W. H. JORDAN.

COIN CONTROLLED BEAM SCALE.

APPLICATION FILED APR. 27, 1906.

931,429.

Patented Aug. 17, 1909.

3 SHEETS—SHEET 1.

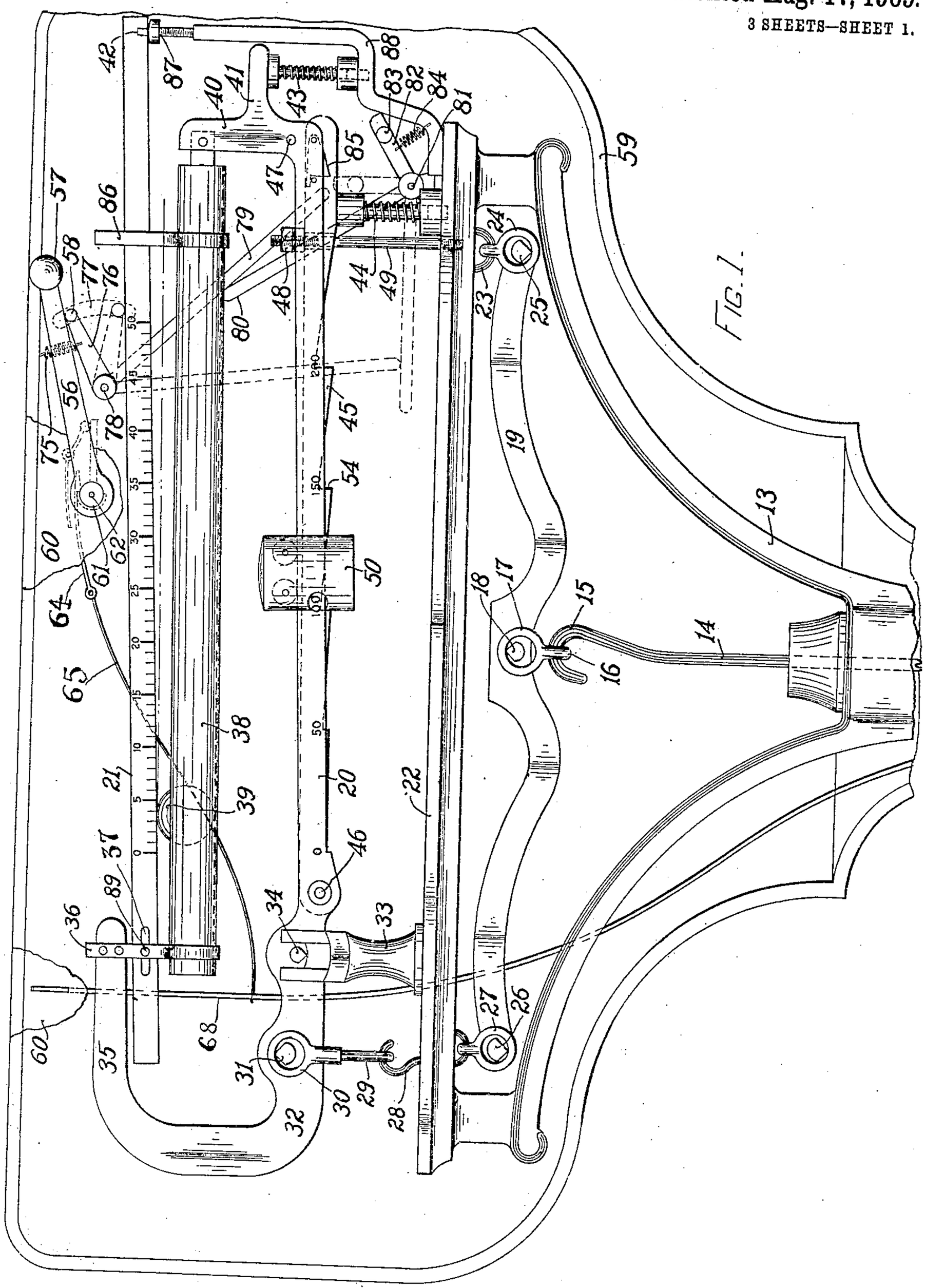

FIG. 1.

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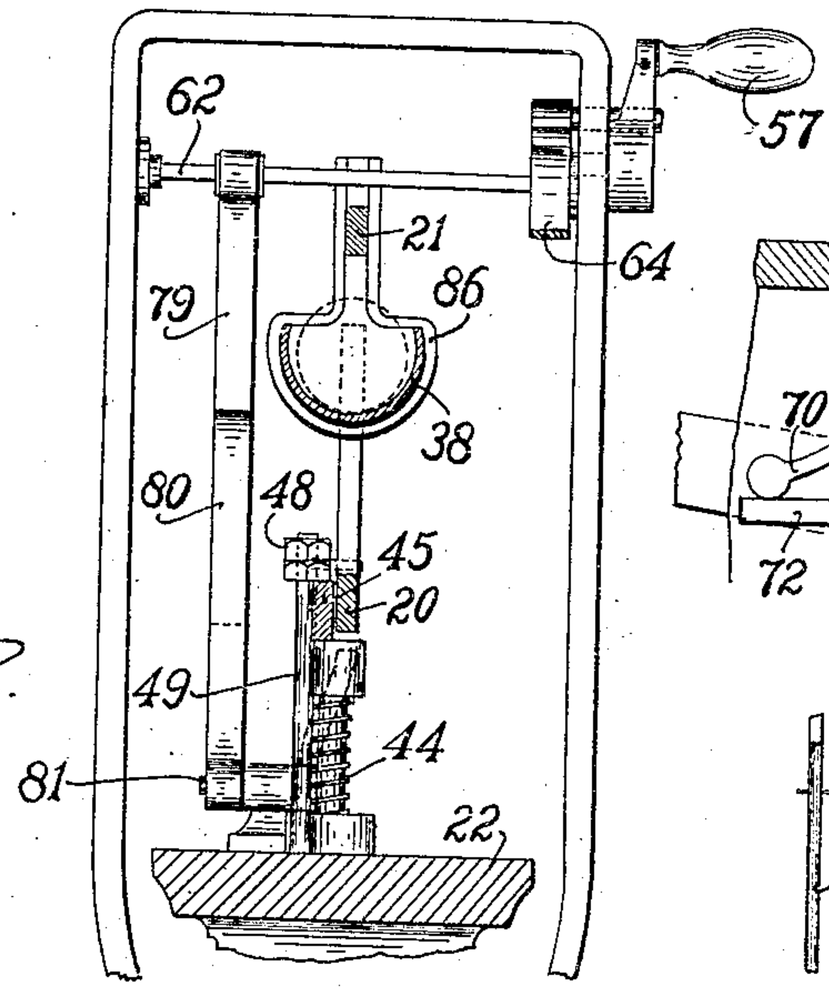

FIG. 2.

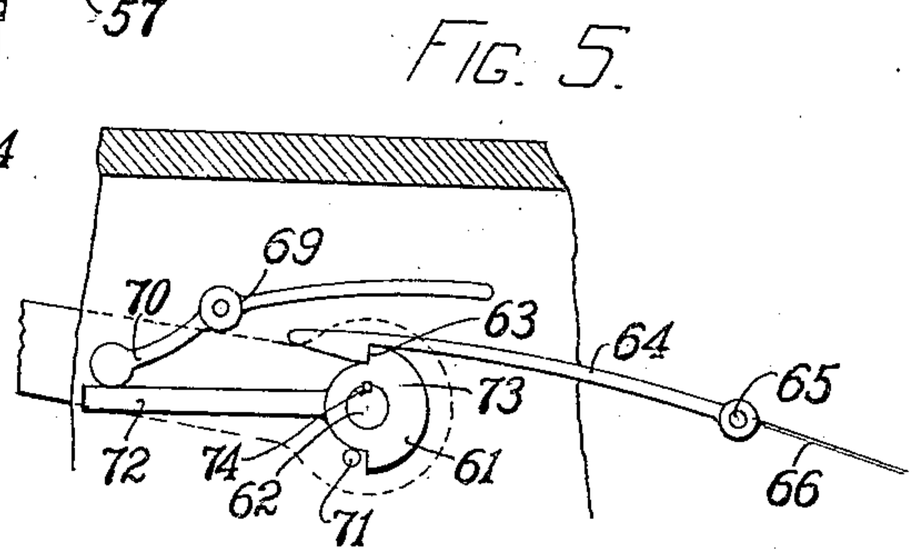

FIG. 5.

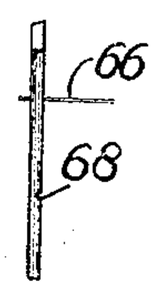

FIG. 6.

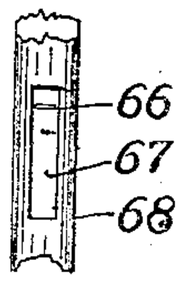

FIG. 7.

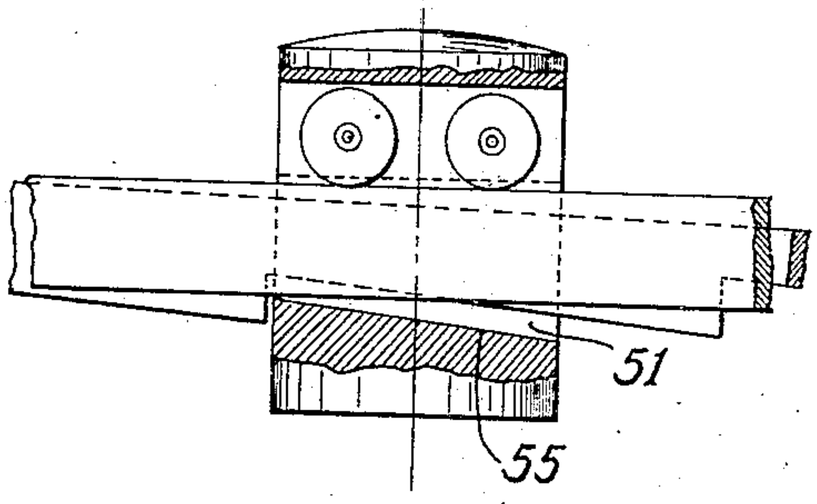

FIG. 3.

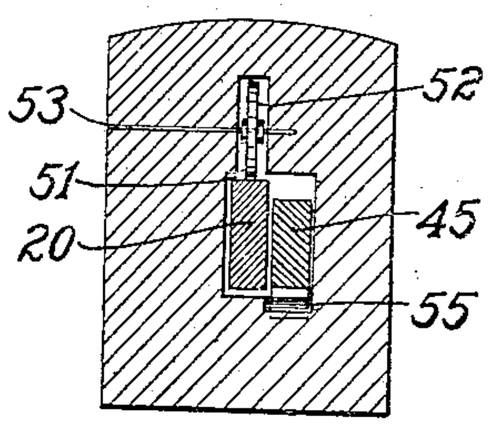

FIG. 4.

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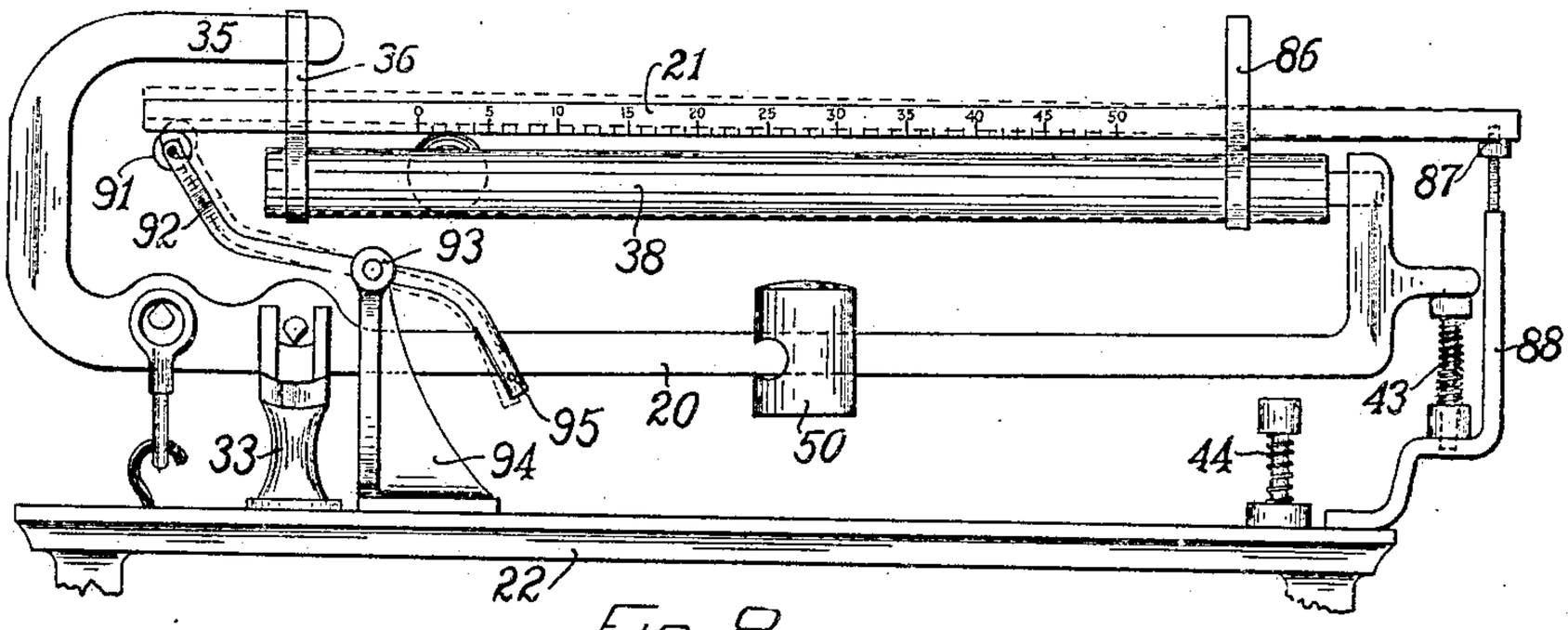

FIG. 8.

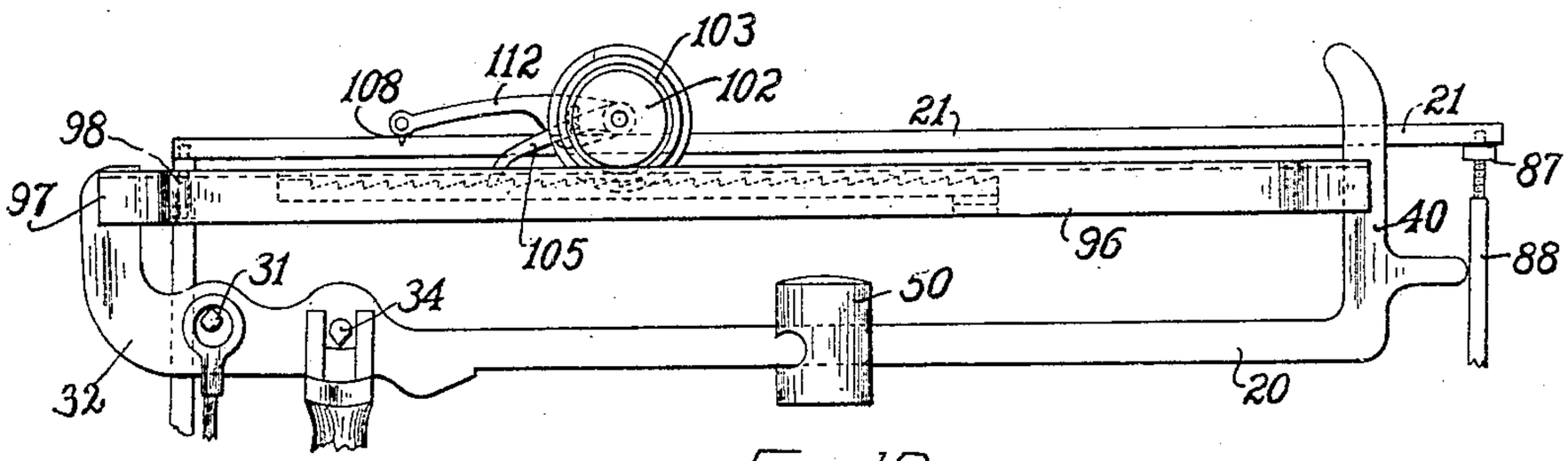

FIG. 10.

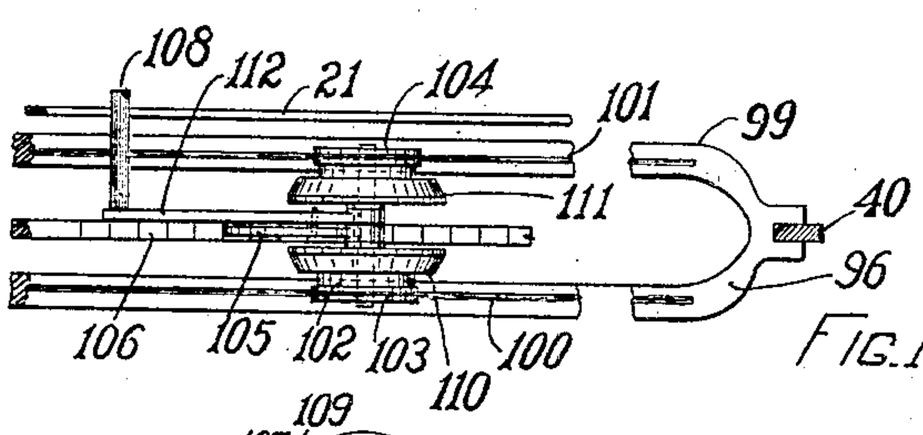

FIG. 11.

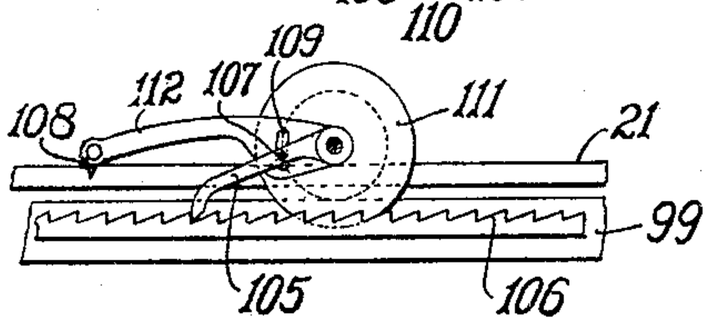

FIG. 12.

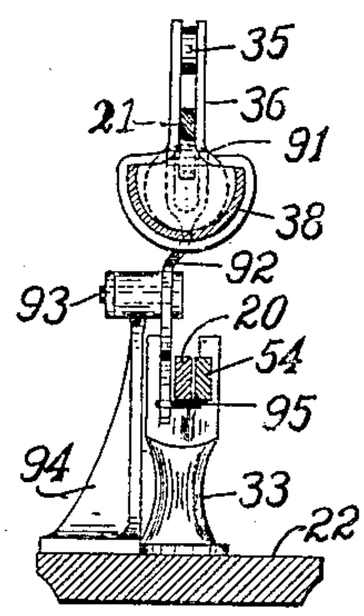

FIG. 9.

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UNITED STATES PATENT OFFICE.

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COIN-CONTROLLED BEAM-SCALE.

No. 931,429. Specification of Letters Patent. Patented Aug. 17, 1909.

Application filed April 27, 1906. Serial No. 313,984.

To all whom it may concern:

Be it known that I, WILLIS H. JORDAN, 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 Coin-Controlled Beam-Scales, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to an automatic weighing-machine of that class in which there is a series of weighing beams united by links and coming into play successively when a load is weighed. Thus the first or lower beam indicates weights ranging from fifty pounds to two hundred or more pounds in units of fifty pounds, while the second or upper beam indicates weights ranging from one to fifty pounds in units of one pound. It will be evident that both the beams must coöperate to indicate a weight above fifty pounds the numerical expression of which does not contain two zeros or a five and a zero. Machines of this kind are arranged as sliding-weight machines, a weight being slid or rolled on each beam by means, commonly of a rack and pinion and a vertically-movable rack until the beam is counterpoised, but in my preferred form by a spring-buffeted rack for the lower poise and by a spring-buffer for the upper weight.

The principal object of my invention is to provide a beam-scale (which may be of that type locked by a pawl, which pawl may be freed by the insertion of a coin into a chute, which acts upon a lever and frees the mechanism allowing the same to be put in operation) having two or more beams each provided with a weight-poise adapted to automatically pass along its respective beam, as may be necessary to indicate the exact weight applied to the scale platform, as soon as the machine has been set in motion by the movement of a handle or other equivalent means.

It is common in coin-controlled beam-scales to automatically operate the balance-weight on the beam by drawing this weight outward on the scale-arm starting at zero and going upward toward the higher numbers so that the arm begins to descend toward the level in the ordinary manner of beam-scales, and passing along until the beam is balanced and the weight carried by the platform accurately indicated by the balance-weight on the scale-arm as explained in my United States Letters Patent numbered 643,226 issued February 13th, 1900, but in this particular invention I have reversed the process and start the poise on the lower graduated beam and the rolling weight used in indicating on the upper graduated beams from the highest numbers, allowing the same, after the lower beam has been partly raised by the operation of a handle, to pass downward along the beam toward the zero marks until the beam is balanced, when as in the preferred form the poise upon the lower beam would indicate the weight applied to the scale platform, or the downward pressure upon the same, in units of fifty pounds, while the rolling-weight would indicate upon the upper graduated beam the additional weight over said indication on the lower beam. For example, if the poise on the lower beam has stopped at 150 pounds and the rolling-weight at 35 pounds, the weight or force applied to the scale platform would be 185 pounds, or if as shown in Figure 1 of the drawings, the poise stops at 100 pounds and the rolling-weight at 4 pounds, the weight applied to the platform would be 104 pounds.

In the drawings is shown a weighing-machine constructed according to this invention with two graduated beams; but this invention is equally applicable with any number of beams.

The invention consists in the combination of elements and in certain parts of novel construction entailed in the combination of said elements to obtain the desired result.

A full understanding of my invention can best be given by a detailed description of a preferred construction embodying the various features of my invention, and such a description will now be given in connection with the accompanying drawings, and I obtain my object by the mechanism there illustrated, showing such preferred construction, and the features forming the invention will then be specifically pointed out in the claims.

In the drawings, Fig. 1 is a front elevation of the upper portion of my improved beam-scale, the case being broken away. Fig. 2 is a transverse sectional view of the same looking toward the right. Fig. 3 is an enlarged sectional view of the poise and a portion of the lower beam. Fig. 4 is a

sectional view on the line 4—4 of Fig. 3. Fig. 5 is a rear view of the coin-controlled pawl and contiguous parts. Figs. 6 and 7 are fragmentary views of the coin-chute and tripping lever. Fig. 8 is a view in front elevation of a portion of a modified form of the machine. Fig. 9 is a transverse sectional view of the same looking toward the left. Fig. 10 is a view in front elevation of a portion of another modified form of the machine. Fig. 11 is a plan view of a part of the mechanism shown in Fig. 10. Fig. 12 is a detail view of part of the mechanism shown in Fig. 10.

Latitude is allowed herein as to details, as they may be changed or varied at will without departing from the spirit of my invention and the same yet remain intact and be protected.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

In the drawings, 13 represents the standard connecting with a platform resting upon the ordinary compound levers usual in scales of this class and to which the steelyard-rod or scale-rod 14 is connected in the ordinary manner. This construction being so well understood, it is not deemed essential to herein specifically illustrate or describe it. The scale-rod 14 has a loop 15, which catches in a loop 16, provided with eyes 17 and through which extend oppositely-extending lateral pivots or knife-edge bearings 18 projecting from the lever-beam 19 whereby the weight of the load is transmitted from the platform to the scale-beam. This scale-beam is of peculiar construction and constitutes one of the important features of the invention. As here shown it comprises two scale-beam bars 20 and 38, rigidly connected together at one end by a heel or counter-balancing portion 32, and at the other end by an upright portion 40.

From the under side of the frame-plate 22, and near one end thereof, extends the suspension eyebolt or link 23 to the lower end of which eyebolt is attached a clevis-shaped supporting link 24 which extends downwardly on both sides of the lever-beam 19 and around the knife-bearings 25 at this end of the lever-beam having its edge suspended downwardly, so as to be carried by the suspension-link 24. At its opposite end said lever-beam is provided with downwardly extending knife-bearings 26 extending through the clevis-shaped links 27 carried by the link or hook 28 which extends through the loop 29, provided with eyes 30 for receiving the oppositely-extending lateral pivots 31 projecting from the heel or counter-balancing portion 32 of the scale-beam.

Extending upward from the top frame-plate 22 is a vertical standard 33 and upon which the scale-beam is pivotally supported by oppositely-extending lateral pivots 34. The counter-balancing portion 32 of the scale-beam is curved or U-shaped as at 35 and has its upper part extending above the standard 33 and carries directly above the pivots 34 a carrying-yoke 36 which supports one end of the bar 38 and also one end of a locking-bar 21, the latter being provided with a slot 37 through which the adjustable screw 89 in the carrying-yoke 36 extends.

The lower scale-beam bar 20 and the locking-bar 21 which is located above the upper scale-beam bar are both graduated, the bar 20 in units preferably of fifty pounds each and the bar 21 in units preferably of one pound. The scale-beam bar 38 is placed above the scale-beam bar 20 and separated sufficiently for the movement of the poise 50 on said bar 20 and the locking-bar 21 which is placed above the bar 38 is separated sufficiently for the movement of the rolling-weight 39 on said bar 38; the bar 38 being swung directly beneath the bar 21 so that when the beam is balanced at the correct weight the bar 21 would rest upon the rolling-weight 39 and this rolling-weight 39 would indicate the exact number of pounds which should be added to the number of pounds designated by the position of the poise 50 on the bar 20 to give the exact weight of the load upon the scale platform.

The upright end portion 40 of the scale-beam is provided with a nosing 41 which rests upon a spring buffer 43; this buffer giving motion to the scale-beam and limiting its downward movement. Upon the top frame-plate 22 is also provided another spring buffer 44 for also limiting downward movement of the scale beam and downward movement of a toothed rack 45 and for other purposes as hereinafter described. This rack 45 is in the rear of the bar 20 being pivoted on the stud 46 extending rearward from said bar 20 near the pivot 34, and is provided with a downwardly projecting tooth 54 for every one of its units of fifty pounds, the teeth being preferably spaced far apart to allow considerable movement of the poise for every fifty pounds. A pin 47 extending from the scale-beam in the portion 40 limits the upward movement of the rack 45 except when the rack is limited in its upward movement by the adjustable nuts 48 on the bar 49 extending upward from the top frame-plate 22.

Upon the scale-beam bar 20 is a poise 50, which is provided with an opening 51, as is common in poises, and in which is journaled the wheels or rollers 52 on the axles 53 which rollers revolve upon the upper side of the bar 20, which extends through the opening 51 allowing the poise to run or pass freely along the beam. The opening 51 is wider at its

lower portion to also allow the toothed rack 45 to pass through it and its portion below the rack is inclined as at 55 at the same angle as the long side of the teeth 54. The height of the rack from the lower portion of one of the teeth to the top is equal or nearly so to the height of the portion of the bar 20 which extends through the poise.

All of the mechanism of my invention, with the exception of the lever 56, its handle 57 and the pin 58 which it operates, is within a casing 59 the upper front portion being preferably of glass 60.

The lever 56 is prevented from downward movement by the ratchet 61 on its shaft 62, held by a key 73 but allowed slight movement by the enlargement of the keyway 74, a tooth 63 of which ratchet is held by the pawl 64 pivoted on the stud 65 and controlled by a wire 66 having a foot piece extending through an opening 67 of the long and narrow coin-chute 68 so that when a coin is placed within the chute it drops downward striking the foot-piece and pressing the foot-piece and wire 66 partly downward and raising the pawl 64 so that the lever 56 can be moved downward by the handle 57. In order to prevent the coin from passing the foot-piece of the wire 66 in the coin-chute 68 until after the operator has had an opportunity to operate the handle 57, I provide a lever 69, having its weighted end 70 normally resting upon the finger 72 extending outward from the ratchet 61, a pin 71, limiting the upward movement of the finger, and the other end of the lever being normally slightly above the pawl so that when the pawl has been raised by the weight of the coin it strikes against the lever 69 and remains there until the handle 57 has been pulled down. When the handle has been pulled down the finger 72 moves downward, the weighted end of the lever 69 drops allowing the pawl to rise by the weight of the coin, so that the coin passes the foot-piece of the wire 66; the pawl thus freed of the weight of the coin then drops back in place ready to catch and hold the ratchet and the handle 57 when they are returned to their initial positions by the contraction of the spiral spring 75 on the lever 76 from which the pin 58 extends, protruding through a runway 77 in the glass 60 of the casing 59 and met by the under side of the lever 56. The lever 76 is fast on the shaft 78 which carries a lever 79 operating a lever 80 fast on the shaft 81 which carries a lever 82 provided with a pin 83 acting against the side of the head of buffer 44 for preventing too far movement. The levers 76 and 79 are returned to their initial positions by the spring 75 and a spiral spring 84 is provided for returning the levers 80 and 82.

Normally the scale-beam declines toward its outer end, so that the poise 50 and the poise 39, respectively, occupy positions at the outer end thereof and neither will start to move along toward the inner end thereof until the outer end of the beam has been raised high enough to decline the bars toward their inner ends. Furthermore, the bar 38 occupies a position out of parallelism with the bar 20, its outer end being disposed nearer the bar 20 than its inner end, so that as the outer end of the scale-beam is raised the bar 20 will first be caused to decline toward its inner end and afterward the bar 38. The lever 82 when drawn upward by a movement of the handle 57 strikes against the under side of the beam and lifts the outer end thereof a short distance, far enough to decline the bar 20 slightly toward its inner end, so that the poise 50 can slide along thereon by gravity toward the inner end, and such movement of the beam is assisted by the spring buffer 43, and the weight of the load being on the platform the outer end of the beam is further lifted by said load. As the scale-beam is lifted by the lever 82, it disengages the buffer 44 and the weight of the beam thereon having been removed, said buffer rises and lifts the rack-bar 45 until it strikes against the stop 48. At its movement the rack-bar which was normally in parallelism with the bar 20 before the lever 82 was operated is again in parallelism with it, so that its teeth do not project below the lower edge of the bar. As the beam continues to rise by the action of the load upon the platform, assisted by the spring buffer 43, and the poise 50 continues to slide along thereon toward its inner end, said bar is gradually raised out of parallelism with the rack-bar and the teeth of the latter gradually project below the lower edge of the bar until one of the teeth thereof catches the poise and checks its movement. In the example shown in Fig. 1 the weight on the platform being 104 pounds the poise continues to slide along on the bar 20 until it is checked by one of the teeth of the rack-bar at the point marked 100. The poise does not stop at the point on the bar which would indicate 104 as no provision is made for stopping it at such point.

The lever 82 which is employed to lift the scale-beam is held in elevated position by a pawl 85 pivoted on the rear side of the beam and said lever prevents return movement of the beam until such time as the beam has been raised high enough for the poise to slide along thereon and indicate the weight, but as soon as it has been raised high enough to accomplish this result the pawl 85 will occupy a position above the upper end of the lever 82, and said lever is thereby permitted to return to its normal position, being moved by a spring 84 which is connected therewith.

It has been found very easy to build an

automatic beam weighing scale where the graduations on the beam were in units of not less than five pounds each, but where the units were of single pounds, it is much more difficult, and for this reason I have provided the second bar 38, the poise of which cooperates with a bar graduated from one to fifty pounds in units of one pound each. I indicate the number of pounds upon this bar 21 by a rolling-weight, which may be in the form of a roller, but which is preferably a ball 39 running in a groove or sluiceway in the bar 38, which is suspended at one end in the carrying-yoke 36 and at its other end by the portion 40 of the scale-beam. The locking-bar 21 is also suspended at one end in the carrying-yoke 36, as at 89, above the bar 38 and ball 39 and its free end being limited by the guide 86 and resting upon the adjustable nut 87 on the screw 42 protruding from the arm 88 extending upward from the top frame-plate 22, and which arm 88 also supports the spring buffer 43 which causes the ball 39 to pass along the sluiceway of the bar 38 until the scale-beam shall have reached a point of balance when the bar 21 strikes upon the top of the ball 39 and holds it from further movement, the scale-rod 14 having been drawn down by the weight of the load. It has been found desirable to use a bar in the shape of a slotted tube, the slot running lengthwise of the tube and sufficiently large to allow a small portion of the top of the ball 39 to protrude but not large enough to allow the ball to fall or fly out. When the poise 50 stops at the 100-pound mark on the bar 20 as previously explained, the scale-beam is not balanced, by reason of the weight of the load exceeding the number of pounds indicated. The beam, therefore, continues to rise and the bar 38 is moved so as to decline it toward its inner end and the rolling weight thereon is started, and rolls along toward the inner end thereof. The beam continues to rise by the weight of the load, assisted by the spring buffer 43, and the bar 38 gradually approaches the locking-bar 21 until the beam reaches the point of balance, when the rolling weight will engage said bar 21 and become locked thereby. When the weight is removed from the scale platform both the rolling weight 39 and the poise 50 return at once to their initial positions at the right end portion of the machine, and the other portions of the mechanism which have not already been returned, at the same time return to their starting point.

In the machine here shown the poises 50 and 39 are moved by the scale-beam toward the locking-bars 45 and 21 and into engagement therewith, yet if the scale beam should teeter, as it is liable t odo, or if it should be raised too quickly and thereby cause its poises to engage the locking-bars before arriving at the point of balance of the beam, said poises may be disengaged from the locking-bars by a downward movement of the beam and in such case may be rapidly moved by the scale-beam into engagement with the locking-bars until finally the scale-beam balances and the poises become locked at the point of balance.

In the modification, shown in Figs. 8 and 9, the mechanism is all similar to that shown in Fig. 1, except that I do not pivot the left end of the locking-bar 21 in the carrying-yoke 36 but guide this bar in the arms of the yoke allowing free up and down movement, resting this free end of the bar 21 upon the upper roller 91 of a bell crank lever 92 pivoted at 93 in the bracket 94; the lever 92 being limited in its movement by the pin 95 striking the under side of the bar 20.

In the modified view shown in Figs. 10 to 12, the mechanism is also similar to that shown in Fig. 1 with the exception that I do not pivot the left end of the locking-bar in a carrying-yoke but I have the bar 21 at the right end rest upon an adjustable screw-nut 87 of the arm 88 and the screw of the nut 98 upon which the other end of the beam 21 rests is inserted in a similar arm attached to the top frame-plate 22. Instead of the scale-beam bar 38 being made as a trough I provide a pair of parallel runways 96 and 99 having the elongated slots 100 and 101 in which run respectively the wheels 103 and 104 of the rolling-weight 102. The two runways 96 and 99 may be joined together at each end and are attached to the two ends 32 and 40 of the beam. Between the runways 96 and 99 is inserted a toothed rack 106, which rack is fastened in any convenient manner between the two racks 96 and 99, and upon the shaft of the rolling-weight 102 is carried a pawl 105 adapted to mesh in the rack 106. A lever 112 is also carried by this shaft and is provided with a pointer 108 to point to the number of pounds to be indicated upon the bar 21; a slot 109 in the lever 112 is adapted to receive a pin 107 of the lever 105. After the poise 50 has come to a standstill upon the bar 20 the buffer 43 has a slight upward force which causes the roller 102 to be set in motion, by the pawl 105 being lifted by the pin 107 acting against the lower end of the slot 109 in the lever 112.

It is understood that my invention is not limited to the specific details of construction shown in the accompanying drawings, but that said details may be varied in the practical carrying out of my invention. It is also to be understood that the combinations specifically set forth in the several claims are intended to be separately claimed without limitation to the use in connection therewith of other features and details of construction illustrated.

Having thus illustrated my invention, what I claim is—

1. In a weighing-machine, a pivoted scale-beam, a counterpoise normally occupying a position at the outer end of said scale-beam, hand-operated actuating-means adapted to lift the scale-beam to enable the counterpoise to move along thereon toward the inner end thereof by gravity to indicate the weight, and means for locking the counterpoise at intermediate positions on the scale-beam, substantially as described.

2. In a weighing-machine, a pivoted scale-beam, normally declining toward its outer end, a counterpoise normally occupying a position at the outer end of said scale-beam, means for lifting the scale-beam to decline it toward its inner end to enable the counterpoise to move along thereon by gravity to indicate the weight and for preventing return movement thereof while the counterpoise moves along thereon, and means for locking the counterpoise at intermediate positions on the scale-beam, substantially as described.

3. In a weighing-machine, a pivoted scale-beam, normally declining toward its outer end, a self-impelled counterpoise normally occupying a position at the outer end of said scale-beam, means for lifting the scale-beam to decline it toward its inner end to enable the counterpoise to move along thereon to indicate the weight and for preventing return movement thereof while the counterpoise moves along thereon, and for releasing it when it is balanced by the counterpoise, and means for locking the counterpoise at intermediate positions on the scale-beam, substantially as described.

4. In a weighing-machine, a pivoted scale-beam normally declining toward its outer end, an automatically operated counterpoise thereon, an actuating-lever for lifting the scale-beam to an elevated position to enable the counterpoise to move along thereon toward the inner end thereof to indicate the weight, hand operated means for moving said actuating-lever to thus lift the scale-beam, and means for locking said counterpoise at intermediate positions of the scale-beam, substantially as described.

5. In a weighing-machine, a pivoted scale-beam normally declining toward its outer end, an automatically operated counterpoise thereon, an actuating-lever for lifting the scale-beam to decline it toward its inner end to enable the counterpoise to move along thereon to indicate the weight and for preventing return movement thereof while the counterpoise moves along thereon toward the inner end thereof, means for operating said actuating-lever, and means for locking the counterpoise at intermediate positions on the scale-beam, substantially as described.

6. In a weighing-machine, a pivoted scale-beam normally declining toward its outer end, an automatically operated counterpoise thereon, an actuating-lever for lifting the scale-beam to decline it toward its inner end to enable the counterpoise to move along thereon to indicate the weight and for preventing return movement thereof while the counterpoise moves along thereon toward the inner end thereof, hand-operated means for operating said actuating-lever, and means for locking the counterpoise at intermediate positions on the scale-beam, substantially as described.

7. In a weighing-machine, a pivoted scale-beam normally declining toward its outer end, an automatically operated counterpoise thereon, an actuating-lever for lifting the scale-beam to decline it toward its inner end to enable the counterpoise to move along thereon to indicate the weight and for preventing return movement thereof while the counterpoise moves along thereon toward the inner end thereof, means for operating said actuating-lever, means for restoring said actuating-lever when disengaged from the scale-beam, and means for locking the counterpoise at intermediate positions on the scale-beam, substantially as described.

8. In a weighing-machine, a pivoted scale-beam normally declining toward its outer end, an automatically operated counterpoise thereon, an actuating lever for lifting the scale-beam to decline it toward its inner end to enable the counterpoise to move along thereon to indicate the weight and for preventing return movement thereof while the counterpoise moves along thereon toward the inner end thereof and for releasing it when it is balanced by the counterpoise, means for operating said actuating-lever, means for restoring said actuating-lever when disengaged from the scale-beam, and means for locking the counterpoise at intermediate positions on the scale-beam, substantially as described.

9. In a weighing-machine, a pivoted scale-beam normally declining toward its outer end, an automatically operated counterpoise thereon, an actuating-lever for lifting the scale-beam to decline it toward its inner end to enable the counterpoise to move along thereon to indicate the weight and for preventing return movement thereof while the counterpoise moves along thereon toward the inner end thereof and for releasing it when it is balanced by the counterpoise, a hand-operated operating device for operating said actuating-lever, means for restoring said actuating-lever when disengaged from the scale-beam, and means for locking the counterpoise at intermediate positions on the scale-beam, substantially as described.

10. In a weighing-machine, a pivoted scale-beam, a counterpoise normally occupying a position at the outer end of said scale-

beam, means for lifting the scale-beam to enable the counterpoise to move along thereon toward the inner end thereof by gravity to indicate the weight and a locking-bar for locking the counterpoise at intermediate positions on the scale-beam into engagement with which the counterpoise is moved by the rising scale-beam, substantially as described.

11. In a weighing-machine, a pivoted scale-beam, a counterpoise normally occupying a position at the outer end of said scale-beam, means for lifting the scale-beam to enable the counterpoise to move along thereon toward the inner end thereof by gravity to indicate the weight, and for permitting said beam to teeter, and a locking-bar for locking the counterpoise at intermediate positions on the scale-beam into and out of engagement with which the counterpoise is moved by the scale-beam, substantially as described.

12. In a weighing-machine, a pivoted scale-beam, a counterpoise normally occupying a position at the outer end of said scale-beam, means for lifting the scale-beam to enable the counterpoise to move along thereon toward the inner end thereof by gravity to indicate the weight, and a locking bar for locking the counterpoise at intermediate positions on the scale-beam into engagement with which the counterpoise is moved by the rising scale-beam, means for connecting one end of said bar to the scale-beam and means for supporting the other end of said bar independent of the scale-beam, substantially as described.

13. In a weighing-machine, a pivoted scale-beam, a counterpoise normally occupying a position at the outer end of said scale-beam, means for lifting the scale-beam to enable the counterpoise to move along thereon toward the inner end thereof by gravity to indicate the weight, a locking-bar for locking the counterpoise at intermediate positions on the scale-beam into engagement with which bar the counterpoise is moved by the rising scale-beam, means for pivotally connecting one end of said bar to the scale-beam, and means for supporting the other end of said bar independent of the scale-beam, substantially as described.

14. In a weighing-machine, a pivoted scale-beam normally declining toward its outer end comprising two nonparallel scale-beam bars arranged one above the other and connected together, two counterpoises arranged one on each bar at the outer ends thereof and movable thereon toward the inner ends thereof by gravity to indicate the weight, each counterpoise starting to move along its scale-beam bar as soon as the bar bearing it declines toward its inner end, and means for lifting the scale-beam to enable the counterpoises to move along thereon, and means for locking the counterpoises at intermediate positions on the scale-beam bars, substantially as described.

15. In a weighing-machine, a pivoted scale-beam normally declining toward its outer end comprising two non-parallel scale-beam bars arranged one above the other and connected together, two automatically operated counterpoises arranged one on each bar and movable thereon to indicate the weight, means for lifting the scale-beam to enable one of the counterpoises to move along on its scale-beam bar, and means for further lifting said scale-beam to enable the other counterpoise to move along on its scale-beam bar and means for locking said counterpoises at intermediate positions on the scale-beam bars, substantially as described.

16. In a weighing-machine, a pivoted scale-beam normally declining toward its outer end comprising two scale-beam bars arranged one above the other and connected together, two counterpoises arranged one on each scale-beam bar, means for lifting the scale-beam to enable the counterpoises to move along the scale-beam bars toward the inner ends thereof by gravity to indicate the weight, and locking-bars for locking the counterpoises at intermediate positions on the scale-beam bars into engagement with which the counterpoises are moved by the rising scale-beam, substantially as described.

17. In a weighing-machine, a pivoted scale-beam normally declining toward its outer end comprising two scale-beam bars arranged one above the other and connected together, two counterpoises arranged one on each scale-beam bar, means for lifting the scale-beam to enable the counterpoises to move along their scale-beam bars toward the inner ends thereof by gravity to indicate the weight and for permitting said beam to teeter, and locking-bars for locking said counterpoises at intermediate positions on the scale-beam bars into and out of engagement with which the counterpoises are moved by the scale-beam, substantially as described.

18. In a weighing machine, a pivoted scale-beam normally declining toward its outer end comprising two non-parallel scale-beam bars arranged one above the other and connected together, two counterpoises normally occupying positions at the outer ends of said scale-beam bars, means for lifting the scale-beam to decline it toward its inner end to enable first one and then the other counterpoise to move along thereon by gravity, and indicate the weight and for preventing return movement thereof while the counterpoises move along thereon, and means for locking the counterpoises at intermediate positions on the scale-beam bars, substantially as described.

19. In a weighing-machine, a pivoted scale-beam normally declining toward its

outer end comprising two non-parallel scale-beam bars arranged one above the other and connected together, two counterpoises normally occupying positions at the outer ends of said scale-beam bars, means for lifting the scale-beam to decline it toward its inner end to enable first one and then the other counterpoise to move along thereon by gravity, and indicate the weight and for preventing return movement thereof while the counterpoises move along thereon and for subsequently releasing it when it is balanced by the counterpoises, and means for locking the counterpoises at intermediate positions on the scale-beam bars, substantially as described.

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

WILLIS H. JORDAN.

Witnesses:

CHARLES F. A. SMITH,

MELVA W. PORTER.