

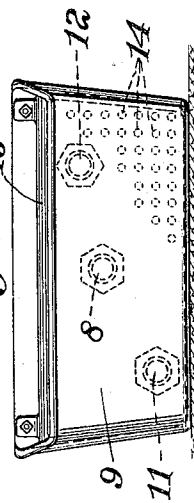
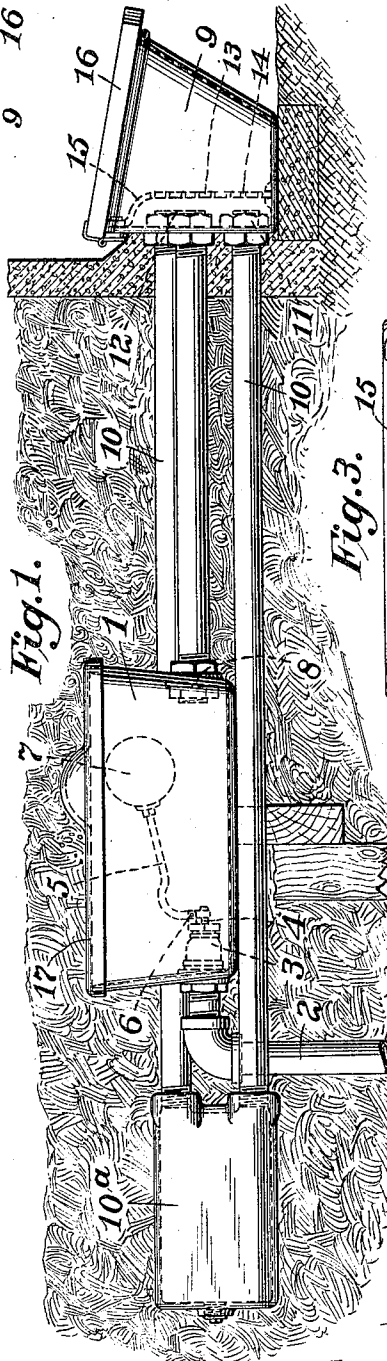
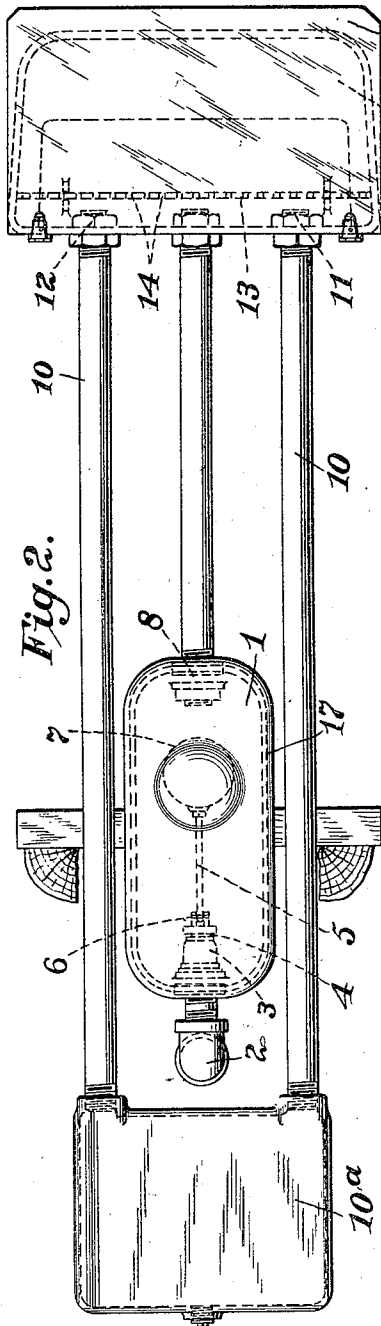
June 10, 1924.

1,497,202

A. BELDEN

NONFREEZING WATERING TROUGH

Filed Jan. 26, 1923



Inventor:

Arthur Belden,

by Spear, Middleton, Donaldson & Hall
Attys.

UNITED STATES PATENT OFFICE.

ARTHUR BELDEN, OF HARVARD, NEBRASKA.

NONFREEZING WATERING TROUGH.

Application filed January 26, 1923. Serial No. 615,105.

To all whom it may concern:

Be it known that I, ARTHUR BELDEN, a citizen of the United States, and resident of Harvard, in the county of Clay and State of Nebraska, have invented certain new and useful Improvements in Nonfreezing Watering Troughs, of which the following is a specification.

This invention relates to a stock watering trough which is an improvement on that shown in my Patent No. 1,446,493, and has for its primary object to produce a device of such a construction that the water therein will not freeze during severe weather and will automatically maintain a constant level in the drinking portion of the trough.

Another object is to provide means to prevent the water in the device from becoming contaminated with mud, refuse, sticks or the like, which usually takes place whenever an open trough is allowed to remain as such in a barn-yard for any length of time.

Other objects and advantages will appear as the description proceeds.

To this end my invention consists in providing a main reservoir into which the water enters, being regulated by any suitable automatic means. This supply is preferably located in a manner to reduce freezing danger to a minimum, such as by entering from the lower side thereof, which utilizes the natural heat of the earth. Communicating with this reservoir is a drinking trough of suitable construction, which trough is provided with a circulation system which will keep the temperature of the water therein above the freezing temperature. Additional means are provided to prevent the circulation system from clogging, which will be more specifically described hereinafter.

In the drawings I have illustrated one embodiment of the portion of my invention which has been chosen for illustration only, as required by law, but it is understood that I do not wish to be limited to the construction, combination or arrangement of parts shown, as obviously various changes and modifications will occur to those skilled in the art, and still fall within the scope of the claims.

In these drawings:—

Figure 1 is a sectional elevation showing the relation of the parts to the frost preventing medium.

Fig. 2 is a plan of one form of my device.

Fig. 3 is an end elevation of the drinking portion.

Fig. 4 is an end elevation of the water bottle, or heat reservoir.

In the embodiment illustrated, I provide a reservoir having water supply pipes entering at the bottom preferably passing underground below the frost penetration line to the source of supply. Suitable means are provided to automatically regulate the flow of water to the reservoir, as by means of a float valve operating in the usual manner.

A drinking trough communicates with the reservoir, said communicating opening being below the water level in order that floating refuse will not be conducted into the drinking portion. This drinking portion is also provided with a circulation system which may include a coil of pipes or the like, having its trough-attached ends at different levels. If a system of this character is used, it has been found satisfactory to extend such pipes around the reservoir, the whole to be packed to a suitable depth with fresh stable manure which will warm the water in the circulation system, which because of the known principles of the thermosiphon, will keep the water in the drinking portion above the freezing temperature. Obviously the water in the reservoir will also be warmed to a certain extent by the direct contact of the heating medium with the walls thereof, and also because of the communication between the water in the drinking portion and that in the reservoir, but it is imperative that the heated water from the circulation system should flow first to the drinking portion of the device. If a portion of this circulation system is enlarged to form a water bottle, or the like, it will be found to hold the heat in a more efficient manner. It has been found desirable to construct baffle or strainer plates over the opening in the drinking portion leading to the circulation system in order to prevent refuse from clogging the heating system.

If found desirable, the drinking portion may be provided with a suitably arranged covering and the reservoir may be provided with upstanding means to retain the manure in the place desired.

Referring now more particularly to the drawings, I have shown a reservoir 1, having water supply pipe 2, entering at the side near the bottom thereof, the entrance

to the reservoir being covered by a suitable valve 3, including a float valve 4, or the like, and a lever 5 pivoted on a fulcrum 6 and supplied with a float 7, in the usual
5 manner to regulate the water supply according to the desired level of the water.

An opening 8, is provided in the reservoir intermediate the normal level of water and the bottom of the trough, for the purpose
10 above stated, said opening communicating with a drinking portion 9, of the trough. This portion may be of any desired shape, which will undoubtedly vary according to circumstances, but I have shown it to be of
15 an elongated configuration.

The circulation system as illustrated, has been found to be satisfactory and includes a hollow member 10 extending backwardly from the drinking portion on each side of
20 the reservoir and behind the latter; terminating in an enlarged water bottle, or heat reservoir 10^a. The inlet end 11, of this system is located below the outlet 12, in order that the convection current of the heated
25 fluid may rise and pass outwardly through the opening 12, into the trough, the cooler fluid passing through opening 11, into the system and the cycle of heating repeated. Obviously this circulation system may be
30 greatly varied and I have illustrated this form merely because of its simplicity.

I have shown a baffle or screen, 13 located between the walls of the drinking portion of the trough, preferably extending to the
35 bottom of the trough, said baffle being provided with a series of perforations 14. An imperforate portion 15, extending from the back of the drinking portion to a point below the water level, prevents refuse from
40 falling into this portion of the trough. I

have shown a cover 16, hingedly connected to the rear wall of the drinking portion, but any suitable means of attachment may be substituted therefor, or if found desirable, the cover may be eliminated. I have
45 likewise illustrated a removable cover 17, on the reservoir portion, but likewise, other arrangement of these parts may be found desirable.

What I claim is:—

1. A drinking device, including a supply
50 tank provided with an automatic water feed, a drinking tank connected to said reservoir by a feed pipe only, a heat reservoir comprising a substantially flat hollow
55 member inclined to the horizontal, and a circulation system connecting the top and bottom of the heat reservoir with the drinking tank, the inlet and outlet of the circulation system in the drinking tank and the
60 outlet of the feed pipe in the drinking tank being commonly covered by a screen between front and rear walls of the drinking tank.

2. A drinking device including a supply
65 tank provided with an automatic water feed, said drinking tank having a heat reservoir supplied with water from said supply tank, said heat reservoir comprising a substantially flat hollow member inclined to the
70 horizontal, a circulation system connecting the top and bottom of the heat reservoir with the drinking tank, the outlet end of the circulation system in the drinking tank being covered with a screen, said supply
75 tank, said heat reservoir, and substantially all of the circulation system being embedded in manure.

In testimony whereof, I affix my signature.

ARTHUR BELDEN.