2 Sheets—Sheet 1.

E. F. DUNAWAY.

Grain Weigher.

No. 51,438. Patented Dec. 12, 1865.

Fig. 1.

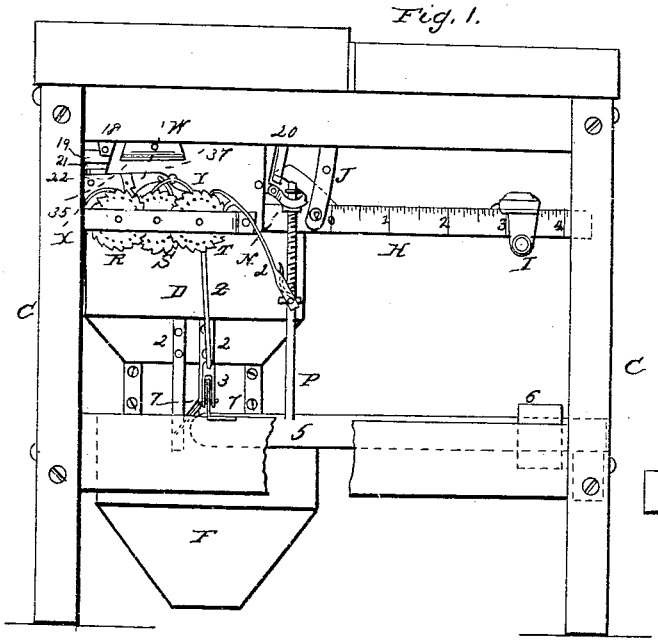


Fig. 5.

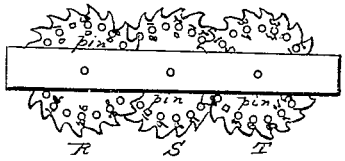


Fig. 3.

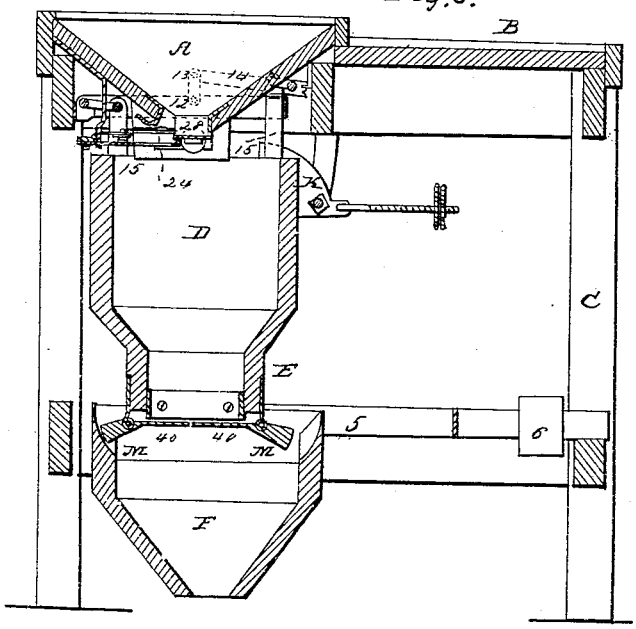
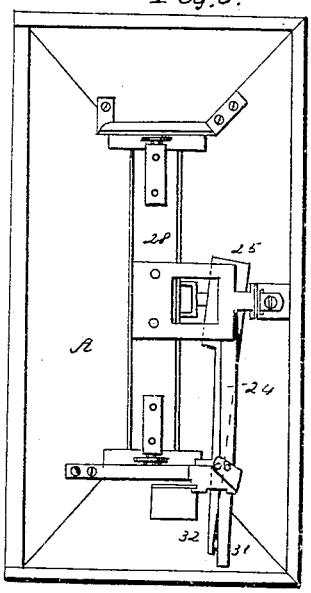


Fig. 6.



Witnesses:
Wm L. Smithmeyer
Lee Mothershead

Inventor
Elijah F. Dunaway
by his Attorney

N. PETERS. Photo-Lithographer. Washington, D. C.

2 Sheets—Sheet 2.

E. F. DUNAWAY.

Grain Weigher.

No. 51,438. Patented Dec. 12, 1865.

Fig. 2.

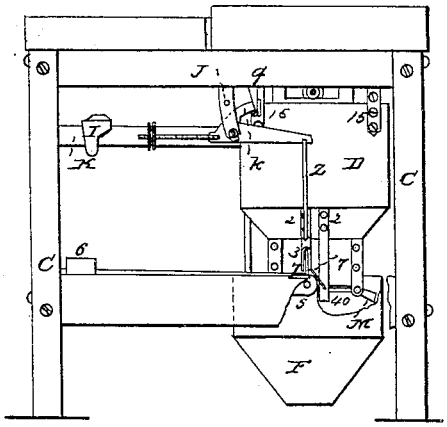


Fig. 4.

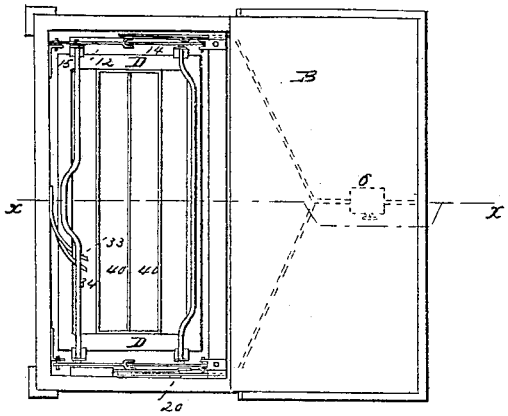


Fig. 7.

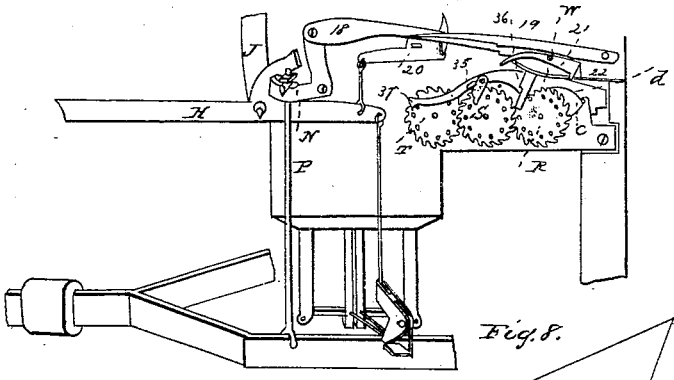


Fig. 9.

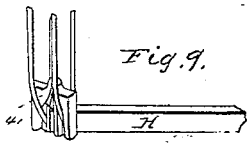
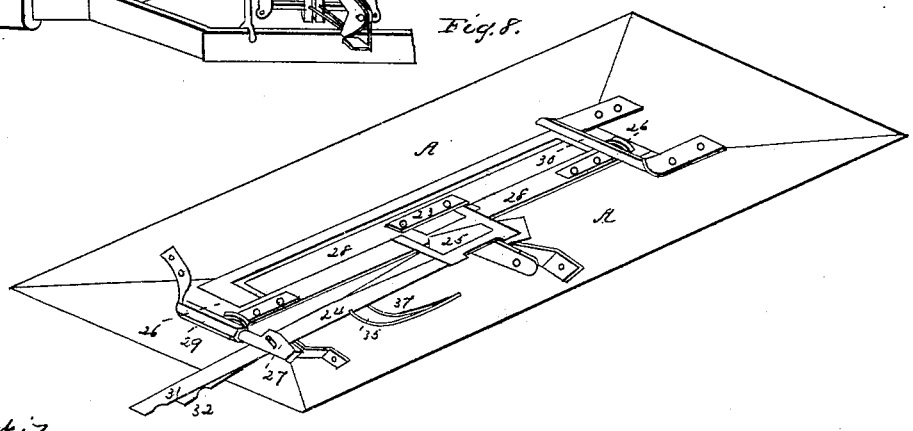


Fig. 8.



Witnesses:
Wm. Armstrong
Lee Mothershead

Inventor:
Elijah F. Dunaway

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

ELIJAH F. DUNAWAY, OF CINCINNATI, OHIO.

IMPROVEMENT IN MACHINES FOR WEIGHING GRAIN.

Specification forming part of Letters Patent No. **51,438**, dated December 12, 1865.

To all whom it may concern:

Be it known that I, ELIJAH F. DUNAWAY, of Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and useful Machine for Weighing Grain, called "Mammoth Grain-Scale;" and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a side elevation taken from the right-hand side of the machine. Fig. 2 is a side elevation taken from the left-hand side of the machine. Fig. 3 is a vertical section taken through the red line *x x* in Fig. 4. Fig. 4 is a plan or top view of the machine with the hopper detached. Fig. 5 is a side elevation of the ratchet index-wheels detached. Fig. 6 is an inverted view of the upper hopper detached. Fig. 7 is a sectional side view. Fig. 8 is an under-side view of the devices of hopper A. Fig. 9 represents the back end of scale-beam H and cut-off weight 41.

The nature of my invention consists in constructing a grain-scale which will automatically weigh grain and register the amount weighed; also, weigh any given or desired amount of grain, and keep its own record.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

I construct a frame, C C C and *c'*, with a plate, B, covering one half of the scale, and a hopper, A, covering the other half. This hopper is provided with an aperture for the grain to pass into the scale-boxes D E. The box E is provided with two apron-flaps, 40 40, which are fastened to the scale-box E by means of pivots, and which turn open when the apron-springs 2 2 are pulled out by means of the rods 7 7, which rods are connected by a lever, 3, and a rod, Z, with rear part of scale-beam H.

When the quantity of grain in the boxes D E is almost equal to the quantity to be weighed the scale-beam H, with its weight I, is raised up and connected with the lever 20, throws the arm 18 up and permits the cut-off 28 to close the large aperture in the hopper A by means of the spring 33. The grain still continues to pass through the small aperture until the quantity to be weighed is equal to the quantity in boxes D E, when the scale-beam H raises the cut-off weight 41, as shown in Fig. 9, and tilts sufficiently to raise arm 19. The springs 33 and 34, impinging against the levers 24 and 25, close the orifices entirely in hopper A. That portion of beam H to which the rod Z is fastened is consequently lowered, and the rod Z is thereby pushed down and turns the lever 3, which pulls out the rods 7 7, and with them the apron-springs 2 2. In this manner it opens the apron-flaps 40 40, and permits the grain to pass from these boxes into the box F. When the boxes D E are emptied the balance-weights M M on each side of the apron-flaps close the flaps again.

When the grain falls into box F it lowers the box and raises the beam 5, with its weight 6. Attached to this beam 5 is the rod P, which passes up and through the arm and lever N, pushing arm 18 forward, catching on the notch 31 on the ends of levers 24 and 25, at the same time pushing up the pawl Q which catches in the notch of the cog or register-wheel T.

When the box F is emptied the weight 6 draws down the beam 5, and with it the hook Q on the rod P, and moves the register-wheel T one cog, thereby operating both levers, 24 and 25, opening the apertures again.

The pawls X Y, being set to 0 at the commencement of weighing, will at any time show the accurate amount of bushels weighed—namely, if a certain amount is to be weighed a pin is to be inserted into the holes of the register-wheels, which indicates the amount to be weighed.

By the revolution of the register-wheel R (with a pin inserted) the check W is moved forward, Figs. 1 and 7, until the first notch, *a*, in the check W falls upon the stationary pin *d* on the plate back of the wheel R, by which means the smaller end of the check W is lowered until the pin in the register-wheel S catches on the drop 35. The revolution of the wheel S draws the check W forward, so that the second notch, *b*, in the check W falls down upon the pin *d*, which lowers the smaller end of the check W until the pin in the register-wheel T catches in the notch 37. The revolution of the wheel T draws the check W forward until the pin *d* enters into the large notch *c* in the heavy end of

the check W. In this way the heavier end of lever 21, resting on check W, drops with it, and, working on a pivot, raises the lighter end of lever 21 up under the arm 18, which it raises, and thereby releases the notch 31 of lever 24, thus closing the large aperture of the hopper A completely.

When the register-wheel T makes one revolution the stationary-pin (see Fig. 5) on the inside of the said wheel catches in the cogs of the wheel S and moves one cog on that wheel. The same operation takes place between the wheels S and R.

If the amount to be weighed is contained in the register-wheel S, the check W is to be placed in the first notch, *a*, resting on a pin, *d*, back of the wheel R. If the amount to be weighed is contained in the wheel T, the check W must be set to rest on the second notch, *b*, on the said pin *d*.

The scale-beam H is provided with an arm, K, which arm works into a slotted lever, 9, and as the scale-beam is elevated the rod Z on the rods 7 7 and springs 2 2 are operated upon.

The lever 12 has a V-shaped pivot on the end, connecting with the slotted pivot 9, and rests on the other end on a sharp pivot on the frame. The box D is fastened to this lever by means of the brace 15.

13 is a connecting-rod, which connects the lever 12 with the short lever 14. The brace 15 extends from the box D to this lever 14. From levers 14 and 12 connecting-rods run across to the corresponding levers to steady the operation of the machine.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the scale-boxes D and E with the rods 7 7, working the apron-springs 2 2, and the upright rod Z, connecting with the extension of the scale-beam H, when arranged as herein described, and for the purpose set forth.

2. The arrangement and combination of the register-wheels R S T, with their pins operating each other, check W, and springs X and Y, as herein described, and for the purpose set forth.

3. The combination of the rod P, pawl Q, and arm N, when arranged as herein described, and for the purpose set forth.

ELIJAH F. DUNAWAY.

Witnesses:
JNO. L. SMITHMYER,
LEE MOTHERSHEAD.