

C. H. LAING.

PENSTOCK.

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972,876.

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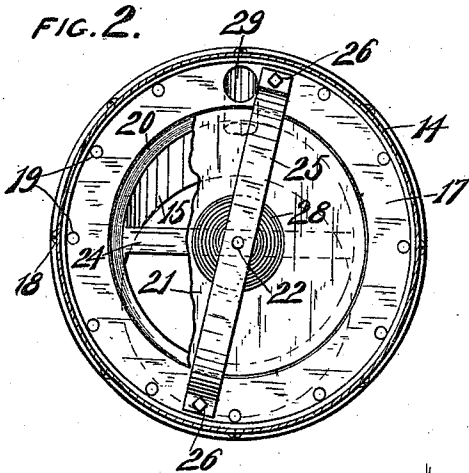
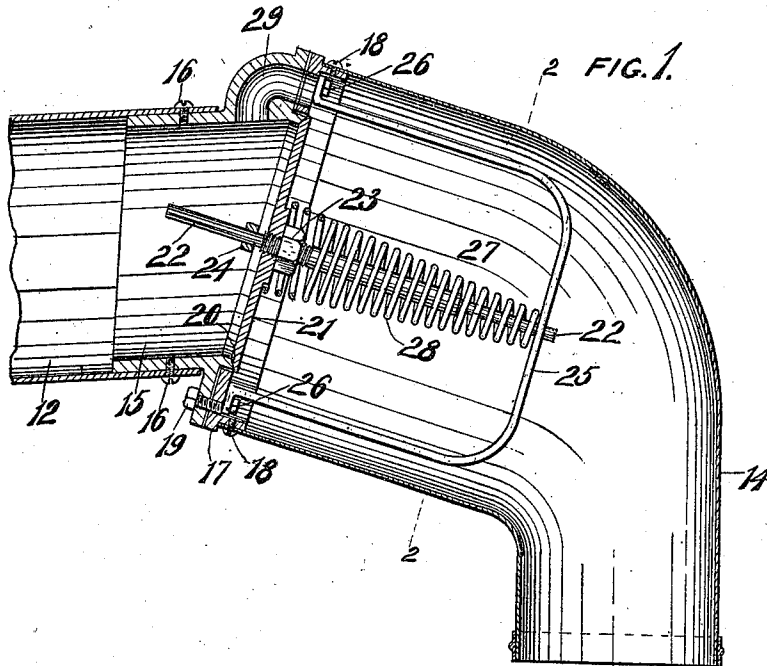
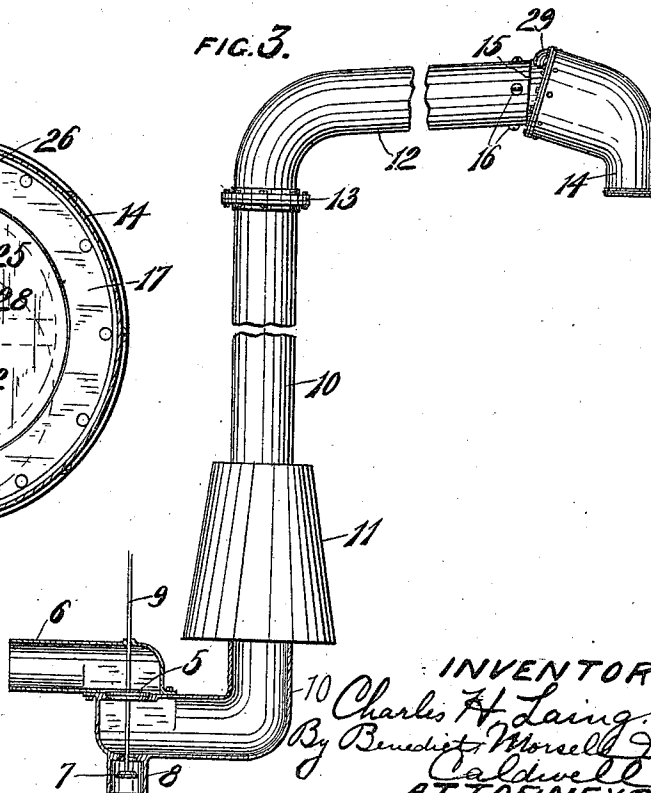


FIG. 3.



WITNESSES.

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PENSTOCK.

972,876.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES H. LAING, residing in Racine, in the county of Racine and State of Wisconsin, have invented new and useful Improvements in Penstocks, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

This invention has for its object to provide a penstock for supplying water to the tenders of railway engines and for like purposes which will avoid the splashing of water common with the constructions in general use.

With penstocks now in general use, provision is made for draining the water therefrom into the sewer at a point below the freezing level as soon as the flow of water therethrough is shut off, but such drain is slow in its operation with the result that the turning movement of the discharge spout of the penstock causes the water contained therein to be discharged over the platform and track around the penstock and the freezing of the water which is thus discharged in considerable quantities is a source of great annoyance and danger to those having to work in the vicinity.

The present invention is designed to entrap the water at or near the mouth of the discharge spout as soon as the flow is shut off and retain it for a sufficient time to enable it to pass out of the drain opening into the sewer and thus avoid the objectionable splashing referred to.

With the above and other objects in view the invention consists in the penstock herein claimed and all equivalents.

Referring to the accompanying drawings in which like characters of reference indicate the same parts in the different views: Figure 1 is a central sectional view of the mouth end of the discharge spout of a penstock constructed in accordance with this invention; Fig. 2 is a transverse sectional view thereof on the plane of line 2—2 of Fig. 1, a portion of the valve being broken away to show the valve seat and the cross bar forming a guide for the valve stem; and, Fig. 3 is an elevation of a complete penstock constructed in accordance with this invention.

In these drawings 10 indicates the upright or standard pipe of the penstock which is mounted on a base or pedestal 11 containing the supply valve for controlling the flow of water through the penstock and the drain

valve for draining the water therefrom to the sewer when the supply valve is closed. Such supply and drain valves are of ordinary construction and are therefore shown in diagram only.

The discharge spout 12, which is swivelly connected with the standard at 13, as usual, is made slightly inclined in a direction to drain the water from it back into the standard 10, when the supply is shut off. The outer end of the discharge spout 12 is provided with a funnel shaped elbow 14 to form the delivery nozzle and constitutes a casing for containing a check valve to entrap the water contained in the discharge spout as soon as the pressure from the water main ceases on the closing of the supply valve.

A flanged tubular casting 15 fits within the outer end of the discharge spout 12 and has bolts 16 connecting it therewith, while a flanged ring 17, which is similarly connected to the upper end of the nozzle or valve casing 14 by bolts 18, is secured to the flange of the casting 15 by means of bolts 19. The end of the tubular casting 15 is ground to form a beveled valve seat 20 for a disk shaped valve 21 which is threaded on a valve stem 22 and is held in position thereon by a jam nut 23, said valve stem being guided through an opening in a cross bar 24 extending across and preferably forming part of the casting 15. The valve stem is also guided by having its other end reduced in diameter and passing through an opening in a U-shaped guide 25 which is bolted or otherwise removably secured at its ends 26 to the ring 17. The opening movement of the valve 21 from its seat 20 is limited by the engagement of the shoulder 27 of the valve stem with the guide 25 and a spiral coiled spring 28 surrounds the valve stem to hold the valve normally on its seat, said spring bearing at its one end against the guide 25 and at its other end against the valve. At the upper part of the casting 15 is a curved passageway 29 forming a communication between the interior of the discharge spout 12 and the nozzle or casing 14 to admit air to the interior of the discharge spout 12 for venting the same when the valve 21 is closed.

In operation the discharge spout of the penstock is swung from its normal position, parallel with the railway tracks, to the position in which its mouth or nozzle stands directly over the water opening of

the tender of the engine, whereupon the supply valve being opened the rush of water from the water mains will be of sufficient force to overcome the action of spring 28 and open the valve 21 to flow freely thereby through the nozzle 14 and into the water tank of the engine tender. As soon as the supply valve is closed, however, and the drain connection with the sewer is simultaneously made as usual, the valve 21 being relieved of the pressure from the water mains is seated by the spring 28 and prevents the discharge of the water contained in the discharge spout 12, such water being entrapped thereby and held until the drain opening allows it to pass out into the sewer. The inclination of the discharge spout toward the standard 10 is designed to facilitate this backward draining action and the vent passage 29 permits air to enter the discharge spout 12 to take the place of the water thus being drained. It is obvious that the form of the vent opening is immaterial and a vent provided by a notch in the valve seat or otherwise may be substituted for the passageway shown.

With this invention the water contained in the discharge spout of the penstock is effectively drained to the sewer instead of being splashed over the platform as usual.

In the summer time and when there is no danger of freezing the drain valve is permanently closed and the invention then serves to entrap all of the water contained in the discharge spout ahead of the valve 21 and thereby effects a material saving in the quantity of water consumed.

What I claim as new and desire to secure by Letters Patent is—

1. A penstock, comprising an inclined discharge spout having a supply valve and drain, a spring seated valve at the mouth of the discharge spout to entrap the water therein upon the supply valve being closed, and a vent for permitting air to enter the upper end of the discharge spout and take the place of the water as it escapes through the drain.

2. A penstock, comprising a discharge spout provided with a supply valve and a drain, a member connected to the mouth of the discharge spout and forming a valve seat, a cross bar on said member having a guide opening, a nozzle connected with said member, a valve seated on the valve seat and

provided with a valve stem passing through the guide opening of the cross bar, a guide mounted on the nozzle through which the valve stem also passes, and a spring surrounding the valve stem and confined between the guide and the valve for holding the valve normally on its seat, there being a vent opening connecting the interior of the discharge spout with the nozzle above the valve.

3. A penstock, comprising a discharge spout provided with a supply valve and a drain, a member connected to the mouth of the discharge spout and forming a valve seat, a cross bar on said member having a guide opening, a flanged ring connected with said member, a nozzle mounted thereon, a valve seated on the valve seat, a valve stem carried by the valve and having one end passing through the guide opening of the cross bar, a U-shaped guide secured to the flanged ring and having an opening through which the other end of the valve stem passes, and a coil spring surrounding the valve stem and confined between the U-shaped guide and the valve, there being a vent opening connecting the interior of the discharge spout and the nozzle above the valve.

4. A penstock, comprising a discharge spout provided with a supply valve and a drain, a member connected to the mouth of the discharge spout and forming a valve seat, a cross bar on said member having a guide opening, a nozzle connected with said member, a valve seated on the valve seat, a valve stem passing through the guide opening of the cross bar and having the valve threaded thereon, a jam nut for locking the valve on the valve stem, a guide carried by the nozzle, said valve stem having a reduced end passing through the guide and a shoulder to engage the guide for limiting the opening movement of the valve, and a coil spring surrounding the valve stem and bearing on the guide and on the valve to hold the valve normally closed, there being a vent opening connecting the interior of the discharge spout and the nozzle above the valve.

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

CHARLES H. LAING.

Witnesses:

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