R. S. MORISON.

Grain Meter.

No. 55,691. Patented June 19, 1866.

Fig. 4

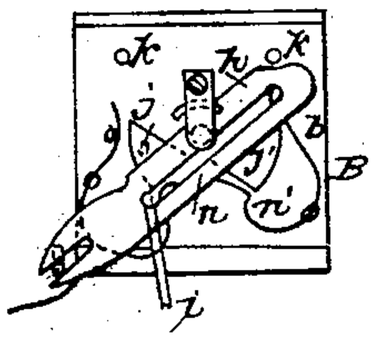


Fig. 1.

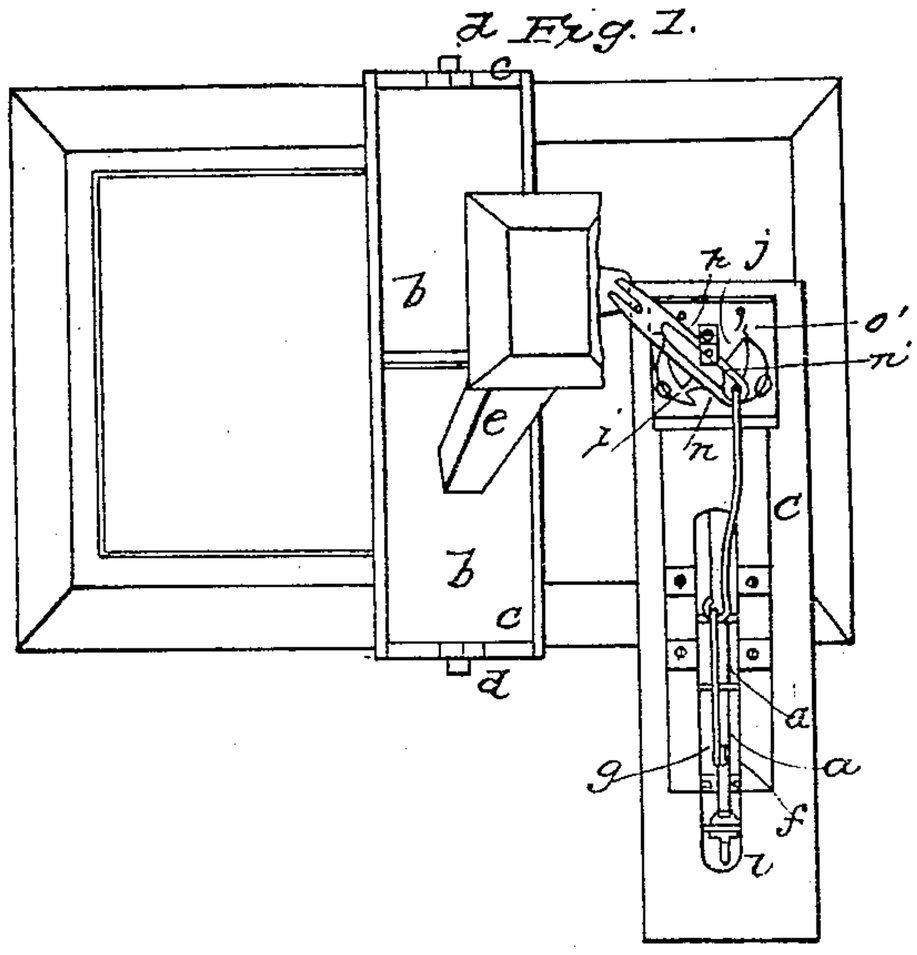


Fig. 2

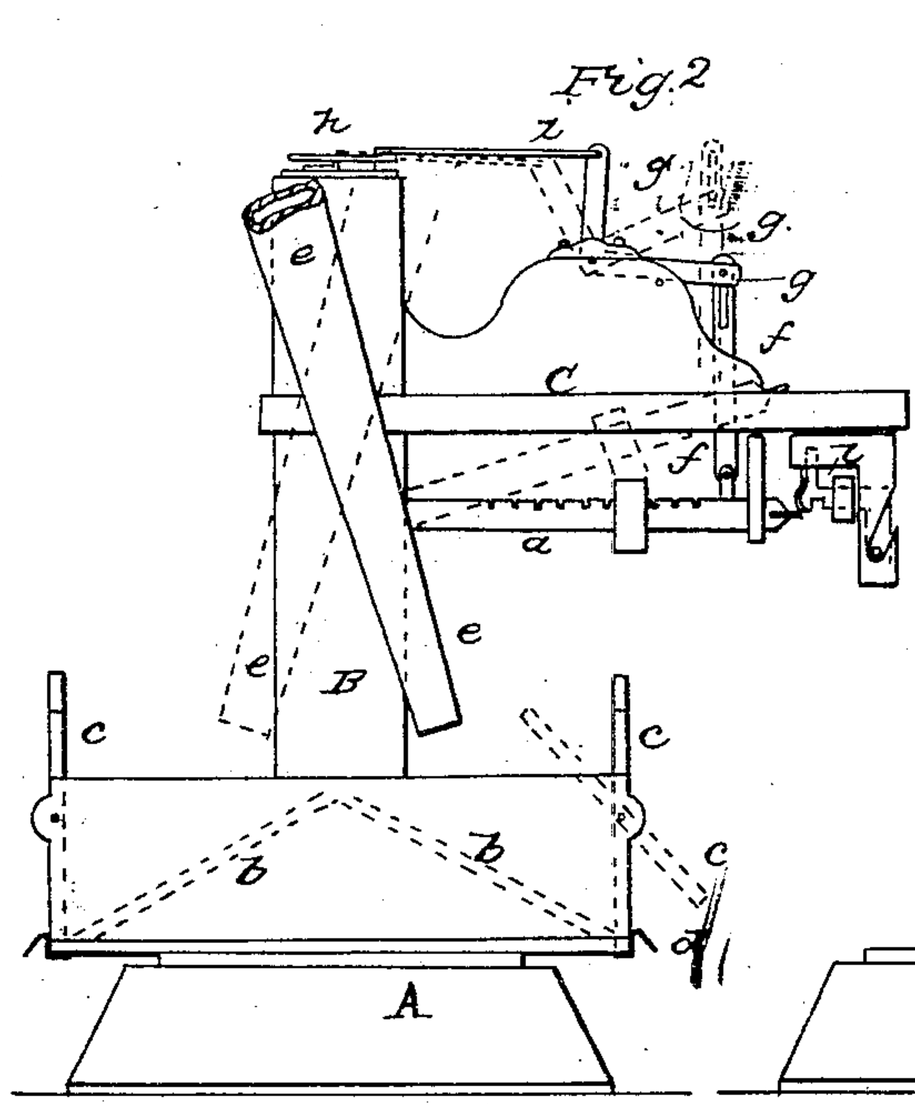
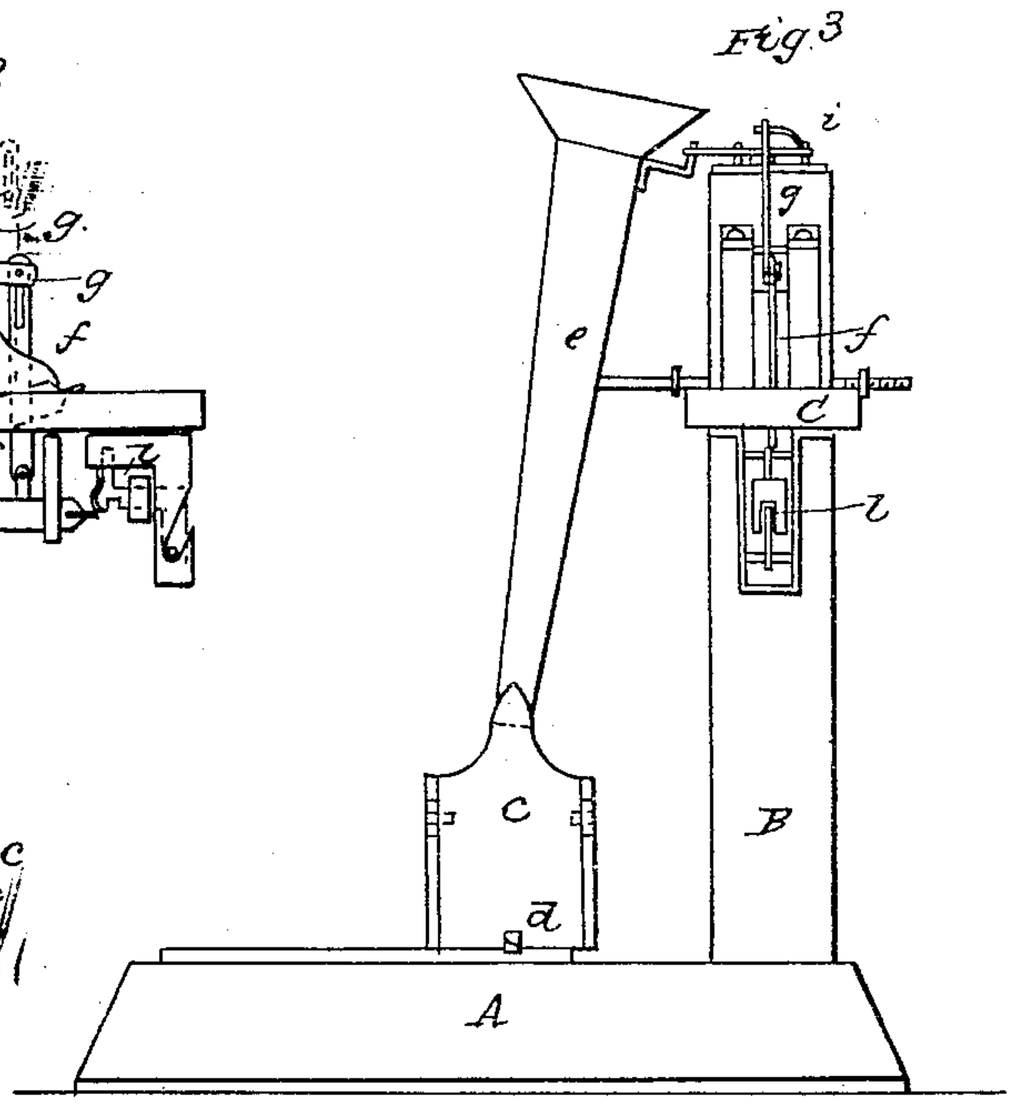


Fig. 3



WITNESSES

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R. S. MORISON, OF BANGOR, MAINE.

IMPROVEMENT IN APPARATUS FOR WEIGHING GRAIN.

Specification forming part of Letters Patent No. **55,691,** dated June 19, 1866.

To all whom it may concern:

Be it known that I, R. S. MORISON, of Bangor, in the county of Penobscot, in the State of Maine, have invented certain new and useful Improvements in Weighing Apparatus; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

In this invention the object is to utilize the movement communicated to a lever or scale-beam, caused by the gravitation of the matter weighed as it balances and overcomes the counterpoise thereof, for the purpose of changing the direction of the current of the matter to be portioned out into equal weights into another receptacle operative on the same lever or scale-beam.

In what the invention consists will be best understood after a description of one of its embodiments. This is shown in the drawings, Figure 1 representing in plan a platform-scale with my invention attached. Fig. 2 shows the same in front elevation, and Fig. 3 represents an end elevation thereof.

The parts A, B, and C represent, respectively, the base, upright post, and horizontal arm of an ordinary platform-scale, and therefore need no description. The lever or scale-beam *a* is connected with the system of levers which in the platform support the weight in the usual manner, and is itself hung or pivoted in a way too well known to call for illustration.

The apparatus shown is one adapted to the weighing of grain or other granular or powdered material, to contain which there is placed on the scale-platform a receptacle of two compartments having bottoms *b b*, inclining from the center to swinging gates *c c*, which make the outer ends of the compartments, these ends extending over the base of the scale, so as to discharge the contents of the compartments when the gates *c c* are open clear of the base, to which bags may be hung under the gates, if desirable. The gates are kept from opening by accident or by pressure from within by the spring-latches *d*. Over the receptacle described is hung a chute, *e*, which at each rising of the scale-beam is caused to vibrate, so that its delivery end is alternately over each compartment, while its upper or receiving end is so flared as always to be beneath the spout or stream of grain or other matter which is descending to be weighed.

I will now proceed to describe a mechanism by which the movement of the scale-beam and the momentum it acquires in rising as the matter in one of the compartments counterbalances the beam and its attachments operates to change the position of chute *e*. The link *f* is pivoted to the beam *a*, and at its upper end, where it connects with the bent lever *g*, is slotted, so as to allow the beam *a* considerable movement, in which it acquires momentum before the lower end of the slot acts on lever *g* to move it. The beam *a*, link *f*, and bent lever *g* are shown in their normal positions in Fig. 2 in black lines, and in the position which they assume consequent on the overcoming the resistance of the beam in red lines.

On the top of post B a horizontal lever, *h*, is pivoted near its center, one end of said lever being connected with the chute. This lever *h* has a long slot extending nearly equal distances each way lengthwise from its pivots, in which slot the end of the link *i* works in a manner hereinafter to be described, the other end of the link *i* being connected to the bent lever *g*, by which it is operated. Suppose the chute *e* to be in the position seen in Fig. 2, ready to discharge into the right-hand compartment, and the lever *h* in the position seen in Fig. 1, with the beam *a* in its normal position. Now, when enough grain or other matter runs into the right-hand compartment to depress the platform and raise the beam *a*, the link *i*, operated by lever *g* from link *f*, changes the position of lever *h* to that shown in Fig. 4, shifting the position of the chute *e*, so that it will deliver into the left-hand compartment. If, now, the right-hand gate *c* be opened, the grain or other matter will run out therefrom and the platform will be elevated by the descent of the beam, which, pulling on the link *i*, causes its end to traverse the slot in lever *h* without changing the position thereof, leaving the parts in the position seen in Fig. 4. The grain or other matter, continuing to run into the left-hand compartment, soon counterbalances the beam and its connections, causing it to rise consequent on the depression of

the platform, this movement acting through the link *i*, shifting the lever *h* from position seen in Fig. 4 to that seen in Fig. 1, and causing the delivery end of the chute to move from left to right. The left-hand gate, being opened, relieves the scale from weight and allows the beam to descend, this causing the end of link *i* to traverse the slot in *h* and to assume the position seen in Fig. 1. Thus the shifting of the chute from one compartment to the other will proceed with regularity so long as matter to be weighed is supplied to and released from the compartments.

I will now describe the details by which, when the lever *h* is vibrated from action of link *i* at one end of the slot, the end of the link moves from one to the other end of the slot in the lever *h* without changing its position.

On the top of the post B, and beneath lever *h*, are located two guiding-projections, which, with four springs operating in conjunction therewith and with the slot in lever *h*, act on the end of link *i*, which projects downward through lever *h*. At each end of the slot in *h* there is a slight enlargement, in which the link *i* operates as in a socket when thrust forward by the rise of the beam to change the position of lever *h*. The purpose of the two springs *n n'* is to lock the end of link *i* in said sockets at the commencement of the thrust on one or the other end of the lever *h*, and to cause the end of the link projecting beneath the lever *h* to move around the curved parts of projections *j j'*, instead of moving along the slot in the lever. The free ends of these springs are inclined or latch shaped to allow the end of link *i* to pass them by springing them back as the link makes its false or return movements through the slot. The springs *o o'* act to start the end of link *i* from the sockets formed in the end of the slot, so that the link shall be free to make its false or return movements with and by the descent of the beam *a*. The pins *k k* act as stops to prevent undue movement of the lever *h*.

To retain the beam *a* in position till nearly the entire weight desired is obtained upon the platform, and then to liberate the beam suddenly, is desirable, in order to obtain sufficient amount of momentum by the movement of the beam to shift the chute.

I will now describe a device which I have employed for said purpose. *l* is a small bent lever pivoted at a point considerably below the place where this lever or beam acts on the main beam *a*, this giving a quick retreating movement to beam *l* when it acts to liberate beam *a*. On the end of *l*, adjacent to *a*, is a light latch-spring, which operates as follows: Suppose beam *a* in the position seen in red lines, Fig. 2, and descending toward its normal position, then the end of *a* strikes upon the latch-spring and easily moves it, passing by it and being then held thereby, so that when once locked in position by the latch-spring the beam *a* cannot be moved upward without vibrating lever *l*. The weight of the lever or beam *l* forms part of the resistance to the depression of the platform of the scale, and in the adjustment of the scale must be considered just as much as the weight of the main beam and its connections. Weights or poises may be applied to either or both of the beams *a* or *l* in any of the well-known manners, and the whole or part of the notation may be read upon either or both of the beams. If, however, the weight is wholly applied to lever *l* and is omitted from beam *a*, the attendant upon the scales would have to take hold of beam *a* to return it to its normal position after each discharge of the matter weighed.

Instead of having the rise of the beam operate to shift the position of the chute, it might be made to shift a belt, which would do the work of changing the position of the chute; or the rise of the beam might be made to work a valve in a chute, or might act as an indicator to other mechanism for accomplishing that or a similar purpose.

My invention in any of the modified forms which it may be made to assume will be found of great practical utility, especially in the weighing of grain where large quantities are handled.

I claim—

1. In combination with a scale-beam, the mechanism operated thereby to control the passage to the scale of material to be weighed, and arranged to operate in the manner shown and described.

2. In combination with a scale-beam, a secondary lever or beam, as set forth, when arranged to suddenly release the scale-beam when the weight received by the scale equals the amount noted on its register, substantially as described.

3. In combination with a scale-beam, a slotted link, as set forth, to permit free motion of the beam to an extent sufficient to secure momentum by which to actuate a controlling mechanism, as described.

4. The arrangement of mechanism for changing the chute, substantially as described.

In witness whereof I have hereunto set my hand this 7th day of February, A. D. 1866.

R. S. MORISON.

Witnesses:

J. B. CROSBY,

F. GOULD.