D. C. MITCHELL.

TRAIN PIPE VALVE.

APPLICATION FILED JUNE 2, 1915.

1,204,176. Patented Nov. 7, 1916.

Fig. 1.

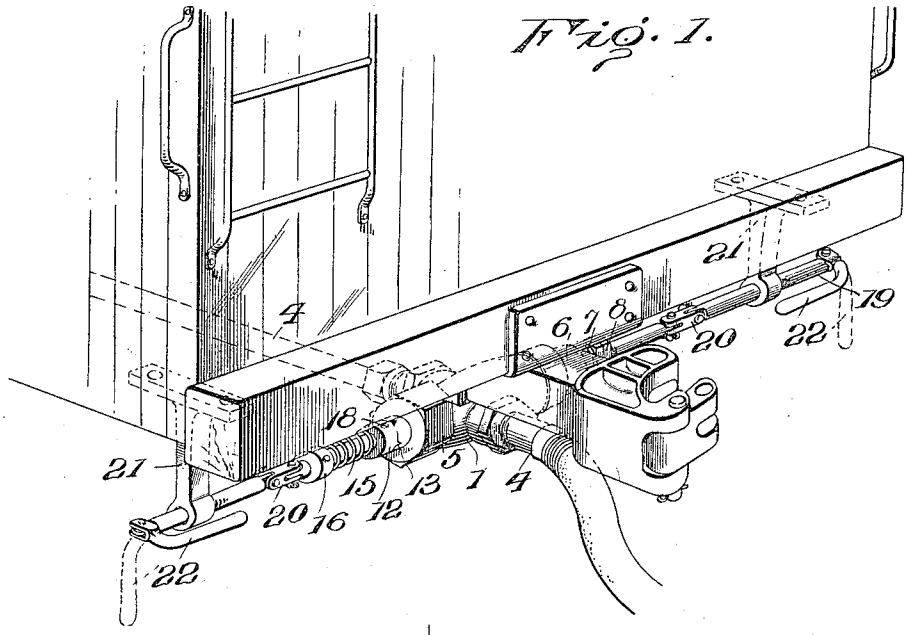


Fig. 2.

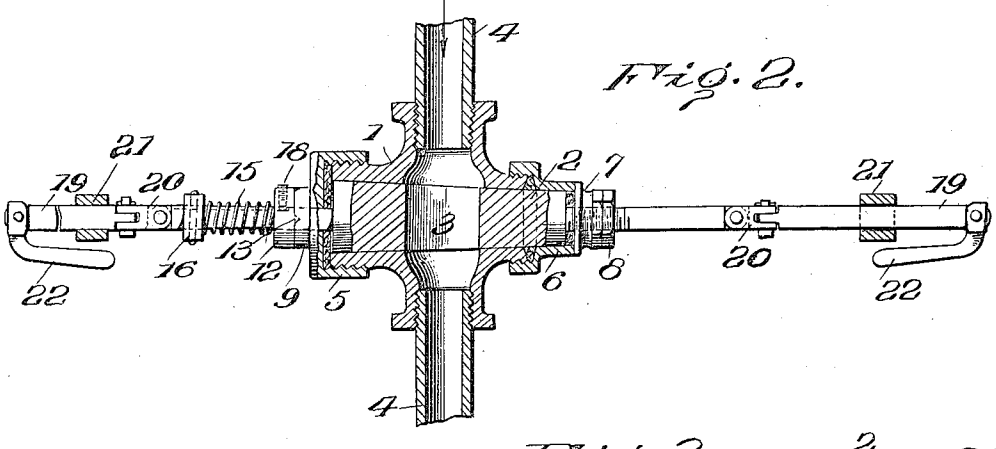
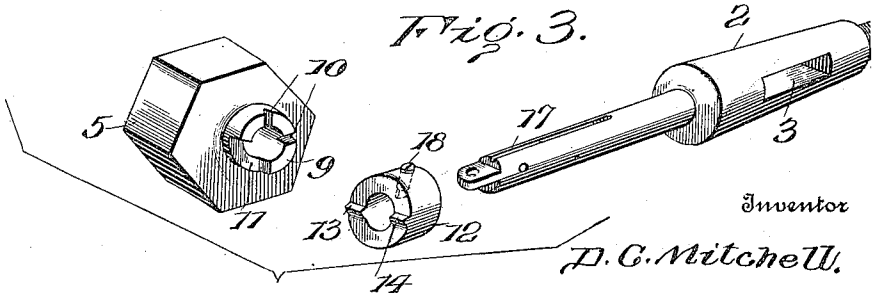


Fig. 3.



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TRAIN-PIPE VALVE.

1,204,176. Specification of Letters Patent. Patented Nov. 7, 1916.

Application filed June 2, 1915. Serial No. 31,759.

To all whom it may concern:

Be it known that I, DAVID C. MITCHELL, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Train-Pipe Valves, of which the following is a specification.

The invention relates to valve mechanism for controlling fluid in its passage through a pipe line applied to cars which are adapted to be coupled in the formation of a train.

Train pipe valves of the type adapted to be manually manipulated require the brakeman or other attendant to pass between the ends of the cars to be coupled or uncoupled thereby endangering the life and limb of such person.

The present invention provides a valve for train pipe mechanism which may be actuated without requiring the person to pass between the cars, the valve operating mechanism being of such construction as to enable the valve to be opened or closed from either side of the car as best suited to the convenience of the operator.

A further purpose of the invention is the provision of novel supporting means for the valve which admits of the latter having a limited movement to compensate for any stress, thereby preventing injury to the valve or adjunctive parts.

The invention also aims to combine with the valve means for limiting the movement so that the valve may be opened to its full extent or entirely closed, the stop mechanism being of a nature to enable the operator to readily ascertain when the two positions are reached.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts which will be hereinafter fully described and particularly claimed.

In the accompanying drawings has been illustrated a simple and preferred form of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that changes, alterations and modifications within the scope of the invention as claimed may be resorted to when desired.

Referring to the drawings, Figure 1 is a perspective view of an end portion of a car provided with a train pipe valve and adjunctive mechanism embodying the invention; Fig. 2 is a horizontal section of the valve showing the parts coöperating therewith; Fig. 3 is a detail view of the valve plug and the stop means for limiting the turning movements thereof.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawing by the same reference characters.

The valve comprises a casing 1 and a plug 2, the latter being tapered throughout its length and formed with a diametrical slot or opening 3 which in one position of the plug provides a passage for the fluid. The valve casing 1 is of the ordinary cruci-form shape and embodies opposed coupling ends to which sections of the train pipe 4 are adapted to be coupled. The remaining two ends are externally threaded and receive caps 5 and 6. The stem of the valve projects axially from opposite ends thereof and extends through the caps 5 and 6. One portion of the stem is screw threaded and receives an adjusting nut 7 and a clamp nut 8. By proper adjustment of the nut 7 the valve 2 may be moved within the casing 1 so as to insure and maintain a close joint therewith. The cap 5 is formed with a collar 9 which has two notches 10 arranged a distance apart corresponding to one-fourth of a circle. A portion of the collar opposite the notches 10 is cut away as indicated at 11 and such cut away portion likewise corresponds to approximately one-fourth of a circle. The walls at the ends of the cut away portion 11 constitute stop shoulders which serve to limit the turning of the valve plug 2. A collar 12 is splined upon the end portion of the valve stem projecting through the cap 5 and collar 9 and is formed with two projections 13 and 14. The projection 13 is of V-form and the notches 10 are of corresponding V-form, the walls of the notches and projection being at such an angle as to admit of the projection 13 riding out of either one of the notches upon the application of sufficient force to effect a turning of the valve plug 2. The sides of the projection 14 are straight and are adapted to engage the straight walls at the ends of the cut away portion 11, thereby limiting the turning of the valve plug in each direction.

An expansible helical spring 15 is mounted upon the valve stem and exerts a pressure upon the collar 12 to yieldingly hold the same against the collar 9. A collar 16 pinned or otherwise secured to the valve stem sustains the outward end thrust of the spring 15. The collar 12 is prevented from turning upon the valve stem by any suitable means but is free to move along the valve stem to admit of the projection 13 riding into and out of the notches 10. As shown a longitudinal groove 17 is formed in a side of the valve stem and receives the inner end of a pin 18 let into an opening formed in the collar 12.

Stems 19 aline with the valve stem and are coupled thereto by means of gimbal joints 20, or any form of joint which will admit of the valve having a limited movement so as to compensate for stress and prevent injury to the valve or concomitant parts. Handles 22 are jointed to the outer ends of the stems 19 in a manner to admit of their having a limited movement so as to yield by impact with an object and thereby prevent injury thereto. The stems 19 are mounted in brackets 21 attached to the end sill of the car or other convenient part. It is to be understood that the stems 19 may be supported in any substantial manner to admit of their turning when it is required to operate the valve and which will at the same time form a substantial support for the valve.

It is observed that the valve comprising the casing 1 and plug or body 2 may be of any desired variety and is supported in a manner to admit of a limited movement, this being effected by means of the gimbal, or like universal joints 20 between the stems 19 and opposite end portions of the valve stem, the valve being supported by means of the parts 21. The handles 22 are located at the sides of the car within convenient reach to be grasped to admit of opening or closing the valve as may be required. By having the handles disposed at opposite sides of the car the valve may be operated from either side of the car according to the position of the attendant. The valve is held in the located position by means of the projection 13 entering one of the notches 10 and is limited in its turning movement by the projection 14 engaging one or the other of the walls at the ends of the cut away portion 11. When turning the valve sufficient force must be exerted to cause the projection 13 to ride out of the notch 10. The construction is comparatively simple and the valve is prevented from being moved beyond a given point when turned in either direction and is held in the required position against casual movement.

Having thus described the invention, what is claimed as new is:—

1. A train pipe valve having a stem extending in opposite directions in axial alinement therewith, such stem having its end portions jointed, supporting means for the outermost sections of the valve stem, thereby admitting of the valve having a limited movement to compensate for stress, and handles jointed to the outer ends of the stem beyond the supporting means.

2. In a valve embodying a casing and a turn plug, a collar fixed with reference to the casing and having notches and a cut away portion, a second collar slidable on and rotatable with the valve stem and having two projections, the one arranged to coöperate with the notches and adapted to ride into and out of engagement therewith and the other projection arranged to operate in the cut away portion and engage the end walls thereof to limit the turning of the plug, and means yieldingly pressing the second collar in contact with the first-mentioned collar.

3. In a valve of the type embodying a casing and turn plug, a cap fitted to the casing and provided with a collar having notches set quartering and an opposed cut away portion, a second collar slidable on and rotatable with the valve stem and provided with two projections, one adapted to coöperate with the notches and the other to operate in the cut away portion of the first-mentioned collar, and a spring mounted upon the valve stem and normally pressing the second collar into engagement with the first-mentioned collar.

4. A train pipe valve comprising a casing, caps threaded to opposite ends of the casing, a turn plug mounted in the casing and having a stem projecting in opposite directions from its ends, other stems jointed to the ends of the valve stem, handles jointed to the outer ends of the last-mentioned stems, a collar formed with one of the caps and having opposed notches and a cut away portion, a second collar slidable on and rotatable with the valve stem and having two projections, one arranged to coöperate with the notches and the other to operate in the cut away portion of the first-mentioned collar, and a spring mounted upon the valve stem and exerting a pressure upon the second collar to yieldingly hold the same in engagement with the first-mentioned collar.

In testimony whereof I affix my signature.

DAVID C. MITCHELL. [L. S.]

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."