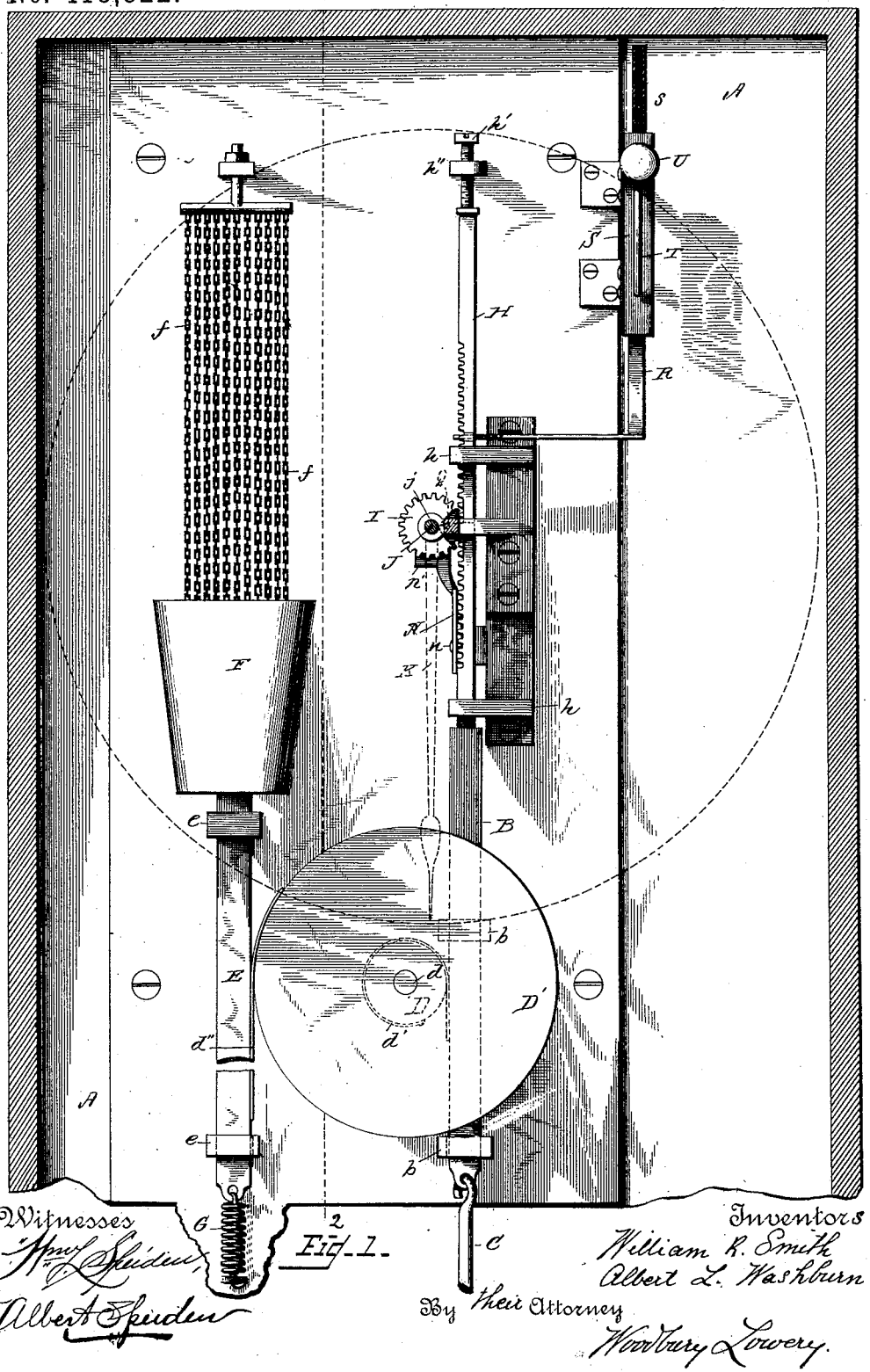
(No Model.) 2 Sheets—Sheet 1.

W. R. SMITH & A. L. WASHBURN.

COIN CONTROLLED WEIGHING SCALES.

No. 418,822. Patented Jan. 7, 1890.



Witnesses
Albert Spieden
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Fig. 1.

Inventors
William R. Smith
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By their Attorney
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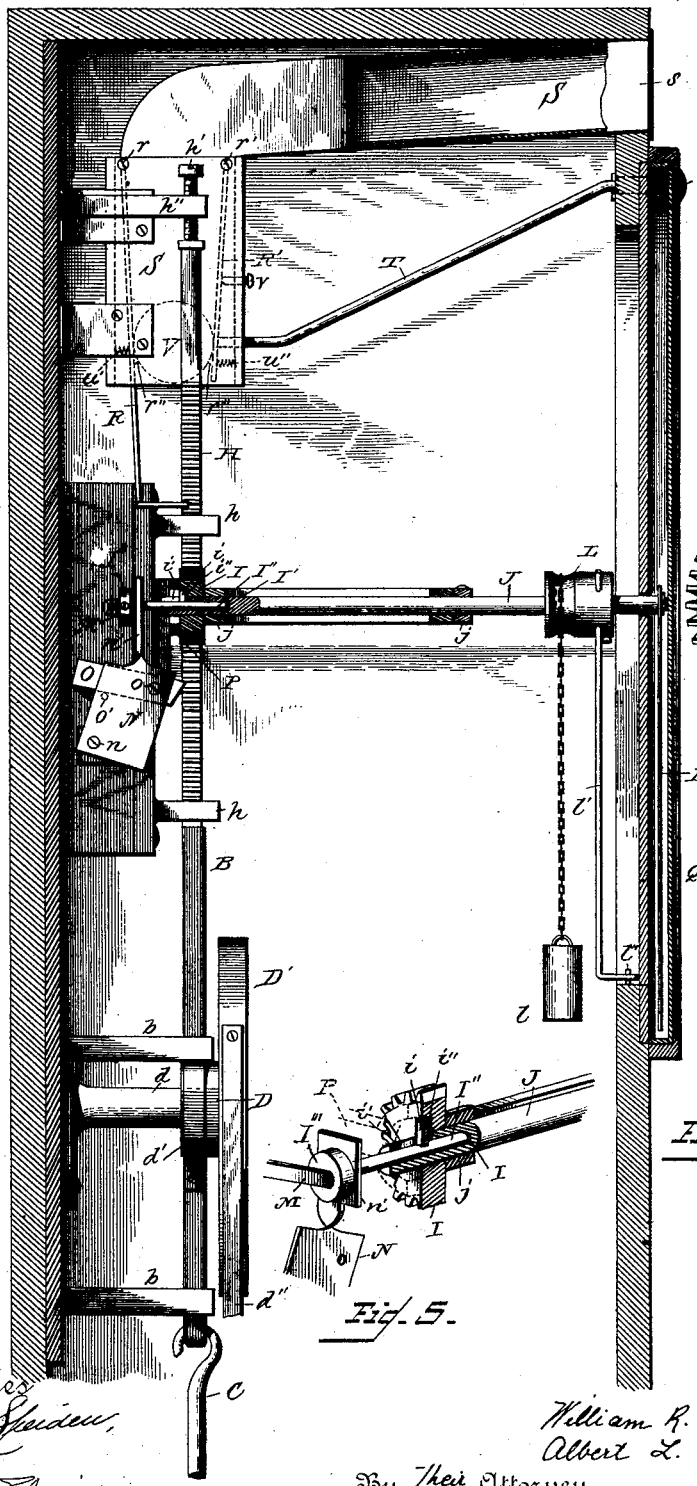

Fig. 2.

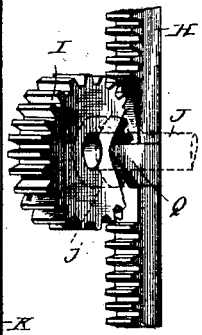

Fig. 3.

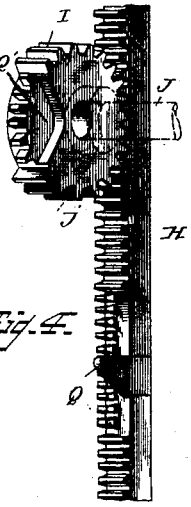

Fig. 4.

Fig. 5.

Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM ROBERT SMITH, OF NEW YORK N. Y., AND ALBERT LYMAN WASHBURN, OF NIANTIC, CONNECTICUT, ASSIGNORS, BY DIRECT AND MESNE ASSIGNMENTS, TO THE STANDARD AUTOMATIC SCALE COMPANY, OF NEW YORK, N. Y.

COIN-CONTROLLED WEIGHING-SCALES.

SPECIFICATION forming part of Letters Patent No. 418,822, dated January 7, 1890.

Application filed June 9, 1887. Serial No. 240,730. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM ROBERT SMITH, residing at New York, county of New York and State of New York, and ALBERT LYMAN WASHBURN, residing at Niantic, Connecticut, citizens of the United States, have invented certain new and useful Improvements in Coin-Controlled Weighing-Scales, of which the following is a specification.

Our invention consists of an ordinary platform weighing-scales having a novel counterbalance by which great simplicity and compactness are obtained in the construction.

It also consists in novel means for returning the indicator of the scales to the zero-point after the weight upon the scales has been indicated.

It also consists in certain improvements in the rack-bar and the actuating part of the indicating mechanism, whereby the actuating part is caused to move at a different rate of motion in its passage over different points of the rack-bar.

It also consists in a novel form of toll or coin receiver, which is connected with a latch locking the rack-bar, whereby a coin or other token introduced into the receiver constitutes part of a rigid connection between the latch and the exterior of the case, which enables the latch to be released. The weighing-levers of an ordinary platform-scale are connected by a bar moving in suitable bearings. A band attached at one end to the bar passes over and is attached at the other end to a small pulley connected to a larger pulley, so as to turn with it, both of them being mounted upon the same arbor. In the same way a band secured at one end to the large pulley passes over it and is attached at its other end to a vertical shaft sliding in suitable bearings connected through a spring at its lower end to an immovable hook fixed in the frame of the machine and surmounted by a receptacle or cup, above which hangs a counter-weight, such as a chain. It follows that when the platform of the scales descend the bar revolves the smaller wheel, the band on the latter is taken up, and the shaft, receptacle, and counter-weight are lifted against the stress of the spring, while the pressure of the counter-weight in the receptacle increases with the rise of the latter.

The rack which actuates the indicating mechanism is vertically above and entirely disconnected from the bar, connecting the weighing-levers of the platform, through the pulley, band, and shaft, with the counter-weight and spring. It moves vertically in suitable bearings, and when the weight is on the scales, on being released indicates the same on a dial by descending until stopped by abutting against the top of the bar, connecting the weighing-levers of the platform, through the pulley, band, and shaft, with the counter-weight and spring. The rack in its descent meshes with a pinion mounted upon a shaft, to which the dial-hand is attached. On the return of the scales to their normal position by the removal of the weight the rack is pushed back into place, and in so doing actuates a pawl, which disconnects the pinion on the index-shaft from its rigid connection with the shaft, allowing the latter to revolve under the influence of a weight coiled upon a pulley on the shaft by its prior rotation until the pointer returns to zero, where further revolution of the shaft is prevented by a stop engaging with an arm on the shaft. Means are also provided for carrying the index-pointer and shaft beyond the zero-point in the absence of the stop and arm.

The latch-releasing mechanism consists of a chute having an aperture large enough to admit a coin or token of the size required. The sides of the chute against which rest the edges of the coin consist each of a pivoted lever, one of them rigidly connected with a push-button on the exterior of the case and the other with a latch engaging with the rack of the indicator. On the introduction of a coin into the chute it is arrested in its fall between the two pivoted sides by projections thereon, becoming thus a rigid connection between the same, so that on pressing the push-button the motion is transferred through the coin from one side of the chute to the other,

and the latch on the rack-bar is released, allowing it to fall and indicate the weight. The return of the rack-bar to its first position opens the chute and causes the contained coin to be dropped into a box provided for the purpose.

Our improvements are adapted to the application of ordinary platform weighing-scales, the platform being mounted upon any ordinary lever mechanism for such scales, and therefore we deem it unnecessary to illustrate such ordinary mechanism.

In the accompanying drawings, which illustrate our invention, Figure 1 is a front view of the mechanism with the dial removed. Fig. 2 is a side view, partly in section, of the same on the line 2 2 of Fig. 1; and Figs. 3 and 4 are enlarged views in perspective of the indicator rack-bar and pinion. Fig. 5 is a view in perspective, partly in section, of the pinion and shaft, showing the means by which they are locked together and released from each other.

A is a case or box in which our mechanism is fastened.

B is a bar, which slides in bearings *b b*, and is connected with the weighing-levers of the platform of the scales below by means of the rod C.

D is a small and D′ a large pulley, both rigidly connected together and mounted upon the same arbor *d*. A band *d′* connects the pulley D with the bar B in such wise that when there is no weight upon the platform and the bar B is in its normal position the band *d′* is wound up around the pulley D. A similar band *d″* connects the pulley D′ with a bar E, sliding in bearings *e e* in such wise that when the band *d′* is unwound *d″* is wound up, and vice versa.

F is a receptacle on the top of the bar E, into which the counter-balance *f*, suspended above it, is gathered up when the bar E and its receptacle F rise.

G is a spring fastened at one end to the bottom of the bar E and at the other to the frame of the weighing-scales. It follows that when a weight is placed upon the platform of the scales the bar B descends and revolves the pulleys D and D′ by the uncoiling of band *d′*. The revolution of the pulley D′ coils up the band *d″*, which lifts with it the bar E, gathering up the counter-balance *f* into the cup F and extending the spring G until the weight on the platform is balanced.

H is a toothed rack sliding vertically in bearings *h h* and meshing with a pinion I, Figs. 2, 3, and 5, loosely mounted upon a shaft J, which carries and revolves the pointer K. The up movement of the rack H is limited by a set-screw *h′*, turning in the nut *h″* and its down movement by abutting against the top of the bar B.

The shaft J, upon which the pinion I is mounted, turns in bearings *j j*, and carries a pulley L and a weight *l*, which is wound up by the revolution of the shaft and the pinion I by the fall of the rack H; but when the rack H is pushed up into its normal position by the rise of bar B it disconnects the pinion I from shaft J, and allows the latter to be revolved by the fall of weight *l* until the pointer K is arrested by an arm *l′* on shaft J, Fig. 2, bringing up against stop *l″*. While rack H is falling the pinion I and the shaft J are locked together in the following way: The shaft J has at the end on which the pinion I is loosely mounted a recess I′, Figs. 2 and 5, into which projects a rod I″, having a pin *i*, extending above and moving back and forth in a longitudinal slot *i′* in the end of the shaft J. The pinion I, located on shaft J so as to project somewhat over the slot *i′* in the shaft, is also provided with a notch *i″* on its side, extending radially from its center, so that the turning of the pinion I on its shaft J brings its own radial notch *i″* at some moment in its revolution into coincidence with the slot *i′* of the shaft J. If at this instant the rod I″ is pushed home into the recess I′, the pin *i*, projecting above said slot *i′* in said shaft J, engages with the radial notch *i″* in the side of the pinion I and locks the shaft and the pinion together. A spring M normally presses against the head I‴ of the rod I″ and holds it in engagement with the pinion I. The spring M is pushed back and the rod I″ withdrawn from engagement with the pinion I by means of the pawl N, pivoted at *n* and having the extension *n′*, through which the rod I″ passes. A lever O, pivoted to the pawl N at *o*, projects into the path of the rack-bar H, but yields with its descent. On the rise of the rack H its teeth engage with the lever O, causing it to turn on its pivot *o* until its other end strikes pin *o′*, whereupon pawl N *n′*, to which the lever O is pivoted, also turns on its pivot *n* by the continued movement of the lever O until its extension *n′*, pressing against the head I‴, withdraws the rod I″ from the recess I′ and disengages the pin *i* from the slot *i′* in the pinion I, allowing the shaft J to revolve independently of the pinion. When the rack H returns to its normal position, the pinion I has been rotated far enough to allow the pin *i* on the rod I″ to be again pushed into engagement with the radial notch *i″* by the pressure of the spring M, the resistance of the pawl N *n′* being removed.

P is a bearing which holds the pinion I in place upon the shaft J.

In order to turn the pinion with increased rapidity during a certain part of its revolution, an enlarged tooth Q, Figs. 3 and 4, is provided on the rack at a point corresponding to zero on the dial, and meshes with the pinion I at Q′, where the pinion is recessed for that purpose. The teeth on both the rack and the pinion are partly cut away at this point in order not to interfere with its operation, but a narrow band of teeth is retained on the rack sufficient to actuate the pawl N and its lever O, and a narrow band of teeth

is also retained at recess Q′ on the periphery of the pinion I to provide for its entire revolution in case of a great fall of the rack-bar H. This tooth Q serves to turn the pinion I and with it shaft J and pointer K beyond zero on the dial or any determinate point when not prevented by the arm l' and the stop l''.

Rack H is locked in position by means of the arm R, Fig. 2, pivoted at r, where it forms one side of a coin-chute S, having an aperture s on the exterior of the case A. The other side of the chute S consists of another arm R′, also pivoted at r' and rigidly connected by a rod T with a push-button U on the exterior of the case. Arms R R′ are separated from each other by a distance corresponding to the diameter of any given coin V, and have projections r'' r'', by means of which a coin dropped into the chute is temporarily retained between them, and the coin, by forming a connection between the sides R R′, allows the pressure on button U to be transferred from the arm R′ to the arm R and to push it out of engagement with the rack H.

u' is a yielding spring which returns the arm R to its locking position.

u'' is a similar spring to return the arm R′ to its position after the pressure on the button U is removed.

v is an adjusting-screw which regulates the distance between the sides R R′.

It is evident that the locking of rack H in this part of our invention could equally well be done by the arm R′ on the opposite side of the chute and the push-button be connected with the other arm, so that the unlocking would be accomplished by pulling in place of pressing the button.

We do not limit ourselves to the use of our coin-receiver with the locking mechanism or with weighing-scales alone, as the coin-receiver is capable of application to a number of objects, the essential element being that the coin itself becomes the unyielding connection through which the mechanism operates. Any rigid token may be substituted for the coin.

We have shown our device for returning the pointer to zero by the disengagement of the shaft and the pinion as applied to counter-balance-scales; but it can be applied equally well to spring-scales.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination, in weighing-scales, with the platform-connections, of the bar B, pulleys D D′, bar E, connecting mechanism, a receptacle, and counter-balance f, substantially as set forth.

2. The combination, in weighing-scales, with the platform-connections, of bar B, pulleys D D′, bar E, connecting mechanism, spring G, receptacle, and counter-balance f, substantially as hereinbefore set forth.

3. The combination of the push-button U, rod T, chute S, side R′, pivoted at r', locking-arm R, pivoted at r, set-screw v, and coin V, whereby on the dropping of a coin into the chute the movement of arm R can be controlled by the push-button, substantially as set forth.

4. The combination of shaft J, having slot i' and recess I′, pinion I, having notch i'', rod I″, having pin i, and spring M, substantially as set forth.

5. The combination of shaft J, having slot i' and recess I′, pinion I, having notch i'', rod I″, having pin i, pawl N n', lever O, and rack H, substantially as set forth.

6. The combination of shaft J, having slot i' and recess I′, pinion I, having notch i'', rod I″, having pin i, spring M, pawl N n', lever O, and rack H, substantially as set forth.

7. The combination, with rack H, of shaft J, pinion I, loosely mounted upon shaft J, and means for locking the pinion to the shaft and for disengaging the shaft from the pinion, of pulley L and weight l, whereby when the rack rises the pulley is revolved, lifting the weight, and when the pinion is released the shaft is revolved by the pulley and weight, substantially as set forth.

8. The combination, in weighing-scales, with platform-connections, the bar B, and means for balancing the weight on the platform, of the rack H, the tooth Q, the pinion I, having recess Q′, the shaft J, carrying a pointer K, a dial, means, as described, for locking and unlocking the shaft J and the pinion I, the pulley L, the weight l, the arm l', and the stop l'', substantially as hereinbefore set forth.

9. The combination of the push-button U, the rod T, the chute S, the pivoted side R′, the pivoted locking-arm R, and the coin V, whereby on the dropping of a coin into the chute the movement of locking-arm R can be controlled by the push-button, substantially as described.

10. In a coin-operated weighing-scale, the combination, with a vertically-sliding independent rack, of a latching device for said rack, a coin-receptacle, a coin, and a connection with the exterior of the scales, whereby a coin introduced into the receptacle permits the control of the latching device by force applied to the exterior connection and exerted against the coin, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM ROBERT SMITH.
ALBERT LYMAN WASHBURN.

Witnesses:
HARRY M. TURK,
GUSTAV SCHNEPPÉ.