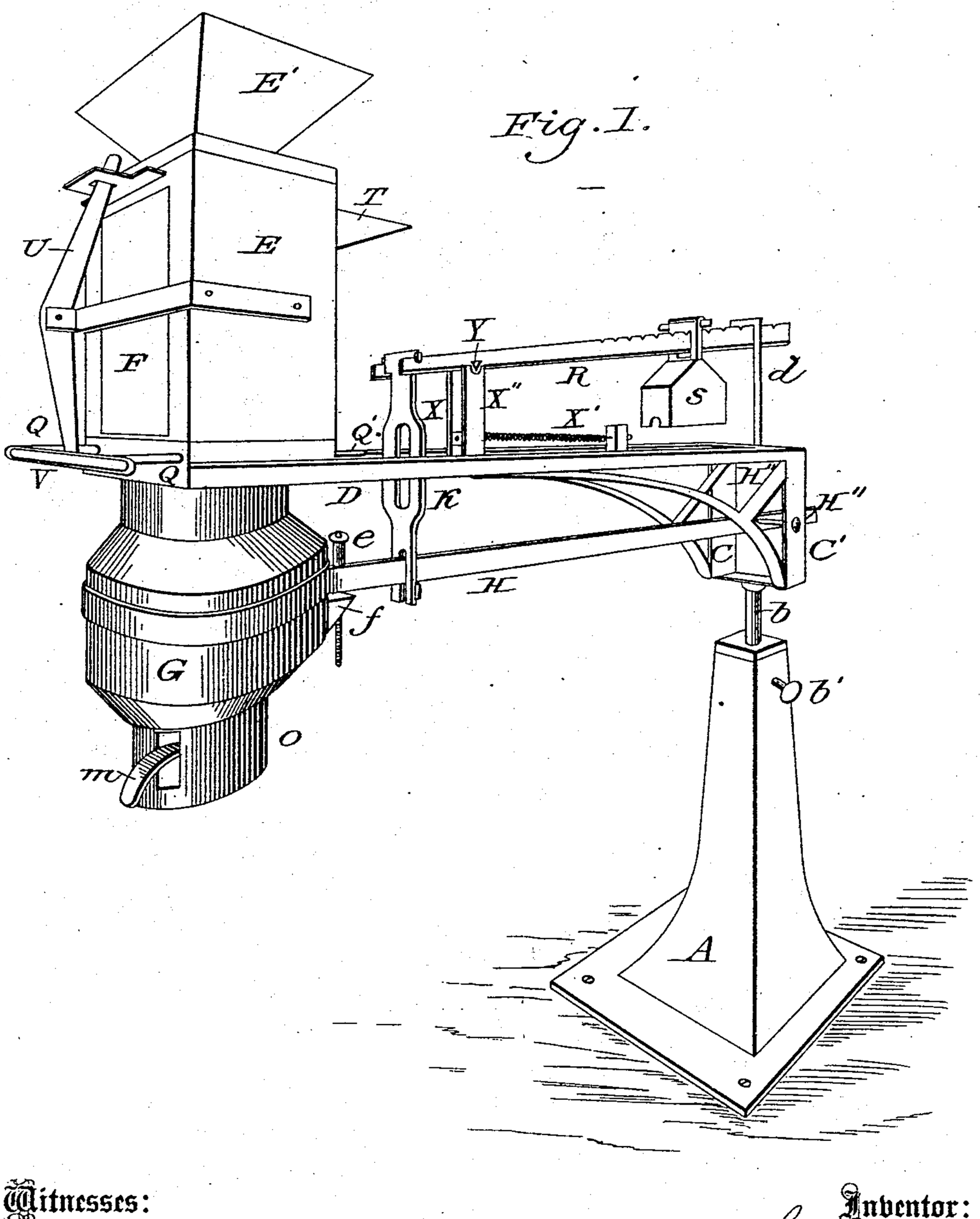
(No Model.) 2 Sheets—Sheet 1.

H. K. WARNER.

AUTOMATIC WEIGHING SCALE.

No. 353,388. Patented Nov. 30, 1886.

Fig. 1.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2

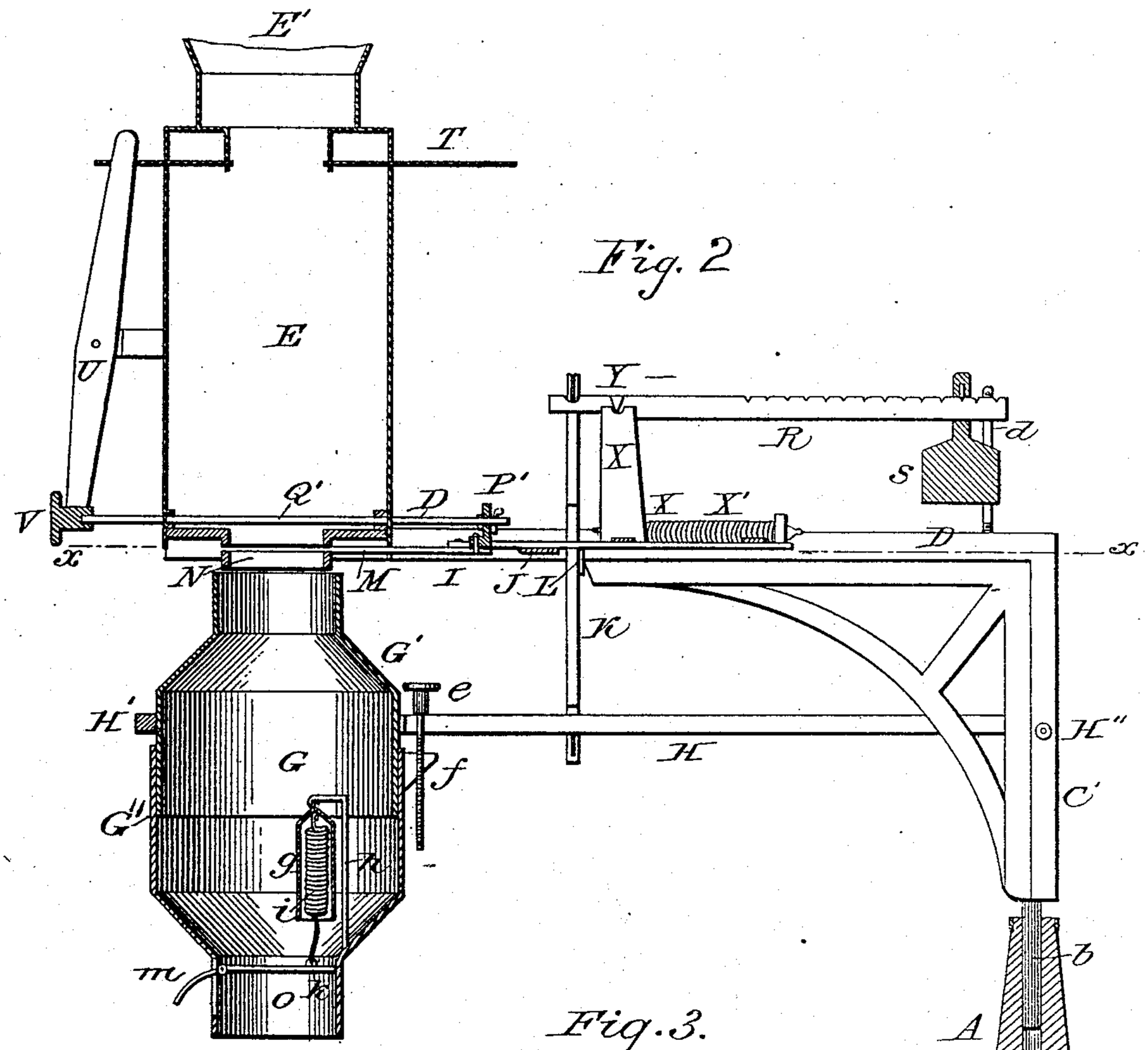
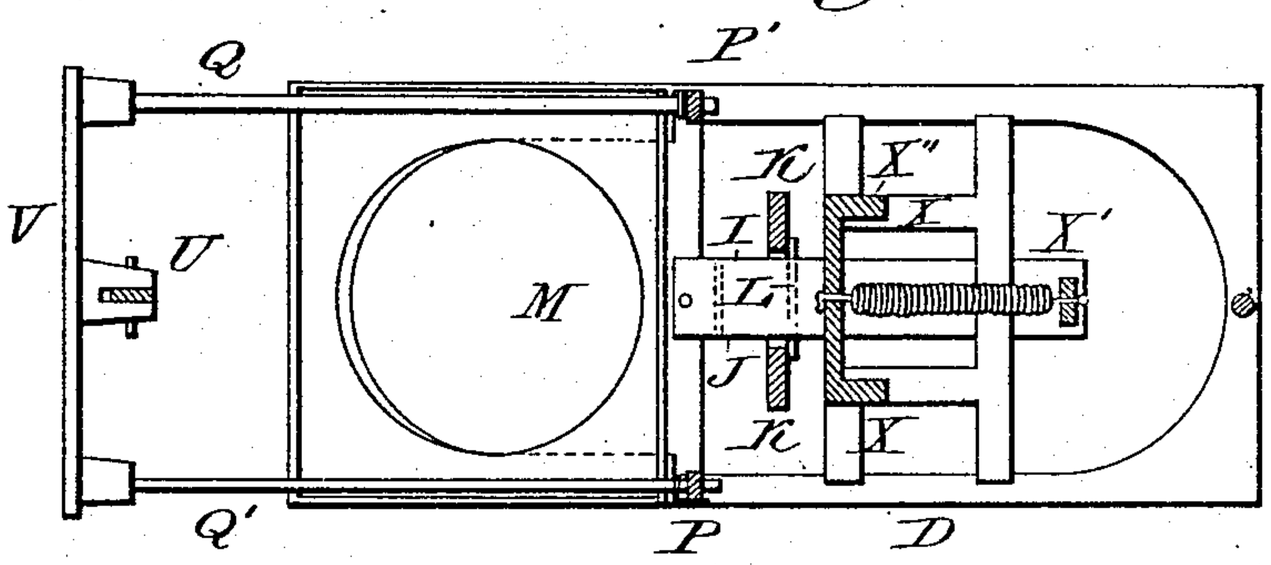


Fig. 3.



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UNITED STATES PATENT OFFICE.

HENRY KIRK WARNER, OF ST. PAUL, MINNESOTA, ASSIGNOR OF ONE-HALF TO FRANCIS HENRY HARVEY, OF HUDSON, WISCONSIN.

AUTOMATIC-WEIGHING-SCALE.

SPECIFICATION forming part of Letters Patent No. 353,388, dated November 30, 1886.

Application filed March 22, 1886. Serial No. 196,191. (No model.)

To all whom it may concern:

Be it known that I, HENRY KIRK WARNER, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented a new and useful Improvement in Automatic Weighing-Scales, of which the following is a specification.

My invention relates to improvements in automatic weighing-scales in which an upper hopper is arranged with an upper and lower cut-off so constructed as to deliver material to be weighed into a hopper suspended beneath it connected with the beam of a scale, the whole supported upon a frame pivoted to a stand, the object of my invention being to provide a mechanism whereby grain and other substances may be accurately weighed and received into a receptacle, from which it may be discharged without removing the receptacle from the scale-beam. I attain this object through the medium of the device illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of the complete machine. Fig. 2 is a sectional view made vertically in the middle line. Fig. 3 is a plan of the frame made in the line *x x*.

Similar letters refer to similar parts throughout the several views.

To a stand or support, A, I secure a pivot, *b*, which is adjustable by a set-screw, *b'*. Connected with this pivot *b* is the frame D D, composed of two bracket-arms and a rectangular frame resting upon the arms horizontally. At the end farthest from the pivot on the frame D, I make a rectangular hopper, E, with a flared hopper on top of it, E'. At the top of the hopper E, and just at the lower opening of the hopper E', is a perforated cut-off, T, which will close the opening in the hopper E'. At the outer end of the cut-off T is a slit into which fits the upper end of the lever U. At the lower end of the hopper E is a round opening, N, which is closed by a cut-off, M, which can be slid forward and backward. The cut-off M is connected with the plate I. Upon the plate I, at a convenient point, is secured the catch J, which is made of a flat piece of steel secured to the plate I at right angles to its long axis, and made with the edge nearest the hopper E having a rounded edge. The object of this rounded edge is to facilitate the working of the cut-off M as the round edge of J comes in contact with the steel plate L and just engages it, the contact being so slight that the instant the pressure is decreased the rounded edge of plate J slips over the steel plate L and the cut-off M is released. The plate I extends beneath the frame X, and at its extreme end has a standard connecting it by means of the spring X' with the standards X'' of the frame X. At each side of the cut-off M are standards P and P', connected with the guide-rods Q' and Q, which steady the cut-off M. The guide-rods Q and Q' are connected with the thumb-piece V, and this is secured by a pivot to the lower end of the lever U. The lever U connects with the upper cut-off, T.

Beneath the hopper E, I make a second hopper, G, made in two parts, G' and G'', of a cylindrical form, and one part fitting into the other and made to slide up and down and held in place by the set-screw *e* and the bracket *f*, which enables the operator to enlarge the cavity within the hopper G. At the lower part of the section G'', I make a standard of wire, *h*, bent in an L shape. The longer limb is secured to the side of the section, and from the upper or short limb I suspend a spring, *i*, which is covered by the tin cap *g'*, (shown in section in Fig. 2.) The upper end of the spring *i* is connected with the wire *h*. The lower end of the spring is secured to the trap *k*, which it holds up in place. At one side of the trap *k*, and opposite to the spring, is the trigger *m*, which projects through the side of the section G'', and is used to open the trap *k*.

About the section G' of the hopper G is a ring, H', which is connected with and forms part of the lever H, and they together support the hopper G. One end of the lever H is connected by a fulcrum to the arms C' C of the frame D at H''. At a convenient distance from the hopper G on the lever H, on the under side, is a notch accommodating the knife-edge of the link K. On the side of the link K farthest from the hopper G, and at such a position that its upper edge will rest against and engage the lower side of the plate I, is a plate of steel, L, which, when the thumb-piece V is pushed in, engages the edge of the plate J.

The upper end of the link K has a knife-

edge, which rests in a socket on the end of the balance or scale beam R. The scale-beam R rests on the knife-edge Y as its fulcrum, and is supported upon the standards X and X″. On the end of the scale-beam R is a weight, S, and on the frame D is a guard, *d*, to keep the scale-beam R in place.

Having thus described the parts of my invention, I now proceed to explain the mode of operating the same.

The hopper E′ is filled with coffee or other material to be weighed, the cut-off T being open, coffee, by gravity, feeds down into the hopper E, keeping it full. The scale R is then set so as to balance a pound, or any desired quantity, in the hopper G by adjusting the weight S. I then push in the thumb-piece V until the plate J has passed beyond the plate L on the link K and is caught very lightly on the outer edge of the plate L. In pushing in the thumb-piece V the spring X′ is extended, and the contact of the plate J with the plate L prevents its recoiling. When the thumb-piece V is pushed in, as indicated, the orifice N is open and coffee descends into the hopper G until the weight for which the scale is set is obtained, when the hopper G descends, disengaging the catch L, and the recoil of the spring X′ at once cuts off the supply of material, so that no more can flow through the orifice N, and the hopper G contains just exactly the required weight of coffee. If the substance to be weighed is bulky, the two parts of the hopper, G′ and G″, of the hopper G are adjusted to suit the bulk by the set-screw *c*. By opening the trap *k* by means of the trigger *m* the exact quantity of coffee is dropped into a package placed beneath the hopper.

The scale, by means of the frame D, pivoted at *b*, can be revolved, so as to distribute the contents of the hopper G at any desired point.

I do not claim the broad principle of automatic scales, as I am aware that they are in use.

What I claim, therefore, and desire to secure by Letters Patent, is—

1. In an automatic weighing-scale, the combination of a base, A, stem *b*, bracket-arms C and C′, frame D, hopper E and E′, with the weighing-hopper G, beam H, link K, scale-beam R, and weight S, all as and for the purpose set forth and described.

2. In an automatic weighing-scale, the combination of a hopper, E, a cut-off, T, lever-arms U, guide Q and Q′, thumb-piece V, cut-off M, with the catch J, the plate L, link K, beams H and R, weight S, and hook *d*, and spring X′, operating the plate I, all substantially as and for the purpose set forth and described.

3. In an automatic weighing-scale, the combination of the cylinder G′, lever H, set-screw *e*, bracket *f*, arbor H″, link K, and scale-beam R, combined with the adjustable cylinder G″, standard *h*, case *g*, spring *i*, trap *k*, and trigger *m*, all substantially as and for the purpose set forth and described.

HENRY KIRK WARNER.

In presence of—
H. HAUPT, Jr.,
WM. A. CAUT.