June 2, 1931. F. W. FUCHS 1,807,782

COUPLING MEMBER FOR CONDUIT RODS, PUMP RODS, ETC

Filed March 3, 1930

FIG. 1.

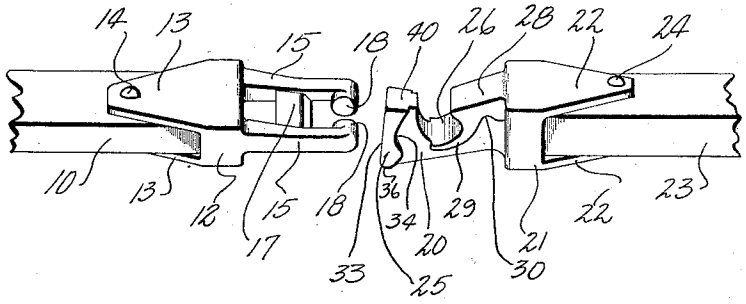


FIG. 2.

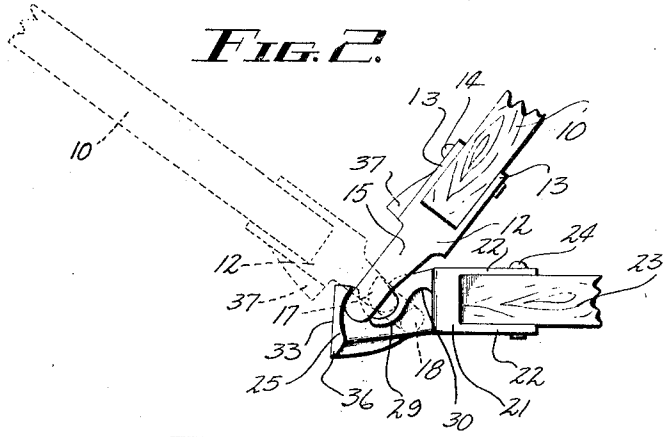
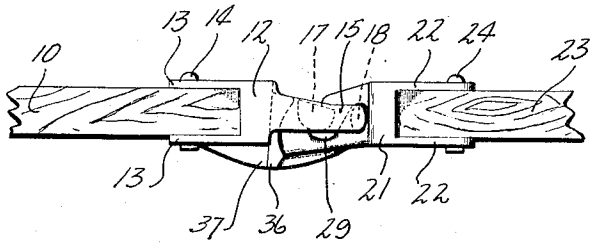


FIG. 3.



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UNITED STATES PATENT OFFICE

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COUPLING MEMBER FOR CONDUIT RODS, PUMP RODS, ETC.

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This invention relates to improvements in coupling members for conduit rods, pump rods, etc.

The object of this invention is to provide means whereby such rods may be formed in short sections which are adapted to be hingedly coupled or uncoupled at the top of a manhole and fed vertically to the conduit through the manhole and thence along the conduit to the next manhole without buckling or unhooking in the conduit.

In general, the object is to provide a coupling which will permit the rod sections to be fed into a sewer or conduit with substantially the same facility that a chain might be similarly manipulated but which may be pushed lengthwise of the conduit with the same facility that a continuous rod of equal length could be pushed horizontally through a tube.

More particularly stated, it is my object to provide coupling members which require the rod sections to be adjusted at an acute angle to each other to initiate their connection and which, after such a connection has been initiated, may be swung toward a position of alignment and mutually guided into an abutting non-buckling relation to each other wherein motion may be transmitted lineally without permitting material movement of the parts upon each other under push and pull operations. The rod sections when completely coupled, are in one way hinge joint connection with each other with abutting surfaces obliquely placed and tending to normally resist flexion in the only direction in which the joint can be flexed.

In the drawings:

Figure 1 is a fragmentary view of two conduit rod sections equipped with my improved mutually interlocking coupling members showing the same as they appear when detached.

Figure 2 is a view of the same as they appear when initiating a coupling operation, with dotted lines indicating an intermediate position occupied by one of the sections while being swung to full coupling position.

Figure 3 illustrates the sections as they appear when fully coupled.

Like parts are identified by the same reference characters throughout the several views.

The rod section 10 has one end provided with a cap 12 having flanges 13 which embrace the end portion of the rod to which they are secured by a connecting pin or rivet 14.

On the opposite side of the cap 12 from that occupied by the flanges 13 it is provided with a pair of fork arms 15 intermediately connected by an obliquely flattened hinge pin 17, the preferable cross sectional contour of which is clearly indicated by dotted lines in Figure 3. The hinge pin 17 is located substantially midway between the cap 12 and the extremities of the fork arms 15 and these extremities are provided with inwardly projecting studs 18. The gap between these studs is substantially equal in width to the thickness of the web portion 20 of the coupling member now to be described.

The companion coupling member comprises a cap 21 similar to the cap 12 and having flanges 22 similarly secured to the rod section 23 by a cross pin or rivet 24. The web 20 projects from the opposite side of the cap 21 from that occupied by the flanges 22 and is provided with a head piece 25 at the outer end of the web 20.

One margin of the web 20 is provided with a bearing socket 26 into which the hinge pin or cross piece 17 may be received. The recess extends inwardly from the margin of the web with an oblique pitch in the direction of the cap 21 and the inner face or bottom of the recess is rounded in general correspondence to the rounded surface of the hinge pin 17.

Between the bearing socket 26 and the cap plate 21, the socketed margin of the web 20 is thickened to provide what may be conveniently termed a shoulder 28 from which curved finger-like guiding abutments or flanges 29 extend along the base of the bearing socket 26 to guide the studs 18 into coupling engagement as hereinafter explained. Between these flanges 29 and the cap plate 21, the shoulder 28 is provided, on each side of the web, with a socket 30 to receive the

studs 18 when the latter are in coupling position.

The outer side of the head piece 25 has an oblique bearing face 33, and at its inner side, on each side of the web 20, it is provided with a rounded recess 34 to initially receive the studs 18 when the members are being assembled.

At the side opposite the bearing socket 26, the outer end portion of the web 20 is preferably widened or provided with a triangular flange which supports an offset portion of the head piece at this side of the coupling. This portion of the head piece is adapted to abut an oppositely disposed similarly supported stop 37 connected with the cap 12. The face of the cap 12, between the fork arms 15, is obliquely disposed to receive the oblique face 33 of the head piece 25, and the offset portions 36 and 37 will not only resist flexion of the coupling on that side, but the oblique position of said faces tend to prevent flexion in the opposite direction.

To couple the sections together, it is first necessary to adjust them at an acute angle to each other, with the studs 18 embracing the web 20 partially within the head sockets 34. Thereupon, the section 10 may be swung upon the hinge pin 17 as indicated by dotted lines in Figure 2 to cause the studs 18 to travel along the web 20 and be guided by the finger flanges 29 to the sockets 30. In the meantime the head piece 25 will have a relative movement between the fork arms 15 until the nose 40 enters the space between the hinge pin 17 and the cap plate 12, whereupon the oblique face of the cap piece and the face 33 of the head piece 25 will be brought into contact, thus completing the coupling.

When the coupling has thus been completed, the parts cannot be uncoupled while in a conduit of such dimensions as to prevent them from being swung relatively to the acute angle at which they appear in Figure 2. By having the studs 18 so located that they bear upon the guiding surfaces of the shoulder piece 28 when the face 33 of the head piece 25 is in abutting contact with the opposing surface of the cap 12, lost motion, or relative movement of the parts upon each other during the axial movements of the push rod may be prevented.

I claim:

1. A coupling of the described class, comprising the combination with a forked member having inwardly facing end studs and an intermediate hinge pin, of a web member provided with a bearing socket for said pin and having a head piece adapted to engage between the fork arms in the space between the pin and the crown of the fork, said web having a shoulder piece socketed on opposite sides of the web member to receive said studs.

2. A coupling of the described class, comprising the combination with a forked member having inwardly facing end studs and an intermediate hinge pin, of a web member provided with a bearing socket for said pin and having a head piece adapted to engage between the fork arms in the space between the pin and the crown of the fork, said web having a shoulder piece socketed on opposite sides of the web member to receive said studs from a direction opposite that of head piece movement between the fork arms, the shoulder piece being provided with finger flanges flanking the base of said bearing socket and adapted to serve as guides to facilitate manipulating the studs into the shoulder piece sockets, and prevent release until one coupling member has been swung to an acute angle relatively to the other.

3. The combination of a set of conduit rod coupling members provided with mutually engageable offset bearings, one of said coupling members having a set of fork arms intermediately connected by a pivot pin and the other having bearing sockets for said pin and for the ends of the fork arms and an associated web receivable between said arms, and guiding members adapted to retain the arms in engagement except when the members are adjusted at an acute angle to each other.

4. In a push rod coupling, a coupling member having fork arms provided with a transverse pivot pin connecting the arms at an intermediate point between the ends of the fork arms, the free extremities of the fork arms having inwardly projecting spaced studs.

5. In a push rod coupling, a forked coupling member provided with a transverse pivot pin between the respective ends of the fork arms, the extremities of the fork arms having inwardly projecting spaced studs, in combination with a counterpart coupling member having a web adapted to be engaged between said studs and provided with a bearing recess to receive the pivot pin, a head piece at one end of the web receivable at the base of said fork arms, and a shoulder portion at the other end of the web having stud receiving sockets and retaining guide fingers to prevent release of the studs at points between the sockets and the head piece.

6. In a push rod coupling, a forked coupling member provided with a transverse pivot pin between the respective ends of the fork arms, the extremities of the fork arms having inwardly projecting spaced studs, in combination with a counterpart coupling member having a web adapted to be engaged between said studs and provided with a bearing recess to receive the pivot pin, a head piece at one end of the web receivable between the fork arms at the head of the fork, and stud receiving sockets at the end of the

web opposite the head piece, said web being also provided with curved guiding flanges adapted to prevent release of said studs from the web until the coupling members are adjusted at an acute angle to each other.

7. In a conduit coupling, a webbed member having a cap piece at one end, a head piece at the other end, an intermediate pivot socket flanked by curved finger-like flanges, and a shoulder piece extending along the web margin and socketed at each side thereof for interlocking engagement with members of a cooperative coupling member.

8. The combination of a set of normally aligned, pivotally engaged coupling members, provided with offset mutually engaging bearings preventing movement out of alignment in one direction and having interlocking members movable in the opposite direction about the pivotal axis to a position for release when one member is at an acute angle to the other, said members being otherwise interlocked against disengagement.

9. The combination with a coupling member provided with fork arms intermediately connected by a cross pin and having their free extremities provided with inwardly projecting aligned studs substantially parallel to the cross pin, a cooperative coupling member having a web adapted to fit between said studs, and a head piece on the web adapted to pass between the fork arms in the space between the cross pin and the connected ends of said arms, said web having at its other end a thickened cap-like portion socketed to receive the studs when the members are aligned, and the web being also provided with an intermediate socket in position to register with and receive the cross pin when the members are aligned.

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