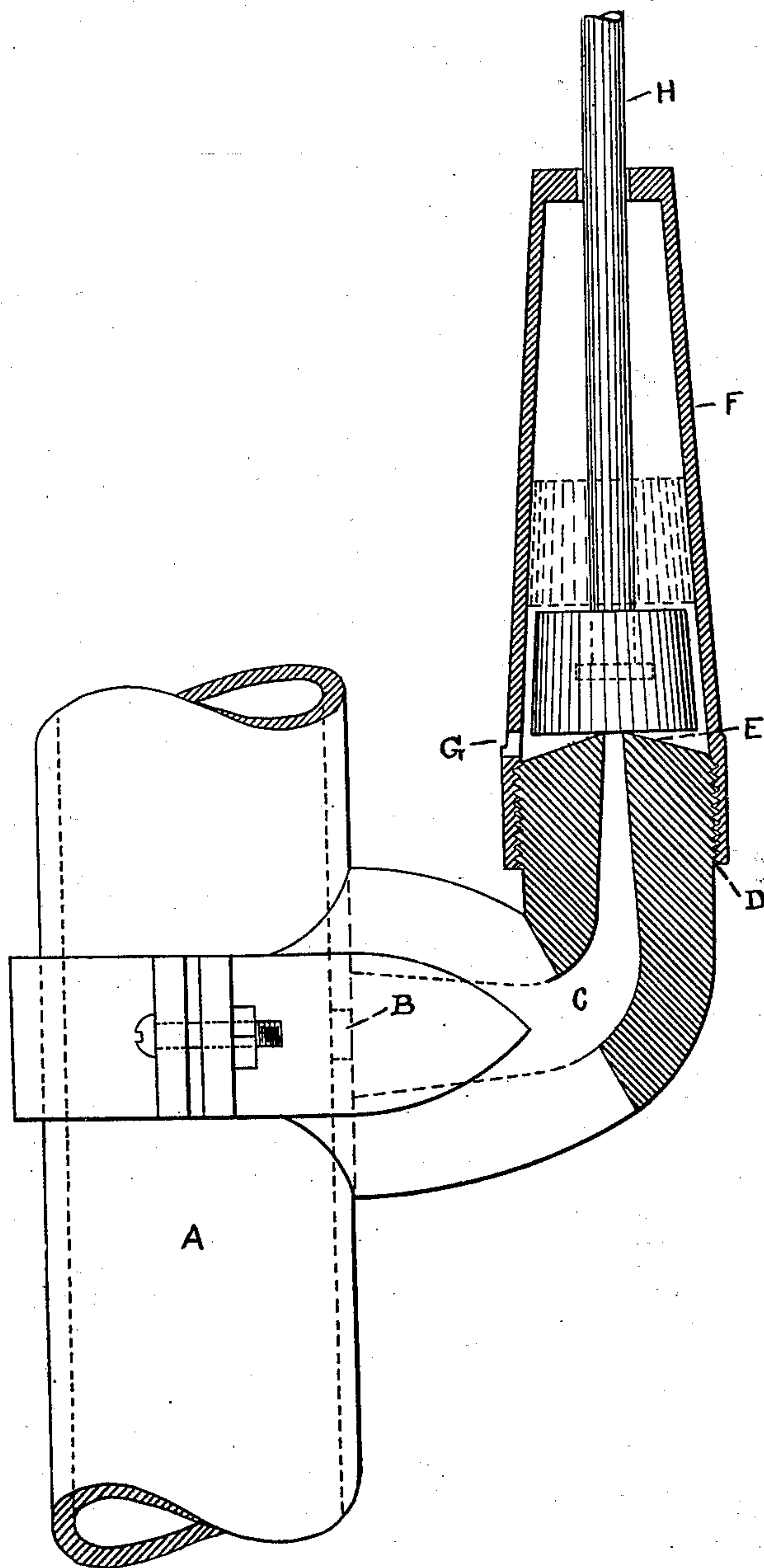


No. 628,532.

Patented July 11, 1899.

J. GRUBER.
VENT VALVE FOR PIPES.
(Application filed Mar. 2, 1899.)

(No Model.)



WITNESSES:
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JULIUS GRUBER, OF LANSING, IOWA.

VENT-VALVE FOR PIPES.

SPECIFICATION forming part of Letters Patent No. 628,532, dated July 11, 1899.

Application filed March 2, 1899. Serial No. 707,549. (No model.)

To all whom it may concern:

Be it known that I, JULIUS GRUBER, a citizen of the United States, residing in Lansing, Allamakee county, State of Iowa, have invented a new, useful, and improved automatic vent-valve to prevent windmill-pump pipes from bursting when the water therein congeals; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention consists of a hollow breast, neck, crown, and cone-frustum, with a rod attached to a plunger which is so constructed and arranged that the breast of the valve is made to fit tightly on the outside surface of the pump-pipe and is held on same by means of a clamp and two bolts and burs. There is a suitable-sized cavity passing through the breast of the valve, which gradually grows smaller as it passes upward through the neck of the valve until it forms a small aperture at the center on the upper surface or crown of the valve. The crown is beveled from the aperture in the center to the outside edge.

There are several threads or skein cut on the outside of crown, so that the cone-frustum may be tightly screwed on same. The crown on the neck of the valve is connected with a hollow cone-frustum of suitable size and length, the lower inside surface of same having a sufficient number of threads to screw on tightly over the crown on the neck of the vent-valve until the small opening through the cone-frustum reaches the beveled surface of the crown of the vent-valve. The cone-frustum is hollow and open at the base, with a sufficient-sized aperture at the top, and of suitable diameter and height to permit a plunger-head of sufficient size to move up and down on the inside of same a suitable distance. The plunger is attached to a rod of suitable size and length, which passes up through the aperture in the center of the upper surface of the cone-frustum and extends upward along the pump-pipe, passing through the base of the pump to a suitable height above the surface, so that it can be raised or lowered at will, all as hereinafter fully described and pointed out.

Reference is to be had to the accompanying drawing, forming part of this specification, in

which letters of reference indicate corresponding parts in the figure.

The figure is a side elevation, partly in section, of my device.

I attach my vent-valve over an opening in the pump-pipe A below frost-line. The opening B permits the water in the pump-pipe A to pass into the cavity C in the vent-valve. The rod H and its rubber plunger-head close the small aperture at the crown of the vent-valve E, and the weight of the rod and plunger-head resists the pressure of the water in the pump-pipe A and prevents it from escaping while the windmill is in or out of gear and not affected by frost.

When the water in the pump-pipe A freezes at any point above the level of the opening at E in the vent-valve, then the expansive force of the freezing water in pipe A presses the water through the vent-hole B into the cavity C against the plunger with such force as to raise it and permit enough water to escape through the cone-frustum F at G to prevent the pipe from bursting. After a sufficient quantity of water has escaped the plunger-head closes again the opening at E. This action is repeated as often as the pressure is increased by the water freezing and diminished by the escaping water, thus preventing the pipes of the pump from bursting.

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

1. A self-acting vent-valve comprising a crown-section, cone-frustum and an adjusting rod and plunger adapted to rise by the pressure caused by the expansion of freezing water in the pump-pipe, and to descend and close the valve when the pressure due to said expansion ceases, substantially as herein shown and described.

2. A combination of a hollow cone-frustum F secured upon a crown on neck of vent-valve D, the upper surface or crown of said vent-valve being beveled to carry off water, an escape-hole G and a rod and plunger H, substantially as hereinbefore described.

JULIUS GRUBER.

Witnesses:

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