

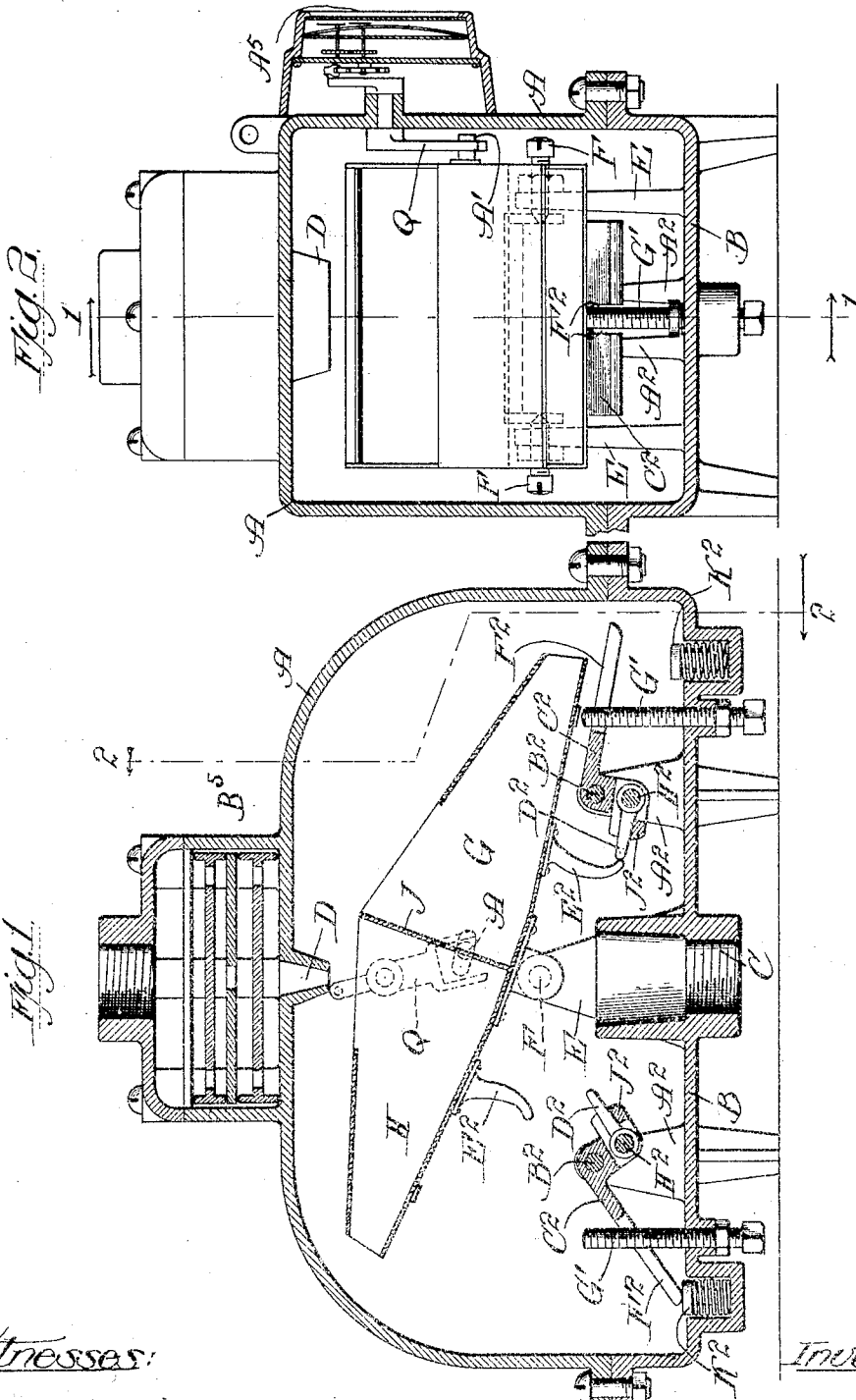
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W. H. PEARCE.

TIP TANK WEIGHING MACHINE OR METER.

APPLICATION FILED MAY 5, 1904.



*Witnesses:*

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# UNITED STATES PATENT OFFICE.

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## TIP-TANK WEIGHING-MACHINE OR METER.

SPECIFICATION forming part of Letters Patent No. 778,887, dated January 3, 1905.

Application filed May 5, 1904. Serial No. 206,428.

*To all whom it may concern:*

Be it known that I, WILLIAM H. PEARCE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Tip-Tank Weighing-Machine or Meter, of which the following is a specification.

This invention relates to tip-tank weighing-machines or meters, and is designed as an improvement upon the construction of apparatus of this nature as shown, described, and claimed in my pending application, Serial No. 166,397, filed July 20, 1903.

The object of the invention is to simplify and improve the construction of apparatus of this nature and to render the same more efficient in operation.

A further object of the invention is to provide means, actuated by the spill of the material being measured from the tip-tank, for cushioning the tipping movements of the tank.

A further object of the invention is to provide efficient means for cushioning the tipping movements of the tip-tank.

A further object of the invention is to provide automatically-operating cushioning devices for cushioning the tip-tank employed in connection with weighing-machines or meters of the class referred to.

Other objects of the invention will appear more fully hereinafter.

The invention consists, substantially, in the construction, combination, location, and arrangement of parts all as will be more fully hereinafter set forth, as shown in the accompanying drawings, and finally pointed out in the appended claims.

Referring to the accompanying drawings, and to both views and reference-signs appearing thereon, Figure 1 is a view in central section on the line 1 1, Fig. 2, looking in the direction of the arrows, of a tip-tank weighing-machine or meter embodying the principles of my invention. Fig. 2 is a transverse section of the same on the line 2 2 of Fig. 1 looking in the direction of the arrows.

The same part is designated by the same reference-sign wherever it occurs throughout both views.

In my pending application above referred

to I have disclosed a construction of meter or weighing-machine of the class to which my invention relates comprising a casing composed of the two parts A and B, suitably bolted or otherwise secured together, with an opening, 55 the part B having an opening C formed centrally therethrough, constituting the discharge-opening of the casing, while centrally of the part A of the casing is formed an opening D, constituting the supply-opening for 60 the admission of the material to be weighed or measured. The tipping tank or weighing-pan is disclosed as including compartments G and H, separated by a separate partition-plate J, said tank or pan being supported 65 upon the ends of pivot-screws F, which are arranged to be tapped through standards E, formed on or carried by the part B of the casing. It is described in said pending application that the bearing-standards E and 70 pivot-studs F and partition-plate J of the weighing-pan are so relatively arranged as to be included in the same vertical plane when the pan stands in exactly balanced position; but when the pan is tipped or rocked in one 75 direction or the other one or the other of the compartments G or H is brought into position to receive the material through the inlet-opening D of the part A of the casing, while the other of the compartments G H is tilted 80 to discharge the contents thereof into the chamber formed by parts A and B of the casing, so as to permit the same to escape from such chamber through the central discharge-opening C. The material to be weighed or 85 measured may be supplied in any convenient manner. In order to secure an even and steady distribution thereof, I have indicated at B<sup>a</sup> an arrangement of plates and screen through and over which the water or other material is 90 supplied. A counter A<sup>s</sup>, comprising a train of registering-gearing, is also disclosed in said application, and actuated by the tipping movements of the weighing-pan for registering such tipping movements, said train of gear- 95 ing being actuated by the crank Q, pivotally mounted upon the casing and having the forked end thereof arranged to receive therein a pin or stud A', carried by the tipping pan. In order to adjustably regulate the extent of 100

tipping movement of the pan, adjustable screws  $G'$  are tapped through the base part B of the casing and are adjustable from the outside, whereby said screws may be set to limit the extent of rocking or swinging movement of the tipping pans, as may be desired.

The parts so far described and referred to are substantially duplicated in the present application and in the specific details of the construction and arrangement thereof are not claimed in the present application.

In the practical operation of a tip-tank weighing device or meter embodying the construction above referred to it is desirable to provide means for preventing undue shock or jar as the tipping pan completes its tipping movement, so as to carry the partition-plate J from one side to the other of the line of delivery of the material and so as to discharge the contents of one of the pans G H into the chamber or casing A B, and it is to the accomplishment of this purpose that the present invention is specially directed. In accomplishing the desired result I propose to employ the tipping movement of the pan and also the spill of the material delivered from the pan. Many specifically-different constructions may be devised for carrying this idea into practical operation. While, therefore, I have shown and will now describe one construction and arrangement of parts, I do not desire to be limited or restricted thereto. In the form shown on each side of the casing I provide suitable standards  $A^2$ , upon which are pivotally mounted, as at  $B^2$ , plates  $C^2$ , said plates being of considerable width, as seen in Fig. 2, and having the outer or free edges arranged to project or extend somewhat beyond the open or discharge ends of the tank-compartments G H, respectively, as clearly shown in Fig. 1. Suitably connected to the rocking-plates  $C^2$  are extensions  $D^2$  on the opposite sides of the pivots of said plates  $C^2$  and arranged to co-operate with fingers or projections  $E^2$ , connected to or carried by the tip-tank. If desired and in order to accommodate the adjustable limit-screws  $G'$ , the plates  $C^2$  may be provided with a slot  $F^2$  therein, as clearly shown. In practice the plates  $C^2$  are in the form of angle-plates, the line of hinging axis thereof being at their angles, thereby, in effect, constituting a bell-crank, and the extensions  $D^2$  are connected to the short arm thereof, but are pivoted to such short arm, as at  $H^2$ , in such manner as to permit of slight relative rocking movement, a supporting-ledge  $J^2$  limiting the downward rocking movement of said extensions.

The operation is as follows: When a compartment G or H of the tipping tank becomes filled to the desired extent to effect a rocking movement of such tank, said tank begins to tip or rock upon the line of axis of its pivot-screws F and in a direction determined by the particular compartment which is filled,

thereby causing the unfilled compartment to be brought into position under the receiving-opening D and causing the filled compartment to rock or swing downwardly to deposit the contents thereof through the open end of such compartment into the chamber of casing A B. As the tank continues its tipping movement the projection or finger  $E^2$ , projecting from the under side of such compartment, engages the extension  $D^2$  of plate  $C^2$ , thereby rocking said plate about its pivot  $B^2$ , and hence elevating or raising the front end or edge of such plate  $C^2$ , and since the front edge or end of said plate extends beyond the end of the tank-compartment it will be readily seen that the material spilled or delivered from the tank-compartment falls upon the rising end of plate  $C^2$ , such spill of the material tending to resist the rising movement of said plate; but since the rising movement of the plate is effected by the descending or tilting movement of the tank it will be seen that the one force tends to counteract the other, thereby cushioning the tipping movement of the tank and enabling the same to finally be received without shock or jar or noise upon the end of the adjusting-screw  $G'$ . It is obvious that the same result may be secured by utilizing merely the overbalance of the weight of the long arm of the angle-plate to effect the cushioning of the rocking movement of the tipping pan. The adjustments of the parts are so relatively fixed as that just before the tank reaches the position to rest upon the end of adjusting-screw  $G'$  the projection or finger  $E^2$  will pass by the end of extension  $D^2$ , thereby permitting the plate  $C^2$  to fall by gravity into its lowered position, as shown at the left-hand side of Fig. 1. If desired and in order to avoid the pounding noise of the cushion-plate  $C^2$  when returning to its lowered position, I may arrange a spring-supported stop  $K^2$  to receive the front end or edge of the cushion-plate. When the tank is tipped or rocked in the opposite direction, the projection or finger  $E^2$  is permitted to ride by the extension  $D^2$  of the cushion-plate, the relative swinging movement of said extension  $D^2$  with reference to the cushion-plate permitting such projection or finger  $E^2$  to be elevated or raised into position, as shown at the left-hand side of Fig. 1, the extension  $D^2$  dropping back upon the lug of bearing projection  $J^2$ .

From the foregoing description it will be seen that I provide an exceedingly simple and efficient cushioning device for the tip-tank wherein I avoid cushioning plungers or cylinders and wherein I utilize the rocking movement of the tank and also the spill of the material delivered therefrom or the action of gravity in the cushion-plate in effecting the cushioning of the tank in its tilting movements.

Having now set forth the object and nature

of my invention and a construction embodying the principles thereof, what I claim as new and useful and of my own invention, and desire to secure by Letters Patent, is—

5 1. In a tip-tank weighing-machine or meter, a casing provided with inlet and outlet openings, and an oscillating tank supported within said casing, in combination with means operated by the oscillating movement of said  
10 tank and the spill of the material from said tank, when oscillated, for cushioning the oscillating movements thereof.

2. In a tip-tank weighing apparatus or meter, a casing having inlet and outlet openings,  
15 a tank having compartments pivotally supported within said casing to oscillate, swinging cushion-plates, and means for rocking said swinging plates.

3. In a tip-tank weighing-machine or meter,  
20 a casing having inlet and outlet openings, a tip-tank pivotally mounted within said casing, and having compartments, swinging cushion-plates arranged to receive the spill of the material from said compartments when said tip-tank is oscillated, and means actuated by the  
25 oscillating movement of said tank for swinging said plates toward the point of spill of the material from said compartments.

4. In a tip-tank weighing-machine or meter,  
30 a casing having inlet and outlet openings, supports arranged within said casing, a tip-tank having compartments, and pivotally mounted to oscillate upon said supports, means to limit the extent of oscillating movement of said  
35 tip-tank, and means, operated by the conjoint action of the oscillating movement of and spill of the material from said tank, for cushioning such oscillating movements.

5. In a tip-tank weighing-machine or meter,  
40 a casing having inlet and outlet openings, a tip-tank pivotally mounted within said casing to oscillate, swinging cushion-plates pivotally mounted within said casing and arranged to extend into position to receive the spill of  
45 material delivered from said tank, and means carried by said tank and arranged to rock said swinging plates toward the point of discharge or spill of the material from said tank.

6. In a tip-tank weighing-machine or meter,  
50 a casing having inlet and outlet openings, a tip-tank pivotally mounted within said casing to oscillate, and provided with compartments respectively arranged to be brought into position, when said tank is oscillated, to receive  
55 the material to be measured or weighed within said compartments alternately, fingers or projections carried by said tank, pivotally-mounted swinging cushion-plates, and means arranged to be engaged by said fingers or pro-  
60 jections during the oscillating movement of said tank to deliver the contents of a compartment thereof into said casing for rocking said plates against the action of gravity, whereby the oscillating movement of said tank is cushioned.  
65

7. In a tip-tank weighing apparatus or meter, a casing having inlet and outlet openings, a tip-tank pivotally mounted within said casing to oscillate, standards arranged within  
70 said casing, swinging plates pivotally supported upon said standards, said plates having extensions, and fingers or projections carried by said tank and arranged to engage said extensions to rock or swing said plates in a direction to meet the oscillating movement of said  
75 tank.

8. In a tip-tank weighing apparatus or meter, a casing having inlet and outlet openings, a tip-tank pivotally mounted within said casing to oscillate, a finger or projection carried  
80 by said tank on opposite sides of the axis about which said tank oscillates, a swinging plate pivotally supported within said casing on opposite sides of the axis of oscillation of said tank, said fingers or projections respectively arranged to engage and rock said plates.  
85

9. In a tip-tank weighing apparatus or meter, a casing having inlet and outlet openings, a tip-tank pivotally mounted within said casing to oscillate, adjustable means to limit  
90 the extent of oscillating movement of said tank, and means for cushioning the contact of said tank with said limiting means and including a swinging plate, said plate arranged to project into the path of the material delivered from said tank when oscillated, and  
95 means actuated by the oscillating movement of said tank for swinging said plate in a direction opposite to that of the spill of material from said tank.  
100

10. In a tip-tank weighing apparatus or meter, a casing having inlet and outlet openings, a tip-tank pivotally mounted within said casing to oscillate, and means for cushioning  
105 the oscillating movements of said tank, comprising a swinging plate arranged to project across the path of flow of the material being measured from said tank when oscillated, said swinging plate provided with an extension,  
110 and a finger or projection carried by said tank arranged to engage said extension during the oscillating movement of said tank to rock or swing said plate in a direction to meet the flow of the material from said tank when oscillated.  
115

11. In a tip-tank weighing apparatus or meter, a casing having an inlet and an outlet opening, a tip-tank pivotally mounted therein to oscillate, and means for cushioning the  
120 oscillating movements of said tank, comprising swinging counterweights, extensions pivotally connected to said swinging weights for rocking movement relative thereto, and fingers or projections carried by said tank arranged to engage said pivoted extensions.  
125

12. In a tip-tank weighing apparatus or meter, a casing having inlet and outlet openings, a tip-tank pivotally mounted within said casing to oscillate, and carrying fingers or  
130 projections, cushioning devices including an-

gle-plates pivotally mounted at the angles thereof to swing against the action of gravity, and extensions projecting from the opposite arm of said angle-plates and arranged to be  
5 engaged by said fingers or projections, whereby said angle-plates are rocked.

13. In a tip-tank weighing apparatus or meter, a casing having inlet and outlet openings, a tip-tank pivotally mounted within said  
10 casing to oscillate, and provided with fingers or projections, cushioning devices including angle-plates pivotally mounted at the angles thereof, one arm of said plates arranged to extend across the line of flow of the material  
15 from said tank when the latter is oscillated, an extension pivotally connected to the other arm of said angle-plates, a stop for limiting the rocking movement of said pivoted extension in one direction, said pivoted extension  
20 arranged to be engaged by the finger or projection upon said tank to rock or swing said swinging plate when said finger moves in one direction, said pivoted extension permitting free movement of said finger or projection in  
25 the opposite direction.

14. In a tip-tank weighing apparatus or meter, a casing having inlet and outlet openings, a tip-tank pivotally mounted within said casing to oscillate, means to limit the extent of oscillating movement thereof, cushioning  
30 devices for said tank, including swinging cushion-plates, means for swinging said plates to cushion said tank, and spring-supported stops for said plates.

15. In a tip-tank weighing apparatus or meter, a casing having inlet and outlet openings, a tip-tank pivotally mounted to oscillate in said casing, a pivotally-mounted counterweight or cushioning device for said tank, and detachably engaging devices for rocking  
40 said counterweight or cushioning device.

In witness whereof I have hereunto set my hand, this 2d day of May, 1904, in the presence of the subscribing witnesses.

WILLIAM H. PEARCE.

Witnesses:

C. H. SEEM,  
S. E. DARBY.