F. G. FAIRALL.

DETACHABLE COUPLING.

APPLICATION FILED SEPT. 5, 1907.

913,484. Patented Feb. 23, 1909.

Fig. 1.

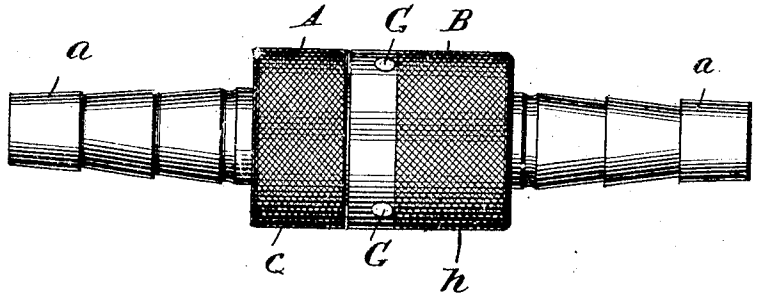


Fig. 2.

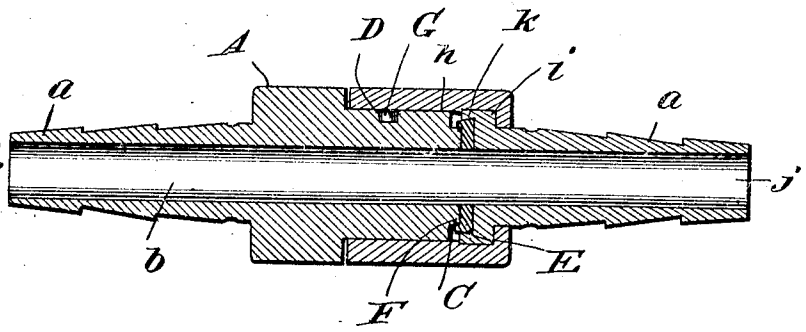


Fig. 3.

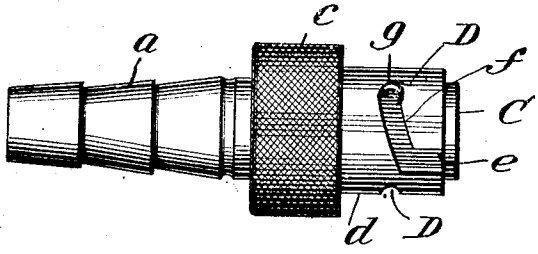


Fig. 4.

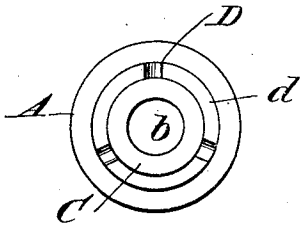


Fig. 5.

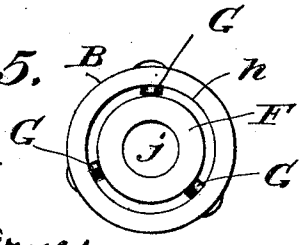
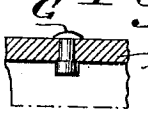


Fig. 6.



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DETACHABLE COUPLING.

No. 913,484. Specification of Letters Patent. Patented Feb. 23, 1909.

Application filed September 5, 1907. Serial No. 391,464.

To all whom it may concern:

Be it known that I, FRANK G. FAIRALL, citizen of the United States, residing at Baltimore, State of Maryland, have invented new and useful Improvements in Detachable Couplings, of which the following is a specification.

My invention pertains to detachable couplings for hose, pipe and the like; and it contemplates the provision of a simple and inexpensive coupling the members of which are well adapted to withstand the rough usage to which coupling members are ordinarily subjected in machine shops and like places, and one through the medium of which two sections of hose or pipe may be expeditiously and easily connected together and as readily disconnected, and this notwithstanding the joint is a tight and strong one capable of withstanding extraordinary high pressure, and the coupling members in their connected relation are positively locked so that there is no liability of the members becoming disconnected through casual rotation of one with respect to the other.

With the foregoing in mind, the invention will be fully understood from the following description and claim when the same are read in connection with the drawings, accompanying and forming part of this specification, in which:

Figure 1 is a side elevation illustrating the members of my novel coupling as connected together, and as specifically adapted to connect two sections of hose. Fig. 2 is a longitudinal-central section of the same. Fig. 3 is a side elevation of the male member of the coupling, definitely illustrating the configuration of one of the grooves. Fig. 4 is an elevation of the inner end of said member. Fig. 5 is an elevation of the inner end of the female coupling member; and: Fig. 6 is a detail section of the latter member, showing the preferred mode of fixing the studs to the major portion thereof.

Similar letters designate corresponding parts in all the views of the drawings, referring to which:

A is the male member and B the female member of the coupling constituting the best embodiment of my invention of which I am cognizant. As illustrated the two members are provided with outer portions *a* adapted for the connection of sections of hose, but I would have it here understood that the specific construction of the said outer portions is immaterial, and that, therefore, they may be of any construction compatible with the purpose of my invention without involving departure from the scope thereof.

The male member A is provided with a bore *b* free from obstruction throughout its length, and is also preferably, though not necessarily, equipped with an enlarged and peripherally roughened hand-grasp portion *c*. At its inner end around the bore *b*, the said male member A is provided with an annular rib or projection C for an important purpose hereinafter set forth, and in the periphery of its circular inner portion *d* it is provided with three (more or less) equi-distant grooves D. These grooves are identical in construction and therefore a detailed description of the one shown in Fig. 3 will suffice to impart a definite understanding of all. The said groove D, Fig. 3, comprises a mouth portion *e* extending in the direction of the length of the member rearward from the inner end of the circular portion *d*, a cam portion *f* extending from the rear or outer end of the portion *e* circumferentially of the circular portion *d* and slightly toward the outer or rear end of the member, and a seat *g* disposed at the inner end of the cam portion *f* and extending slightly forward from said end or toward the inner or forward end of the member. At this point I desire to direct attention to the fact that there is no communication between the bore *b* and the grooves D, and hence no liability of leakage through the said grooves; and it should also be noted that the construction of the male member A as a whole is such that there is no liability of said member being injured when thrown down or about in a machine shop or when stepped upon or struck against another object.

The female member B comprises the before mentioned outer portion *a* and an inner portion *h*, the interior diameter of the latter being such as to snugly receive the portion *d* of the male member A. The inner portion *h* is preferably, though not necessarily, swiveled on the outer portion *a* for a cogent reason which will be pointed out, and in the outer end wall of the inner portion *h*, which

wall is formed by the enlargement *i* on the portion *a*, is formed an annular groove E which surrounds the bore *j* in the outer portion *a* and has its outer wall *k* slightly undercut or dovetailed as shown in Fig. 2. Disposed in the said annular groove E and securely retained in position by the wall *k* thereof is an elastic washer F, of rubber or other suitable material, which is of the same shape in cross-section as the groove E. It is preferable to swivel the inner portion *h* on the outer portion *a* as stated since when the members A and B are connected in the manner to be pointed out, the washer F will be carried rectilinearly against the inner end of the male member A and hence will not be subjected to any frictional wear whatever with the result that its period of usefulness will be materially prolonged.

At about the proportional distance illustrated from its mouth, the inner portion *h* of the female member B is provided with three (more or less), equi-distant inwardly extending studs G. These studs G are preferably fixed to the portion *h* in the manner shown in Fig. 6, that is to say, each has a shoulder disposed against the inner side of the said portion and an outer end upset or riveted against the outer side of the portion. Because of this it will be apparent that the studs may be readily secured with respect to the portion *h* and yet are not liable to be casually disconnected or displaced.

The practical operation of my novel coupling is as follows: The portion *d* of the male member A is moved rectilinearly into the portion *h* of the female member B and so that the studs G are received in the mouth portion *e* of their complementary grooves D. The portion *h* of the female member B is then turned through a part of a revolution so as to move the studs G along the cam portions *f* of the grooves toward the seats *g* and place the studs in the said seats *g*. The movement of the studs G in the direction described in the cam portions *f* of the grooves D operates to draw the members A and B endwise together and to compress the washer F and embed the annular rib or projection C of the male member A in said washer F so as to break the joint and thereby preclude leakage or displacement of the washer even when the pressure present in the coupling is extraordinarily high. When the studs G reach the seats *g* of grooves D, the washer F expands to a certain extent and serves to move the male member A endwise outwardly or away from the female member B with the result that the studs G are received and held in the seats *g* and the members A and B are locked against casual rotation with respect to each other, and there is no liability of the members being casually disconnected. While the washer expands as stated to engage the seats *g* with the studs G for the purpose stated, it will be seen by reference to Fig. 2 that because of the embedding of the annular rib C in the elastic washer F, said seating of the studs G in the seats *g* is accomplished without affecting the broken joint between the male member of the coupling and the elastic washer F. In other words the outward endwise movement of the male member necessary to engage said seats *g* with the studs G and lock the members against casual rotation with respect to each other may be effected and yet because of the embedding of rib C in the elastic washer F, the advantageous broken joint between the members is effectually preserved. When it is desired to disconnect the members A and B it is simply necessary to forcibly turn the portion *h* of the member B in the direction opposite to that first stated so as to move the studs G out of the seats *g* of the grooves D, and then move the studs G along the cam portions *f* of the grooves to the mouths *e* thereof, when the members A and B may be drawn or moved endwise apart.

As will be gathered from the foregoing, the female member B, like the male member A, is so constructed that there is no liability of its being injured when thrown down or around in a machine shop or against another object.

The construction herein shown and described constitutes the preferred embodiment of my invention, but it is obvious that in the future practice of the invention such changes or modifications may be made as fairly fall within the scope of my invention as defined in the claim appended.

Having described my invention, what I claim and desire to secure by Letters-Patent, is:

In a detachable coupling, a male member having a bore extending throughout its length and an annular rib C projecting forwardly from its inner end, around the said bore, and also having an inner portion, of circular form in cross-section, in the periphery of which are grooves each comprising a mouth portion extending rearwardly from the inner end of said inner portion and in the direction of the length of the member, a cam portion extending circumferentially from the rear end of the mouth portion and slightly rearwardly or toward the outer end of the member, and a seat extending from the inner end of the cam portion forwardly or toward the inner end of the member, in combination with a female member having a bore and also having an inner tubular portion receiving the circular and grooved portion of the male member and studs extending laterally inward from the wall of said tubular

portion and removably arranged in the seats at the ends of the grooves in the male member, and an elastic washer arranged in the tubular portion of the female member and receiving the annular rib C of the male member, whereby the joint between the washer and the male member is broken.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

FRANK G. FAIRALL.

Witnesses:
THOS. E. TURPIN,
PHIL. E. BARNES.