

No. 857,831.

PATENTED JUNE 25, 1907.

F. H. RICHARDS.
PIVOT CONNECTION.
APPLICATION FILED OCT. 7, 1901.

Fig. 1.

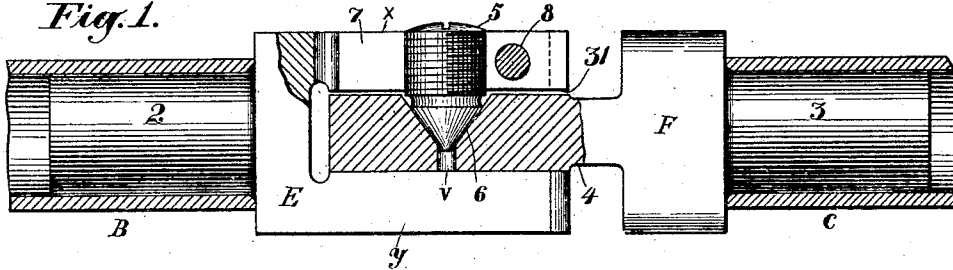


Fig. 2.

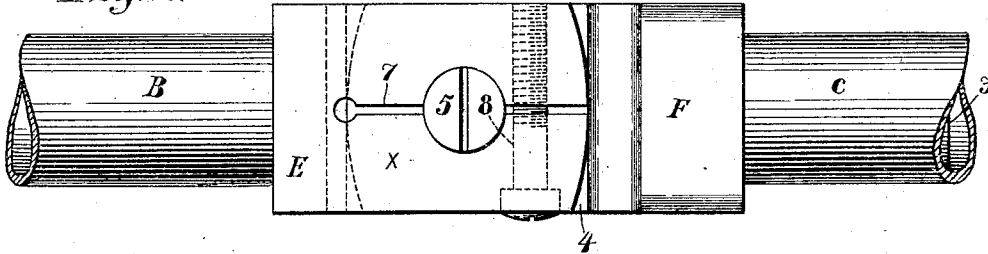


Fig. 6.

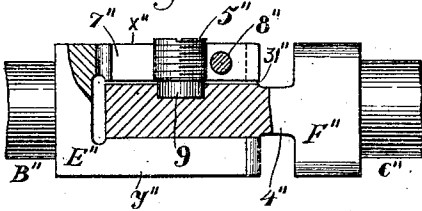


Fig. 4.



Fig. 7.

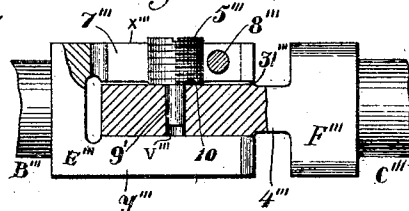


Fig. 5.

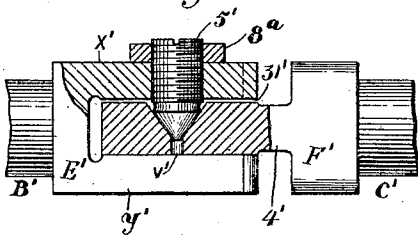
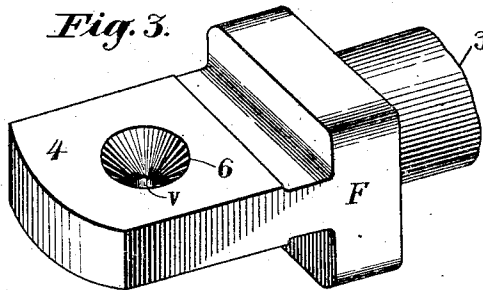


Fig. 3.



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PIVOT CONNECTION.

No. 857,831.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANCIS H. RICHARDS, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Pivot Connections, of which the following is a specification.

This invention pertains to the construction of articulated joints, and has for an object to provide a pivot connection for a pair of articulated members, possessing means for precisionizing the parts when connected together and confining their possible movement to a pivotal one about a predetermined axis.

A pivot connection embodying the present improvements possesses, furthermore, means for adjusting the parts to compensate for wear and for taking up slack or looseness which may arise therefrom or from other causes.

In the drawing accompanying this specification, Figure 1 is partly an elevational view, partly a longitudinal section of a pivot connection embodying my present invention. Fig. 2 is a plan of the connection shown in Fig. 1. Fig. 3 is a perspective view of one of the connected members. Fig. 4 is an elevational view of the pivot-pin shown in Fig. 1. Fig. 5 is a view similar to Fig. 1 showing a modification, this figure and the remaining figures being upon a somewhat smaller scale than the preceding figures. Fig. 6 is a view similar to Fig. 1 but shows a modification embodying a pivot-pin for the connection of the parts differing from the form thereof depicted in Fig. 1; and Fig. 7 is mainly a sectional view illustrating a modified form of the pivot-pin shown in Fig. 6.

Similar characters of reference designate corresponding parts in all figures.

A pivot connection constructed according to the present invention will embody means for connecting the pivoted members one with the other of such a character as to enable the parts to be pressed in intimate contact and one, furthermore, which permits the two connected members to be adjusted relatively to each other, when connection is made, into a position in which the members are confined to a motion about a predetermined pivotal axis.

The members to be connected, designated in a general way by B and C, are herein shown in the form of tubular end portions,

although it is to be understood that in so illustrating the same, this particular representation of such members is chosen merely for purposes of illustration and description, as it is not contemplated that the application of the present pivot connection shall be limited to employment with such a form for the connected members alone.

When the members are of tubular form the connection is conveniently made between end pieces, which though separate from, but fixedly secured to such tubular members, yet form essential parts of their respective members, each set comprising a member and its end piece constituting in fact an entity. Thus one end piece, the end piece herein designated by E may be provided with a shank 2, adapted to enter the bore of the member B, in which it may be affixed by proper means. Similarly the end piece F may be provided with a shank 3, similarly affixed to the member C. One of the end pieces, in this case the piece E, is provided with a slot 31, into which enters an extension 4 of the end piece F.

The means provided for pivotally connecting the two end pieces E and F is of such a character as to press the extension 4 against the opposing surface at the side of the slot 31 and by the reaction of the parts thus called into play serving to hold the surfaces in close contact. Preferably the surfaces in contact will be of ample extent to provide a comparatively large working surface.

Referring particularly to the construction set forth in Figs. 1, 2, 3, and 4, there is shown in those figures a pivot-pin 5, passing through an aperture in the side portion *x* of the end piece E and engaging with the extension 4 of the end piece F. The engaging end of the pivot-pin 5 is shown conical in form, being seated, when the parts are assembled, in a conical recess 6 in the extension 4. Preferably the pin 5 will be adjustable to position, and for this purpose it may be threaded to engage with the correspondingly threaded bore of the aperture through which it passes. When the parts are constructed in this manner, it is obvious that upon adjusting the pivot-pin 5 into its engaging position, the tendency, as a result of the engagement of the conical surface of the pivot-pin with the conically tapering surface of its seat, is to shift and precisionize the extension 4 and hence the member rigid with it into a relative position in which the axis of the conical re-

cess or seat 6 therein coincides with the axis of the pivot-pin. Thus the pivot-pin not only provides a means for firmly pressing the extension 4 against the opposing surface of the side portion y of the end piece E, but, furthermore, it causes the precise locating of the connected parts in a relative position in which the possible movement is confined to an angular movement about a fixed and predetermined axis. Evidently the adjustment of the pin 5 may be utilized to take up wear or looseness that may exist between the parts either through continued use or from other causes.

In Figs. 1 and 2 the side portion of the end piece E through which the pivot-pin 5 passes is shown provided with a slot 7 intersecting the bore of the pivot-pin aperture, thus enabling, by means of a clamping screw 8, the two sections of the side piece x to be clamped firmly together and the pin 5 to be locked in an adjusted position.

Referring to Fig. 5, in which the parts analogous to the parts indicated and shown in Figs. 1 to 4, inclusive, are designated by identical characters with prime marks attached, and which therefore need not be more fully described, a construction is shown in which the means for locking the pivot-pin 5' in position consists of a lock-nut 8^a.

Instead of having a pivot-pin with a conical end as shown and described, the construction shown in Figs. 6 or 7 may be employed. In these figures similar parts are also designated in a manner corresponding to that described with reference to Fig. 5, that is to say, like parts are designated by like characters, double prime marks being attached to the characters in Fig. 6 and triple prime marks to the characters in Fig. 7. The pivot-pins 5'' in Fig. 6 and 5''' in Fig. 7 are each screw-threaded as before for engagement with the side portion of the end piece, E'' and E''' respectively, but in each case that portion of the pivot-pin which engages with the extension of the opposite end piece is cylindrical. In Fig. 6 the cylindrical extension 9 of the pivot-pin 5'' enters a corresponding recess in the extension 4''. Upon the adjustment of the pin to its final position, its end bottoms against the lower surface of its receiving socket, whereupon the further adjustment of the pivot-pin, effects the intimate contacting of the opposing surfaces. In the construction set forth in Fig. 7, however, the pivot-pin 5''' extends entirely through the extension 4''', the annular shoulder 10 formed by the reduced end 9' of the pivot-pin being here effective to press the parts together. Both of these connections are shown provided with means for clamping the respective pivot-pins in an adjusted posi-

tion, clamping screws 8'' and 8''' respectively being provided for this purpose. Of course suitable oil channels will usually be provided for the purpose of facilitating the effectual lubrication of the working and sliding surfaces.

As shown in some of the figures the recess in the extension of the member with which the pivot-pin engages may open outward through the opposite or contacting face of the extension, as indicated by v , v' and v''' in Figs. 1, 5 and 7, respectively.

Having described my invention, I claim—

1. A pivot connection comprising a bifurcated member, a member projecting thereinto, said members having a single pair of opposed, broad, flat bearing surfaces of substantially the same area, and a single pivot carried by the bifurcated member and projecting into a socket of the other member and engaging such member to one side of such flat bearing surfaces to hold said surfaces in engagement and maintain the said members in the same working plane and against torsional movement one relatively to the other and also acting as an axis for said members.

2. A pivot connection comprising a bifurcated member, a member projecting thereinto, said members having a single pair of opposed, broad flat bearing surfaces of substantially the same area, and a single conical pivot carried by the bifurcated member and projecting into a conical socket of the other member and engaging such member to one side of such flat bearing surface to hold said surfaces in engagement and maintain said members in the same working plane and against torsional movement one relatively to the other and also acting as an axis for said members.

3. The herein described pivot connection comprising a bifurcated member having one part thereof slotted, a member projecting into such bifurcated member, said members having a single pair of opposed, broad, flat bearing surfaces of substantially the same area, a single conical pivot threaded into one part of the bifurcated member and projecting into a conical socket of the other member and engaging such member to one side of such flat bearing surfaces to hold said flat surfaces in engagement and maintain said members in the same working plane and against torsional movement one relatively to the other and also acting as a pivot for said members, and a clamping screw projecting into said slotted part of the bifurcated member for locking said pivot screw in place.

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