

No. 717,450.

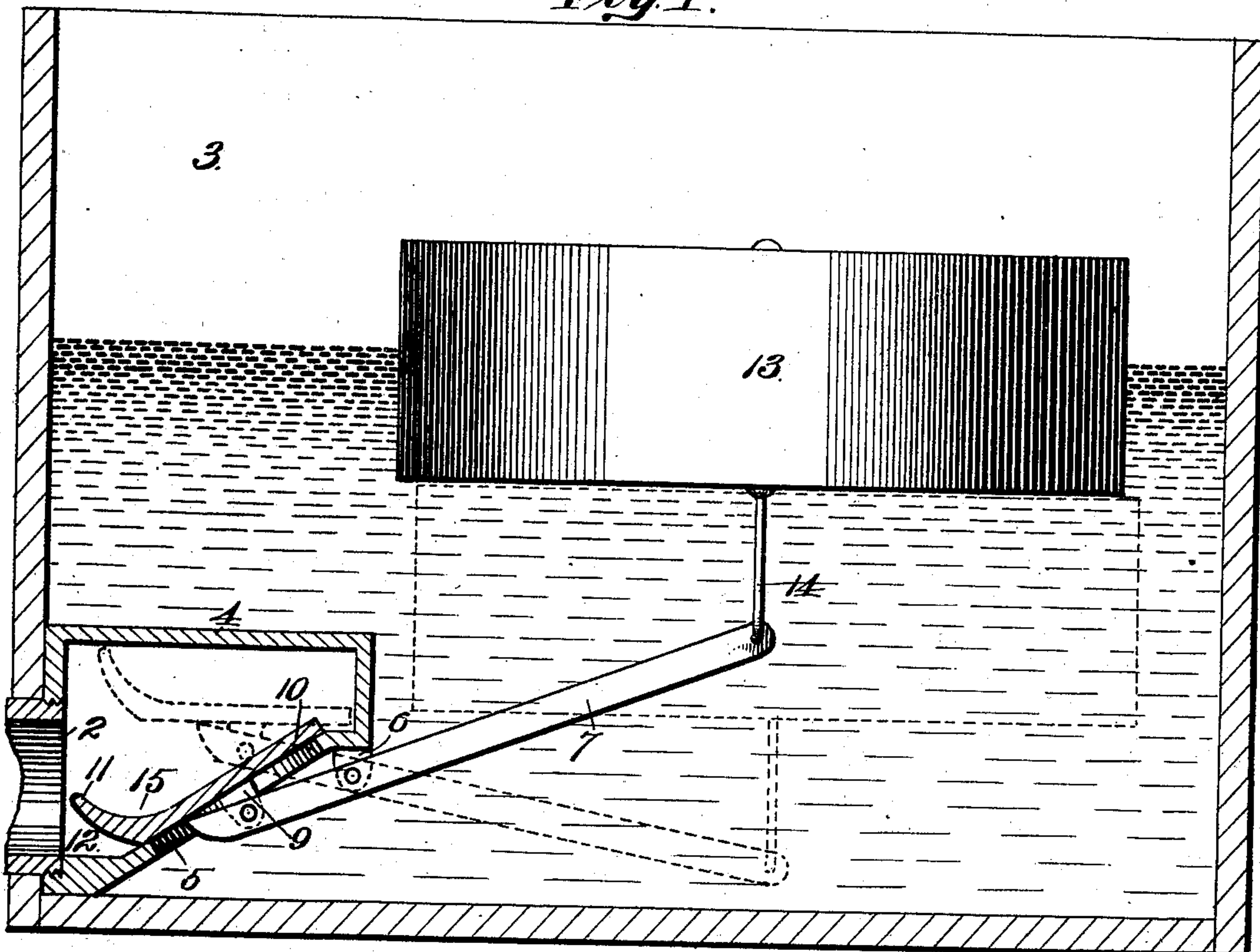
Patented Dec. 30, 1902.

E. C. PROWANT.  
FLOAT VALVE FOR DRINKING TROUGHS.

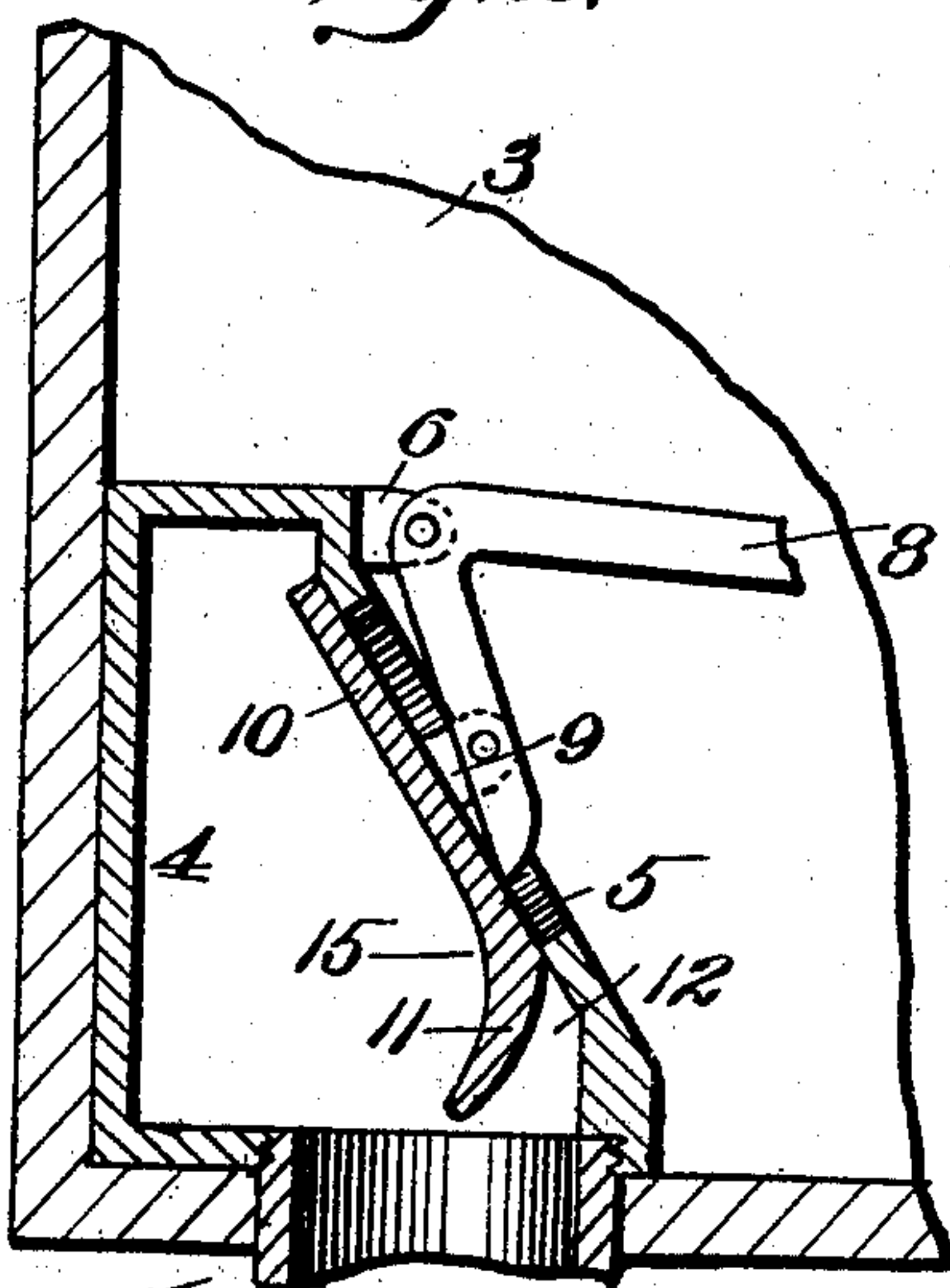
(Application filed Sept. 9, 1902.)

(No Model.)

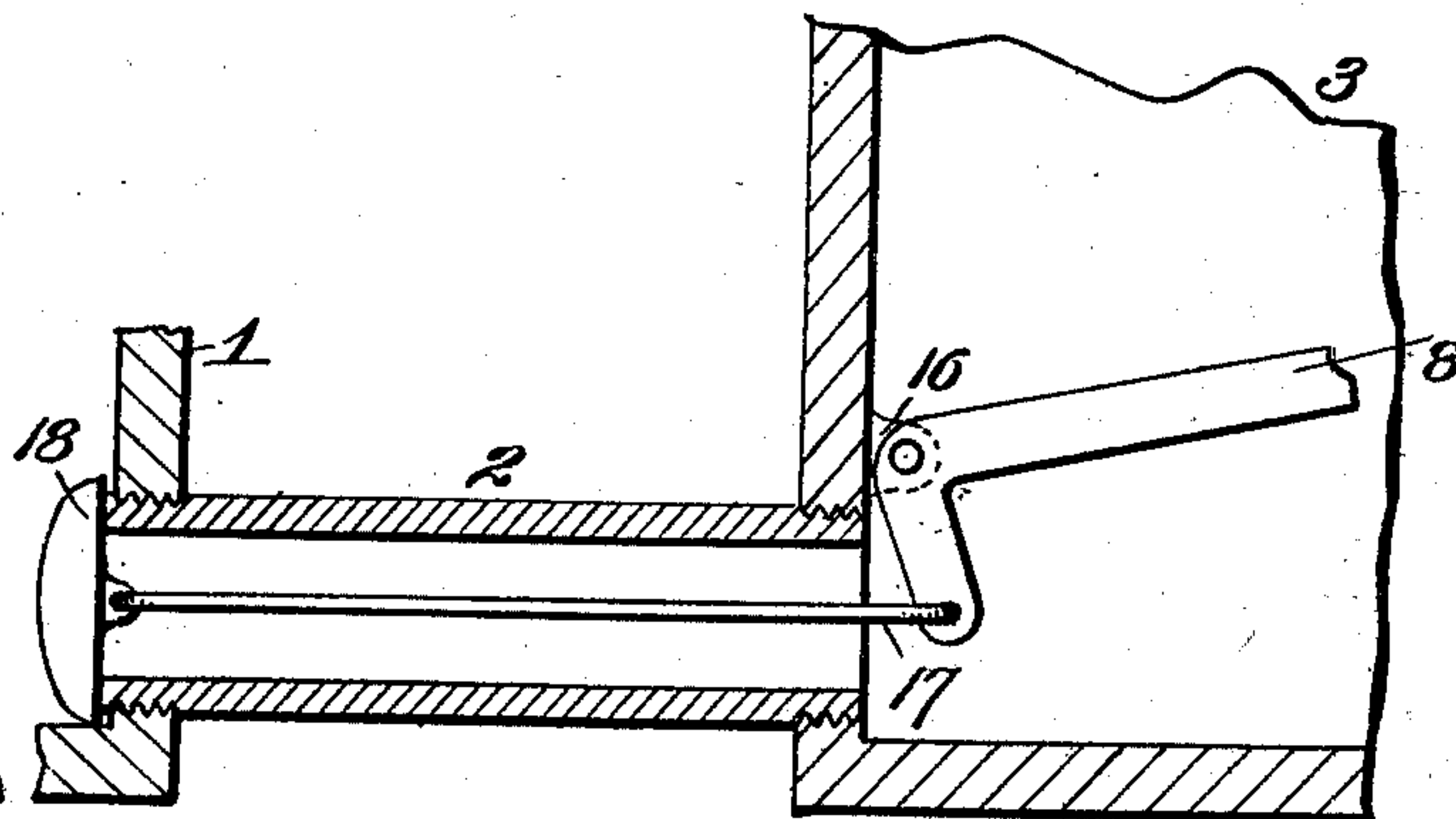
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



Witnesses:  
*H. M. Fisher*  
*H. C. Rodgers.*

Inventor:  
*E. C. Prowant.*  
*B. Fischer & Phelps Attys*



# UNITED STATES PATENT OFFICE.

EPHRIAM C. PROWANT, OF BELLAIRE, KANSAS.

## FLOAT-VALVE FOR DRINKING-TROUGHS.

SPECIFICATION forming part of Letters Patent No. 717,450, dated December 30, 1902.

Application filed September 9, 1902; Serial No. 122,689. (No model.)

*To all whom it may concern:*

Be it known that I, EPHRIAM C. PROWANT, a citizen of the United States, residing at Bellaire, in the county of Smith and State of Kansas, have invented certain new and useful Improvements in Float-Valves for Drinking-Troughs, of which the following is a specification.

My invention relates to float-valves for drinking-troughs; and my object is to produce a device of this character which operates efficiently and reliably, can be easily, quickly, and cheaply applied, and which is of simple, durable, and cheap construction.

A further object is to produce a construction whereby the supply-tank or its equivalent may be stationed at the same level as the trough and yet be almost completely drained into the latter.

A still further object is to produce a construction whereby the supply of water may enter through the bottom of the trough to reduce chances of freezing in the conducting-pipe.

Other objects of the invention will hereinafter appear, and in order that it may be fully understood reference is to be had to the accompanying drawings, in which—

Figure 1 represents a vertical cross-section of a trough equipped with my improved valve mechanism and with a conducting-pipe arranged to discharge-water into the trough through the side thereof. Fig. 2 is a similar view with the pipe arranged to discharge water into the trough through the bottom thereof. Fig. 3 is a similar view of a modified construction for conducting the water into the trough through the side thereof.

Referring to the drawings in detail, 1 designates a supply-tank stationed upon the ground, as is customary on farms, and adapted to receive a supply of water from a pump. (Not shown.) 2 designates a pipe connecting said tank at or near its bottom with a trough 3. In Fig. 2 the pipe is shown as entering through the bottom of the trough and in Figs. 1 and 3 through one of the side walls thereof.

The valve mechanism shown in Figs. 1 and 2 consists of a hollow casing 4 of substantially right-angle-triangle form and having in its hypotenuse side a discharge-opening 5 and at the upper end of said hypotenuse side a lug 6. In Fig. 1 this casing is arranged with the hy-

potenuse side forming the bottom and with its opening in alinement with pipe 2. In Fig. 2 the casing is arranged with its hypotenuse side forming its inner side and with its opening in alinement with pipe 2. In both cases a vertically-operating lever is pivoted to lug 6, the lever being substantially straight, as at 7 in Fig. 1, and of angular form, as at 8 in Fig. 2. The short arm of the lever in each case is pivoted near its free end to a lug 9, projecting from valve 10, normally closing the opening 5 and arranged within the casing, said valve terminating at its end contiguous to the pipe in a lip 11, so as to form when the valve is closed a wedge-shaped chamber 12, registering with the pipe for the purpose of enabling the pressure of the water seeking entrance to the trough to assist the float 13, coupled to the opposite end of the lever, as at 14, or otherwise, in opening the valve as the water-level in the trough gets below the required plane. This lip also provides a pocket 15 to give the water increased leverage on the valve in its closing action and also tends by contact with the opposite wall of the casing from opening 5 to arrest the opening movement when the valve no longer obstructs the discharge of the water from the pipe into the trough. In practice as the water-level in the trough falls below the required plane through any cause the float descends a corresponding distance and, aided by the wedge-like pressure on the lower side, positively and reliably moves the valve from its seat. This coöperative action of the float and water-pressure from the tank is a double leverage which the valve cannot resist, and in consequence a proper supply of water from the tank to the trough is assured, and in view of the fact that the pipe connects the bottom of the tank with the bottom of the trough it is evident that practically all of the water may be exhausted from the former for the use of the stock. In Fig. 2 by burying the pipe and using an angular lever, as shown, the necessity of insulating the former from the cold to prevent freezing of the water therein is avoided. In the opening operation, by reason of the peculiar disposition of the parts shown, it will be apparent that the valve moves obliquely from its seat—that is to say, moves in a direction approximately toward the float—so that instead of offering a large



resistance to the water in the casing, as would be the case if moved at right angles to its seat, it moves edgewise through the water and is assisted in such movement by the water below the lip. If it moved at right angles to its seat, it is obvious that the pressure tending to seat the valve would be so great when the supply-tank was full that it would necessitate a heavy float, whereas with the construction shown a very light float is sufficient to accomplish the desired result, and in this connection it will be noticed that the free end of the short lever-arm projects beyond the pivotal point 9, so as to eliminate any possibility of the valve tilting at its lipped end toward the opening, and thus being held by the pressure of the water-supply in a position where it would partially obstruct the free flow of water into the trough.

In Fig. 3 I show a cheaper type of valve. In this case I pivot the float-lever 8 to the lug 16 just above the discharge end of pipe 2 and connect the short arm of the lever by means of a rod 17 with a button-valve 18, arranged within the tank and normally closing communication between the latter and pipe 2 by fitting against the tank end of the latter. As the float falls with the descending water of the trough the button is unseated, but the proportions of the parts are such that it never moves so far from the end of the pipe as to tilt to a position from which it cannot instantly recover under the coöperation of the rising float and internal pressure of the tank.

The great advantage of either of the types of construction herein shown and described over all of the analogous structures with which I am familiar lies in the fact that the tank can be equipped with an automatic valve and the water be practically all drained from the former without making it necessary to raise it, as is frequently done, this raising being objectionable in that the original relation between the tank and the pump is thereby disturbed. Furthermore, if the tank must be elevated an additional expense is entailed on the purchaser, and where the pump-spout barely clears the top of the tank the raising of the latter is out of the question, and the trough must either be lowered or the pipe connection between the tank and trough placed at such a height that it cannot be automatically emptied for the benefit of the stock.

If desired, a shallow drinking-trough may be provided for hogs, the two troughs being connected together by a pipe to enable the water to flow off from the valved trough to the other.

From the above description it will be apparent that I have produced an automatic valve for watering-troughs which embodies the features of advantage enumerated as desirable in the statement of invention and which may be varied in minor particulars without departing from its spirit and scope.

Having thus described the invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a trough, a casing therein of angular form and provided with an opening in each of two sides, a valve within the casing to control the passage of water through one of said openings and provided with a lip projecting toward the other opening at the end contiguous thereto, a lever suitably mounted and connected to the valve, a float connected to the opposite end of the lever, and a supply-pipe projecting through the trough and into the opening of said casing toward which said lip projects and adapted to discharge water between said valve-lip and the side of the casing containing the discharge-opening.

2. The combination of a trough, a casing therein of angular form, and provided with an opening in each of two sides, a valve within the casing to control the passage of water through one of said openings and provided with a lip projecting toward the other opening at the end contiguous thereto, a lever suitably mounted and pivotally connected to the valve at a point between its fulcrum-point and free end, a float connected to the opposite end of the lever, and a supply-pipe projecting through the trough and into the opening of said casing toward which said lip projects and adapted to discharge water between said valve-lip and the side of the casing containing the discharge-opening.

3. The combination of a supply-tank, a trough, a pipe connecting the two, a casing within the trough and provided with an opening to receive the pipe, and with a discharge-opening, a valve within the casing to control the discharge-opening thereof, and provided with a lip projecting at an angle toward the pipe-receiving opening from the end of the valve contiguous thereto, a lug projecting from the valve, a lug projecting from the casing at the opposite end of the valve from its lip, a vertically-operating lever pivoted to the last-named lug, and pivoted short of its free end to the valve-lug, and a float connected to the opposite end of said lever.

4. In a device of the character described, a valve-casing having a supply-opening and a discharge-opening, a valve controlling the discharge-opening and having a lip projecting at an angle toward the supply-opening from the end of the valve contiguous to said opening, said lip in conjunction with the contiguous part of the casing forming a wedge-shaped chamber to receive the water-supply, and a lever connected to the valve and fulcrumed to the casing at a point beyond the edge of the valve most remote from said lip.

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

EPHRIAM C. PROWANT.

Witnesses:

H. C. RODGERS,  
G. Y. THORPE.