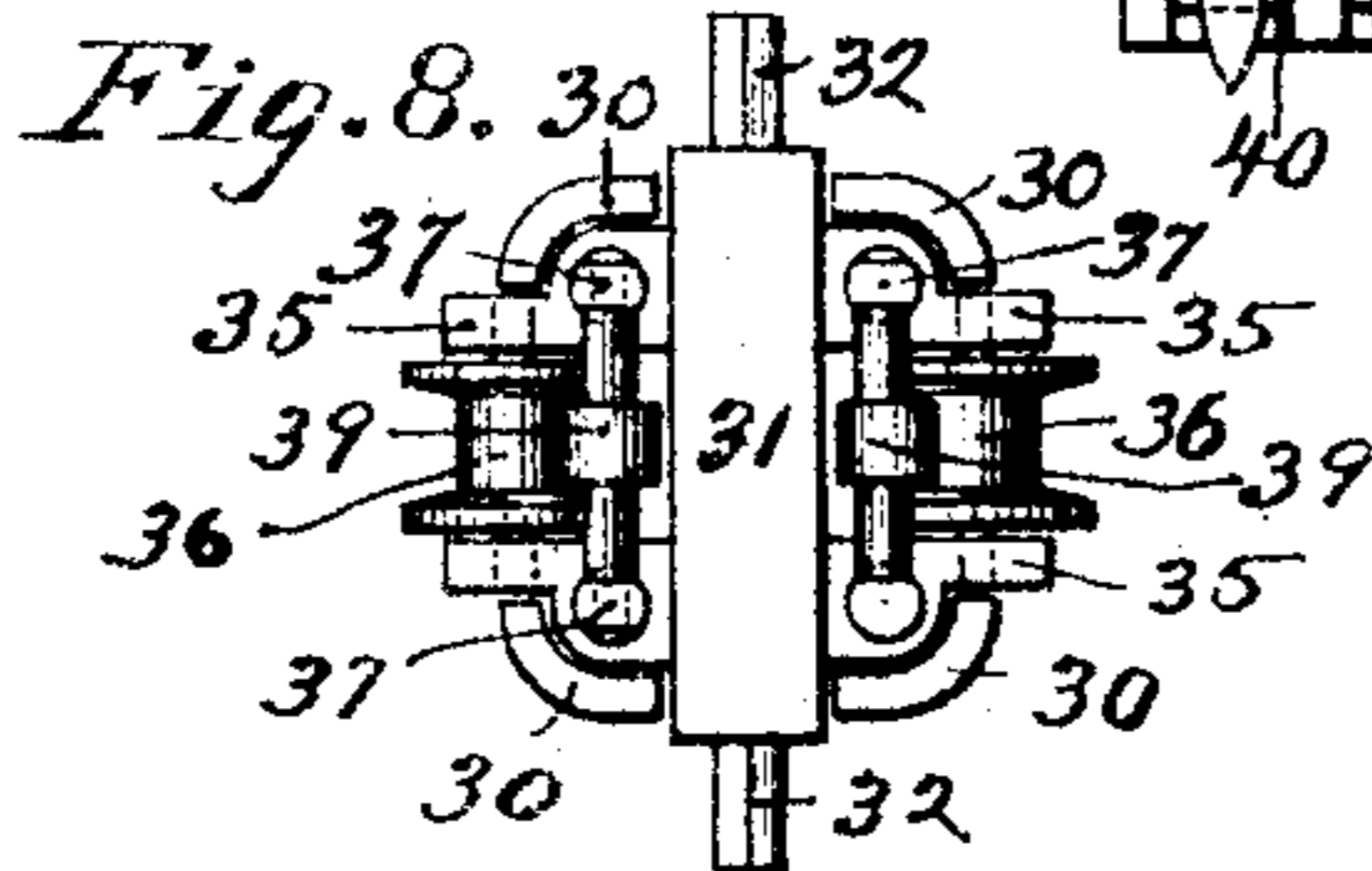


Fig. 8.

Fig. 11.

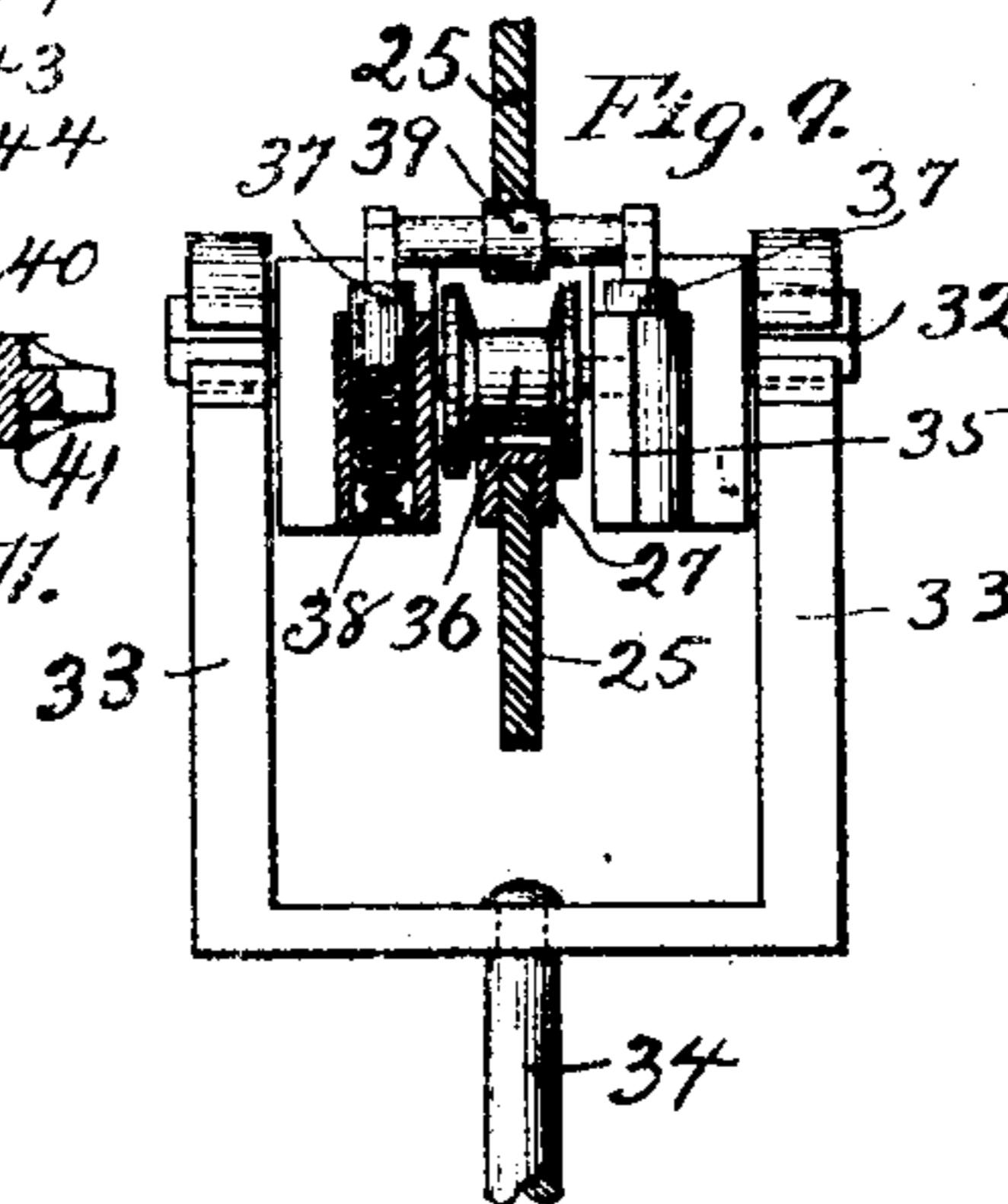
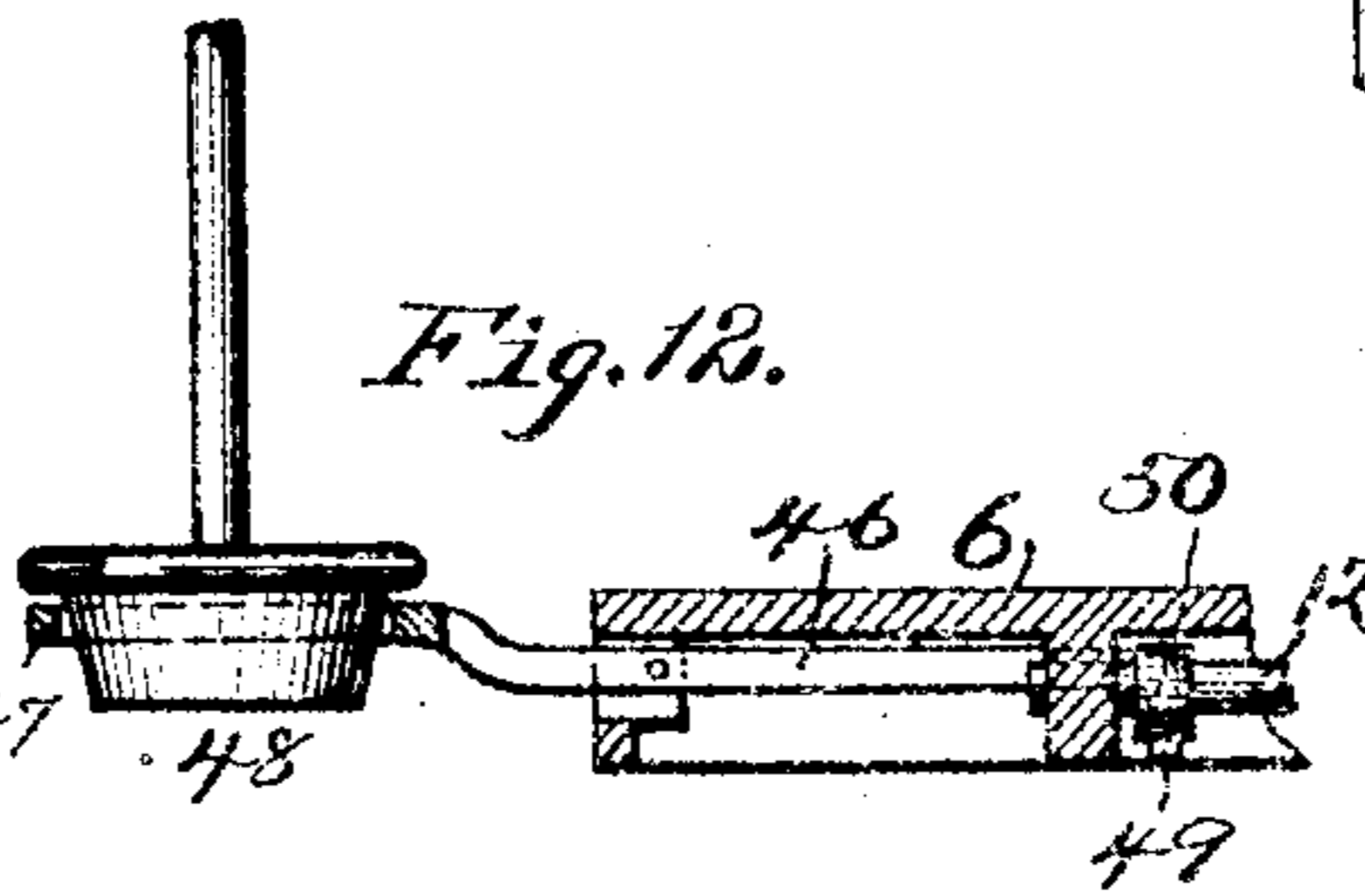


Fig. 9.

Fig. 12.



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UNITED STATES PATENT OFFICE.

ALPHA R. BEAL, OF PITTSBURG, PENNSYLVANIA.

PRICE OR MONEY WEIGHT-SCALE.

SPECIFICATION forming part of Letters Patent No. 753,222, dated March 1, 1904.

Application filed May 28, 1900. Serial No. 18,204. (No model.)

To all whom it may concern:

Be it known that I, ALPHA R. BEAL, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented new and useful Improvements in Price or Money Weight-Scales, of which the following is a specification.

This invention relates to certain improvements in the price or money weight-scale patented to me June 6, 1899, No. 626,520; and one object thereof is to provide an improved roller connection between the steelyard-rod and beam and to provide improved carriage locking and releasing mechanism.

A further object is to reduce to a minimum the drag upon the beam at the point of connection with the steelyard-rod when setting the scale. This I accomplish by depressing the poise end of the tare-beam, and thus throwing the pull of the weighing-levers entirely on said beam, together with any weight that may be on the scale-platform. This depression of the tare-beam is accomplished automatically by mechanism operating in conjunction with the carriage-locking devices. I also provide for lifting and sustaining the pendent poise of the price-beam while setting the latter, whereby said beam exerts downward pressure on its steelyard-rod at such time and relieves the beam of the slight resistance to its longitudinal movement which otherwise the steelyard-rod connection would offer.

A further object of the invention is to provide the price and tare beams with separate steelyard-rods extending to and having independent connection with the weighing-levers or nose-iron, whereby no contortion or strain is occasioned by the beams vibrating in different arcs, as is the case when both beams operate with a single weighing-lever connection.

The invention consists in the novel features of construction and in the combination and arrangement of parts, hereinafter fully described and claimed, and illustrated by the accompanying drawings, in which—

Figure 1 is a front elevation of the upper portion of a scale, also the lower extremities

of the steelyard-rods connecting with the weighing-lever nose-iron, the platform and base not being shown, as no part of the lower portion of the scale save said rod connections enters into my invention. Fig. 2 is an inverted plan view of the carriage. Fig. 3 is a top plan view of the supplemental base or pillar-cap in which the carriage moves. Fig. 4 is a longitudinal sectional view of the pillar-cap and carriage, taken on line 4 4 of Fig. 5. Fig. 5 is a cross-sectional view on line 5 5 of Fig. 4 looking in the direction of the arrow. Fig. 6 is a side elevation of the steelyard-rod and price-beam connection; and Fig. 7 is a vertical sectional view, Fig. 8 a plan view, and Fig. 9 an end view, partly in section, of the same. Figs. 10 and 11 are detail views of the lower ends of the steelyard-rods. Fig. 12 is a detail view of the poise-lifting device. Fig. 13 is an enlarged detail view of my improved form of rack and dog teeth.

Referring to the drawings, 2 represents the pillars, rising from a base (not shown) and supporting supplemental base or pillar cap 3, the latter having vertical sides 4, interrupted at 4' and formed with ball-grooves 5.

6 is the carriage, having depending longitudinal flanges 7, the latter grooved at 8, complementary with grooves 5, to form races for bearing-balls 9, whereby the carriage is held against vertical displacement and may be moved as required without friction.

Secured in the supplemental base is rack 10 and cooperating therewith is dog 11, secured on rock-shaft 12, mounted in carriage 6. Also carried by said shaft is spindle-arm 13, preferably made integral with or secured to dog 11 and revoluble on this arm. Also slidable thereon longitudinally is roller 14, which travels on the free longitudinal portion of the vertically-swinging bail 15, having bearings 15' in base 3. This bail is held normally raised by elongated spring 16, bearing at its free end on the under side thereof and secured at its opposite end to base 3 by screw 16'. Thus the bail sustains arm 13 normally in raised position, with dog 11 in engagement with rack 10, and oscillation of shaft 12 by depressing operating-handles 17, as when

setting the carriage, is resisted. Roller 14, sliding on its spindle, compensates for the movement of bail 15.

18 is the tare-beam, suitably mounted beneath base 3 and provided on its poise end with vertical projection 19, elongated horizontally at its upper end 19' for engagement with bail 15, whereby downward movement of the latter, which always precedes the longitudinal movement of the carriage, depresses the poise end of the tare-beam, raising its opposite end and exerting thereon the pull or weight of the platform and weighing-levers and relieving the price-beam, presently to be described, of all such weight while being set.

The price-per-pound indications are placed on plates 20 on the opposite faces of base 3 and arranged preferably at an angle thereto, as seen in Fig. 5, to facilitate reading, and provided on their lower edges with milled rods or bars 20'. On the operator's side of the scale the thumb drops in natural position on bar 20' when depressing one of the handles 17 for setting the carriage. 21 represents pointers on the carriage movable over the indications on plates 20.

In Fig. 13 I illustrate my improved form of notches and teeth for rack-bar 10 and dog 11. The extremities of teeth 22 and of dog 11 are brought to an edge rather abruptly in contradistinction to an elongated taper, as is usual in this class of construction, so that each is formed with the flat sides 23, which when in engagement, however slight, hold the carriage immovable, whereas with teeth of usual form the engaging surfaces are at a slant to the line of movement of the carriage, so that it is quite possible to displace the carriage by longitudinal pressure thereon, and especially is this true when the teeth are not in full engagement, as is often the case. The blunt edges of my improved teeth are sufficient to direct the dog into the proper notch and at the same time are not injured if the dog drags or rakes thereon during the movement of the carriage. Raised from the carriage is post 24, in which price-beam 25 is balanced, the latter being slotted longitudinally at 26 and provided at the bottom of the slot with the channel piece or bar 27, fitting over the beam, as shown, and formed on its upper edge with indentations 28, preferably of scallop form, and at intervals corresponding with the notches of carriage-locking rack 10.

29 is a hollow post raised from base 3, with its upper end recessed or slotted at right angles to form the four vertical stops or guides 30.

31 is a block or head extending transversely through beam-slot 26 and between stops 30 and provided at the ends with knife-edges 32 for yoke 33 on the upper end of steelyard-rod 34. On opposite sides of block 31 are bearings 35, and journaled therebetween are

flanged rollers 36, which engage beam-scallops 28, holding the steelyard-rod and beam in correct relation when the scale is set. With scallops 28 corresponding with the carriage-locking points and the play of head 31 limited by stops 30, all as described in my former patent, No. 628,520, it is quite impossible for the beam to be incorrectly positioned or for the rollers to engage other than the correct scallops. The block or head being provided with two rollers rather than one, as in my former patent, independent vertical oscillation of the head is avoided, rendering it unnecessary for the knife-edges and roller-journal centers to align, as in said patented construction, thereby cheapening the manufacture, as less precision is required. Block 31, with its roller-bearings and knife-edges, is one integral piece, and hence may be manufactured at less cost than a corresponding built-up element and at the same time is most substantial and durable.

Formed in opposite sides of head or block 31 and adjacent opposite ends thereof are four sockets or depressions closed at the lower ends, and movable vertically therein are posts 37, hollowed upward from their lower ends to receive coiled springs 38, which exert upward pressure thereon. The posts are arranged in pairs and form bearings for anti-friction-rollers 39, extending through beam-slot 26 and engaging the flat wall thereof. Thus it will be understood that while said spring-held rollers hold rollers 36 in the beam-scallops, yet they yield sufficiently to permit of the beam being moved thereunder, as when changing the adjustment, in such case the beam being lowered at the point of connection, or the steelyard-rod 34 and block 31 raised, or both, so as to free the notched or scalloped beam member from rollers 36. The pull of the weighing-levers being thrown entirely upon the tare-beam concurrently with the unlocking of the carriage, as before described, the price-beam will move more readily over the steelyard-rod connection than though the rod were pulling downward thereon.

The lower end of steelyard-rod 34 hooks beneath knife-edge bearing 40 of nose-iron 41 of the weighing-levers, (not shown,) and rod 42 of tare-beam 18 has independent connection with the same bearing, said rod 42 being of ordinary or usual form. When rod 42 is raised by depression of forward end of the tare-beam, as before explained, rod 34 is prevented from disengaging bearing 40 by latch 43, positioned on the rod directly over said bearing. This latch is slotted longitudinally to slide on screws 44 and its upper end provided with a spring-catch 45, adapted to engage a notch in the rod. By springing outward the upper end of said latch the latter may be moved upward and the rod disengaged from

the bearing. The upward pull of tare-beam rod 42 on the nose-iron concurrently with the unlocking of the carriage has the effect of lifting rod 34 and block 31, as above referred to, thereby facilitating the adjustment of the computing-beam. If rod 34 were not confined on the nose-iron, said upward movement of the latter would be liable to disengage it from bearing 40.

10 Fulcrumed in the end of carriage 6 is lever 46, provided at its outer end with ring 47, which embraces the tapered weight poise 48 of the price-beam. The inner end of said lever is formed with the laterally-extending foot 49, which projects beneath cam 50 on shaft 12, so that when the latter is oscillated by depression of handles 17, as when releasing the carriage for changing its adjustment, the lever 46 is oscillated and its outer ring-carrying end lifts poise 48. The beam thus lightened lowers with respect to its steelyard-rod connection, irrespective of the position of sliding poise 25', and thus further provision is made for disengaging rollers 36 from the beam-scallops while the beam is being set. Thus it will be seen that the carriage is unlocked, the tare-beam depressed, and the pendent weight of the computing-beam raised, all by the oscillation of shaft 12 through the medium of handles 17, and that said parts are returned to normal position by the action of a single spring.

Steelyard-rod 34 is provided with a turn-buckle or sleeve 34', whereby its length may be increased or diminished, as may be required to effect a proper adjustment.

The scale reads and is operated in connection with the price and value indications in the same way as the scale described in my former patent, and such description need not be here repeated.

While I have shown and described my several improvements assembled in a perfected scale, I do not wish to be understood as confining myself to their use conjointly, as they may be employed severally in scales of the character described, or two or more of said improvements may be used together to the exclusion of the others, without departing from the scope or intent of the invention. An instance of this would be the inclusion or omission of the lifting mechanism for the pendent weight-poise.

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

1. In a price-scale, the combination of a carriage, a price-beam, a tare-beam, and securing means for the carriage constructed and arranged to simultaneously release the carriage and raise the load end of the tare-beam.

2. A price-scale including an adjustable computing-beam, a tare-beam, and mechanism operating to transfer the entire pull of the weighing-levers to the tare-beam while the

computing or price beam is being set, substantially as described.

3. The combination of a carriage, a price-beam, a tare-beam, a separate steelyard-rod for each beam, securing means for the carriage, and means operating to raise the load end of the tare-beam when the carriage is released.

4. A price-scale including a price-beam, a tare-beam, and a steelyard-rod for each beam extending to and having independent connection with the nose-iron of the weighing-levers, the price-beam rod being locked on the nose-iron pivot and adapted to move upward therewith when lifted by the tare-beam rod, substantially as described.

5. A price-scale comprising a base, a price-beam and carriage therefor, a tare-beam, and carriage locking and releasing mechanism operating to depress the forward end of the tare-beam and hold the same depressed while the carriage is released, whereby the pull of the weighing-levers is thrown entirely on the tare-beam while setting the price-beam, substantially as described.

6. A price-scale comprising a base, a carriage, a price-beam on the carriage, a tare-beam, a price-beam steelyard-rod operatively connected to the tare-beam, a movable device operatively engaging the tare-beam for the purpose of throwing on the lower end of the latter the entire weight of the steelyard-rod, and carriage locking and releasing mechanism adapted to operatively engage said device when moving to and when in carriage-releasing position, whereby the computing-beam is relieved of weight save when in locked adjustment, substantially as described.

7. A price-scale comprising a base, a carriage supporting a price-beam, an elongated vertically-swinging bail in the base, a spring for resisting depression of the bail, a tare-beam adapted to be depressed by and with the bail, and carriage locking and releasing mechanism movable on the bail and operating to depress the bail and hold the same depressed while the carriage is released, substantially as described.

8. A price-scale comprising a base, a carriage therein supporting a price-beam, an elongated vertically-swinging bail in the base, a spring for resisting depression of the bail, a tare-beam adapted to be depressed by the bail, a rock-shaft in the carriage having a laterally-projecting arm adapted to depress the bail and traverse the same while depressed, and carriage-locking mechanism operated by the shaft, substantially as described.

9. A price-scale comprising a base, a carriage therein supporting a price-beam, an elongated vertically-swinging bail in the base, a spring for resisting depression of the bail, an elongated notched bar in the base, a rock-shaft in the carriage, a dog on the shaft adapted to engage the notched bar and hold the carriage

locked, an arm projecting laterally from the shaft and adapted to depress the bail and traverse the same while depressed, and a tare-beam adapted to be depressed by the bail, substantially as described.

10 10. The combination of the spring-held bail, the rock-shaft, the arm on the shaft, and the roller on the arm adapted to ride on the bail, substantially as described.

15 11. The combination of the vertically-swinging spring-held bail, the rock-shaft above the bail, the arm projecting laterally from the shaft and over the bail, and the roller revolvable and slidable on the arm and adapted to depress and traverse the bail, substantially as described.

20 12. Improved teeth for the interlocking rack-bar and dog having their operative sides or edges straight or parallel a portion of their length, substantially as shown and described.

25 13. Improved teeth for the interlocking rack-bar and dog having their operative sides or edges straight a portion of their length, each tooth being tapered abruptly at the extremity to form a point, substantially as described.

30 14. In a price-scale, a carriage, a price-beam mounted thereon provided with a pendent weight, means for locking and releasing the carriage, and mechanism intermediate the locking and releasing means and the pendent weight for sustaining the latter free of the price-beam when the carriage is released, substantially as described.

35 15. In a price-scale, a longitudinally-movable price-beam having a pendent weight, a steelyard-rod operatively connected to the beam and past which the beam is movable, and means for relieving the beam of the pull of said pendent weight while being adjusted with relation to the steelyard-rod, substantially as described.

45 16. In a price-scale, a carriage, a price-beam mounted thereon and provided with a pendent weight, a lever fulcrumed in the carriage and extending beneath the weight and means for oscillating the lever and causing it to lift the weight while the beam is being set, substantially as described.

50 17. In a price-scale, a carriage, a price-beam mounted thereon and provided with a pendent weight, a lever fulcrumed in the carriage and at its outer end adapted to sustain said weight free of the beam, the inner end of the lever provided with a horizontal extension, a rock-shaft in the carriage, and a cam on the shaft adapted to engage and depress the horizontal extension of the lever, thus raising the price-

end of the lever and causing it to sustain said weight, substantially as described.

60 18. In a price-scale, a supplemental base, a carriage, a price-beam on the carriage, carriage-locking mechanism, a tare-beam adapted to be depressed for the purpose described, and a rock-shaft in the carriage operatively 65 connected to the locking mechanism and to the tare-beam for depressing the latter, the shaft operating against the pressure of a spring, as set forth.

70 19. In a price-scale, a supplemental base, a carriage, a price-beam on the carriage provided with a pendent weight, carriage-locking mechanism, a tare-beam adapted to be depressed for the purpose described, a rock-shaft in the carriage operatively connected to the 75 locking mechanism, an operative connection between the rock-shaft and tare-beam for depressing the latter, a support for the pendent weight of the price-beam operatively connected to the rock-shaft, and a spring for resisting rotation of the said shaft, substantially as described.

80 20. The combination with the slotted and indented price-beam, and the steelyard-rod, of the connecting block or head operatively connecting the beam and rod, rollers in the lower portion of the head to engage the indented surface of the beam, vertical depressions in the upper surface of the head, bearing-posts movable in said depressions and held normally in 85 outwardly-extended position, and anti-friction-rollers journaled between the bearing-posts and bearing upward on the top face of the beam-slot, substantially as described.

90 21. The combination with the connecting head or block formed with the depressions in its top, of the hollow bearing-posts fitting the depressions, coiled springs fitting the hollow posts and resisting inward movement thereof in the head depressions, and the rollers journaled between the bearing-posts, substantially 95 as described.

100 22. The improved connecting-head, formed at opposite ends with the knife-edge bearings, and on opposite sides with the separated bearing-cars, and in the top with the depressions, the whole being of a single piece substantially 105 as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ALFRED H. BRADY

Witnesses:

ALAN S. MASON
J. M. HAZEN