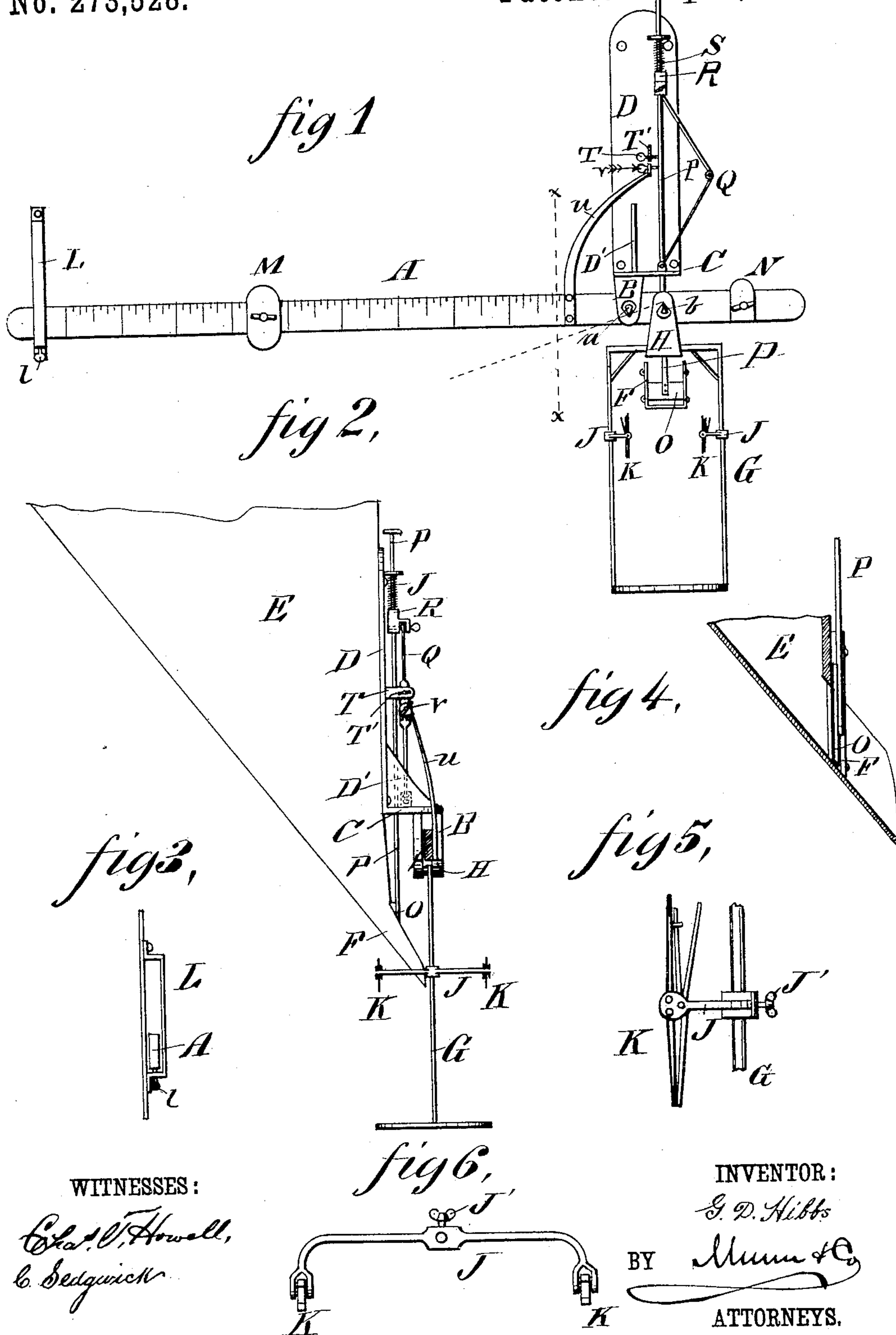


(No Model.)

G. D. HIBBS.
WEIGHING APPARATUS.

No. 273,528.

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UNITED STATES PATENT OFFICE.

GEORGE D. HIBBS, OF NEWARK, NEW JERSEY.

WEIGHING APPARATUS.

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To all whom it may concern:

Be it known that I, GEORGE D. HIBBS, of Newark, Essex county, New Jersey, have invented a new and Improved Weighing Apparatus, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved device for automatically and accurately weighing any material that can flow in a stream from an orifice—for instance, such materials as grain, flour, coffee, sugar, rice, powder, shot, guano, phosphate, marl, &c., and also liquids.

The invention consists in an automatic weighing apparatus formed of a steelyard, upon which is suspended a frame for holding the receptacle to receive the material to be weighed, which steelyard is provided with an arm, which, when the long end of the steelyard is drawn upward by the weight of the material, strikes against a toggle-lever, and thereby releases a vertical rod which is pressed downward by a spring, whereby a gate at the lower end of the said rod closes the chute through which the material to be weighed passes into the bag or other receptacle held by the frame suspended from the steelyard.

The invention further consists in the combination, with the frame suspended from the steelyard, of vertically-adjustable double arms on the side bars of the said frame, which double arms are provided toward the ends with spring-clamps for holding the bag.

The invention also consists in certain parts and details and combinations of the same, as set forth more fully hereinafter.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a longitudinal elevation of my improved weighing apparatus. Fig. 2 is an end elevation of the same, parts being shown in section. Fig. 3 is a longitudinal elevation of the guide for the end of the scale-beam. Fig. 4 is a longitudinal sectional elevation of the chute and of the sliding gate for closing the same. Fig. 5 is a detail longitudinal elevation of one of the spring-clamps for holding the bag, the said clamp being attached to a transverse arm; and Fig. 6 is a plan view

of the double arm to which the spring-clamps for holding the bag are attached.

The scale-beam A, which is graduated in the usual manner, is provided with knife-edges *a*, which rest in apertures in jaws B, projecting from the under side of a horizontal plate, C, which is attached to the lower end of a vertical plate, D, fastened to the side of the receptacle E, which contains the material to be weighed, the said plates C and D being directly above the spout F of the receptacle E. The horizontal plate C and the vertical plate D are braced, stiffened, and connected by means of the diagonal brace-plates D'.

The frame G, which is adapted to receive the bag for containing the material while it is being weighed, the said bag resting on the flat bottom of the frame G, is provided at its upper end with jaws H, provided with apertures into which the knife-edge *b* of the scale-beam A pass. On each vertical side bar of the frame G a double transverse arm, J, is mounted vertically adjustable, which double arm J can be locked in the desired position by means of a binding-screw, J'. On each end of the double arm J a spring-clamp, K, is fastened, which serves to hold the bag, so that a bag placed within the frame G is held by four spring-clamps, K, two on each side of the frame. The double arms J, carrying the spring-clamps K, must be made adjustable, as the bags are of different sizes. The end of the flat part or arm of the scale-beam A is guided by a guide frame or clip, L, which is fastened to the side of the receptacle E. A poise, M, is mounted to slide on the graduated longer part of the beam A, and a balancing-poise, N, is mounted on the shorter part of the beam A. The poises M and N are provided with binding-screws for holding them in position when set.

A gate, O, is adapted to slide vertically into the chute F, which is provided in its inner sides with vertical grooves for guiding the said gate O. The gate is attached to a vertical rod, P, which is guided on the plate D by a guide-clip near the top, by the plate C, near the center, and by the gate. The lower end of a toggle-lever, Q, is pivoted to a jaw or projection on the plate C, and the upper end is pivoted to a nut, R, which is vertically adjustable on the rod P. The said nut is held in

the desired position by a small thumb-screw, which screws into suitable apertures in the rod P. The said screw also serves as the upper pivot-pin of the toggle-lever. The rod P is provided at its upper end with a handle or knob, P', for raising or lowering the said rod. A spiral spring, S, surrounds the rod P between the nut R and a guide-clip projecting from the plate D, the said spring pressing downward on the nut R. A set-screw, T, passes through a lug, T', projecting from the surface of the plate D, the point of the said screw projecting outward and opposite the rod P and in such a position that the toggle-lever will rest against it when the rod P is raised. A curved arm, *u*, is attached to the scale-beam A, and at its upper end is a trip-screw, *v*, which projects through the arm *u*. This screw is held in such a position and is so adjusted that it will strike the toggle-lever Q just below the hinge or joint when the long end of the weighing-beam A has raised one-half of the distance allowed by the guide L and moved the upper end of the tripping-arm *u* in the direction of the arrow. The toggle-lever Q is widened near the hinge, so as to give surface for the set-screw T and trip-screw *v*.

The operation is as follows: The bag that is to receive the material to be weighed is placed within the frame G, and is held raised and opened by the spring-clamps K, and then the long arm of the beam A is balanced by the poise N, which is adjusted in the proper position on the short arm, and the weight or poise M is moved to the mark of the desired weight. The rod P is then raised until the toggle-lever Q rests against the inner end of the set-screw T, which is so adjusted that the toggle-lever will not be in a straight line, but will be bent at its joint toward the said set-screw T. The pressure of the spring S holds the toggle-lever in the desired position. By moving the rod P upward to bring the toggle-lever in the desired position, the gate O is opened and the grain or other material in the receptacle E can flow through the chute F into the bag or barrel. When the weight of the material filled into the bag corresponds with the weight for which the poise M is adjusted on the beam A the long arm of the scale-beam will be moved upward, and the upper end of the curved arm *u* will be moved in the direction indicated by the arrow in Fig. 1, and the trip-screw carried by the upper end of the arm *u* strikes against the joint of the toggle-lever and moves the said joint in the direction from the set-screw T, thus permitting the toggle-lever to bend on its joint. The spring S immediately forces rod P downward, and thereby the gate O closes the chute and prevents a further flow of the material into the bag. The bag is then removed and replaced by another, the scale-beam is balanced, and then the above operation is repeated. Any quantity of any suitable material can be weighed in the above-described manner, and can run from the recep-

tacle into a barrel, bag, or any other suitable vessel or receptacle adapted to receive the same. Unlike the common steel yards, the two points of support are not in line with the beam, but on an angle to the same, as shown in dotted line in Fig. 1—that is, to throw two lines of support farther apart instead of nearer together when the beam rises, causing it to rise quickly and with force. A screw, *l*, is provided in bottom of the guide-clip L, for leveling the beam A.

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

1. In an automatic weighing apparatus, the combination, with a scale-beam and a frame supported on the same and adapted to be attached to a feeding-hopper, of a sliding rod, a gate on the lower end of said rod for closing the opening in said hopper, a toggle-lever for keeping said rod raised and the gate open, and means, substantially as herein shown and described, for tripping the toggle-lever when the desired weight of material has passed into a receptacle suspended from the scale-beam, as set forth.

2. In an automatic weighing apparatus, the combination, with the scale-beam A, of the frame G, supported on the same, the vertically-movable rod P, the gate O, attached to the lower end of the same, the chute F, the toggle lever Q, having one end fixed and the other adjustable, attached to the rod P, and the arm *u* on the beam A, substantially as herein shown and described, and for the purpose set forth.

3. In an automatic weighing apparatus, the combination, with the scale-beam A, of the frame G, suspended from the same, the rod P, the gate O, attached to the same, the toggle lever Q, having one end fixed and the other adjustably secured to the rod P, the spring S, and the arm *u* on the beam A, substantially as herein shown and described, and for the purpose set forth.

4. In an automatic weighing apparatus, the combination, with the scale-beam A, of the united vertical and horizontal plates D and C, respectively, the vertical rod P, guided on the plate D, the toggle-lever Q, having its lower end fixed and its upper end pivoted to an adjustable nut, R, on the rod P, the gate O, the chute F, the arm *u* on the beam A, and the frame G, suspended from the beam A, substantially as herein shown and described, and for the purpose set forth.

5. In automatic weighing apparatus, the combination, with the beam A, of the frame G, suspended from the same, the rod P, the toggle-lever Q, the gate O, the chute F, the adjusting-screw T, and the arm *u*, substantially as herein shown and described, and for the purpose set forth.

6. In an automatic weighing apparatus, the combination, with the beam A, of the frame G, suspended from the same, the rod P, the toggle-lever Q, the gate O, the chute F, the ad-

justing-screw T, the arm *u*, and the screw *v*, substantially as herein shown and described, and for the purpose set forth.

7. In an automatic weighing apparatus, the
5 combination, with a steelyard, of the frame G, supporting the bag or other receptacle, the vertically-adjustable double arms J on the side bars of the frame G, and the spring-clamps K,

attached to the ends of the double arms J, substantially as herein shown and described, and for the purpose set forth.

GEO. D. HIBBS.

Witnesses:

FRANK W. HIBBS,
ALBERT S. HIBBS.