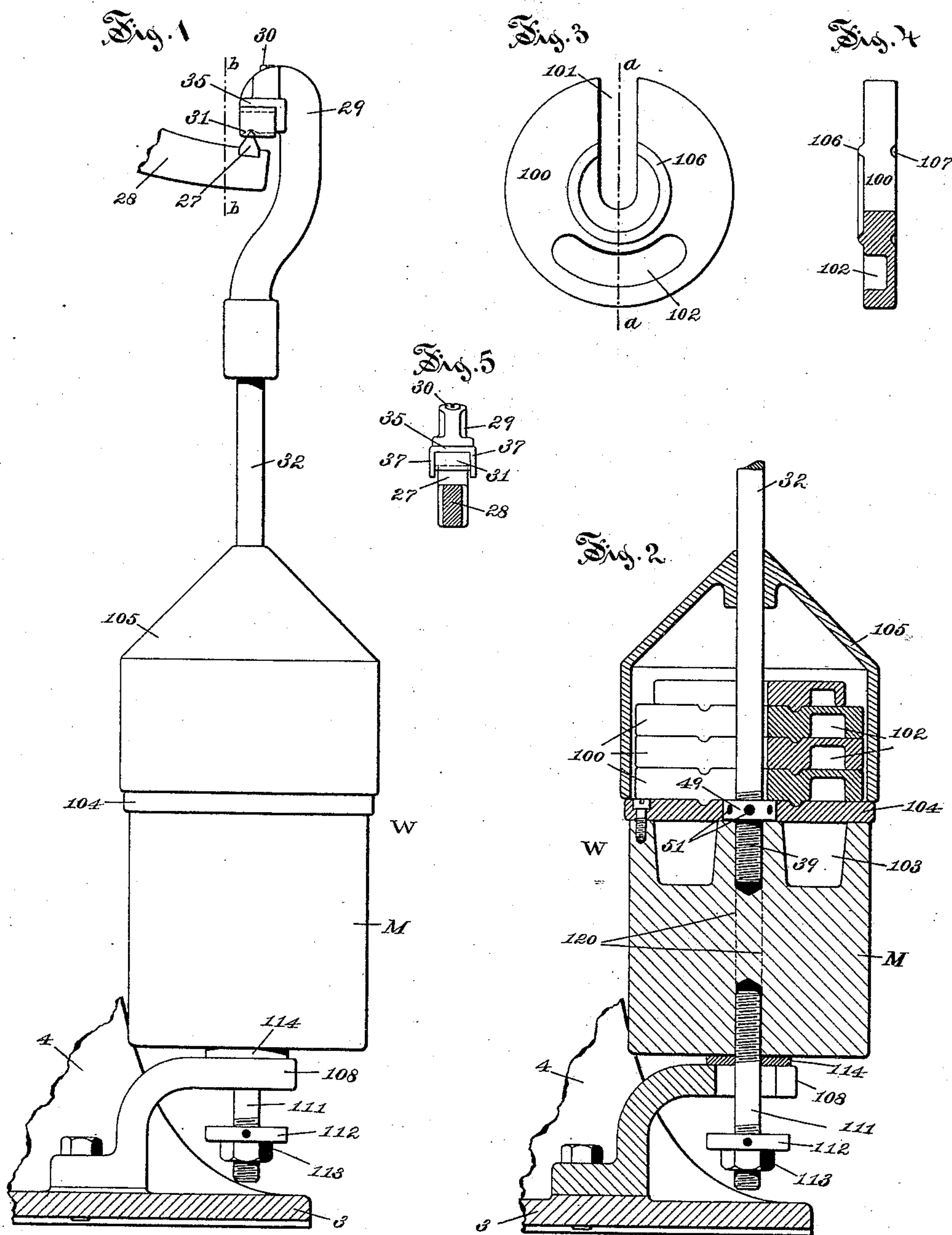


(No Model.)

C. H. COOLEY & F. H. RICHARDS.
GRAIN WEIGHER.

No. 442,860.

Patented Dec. 16, 1890.



Witnesses:

Wm. Borkman,
Henry L. Reckard.

Inventors:

Charles H. Cooley
Francis H. Richards.

UNITED STATES PATENT OFFICE.

CHARLES H. COOLEY AND FRANCIS H. RICHARDS, OF HARTFORD, CONNECTICUT, ASSIGNORS TO THE PRATT & WHITNEY COMPANY, OF SAME PLACE.

GRAIN-WEIGHER.

SPECIFICATION forming part of Letters Patent No. 442,860, dated December 16, 1890.

Original application filed February 11, 1890. Serial No. 339,967. Divided and this application filed July 14, 1890. Serial No. 358,659. (No model.)

To all whom it may concern:

Be it known that we, CHARLES H. COOLEY and FRANCIS H. RICHARDS, citizens of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Grain-Weighers, of which the following is a specification.

This invention relates to automatic grain-weighers, and has for its object to furnish an improved counterpoise-weight for the grain-bucket.

This application is a division of our prior application, Serial No. 339,967, filed February 11, 1890, for improvements in grain-weighers.

In the drawings accompanying and forming a part of this specification, Figure 1 is a side elevation of a counterpoise-weight embodying our present improvements. Fig. 2 is a vertical section through the several parts of the weight. Fig. 3 is a plan view of the under side of one of the load-weights. Fig. 4 is a sectional view of the load-weight in line *a a*, Fig. 3. Fig. 5 is a front view of the upper end of the hook 29 and the details thereon, showing also the scale-beam arm 28 in section in the line *b b*, Fig. 1.

Similar characters designate like parts in all the figures.

In Figs. 1 and 2, in addition to the counterpoise-weight, are shown some details of a grain-weigher, for a particular description of which reference may be had to our said prior application. The plate 3 is the bottom plate of the grain-weigher frame-work, which has usually two uprights for carrying the grain-bucket and valve mechanisms. One of said uprights (designated by 4) is partially shown in the drawings of this application. The grain-weigher scale-beam, as shown and described in our said prior application, has a rearwardly-extending arm 28, which is provided with a pivot or knife-edge 27, on which the counterpoise-weight (herein designated in a general way by *W*) is suspended by a rod 32, having at the upper end thereof a hook 29. Said suspension-rod is firmly fixed in any suitable manner to the lower end of said hook,

which hook is fitted with a suitable V-shaped bearing 31 (preferably as described in our said application) for resting on said knife-edge 27, said bearing 31 being secured to said hook by a screw 30 and being seated in the guard-plate 35, whose sides 37 extend down over the ends of the knife-edge 27, and thereby serve as end stops for retaining the bearing 31 in proper position longitudinally of the knife-edge.

The main weight *M*, which should have a mass nearly sufficient to balance the unloaded grain-bucket, is screwed to the rod 32 by means of a screw-thread and nut or other well-known means therefor, as shown in the drawings. The lower end 39 of said rod 32 is threaded, as shown, and is screwed into the upper end of said weight *M*, there being a check-nut 49 for setting and holding the same in the required position. Said weight *M* has an annular or other suitable recess, as 103, formed in the top thereof to receive the usual small pieces for making up the correct weight for balancing the bucket mechanism when the bucket is empty of grain. A circular cover 104 is fixed to the top of the weight *M*, as shown in Figs. 1 and 2, for covering said recess. On this cover rests the several load-weights 100, which together should equal in weight the load of grain. Said cover forms in effect a part of the main weight, being normally fixed thereto. The load-weights, as shown in detail in Figs. 3 and 4, are symmetrically formed, having the usual radial slot 101 formed therein to receive the suspension-rod 32, and having also the balance-chamber 102 formed therein opposite to said slot 101, and of a capacity to substantially make up for the portion of the weight cut out to form the slot 101, so that the center of gravity of the weight may be in the center thereof. By this means the weights 100 may all be placed in the same position, as indicated in Fig. 2, without disturbing the center of gravity of the whole counterpoise-weight *W* and without making the rod 32 swing out of its vertical position. This resulting steadiness is especially important in grain-weighers, because of the manner in which the weight is operated.

If during its vertical movement the weight is thrown out of line by its overweighting on one side, then on striking its supporting shelf or bracket 108 the weight is set down at one side of its proper place and at once causes a lateral pressure of the V-bearing of the knife-edge 27, and this pressure is liable in practice to be in any direction, since the weights 100 are liable to be set in any position on the main weight. By our improvements any possible combination of the load-weights does not disturb the proper position of the weight W. The said load-weights have formed on the opposite sides thereof the usual annular tongues and grooves 106 and 107, respectively, for the purpose of centering the said weights on each other, as shown in Fig. 2, in a well-known manner.

The cylindrical cover 105 is fitted to slide up and down on the suspension-rod, and its closed upper end is preferably formed conical for the purpose of shedding grain, dust, &c., falling thereon. The lower end of said cover being open, when the cover is raised on the rod 32 the load-weights remain resting on the main-weight cover 104, and are thus rendered accessible for removal whenever the operator has occasion to make up or change the set of load-weights. This load-weight forms, of course, a part of the weight for counterpoising the unloaded bucket.

The main-weight cover 104 serves not only to close the space 103, but to inclose the check-nut 49 on rod 32, whereby said nut is made inaccessible for operation except by removal of said main-weight cover, this construction being devised to furnish a means for adjusting the parts when assembling the machine and to prevent accidental misadjustment thereof. As shown in the drawings, the nut 49 is supposed to be round, and to have a series of holes 51, whereby to turn the same in a well-known manner.

At the lower end of the main weight M there is a stud or rod 111, which extends down through an opening in the bracket 108 and carries at the lower end thereof the stop-collar 112 and check-nut 113 for holding the said collar in place, the collar being usually, and as shown in the drawings, itself a nut fitting a thread on said stud 111. A washer 114, which may be of metal or of some yielding or non-sonorous material—as, for instance, vulcanized fiber—is placed on the rod 111 above the

bracket 108 for receiving the blow of the descending weight. In practice, however, said washer 114 may be dispensed with or may be part of the main weight M. The rod 111 may be separate, as shown in Fig. 2, or it may be a continuation of the rod 32 downwardly through the weight M, as indicated by the dotted lines 120, Fig. 2.

Having thus described our invention, we claim—

1. In a grain-weigher counterpoise-weight, the combination of a main weight having a central suspension-rod, load-weights on said main weight, and the tubular guard-cover closed at the top and open at the bottom and having in its upper end a central bearing fitting said rod, said cover being fitted to slide up and down on said rod over the load-weights.

2. In a grain-weigher counterpoise-weight, the improved load-weight consisting in a symmetrically-formed weight having a slot for the suspension-rod, and means for centering the weight relative to said rod and having the balance-chamber opposite to said slot.

3. In a grain-weigher counterpoise-weight, the combination, with the main weight and suspension-rod thereof, of a series of symmetrically-formed load-weights, each having a slot for the suspension-rod, and means for centering the load-weight relative to said rod and having a balance-chamber opposite to said slot, whereby the position of the whole weight is maintained irrespective of the rotation thereon of the load-weights.

4. In a grain-weigher counterpoise-weight, the combination, with the supporting-rod and the main weight, said rod being connected to said weight by a screw-thread and having the check-nut thereon, of the main-weight cover removably fixed on said weight and inclosing said check-nut, whereby said rod is secured.

5. The combination, with the scale-beam arm and its knife-edge and with the hook having a seat for the guard-plate, of the guard-plate seated under the hook and having the depending sides, and the V-bearing seated in the guard-plate between said sides, whereby the depending sides form end stops, substantially as shown and described.

CHARLES H. COOLEY.
FRANCIS H. RICHARDS.

Witnesses:

L. C. HEERMANN,
HENRY L. RECKARD.