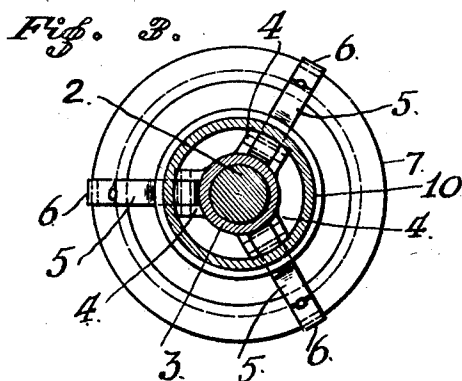
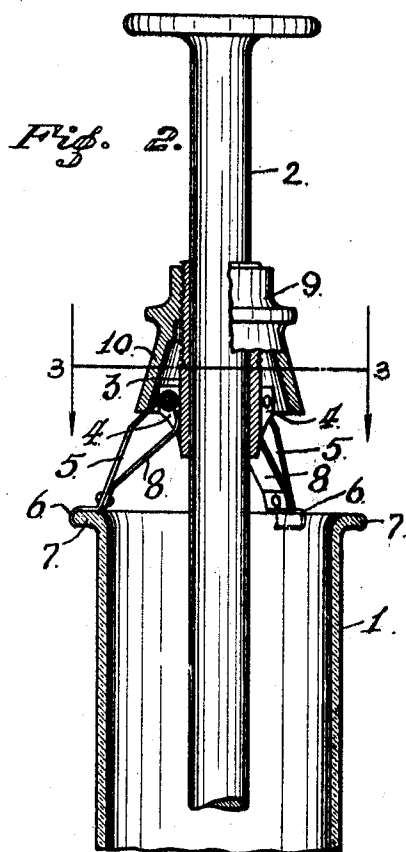
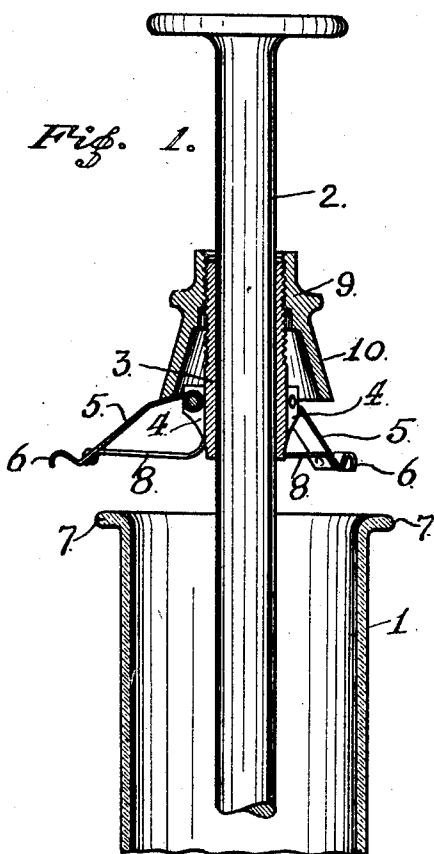


Feb. 2, 1926.

1,571,268

G. N. HEIN
ADJUSTABLE PISTON ROD CENTERING GUIDE AND COUPLING, ESPECIALLY
ADAPTED FOR SYRINGES
Filed Sept. 21, 1925



INVENTOR
George N. Hein
BY Harry A. Totten
ATTORNEY

UNITED STATES PATENT OFFICE.

GEORGE N. HEIN, OF SAN FRANCISCO, CALIFORNIA.

ADJUSTABLE PISTON-ROD CENTERING GUIDE AND COUPLING, ESPECIALLY ADAPTED FOR SYRINGES.

Application filed September 21, 1925. Serial No. 57,509.

To all whom it may concern:

Be it known that I, GEORGE N. HEIN, a citizen of the United States, residing at the city and county of San Francisco and State of California, have invented certain new and useful Improvements in Adjustable Piston-Rod Centering Guides and Couplings, Especially Adapted for Syringes, of which the following is a specification.

My invention relates to means for coupling and centering piston-rods to and in the cylinders to which the piston is fitted.

While applicable to any engine or appliance in which a piston is operative within a working barrel, said invention is especially adapted for syringes, particularly of the hypodermic type.

The object of my invention is, in the main, two-fold, namely, first to provide a simple, easily applied and effective center-mounting and guiding connection between the piston-rod and the barrel; and, second, to provide for the adjustment of said connection to adapt it for use with barrels of varying diameters.

In connection with syringes, especially, the attainment of these objects is desirable, in that it may often be expedient to substitute one barrel for another of different diameter, and to use the same piston-rod coupling with like guiding and centering effect.

My invention, briefly stated, comprises a hub member linearly slidable upon the piston-rod; a circumferential series of radially spreading coupling arms pivotally carried at one end by the hub member and having means at the other end for circumferential engagement with the barrel top; resilient members acting on said arms to effect their normal spread; and a pressure member adjustably fitted on the hub member and adapted to bear on the coupling arms to contract them to clamping engagement on the barrel.

In the accompanying drawings I illustrate my invention as embodied in a practicable and efficient form, though it is to be understood that changes may be made in constructive practice without departing from the spirit of the invention as defined by the claims hereunto appended.

Fig. 1 is a longitudinal section of my coupling, showing it mounted upon a piston-rod, and about to be fitted to a barrel.

Fig. 2 is a similar section showing the coupling fitted to the barrel.

Fig. 3 is a section on the line 3—3 of Fig. 2.

1 is a barrel or cylinder shown here as fragmentary, its upper portion only appearing. 2 is a piston-rod operating in the barrel through the open top of the latter. Upon the piston-rod is mounted with a linearly slidable fit a hub member in the form of a sleeve 3, which carries a circumferential series of ears 4, to which are pivoted by their upper ends the coupling arms 5. There may be any plurality of these arms, three being indicated in Fig. 3. The arms spread out in radial planes and are provided at their free ends with means for circumferentially engaging the top of the barrel, said means being here shown as hook-like extremities 6, on the arms and an exterior bead 7 on the barrel.

Springs 8 bear on the arms to hold them at their normal maximum spread.

Threaded upon the upper end of the sleeve 3 is a clamp member 9 having a flaring skirt 10 adapted to bear upon the arms 5.

By referring to Fig. 1, it will be seen that when the clamp member 9 is drawn back, it so relieves the arms 5 of pressure, that said arms spread out to their utmost divergence, and in this condition they have, as a series, a diameter enabling them to be readily applied to various diameters of barrels. In this Fig. 1 they are shown ready to be fitted to a barrel.

In Fig. 2 they are shown so fitted. The adjustable clamp member 9 has been moved down to cause its skirt 10 to press upon the arms 5 and thus contract the annular arm series to firm engagement with barrel top. This engagement being circumferential of the barrel and the coupling itself having the piston-rod for its axis, it follows that when the engagement is complete, the piston-rod will be centered in the barrel and held and guided accurately in this relation, without regard to the piston contact with said barrel.

I claim:—

1. A piston-rod centering guide and coupling comprising a hub member adapted for a linear slidable fit upon said rod; a plurality of coupling arms pivotally carried at one end circumferentially of and by said member, and normally spreading outwardly

therefrom, their free ends having means for engaging a barrel; and a clamp member adjustably linearly fitted to the hub member and adapted to bear upon the coupling arms to contract and hold them to their engagement with the barrel.

2. A piston-rod centering guide and coupling comprising a hub member adapted for a linear slidable fit upon said rod; a plurality of coupling arms pivotally carried at one end circumferentially of and by said member, and normally spreading outwardly therefrom, their free ends having means for engaging a barrel; resilient means for normally spreading said arms; and a clamp member adjustably linearly fitted to the hub member and adapted to bear upon the coupling arms to contract and hold them to their engagement with the barrel.

3. A piston-rod centering guide and coupling comprising a sleeve adapted for a linear slidable fit upon said rod; a plurality of coupling arms pivotally carried at one end circumferentially of and by said sleeve and normally spreading outwardly therefrom, their free ends having means for engaging a barrel; and a clamp member mounted for linear adjustment upon said sleeve, said member having a flaring skirt adapted to bear upon the coupling arms to contract and hold them to their engagement with the barrel.

4. A piston-rod centering guide and cou-

pling comprising a sleeve adapted for a linear slidable fit upon said rod; a plurality of coupling arms pivotally carried at one end circumferentially of and by said sleeve and normally spreading outwardly therefrom, their free ends having means for engaging a barrel; springs for normally spreading said arms; and a clamp member mounted for linear adjustment upon said sleeve, said member having a flaring skirt adapted to bear upon the coupling arms to contract and hold them to their engagement with the barrel.

5. In combination with a barrel having an open top with an exterior circumferential bead, and a piston-rod playing through said open top, a coupling device comprising a sleeve linearly slidable upon said rod; a plurality of coupling arms pivotally carried at one end circumferentially of and by said sleeve and spreading outwardly therefrom, the free ends of said arms having hooks adapted for engagement with the bead of the barrel; springs to hold said arms to their normal spread; and a clamp member threaded for linear movement of said sleeve and having a flaring skirt bearing upon the coupling arms to contract them and hold their hooks to their engagement with the barrel bead.

In testimony whereof I have signed my name to this specification.

GEORGE N. HEIN.