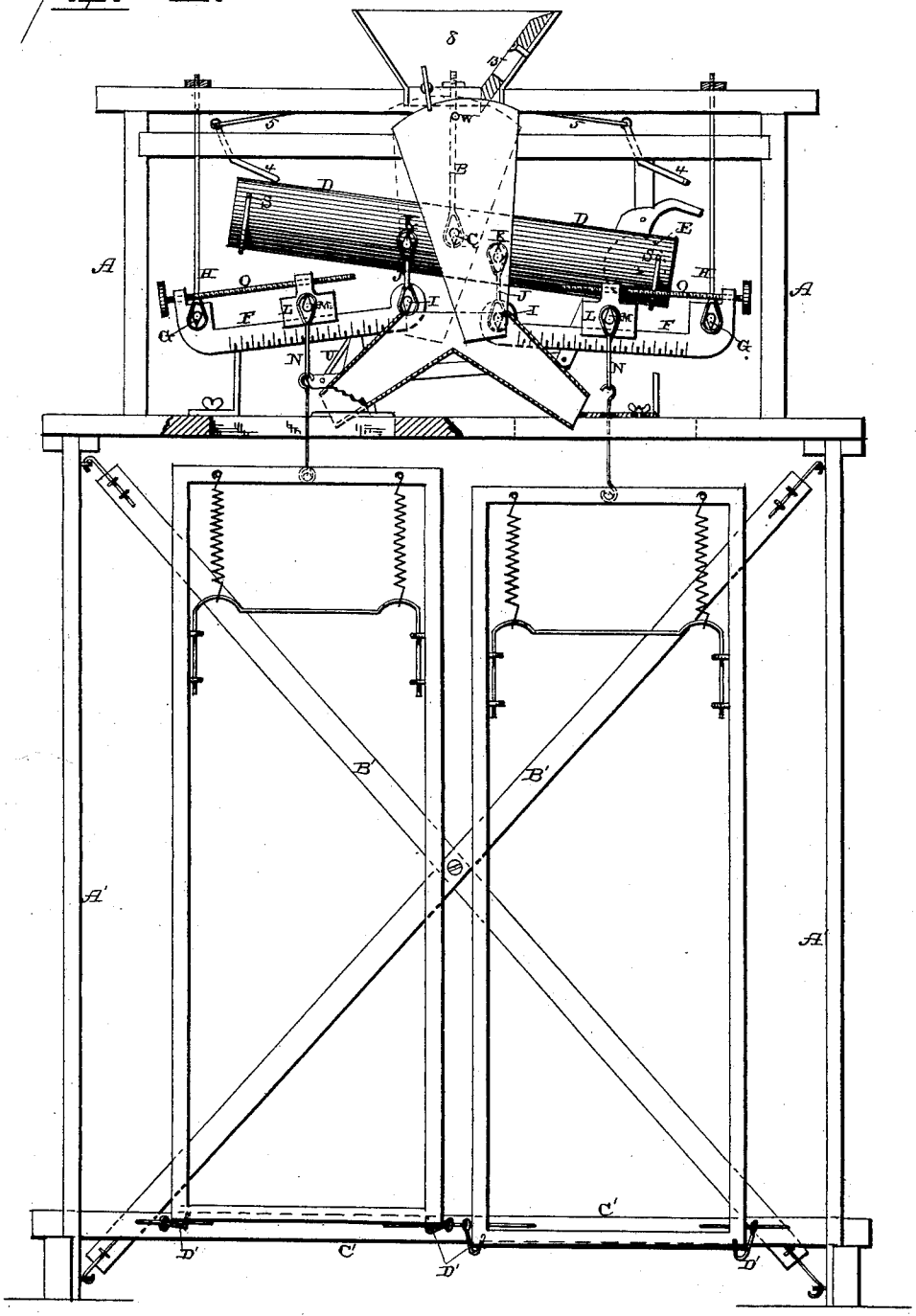
(No Model.) 2 Sheets—Sheet 1.

F. M. GLADISH.

AUTOMATIC GRAIN WEIGHING MACHINE.

No. 364,407. Patented June 7, 1887.

Fig. 1.



Witnesses.
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A. W. Brecht

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F. M. Gladish,
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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

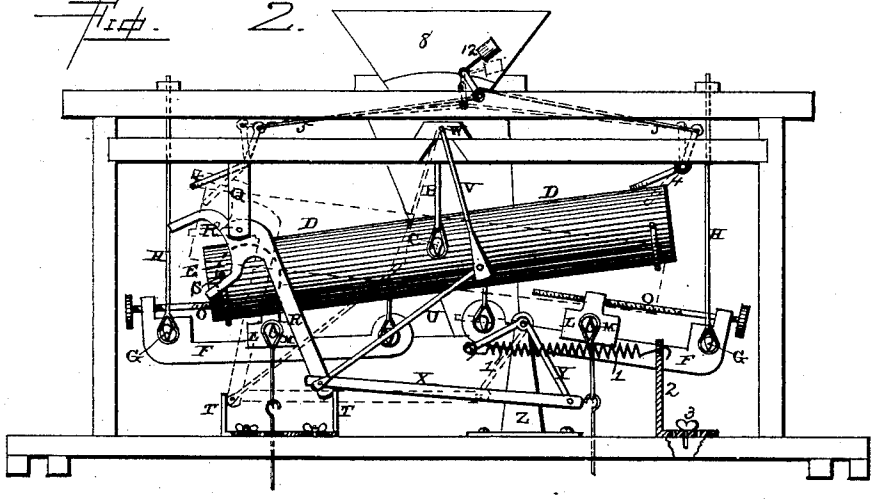


Fig. 3.

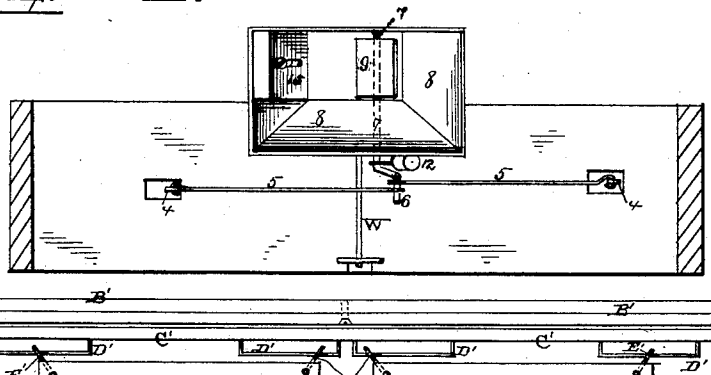
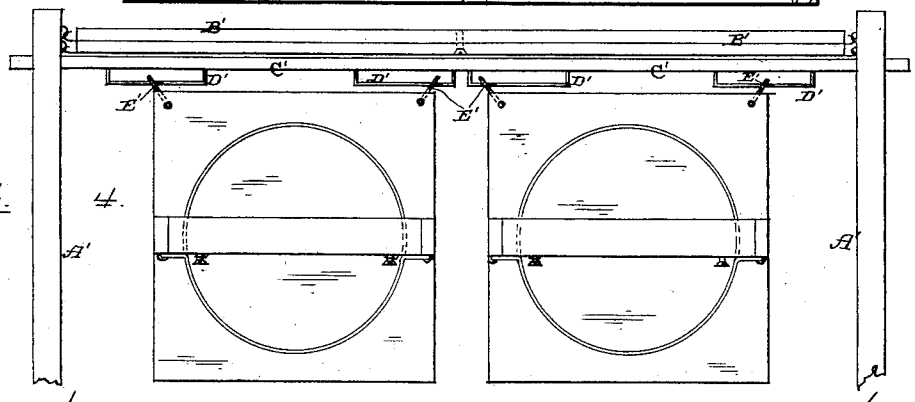


Fig. 4.



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UNITED STATES PATENT OFFICE.

FRANCIS M. GLADISH, OF AULLVILLE, MISSOURI.

AUTOMATIC GRAIN-WEIGHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 364,407, dated June 7, 1887.

Application filed November 24, 1886. Serial No. 219,822. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS M. GLADISH, of Aullville, in the county of Lafayette and State of Missouri, have invented certain new and useful Improvements in Automatic Weighing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in automatic weighing-machines; and it consists in, first, the combination of a tube in which a rolling weight is placed, the two scale-beams, which are connected at their inner ends to this tube upon opposite sides of its center, and the adjustable slides or carriages, to which the bag-holders are attached; second, the combination of the pivoted tube in which the rolling weight is placed and which is provided with projections upon its ends, the pronged lever, connecting-rods, shaft, and shifting funnel which is connected to the shaft; third, the two cranks which are alternately operated by the tube in which the rolling weight is placed, the connecting-rod, the weight, and the valve, which is placed in the bottom of the hopper; fourth, in the arrangement and combination of devices, which will be more fully described hereinafter.

The object of my invention is to provide a machine for automatically weighing material of any kind, which is to be placed in sacks or bags, and in which the parts are automatically made to operate by the weight of the material which flows into the bags, leaving the operator nothing to do, except to remove the filled bags or sacks and replace them with empty ones, and in which the counterpoise is always the same distance from the fulcrum, and the heft of the material being weighed is adjusted upon the beam to give the desired weight.

Figure 1 is a side elevation of a machine embodying my invention complete, a portion of the frame-work being removed. Fig. 2 is a view of the operating mechanism alone, taken from the opposite side which is shown in Fig. 1. Fig. 3 is a plan view. Fig. 4 is a detail view.

A represents a suitable frame-work at the top of the machine, and in which the operating mechanism is placed. Suspended from the center of this frame-work, by means of the hanger B, is the tube D, which is provided with knife-edged bearings C. Inside of this tube D is placed a rolling weight, E, which rolls from one end of the tube to the other, from time to time, and thus causes the tube to tilt upon its bearings in the usual manner. Secured to this tube, upon opposite sides of its center, are the knife-edge bearings K, upon which the loops J are made to catch, the lower ends of the loops J being made to catch under the knife-edge bearings I upon the inner ends of the scale-beams F. The outer ends of the scale-beams F are supported upon the rigid hangers which project downward from the top of the frame A. These outer ends of the scale-beams have no movement, except a slight turning movement upon the knife-edge bearings G in the hangers H. The inner ends of the beams have a rising and falling movement, being connected to the tube D upon opposite sides of its center. When one end of the tube tilts downward, the scale-beam connected to that end descends, while the inner end of the other beam is raised upward. Upon each one of these scale-beams F is placed an adjustable slide or carriage, L, which is provided with knife-edge bearings M for the hangers N to catch upon. To the hangers N are connected the connecting-rods, which pass through slots in the bottom of the frame, and to which the sack-holders are fastened. These adjustable carriages are adjusted back and forth upon the scale-beams F, preferably by means of the screw-rods O, as shown; or the slides may be moved by hand, and secured at any desired point upon the beams by means of set-screws, or the top edge of the beam provided with notches and the slide with corresponding projections to fit in the notches upon the beam.

The amount which is to be placed in the bags or sacks is first determined, and then the slides or cariages to which the bag-holders are attached are moved upon the beams F accordingly. The bag-holders here shown are the same in a patent heretofore granted to me, with the exception of the adjustable slide or carriage to which the bag-holder is attached, and therefore need not be more fully described

here. I do not, however, limit myself to the use of any particular scale or bag-holder, for these may be varied at will without departing from the spirit of my invention.

Upon each end of the tube D are placed projections S, which extend horizontally outward to any suitable distance, and which serve to shift the funnel from the mouth of one bag to the other from time to time, according to the movements of the tube. At one end of the tube, in suitable bearings, Q, is pivoted the lever R, which is made pronged at its upper end, and which has the length of movement of its lower end controlled by the adjustable stops T T, which are placed in the lower part of the frame A. When the tube D has its end tilted upward, the projection at this end strikes one of the prongs of the lever R and shifts it from the position shown in Fig. 1 to that shown in Fig. 2 in dotted lines. Connected to the lower end of this lever R is a connecting-rod, U, and connected to the opposite end of the rod U is the lever V, which is connected at its upper end to the shaft W, which extends across the top of the frame-work and is connected to the shifting funnel under the hopper. When the lever R is moved from one position to the other, it shifts the lower end of the movable funnel from the mouth of one sack to the other, so as to at once stop the flow of material into one bag and begin the filling of another. The funnel and the lever V are always moved at the same time and in the same direction, and thus are always parallel with each other; also connected to the lower end of the lever R is a connecting-rod, X, which is fastened at its other end to the crank-lever Y, which is pivoted upon the support or standard Z. Connected to the upper end of this crank Y is a spring, 1, which has its other end fastened to an adjustable upright, 2, which is held in position by a set-screw, 3. This upright is made adjustable back and forth on the frame A, so as to increase or decrease the tension of the spring 1. The tension of this spring keeps a pull exerted upon the lever R through the connecting-rod X, so as to hold it in the position into which it has been shifted by the movement of the tube D. When the weight rolls down to that end of the tube next to the lever R, the projection S strikes the lower prong of the lever R, and the lower end of the lever is forced backward.

The lever Y is made to turn upon its pivot by the rod X until the center of its movement has been passed, and then the spring 1 exerts a pull upon the crank Y, so as to hold it and the lever in position. When the weight rolls to the other end of the tube and the tube has that end next to the lever R raised upward, the projection S strikes the upper prong of the lever R and forces the lever into the position shown in dotted lines. The crank Y is made to turn upon its pivots as the lever R is moved, and then the spring 1 exerts its tension in holding the lever R in position, as shown in dotted lines in Fig. 2.

Pivoted inside of the frame at its top, and having their upper ends to project through slots in the top of the frame, are the two cranks 4, which extend and move in the same direction, and which are connected at their upper ends by the connecting-rods 5. Connected to these connecting-rods is a crank, 6, which is formed upon one end of the shaft 7, which passes through the side of the hopper 8, and to which the valve 9 in the lower portion of the hopper is connected. Attached to the crank 6 is a weight, 12, which is placed at such an angle that it always has a tendency to return the valve to its proper position after having been moved. This valve is placed in the lower portion of the hopper, for the purpose of cutting off the flow of material, through the shifting funnel, to a minimum at the close of each operation. An adjustable slide, 15, is placed in the opposite side of the hopper from that of the valve, for the purpose of increasing or diminishing the opening in the bottom of the hopper and thereby regulating the flow of the material through the hopper into the shifting funnel, as may be desired. When the tube D flies up at the other end, it strikes against the crank 4, and, by moving this crank and the connecting-rod 5, shifts the valve 9 in the hopper. As soon as the valve is left free to move it is returned to position by means of the weight 12, which is connected to the crank 6. By the use of this valve 9 the flow of the grain is not cut off entirely, but is simply reduced to a uniform volume at the time of weighing as the bag becomes full. The tendency of the weight 12 is to tilt the valve up on edge and thus open the mouth of the hopper, while the tendency of the tube D, pressing up against the crank 4, is to force the weight up and the valve back until the mouth of the hopper is closed again.

The entire operation of the machine above described is effected by the heft of the material being weighed upon the beams and the rolling weight E, which is placed inside the tube D. As soon as the regulated quantity of material has run into one of the bags its weight, acting upon one of the scale-beams F, causes the tube D to tilt upon its bearing C, when the weight E rolls from one end of the tube to the other, causing the depressed end of the tube to rise upward and the higher end to be depressed. The dropping of this beam F and the movement of the tube D cause the shifting funnel and the valve to be instantly moved, so as to diminish the flow of material into the bag which has just been filled, and turn it into the empty one. The entire operation of the machine being automatic, there is nothing for the operator to do but remove the filled bags and replace them with empty ones.

The frame-work A, in which the operating mechanism is placed, is supported by means of a portable trestle-work consisting of the up-

rights A′, which are connected together by means of the braces B′. The braces B′ are provided at their upper and lower ends with suitable hooks, which catch in eyes upon the upper and lower ends of the uprights A′. Connected to the lower ends of the braces B′ is the rod or bar C′, having loops D′. Sliding in these loops D′ are the connecting links or rods E′, which are connected to the lower end of the bag-holders. The object of this bar C′, having loops and the connecting links or rods, is for the purpose of steadying the lower ends of the bag-holders. These loops allow the bag-holders to be moved sidewise when adjusting the sliding carriage L upon the beams. Were no means provided for steadying the lower ends of the bag-holders, and they allowed to vibrate from any cause, the vibration would cause a movement of the tube D through the scale-beams, and be liable to affect the accuracy of the scales.

In case this weighing-machine above described is to be used in the field where thrashing is being done, the frame-work A may be taken from the standards A′ and suspended upon the side of the thrashing-machine, or any other suitable support of that nature. It is not necessary that the machine should always be placed upon the standards A′, for the upper portion of the machine may be used independently of them.

Having thus described my invention, I claim—

1. The combination of the tilting tube, the rolling weight placed therein, the scale-beams supported upon stationary bearings at their outer ends and connected at their inner ends to the opposite sides of the center of the tube, and the adjustable slide or carriage upon the beams, to which the bag-holders are attached, substantially as shown.

2. The combination of the tilting tube provided with projections upon its ends, the rolling weight placed in the tube, the pronged lever R, connecting-rod, lever V, shaft W, and tilting funnel, substantially as described.

3. The combination of the tilting tube, provided with projections upon its ends, the lever R, rod U, shaft W, the tilting funnel, and a spring-actuated mechanism, substantially as shown, for holding the lever R in any position into which it may be moved, substantially as set forth.

4. The combination of the tilting tube, the weight placed therein, the crank 4, connecting-rod 5, crank 6, shaft 7, valve 9, hopper 8, and weight connected to the crank, substantially as specified.

5. The combination of the tilting tube provided with a projection upon its end, the weight placed in the tube, the lever R, provided with projections at its upper end, rod U, lever V, shifting funnel, and the stops T, for regulating the amount of movement at the lower end of the lever R, substantially as shown.

6. The combination of the uprights A′, upon which the frame-work A is placed, the braces B′, rod or bar C′, provided with loops, the connecting links or rods sliding in the loops and connected to the lower ends of the bag-holders, and the bag-holders, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

FRANCIS M. GLADISH.

Witnesses:
C. C. CATRON,
F. C. T. BRIGHTWELL.