

No. 652,087.

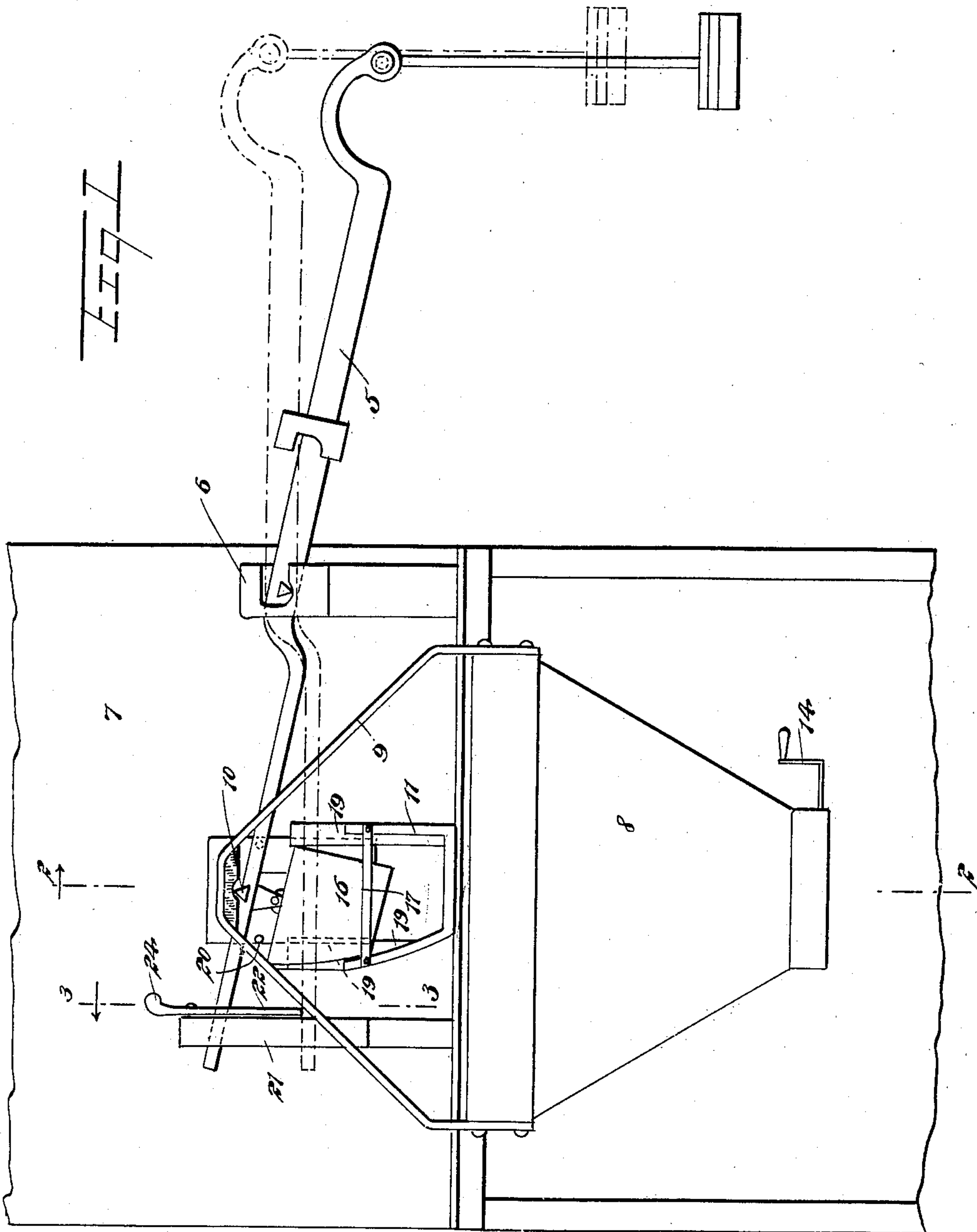
Patented June 19, 1900.

E. W. COLLINS.
WEIGHING MACHINE.

(Application filed July 15, 1899.)

(No. Model.)

2 Sheets—Sheet 1.



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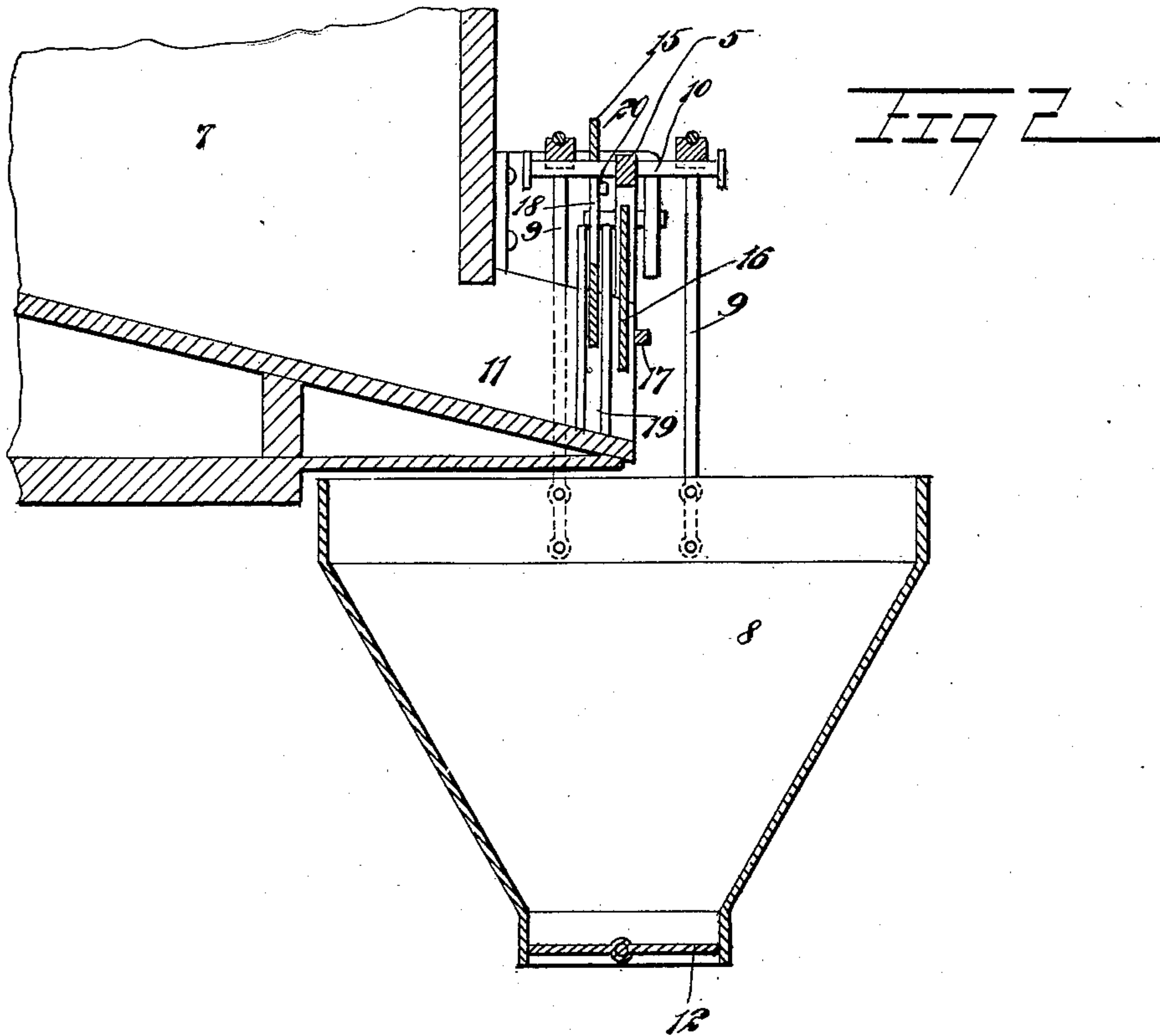


Fig 3

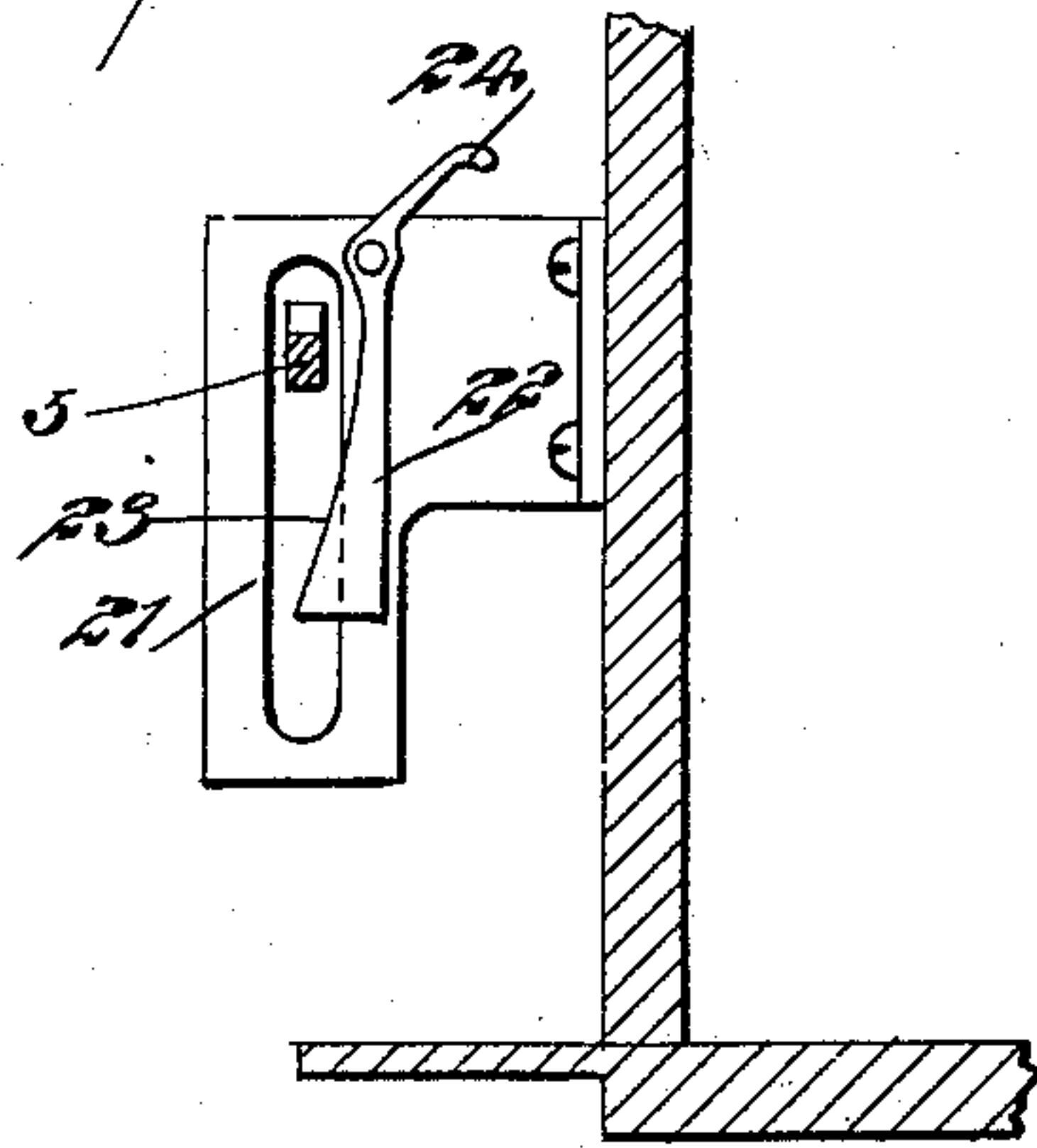
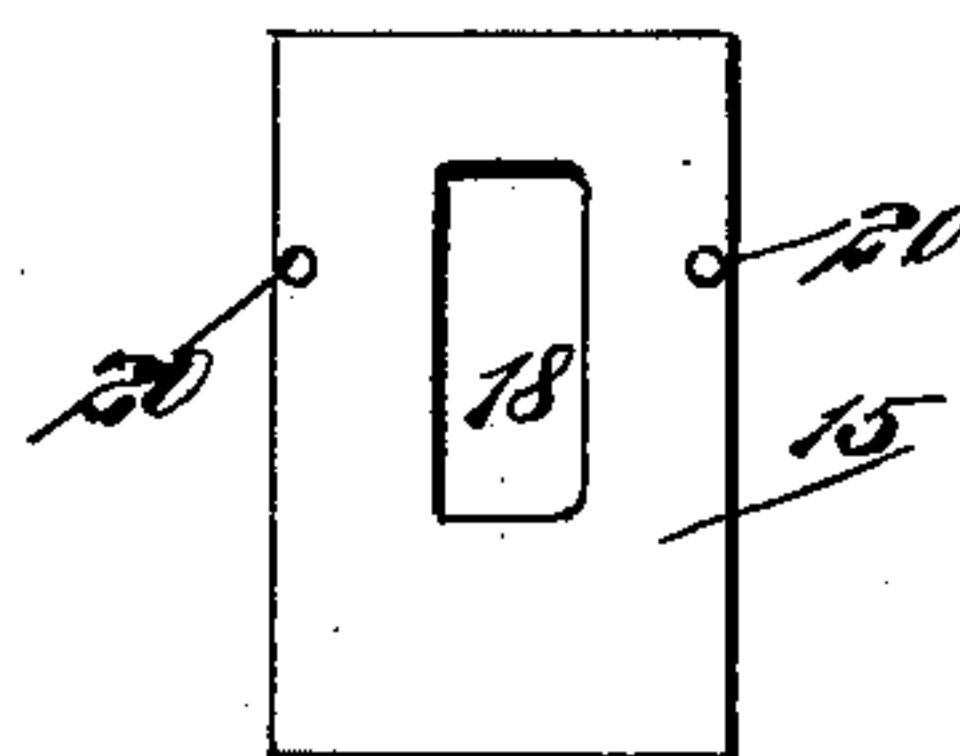


Fig 4



WITNESSES:

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UNITED STATES PATENT OFFICE.

EDWARD W. COLLINS, OF COALVILLE, IOWA.

WEIGHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 652,087, dated June 19, 1900.

Application filed July 15, 1899. Serial No. 723,884. (No model.)

To all whom it may concern:

Be it known that I, EDWARD W. COLLINS, of Coalville, in the county of Webster and State of Iowa, have invented a new and Improved Weighing-Machine, of which the following is a full, clear, and exact description.

The purpose of this invention is to provide means for controlling the feed of granular material to weighing-machines; and to this end the invention comprises certain novel valve mechanisms for accurately cutting off the supply of the material to be weighed.

This specification is the disclosure of one form of my invention, while the claims define the actual scope thereof.

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

Figure 1 is a side elevation of the invention. Fig. 2 is a section on the line 2 2 of Fig. 1. Fig. 3 is a detail section on the line 3 3 of Fig. 1, and Fig. 4 is a face view of the auxiliary valve to be hereinafter fully described.

The invention is applied to a weighing apparatus in which the scale-beam, graduated in the usual manner, is mounted on a bracket 6, carried by the hopper 7, in which the material to be weighed is stored, and the receptacle or pan 8 of the scale is provided with two slings 9, suspended on a knife-edge 10, carried by and transversely of the scale-beam. The receptacle or pan 8 is mounted directly below a spout 11, which forms part of the hopper 7 and serves to discharge the grain into the pan. The bottom of the pan 8 has a closure 12, provided with an arm 14 for permitting the operation thereof, by means of which closure the pan 8 may be dumped.

Now for the purpose of accurately and reliably controlling the discharge of the material to be weighed from the spout 11 I provide a plate 15, forming an auxiliary valve, and a plate 16, forming a main valve. The plate 16 is mounted rigidly on the scale-beam 5, directly adjacent to the knife-edge 10, and this plate slides with the swinging scale-beam in the outer portion of the spout 11. The left-hand wall of the spout 11 (see Fig. 1) is curved in an arc concentric with the center of movement of the scale-beam, and the ad-

jacent edge of the valve or plate 16 is similarly curved, thus insuring a true engagement of the plate 16 with the walls of the spout during the closing movement of the valve 16 and during the time when the valve is actually in closed position. For guiding the valve or plate 16 any suitable means may be provided—for example, the bar 17, extending across the mouth of the spout, at the upper portion thereof.

The auxiliary valve formed by the plate 15 has a vertically-elongated slot 18 formed therein, through which passes the knife-edge 10. This plate 15 moves vertically at the sides of the spout 11, and for limiting the downward movement of the plate 15 I provide the plate with two forwardly-disposed projections 20, which are so arranged as respectively to bear, as the plate 15 descends, on the upper ends of guides 19 on the spout 11, thus arresting the movement of the plate and causing it to stand with its lower edge slightly raised above the bottom of the spout 11. The main valve 16 completely closes the spout; but the auxiliary valve 15 serves simply to cut off the major portion of the supply of material to be weighed, thus relieving the valve 16 of excessive lateral pressure and permitting it to be operated with entire accuracy. The slot 18 in the valve 15 permits the continued descent of the knife-edge of the beam 5, notwithstanding that the valve 15 may be held from further downward movement by the guides 19. For the purpose of holding the scale-beam with its attached parts in the position indicated in dotted lines in Fig. 1, which is, to say, the overweighted position, I provide the vertically-slotted guide-plate 21, supported on the hopper 7 and having the rear end of the beam 5 projected there-through. Mounted on the guide-plate 21 is a gravity-catch 22, with an inclined edge 23 and a finger-piece 24. As the beam 5 drops to the position shown in Fig. 3 it engages the edge 23, and thus passes the catch 22; but the catch swinging back to normal position prevents the return of the scale-beam until the catch is manually released through the medium of the finger-piece 24.

In the operation of my invention the pan 8 being light and the closure 12 thereof being shut the parts will assume the position shown

by full lines in Fig. 1, thus permitting the grain to pass from the spout into the pan. Then as the pan becomes weighted it drops, carrying with it the beam 5 and gradually closing the valves 15 and 16. When the projections 20 of the valve 15 engage the guides 19, further movement of the valve 15 will be arrested and the major portion of the supply to the scale-pan will be cut off. Then the scale-pan being supplied with nearly sufficient material to balance the beam 5 the valve 16 will continue to descend and will finally cut off completely the supply of the material. It will be observed that by this arrangement of main and auxiliary valves I provide very simple mechanism for regulating the supply to the scale-pan and that this mechanism must be thoroughly effective in its action.

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

1. In a valve mechanism for weighing apparatus, the combination with the scale-beam of a main and an auxiliary valve hung thereon and actuated by the movements thereof, the auxiliary valve serving to cut off the major portion of the material to be weighed, and the main valve subsequently serving to completely cut off the supply of such material.

2. In a weighing apparatus, the combination with a feed-spout and with a scale-beam supported adjacent thereto, of a main valve attached rigidly to the scale-beam and moving therewith completely to close the spout, and an auxiliary valve having sliding connection with the scale-beam and serving partly to close the spout, the auxiliary valve being arranged to operate before the final operation of the main valve.

3. In a weighing apparatus, the combination with the feed-spout and with the scale-beam supported adjacent thereto, of a main valve rigidly connected to and moving with the scale-beam to completely close the spout,

and an auxiliary valve mounted in guides carried by the spout and having a vertically-elongated slot receiving a portion of the scale-beam, the auxiliary valve being controlled by the scale-beam and serving to cut off a portion of the feed of the material to be weighed, the auxiliary valve being arranged to operate previous to the final operation of the main valve.

4. In a weighing apparatus, the combination with a feed-spout and with a scale-beam and pan, the pan being hung from the beam, of guides mounted on the spout, an auxiliary valve moving in the guides and serving partly to close the spout, the auxiliary valve having a vertically-elongated slot receiving a portion of the scale-beam, and a main valve attached rigidly to the scale-beam and working in the spout to completely close the same, the final operation of the main valve being subsequent to the operation of the auxiliary valve.

5. In valve mechanism for weighing apparatus, the combination with the scale-beam, of two valves hung from and supported by the scale-beam, when in open position the valves moving with the scale-beam and one of the valves having independent movement on the beam, for the purpose specified.

6. In valve mechanism for weighing apparatus, the combination with a part connected directly with the weighing apparatus to move in time therewith, of two valves supported by such part when the valves are in open position, the valves moving bodily with said part as the scale operates by which movement the valves are carried to closed position, one of the valves having independent movement on the said part of the weighing apparatus, for the purpose specified.

EDWARD W. COLLINS.

Witnesses:

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