No. 830,175. PATENTED SEPT. 4, 1906.

H. J. ROBINSON.

DRAIN PIPE.

APPLICATION FILED APR. 7, 1905.

Fig. 1.

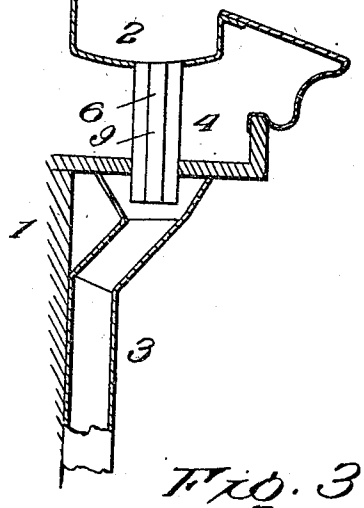


Fig. 2.

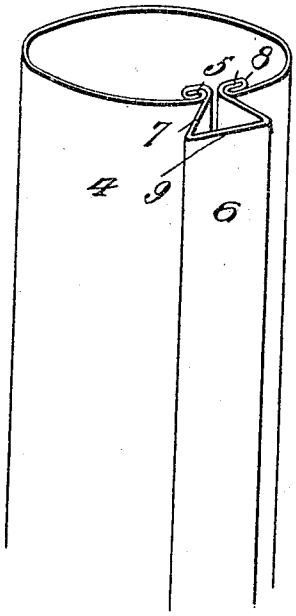


Fig. 3.

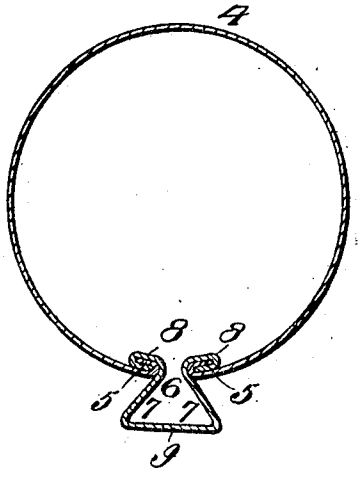
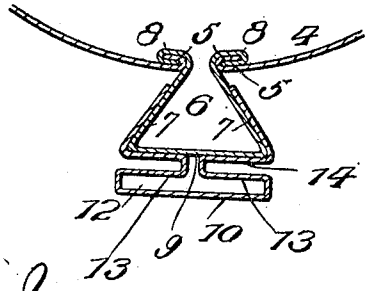


Fig. 4.



Witnesses

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DRAIN-PIPE.

No. 830,175. Specification of Letters Patent. Patented Sept. 4, 1906.

Application filed April 7, 1905. Serial No. 254,352.

To all whom it may concern:

Be it known that I, HARRY J. ROBINSON, of Mount Vernon, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Drain-Pipes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to that class of house drain-pipes equipped with means for allowing the pipe to yield when ice forms and expands therein, and has special reference to the construction of the tube connecting the gutter of the house with the leader-pipe.

Figure 1 shows portion of a roof equipped with a tube constructed in accordance with my invention. Fig. 2 is a perspective view of the tube, and Fig. 3 is a cross-section thereof, the clamp being omitted in each of these views to clearly show the construction. Fig. 4 shows the tube equipped with a clamp.

Referring to the drawings, 1 designates portion of a house of the construction common in frame dwellings, having a gutter 2 in the roof near the edge of the projecting portion or eaves. 3 is the leader-pipe, secured to the side of the house and extending to the ground, and 4 the "tube," as the connection is commonly called, between the gutter and the leader-pipe. It is well known that this tube is the portion of the drainage system whose integrity must be preserved, since a leak occurring therein will readily reach the interior of the house, whereas any water escaping from a leader-pipe through a break therein will run down the side of the house and be less damaging in its effects.

As shown, the tube 4 is approximately cylindrical, and its longitudinal edges are bent back upon themselves, as at 5. 6 is an expansible member designed to be accommodated between the edges of the tube to provide the means for allowing the tube 4 to expand and yet be of such strength in its bow-spring action as to insure the tube returning to its normal shape and size when the expanding pressure from the freezing is relieved.

Various attempts have been made to provide drain-pipes with expansible members; but, so far as I am aware, the constructions employed have failed to meet the requirements specified. I form my expansible member as shown—that is, of a single strip of metal extending throughout the length of the tube and of approximately triangular shape, the sides 7 and 9 thereof forming a plurality of acute angles. The converging sides 7 are extended into tube 4 and bent back upon themselves to form flanges 8, held between flanges 5 of the tube and the wall of the latter. The slot formed by the edges of tube 4 is thus within the width of the outer side 9 of the expansible member, and in consequence a pressure exerted upon the tube and tending to open it will always be resisted by the sides 7 and 9. This, obviously, cannot result where the connections of the expansible member to the tube are without the width of the former, since in such event the pressure may act upon an extended surface without being resisted at all by the bow-spring action.

It will be apparent that a piece of heavy metal bent into the form of the expansible member shown provides a very strong spring action, since a pressure separating the sides 7 is against a plurality of acute angles formed by the sides 7 and 9. The strength of the expansible member is enhanced by the edges of the tube 4 being directly in engagement with the converging sides 7. The tube and part 6 I preferably make of hardened copper, since that material in the described formation and with the two elements secured together, as shown, has been found to meet the requirements.

To provide additional means for resisting the expansion, as when the severe cold weather is continuous, under which condition each successive freezing increases the column of ice within the tube by about one-eleventh of its volume, I have provided an auxiliary member 10, designed to clamp the part 6. Any desired number of these may be employed. One is shown applied in Fig. 4. It preferably consists of a single piece of metal bent to form an outer bow-spring 12, whose laterals 13 are brought nearly into contact and then bent back upon themselves and outwardly to form a triangular portion 14, designed to be sprung over the expanding member 6. The efficiency of the tube as an entirety is thus materially enhanced and the spring action increased by the plurality of acute angles in the clamp. The laterals 12 of the clamp may be utilized for the purpose of securing the tube to the framework of the house. Obviously the expansible member 6 and the clamp may be placed within the tube 4, if desired, the flanges 5 of the latter being for

that purpose turned outwardly against the outer face of the tube. Practice has demonstrated that a tube constructed in accordance with my invention will stand severe weather without being damaged.

I claim as my invention—

A tube formed of a single strip of metal and having a longitudinal slot extending throughout its length, a triangular-shaped expansible member having two of its sides secured to the edges of said tube at the sides of said slot, and extending throughout the length of said tube, and a clamp designed to embrace said expansible member, said clamp consisting of a single piece of metal bent to form an outer bow-spring and a triangular-shaped spring designed to accommodate said expansible member.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

HARRY J. ROBINSON.

Witnesses:

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