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FLEXIBLE CONNECTION

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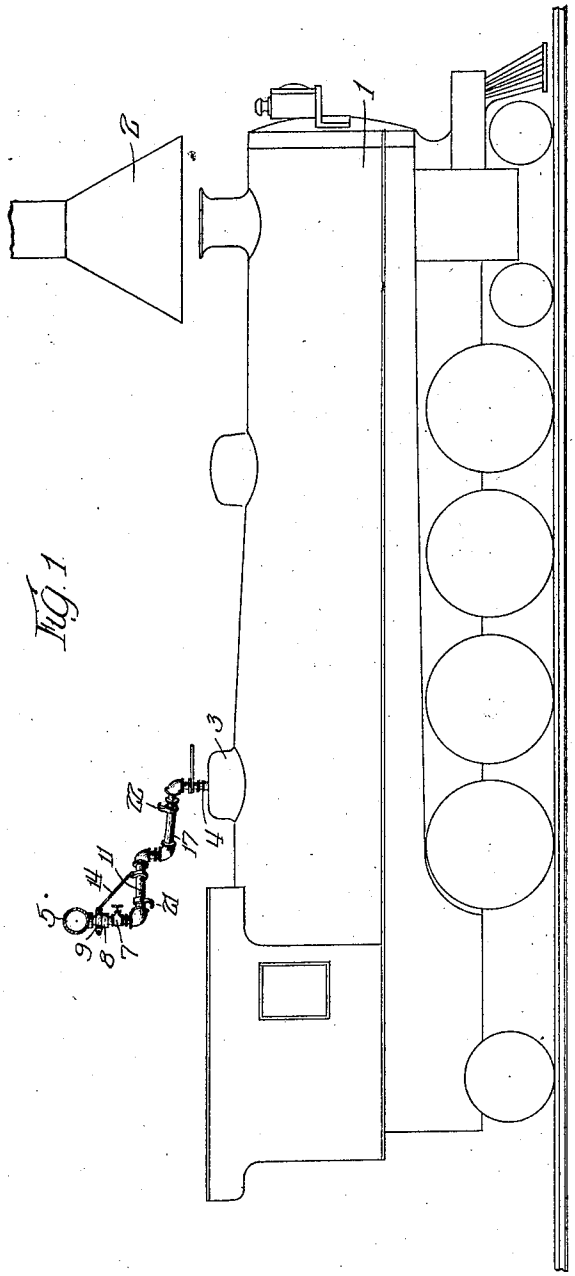


Fig. 1.

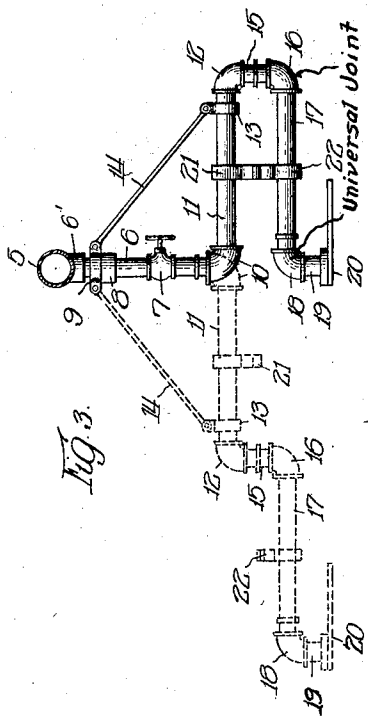


Fig. 3.

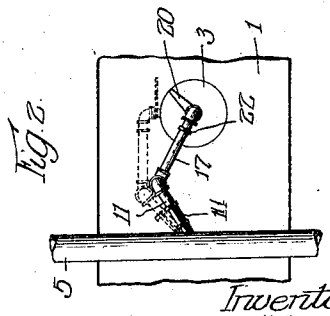


Fig. 2.

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UNITED STATES PATENT OFFICE.

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FLEXIBLE CONNECTION.

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The present invention relates to improvements in flexible connections.

In locomotive roundhouses it is desirable to provide a connection which may communicate with the steam dome of a locomotive for delivering water to said steam dome or conducting steam from said steam dome when it is desired to blow off steam from a locomotive. Due to the fact that locomotives vary greatly in design, and inasmuch as it is not always feasible to spot a locomotive with precision for communicating with the steam dome, the expedient of providing a flexible connection to the steam dome has been tried. Hose has been provided for this purpose, but has proven very unsatisfactory for various reasons. Sturdier constructions have also been tried, but as heretofore known and used have been so heavy and bulky that the workmen have been very reluctant to use same.

Though the present invention will be described particularly with reference to locomotive connections, it will be clear as the description proceeds that the invention is equally applicable to other purposes, as, for example, the filling of tank cars.

An object of the present invention is to provide a flexible connection which is light in weight and which may be readily manipulated.

A further object is to provide a flexible connection which may be made up of parts readily purchasable in the open market, which is simple to assemble and easy to operate.

A further object is to provide a flexible connection which may be folded up into small space but which is capable of action throughout a relatively large range.

Other objects will appear as the description proceeds.

Referring to the drawings—

Figure 1 is a view in elevation containing a schematic representation of a locomotive having associated therewith a flexible connection embodying the principles of the present invention;

Figure 2 is a plan view of the flexible connection shown in Figure 1; and

Figure 3 is a view, on an enlarged scale, of the flexible connection shown in Figure 1.

The numeral 1 indicates a locomotive and the numeral 2 indicates a smoke jack under which the stack of a locomotive may be spotted when said locomotive is driven into a roundhouse. The numeral 3 indicates the steam dome of the locomotive 1, said steam dome being provided with a nipple 4, which nipple may project upwardly from the steam dome 3, laterally from the side thereof, or at other angles, according to different locomotive designs. One of the purposes of the present invention is to provide a flexible connection by means of which attachment to said nipple 4 may be readily made regardless of the angle at which said nipple extends.

The numeral 5 indicates a steam pipe, having the downwardly extending pipe 6. A close fitting collar 6′ may be provided, welded to the steam pipe 5 and to the downwardly extending pipe 6, whereby to provide a sturdy joint which will effectually resist all the shocks likely to be encountered in service. Said pipe 6 is provided with the valve 7 and may have the collar 8 fast thereto for forming an abutment for supporting the collar 9, which collar 9 is capable of rotation about the pipe 6 as an axis. At its lower extremity the pipe 6 is provided with the joint member 10, which may be referred to herein as a swivel joint. A pipe 11 has one of its extremities connected to the joint 10 and has the other of its extremities connected to the elbow 12. The pipe 11 may be provided near the elbow 12 with the collar 13 fast on said pipe 11, which collar 13 is connected to the collar 9 by means of the tie rod 14 whereby the outer extremity of pipe 11 is supported from the relatively rigid pipe 6. The joint 10 permits freedom of movement of translation of the pipe 11 about the pipe 6 as an axis.

The elbow 12 is provided with the downwardly extending pipe 15, which is provided at its lower extremity with the universal or ball joint 16. The other side of the ball joint 16 is connected to the horizontal pipe 17, the other end of said pipe 17 being connected to the universal or ball joint 18. The ball joint 18 is provided with the downwardly extending pipe 19, which when the pipes 11 and 17 are in parallel relation with one another may occupy a position in substantial alignment with the pipe 6. The lower extremity of the downwardly extending pipe 19 may be provided with the connector 20, by which a steam-tight connection may be made between the pipe 19 and the nipple 4 of the steam dome 3. The ball joints 16 and 18 each permit not only a free swivel movement, but also a swinging movement of a uni-

versal nature. Ball joints of this nature are well known and are readily purchasable in the open market.

The pipe 11 and the pipe 17 may be provided with the catch members 21 and 22, respectively. When the flexible connection is out of use, the catch members 21 and 22 may be engaged by one another, whereby the pipe 17 and the pipe 11 will lie substantially in the same vertical plane. If desired, said pipes 11 and 17 may be swung about the pipe 6 as an axis, into parallelism with the steam pipe 5, the loose collar 9 and joint 10 permitting this movement. At this time the flexible connection will be packed away in an unobtrusive position. When a locomotive is driven into the roundhouse, the steam dome of said locomotive may or may not come close to the steam line 5, depending upon whether or not the locomotive is carefully spotted to bring said steam dome into proximity to the steam pipe 5, and also depending very largely upon the design of the locomotive. According to the present invention, it is immaterial, within a relatively great range, how closely the steam dome 3 is spotted relative to the steam line 5. It is also immaterial whether the nipple of the steam dome is at a high or low level, or whether it extends horizontally, vertically, or in any other direction. Choosing figures from practice, the distance from the center line of pipe 6 to the center line of pipe 15 may be five feet. The distance from the center line of pipe 15 to the center line of pipe 19 may be an equal length. A clearance of only about five feet is required about the pipe 6, therefore, to accommodate a complete rotation of pipe 11 about the pipe 6 as an axis. Such a length of pipe with the pipe 17 supported therefrom may be readily operated by the ordinary workman. When a connection is to be made to the steam dome of a locomotive, the workman will swing the pipes to such a position that the connector 20 may be readily applied to the nipple 4 of the steam dome 3. Inasmuch as the ball joints permit a universal action, within limits, the workman may apply the connector 20 to any nipple which will be presented in service without the exertion of exhausting efforts. Continuing with the illustrative figures referred to above, if the distance between the center line of pipe 6 and the center line of pipe 15 is five feet, a radius of ten feet may be covered when the pipe 17 is swung through an angle of 180 degrees about pipe 15 as an axis from the position indicated in Figure 3. Inasmuch as the pipes 11 and 17 may be moved to a position on either side of the downwardly extending pipe 6, it is clear that the flexible connection having the dimensions referred to may be readily applied to any steam dome spotted within a range of twenty feet, that is to say—ten feet in either direction from the downwardly extending pipe 6.

The described embodiment of the present invention is subject to many modifications. It is intended in this patent to cover all such modifications that fall within the scope of the invention as defined by the appended claims.

What is claimed is:

1. Means adapted to connect a relatively fixed main with a nipple, which may be presented at widely varying positions including different levels and different angles, said means including a flexible pipe line comprising a downwardly extending pipe, a second pipe swivelly connected to said downwardly extending pipe, and means for rotatably supporting same from said downwardly extending pipe, said second pipe being capable of movement about said downwardly extending pipe as an axis, a downwardly extending extension for said second pipe, a third pipe constituting an extension for said second pipe, said third pipe being universally connected to said downwardly extending pipe through said second pipe, a universal joint at the outer extremity of said third pipe, a connector carried by said universal joint adapted to connect same to a nipple at varying angles, and hook means for releasably holding said pipes in substantially the same vertical plane.

2. Means adapted to connect a relatively fixed main with a nipple which may be presented at widely varying positions including different levels and different angles, said means including a flexible pipe line comprising a downwardly extending pipe, a second pipe, a swivel joint connecting said downwardly extending pipe and said second pipe, means rotatably connected with said downwardly extending pipe and having a connection with said second pipe at a point remote from said swivel joint for supporting said second pipe, a downwardly extending extension for said second pipe, a third pipe constituting an extension for said second pipe, a universal joint in the line between said second and third pipe, and hook means for releasably holding said second and third pipes in substantially the same plane.

Signed at Chicago, Illinois, this 8th day of June, 1923.

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