(No Model.) 2 Sheets—Sheet 1.

H. C. DOMAN.

HOSE COUPLING.

No. 455,180. Patented June 30, 1891.

Fig. 1.

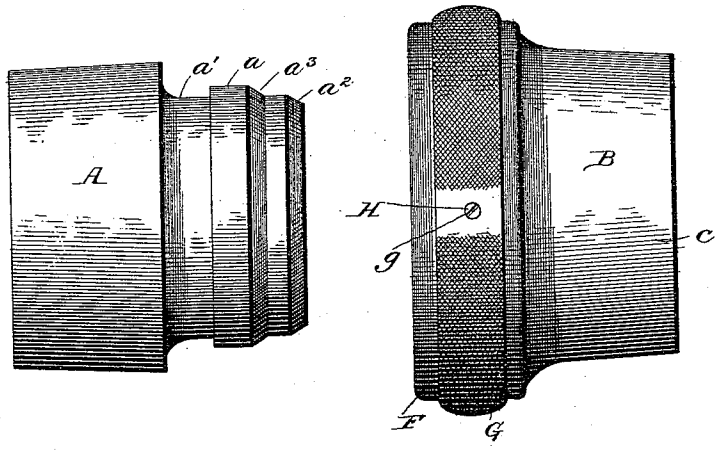
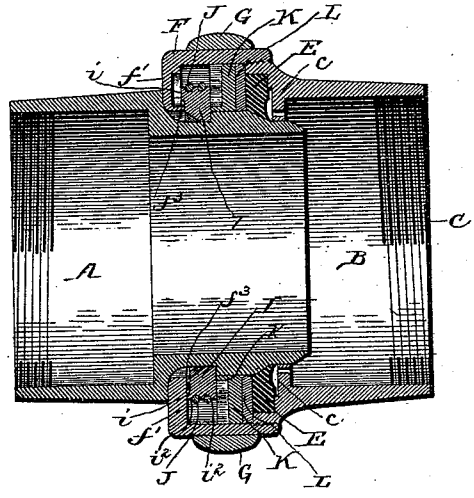


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

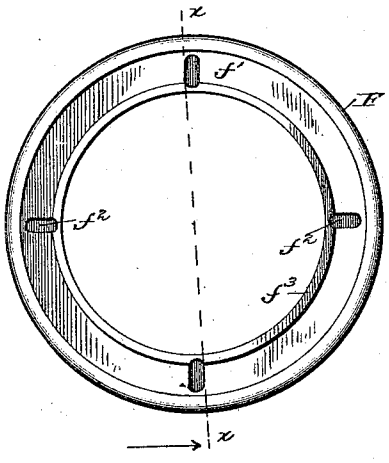


Fig. 4.

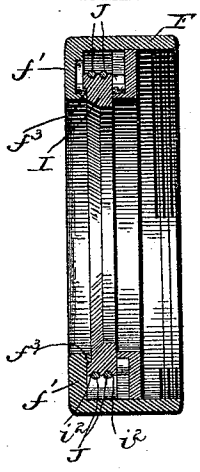


Fig. 5.

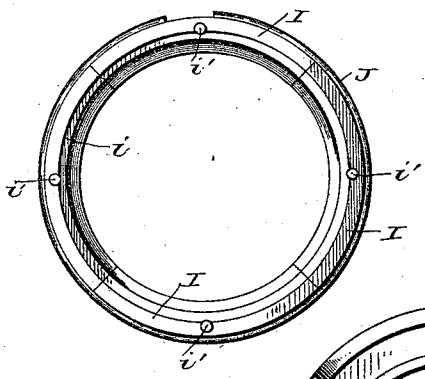


Fig. 6.

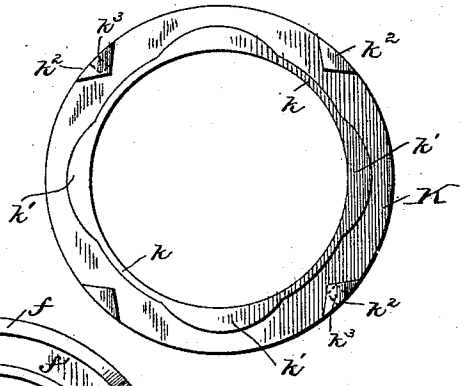
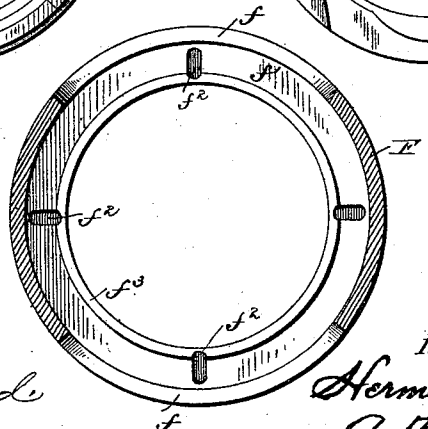


Fig. 7.



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UNITED STATES PATENT OFFICE.

HERMAN C. DOMAN, OF OSHKOSH, WISCONSIN.

HOSE-COUPLING.

SPECIFICATION forming part of Letters Patent No. 455,180, dated June 30, 1891.

Application filed February 18, 1891. Serial No. 381,926. (No model.)

To all whom it may concern:

Be it known that I, HERMAN C. DOMAN, a citizen of the United States, residing at Oshkosh, in the county of Winnebago and State of Wisconsin, have invented certain new and useful Improvements in Couplings for Hose and Like Tubing; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention has relation to improvements in couplings for hose and like tubing.

The objects which I have in view are, first, to provide for the automatic joining of two sections of pipe or hose by simply passing the male portion of my improved coupling into the female; second, to provide an absolute preventive against leakage at any joint; thirdly, to provide a simple and effective means for uncoupling.

With the above and other objects in view the invention consists in the improved construction and combinations of parts, as will hereinafter more fully appear.

In the accompanying drawings, Figure 1 is a side elevation showing the sections detached. Fig. 2 is a longitudinal sectional view of the device when coupled. Fig. 3 is an elevation looking from the inner side of the rim which forms the outer end of the female coupling, showing clearly the seat or inwardly-extending flange upon its outer end. Fig. 4 is a vertical section through this rim on the line $x\ x$, Fig. 3, showing the spring-actuated segments and the cam-ring in proper position therein. Fig. 5 is an elevation looking upon the outer sides of the segments. Fig. 6 is an elevation of the inner side of the cam; and Fig. 7 is an elevation of the rim, portions being broken away to illustrate the diametrically-opposite slots $f\ f$.

Like letters of reference refer to like parts throughout the several views.

Referring to the drawings, the letters A and B indicate, respectively, the male and female sections of the coupling. The male section is adapted to receive interiorly the end of the pipe or tube and has its outer extremity contracted. Upon this contracted portion is an annular enlargement or flange a, a groove a' being thus formed between said flange and the enlarged rear end. It will also be seen from the drawings that the extremity of this section is slightly beveled, as indicated at a^2, as also the outer edge of the annular shoulder a, the latter bevel being indicated by reference-letter a^3. These beveled surfaces provide for the more ready insertion of the part A. The female section B consists of several component parts, of which C indicates a tube which receives the pipe or hose. This tube is provided near its outer end with an interior annular seat c, which receives a rubber washer E.

The letter F indicates an annular rim provided upon its inner end with female threads registering with the male threads of the adjacent end of the tube C. The periphery of the rim is provided at diametrically-opposite points with slots $f\ f$, which extend in length about one-fourth of the entire circumference. The inner surface of the rim is also provided with an integral annular flange or seat f', located at the outer extremity. This inwardly-extending flange is provided with a series of transversely-elongated slots f^2, the function of which will appear more fully hereinafter, while the outer edge of the flange is formed with a raised projection or bead f^3. Fitting around the exterior surface of the rim is an operating band or annulus G, provided with a series of holes g, any two of which are adapted to receive screws H, which also enter the diametrically-opposite slots of the rim. Resting upon the inwardly-extending seat or flange of said rim is a series of segments I, the outer surfaces of which are provided with beads or shoulders i, which are adapted to come in contact with the corresponding shoulder or bead of the flange f' to limit the inward movement of the segments when acted upon by the springs hereinafter referred to. These segments are each intersected by a pin i', one end of which enters the slots formed within the inwardly-extending flange of the rim. The peripheries of the segments are doubly grooved, as indicated at $i^2\ i^2$, said grooves receiving annular springs J J, which

are confined between the segments and the inner surface of the rim. Bearing against the segments is a cam-ring K, the construction of the inner or bearing face of the same being clearly shown in Fig. 6. This cam is provided with an inwardly-extending flange k, which is provided at certain points upon its periphery with projecting curved lugs k', which form the cam or acting surfaces. The inner face of the cam-face is further provided near its edge or periphery with a series of cone-shaped lugs or projections k^2, the apices thereof pointing inwardly. The lugs are formed so as to occupy an intermediate position relative to the curved lugs of cam surfaces, and are also provided with screw-threaded apertures k^3, any two of which are adapted to receive the screws H, which pass through the operating ring or annulus G and the diametrically-opposite slots or rim F. The outer surface of the cam-ring is perfectly plain, and resting thereon is a metallic washer L, against which in turn bears the rubber washer E of tube C.

The above being the construction of my improved coupling its operation, is as follows: Before the operating annulus or ring is turned so as to unlock the device two of the cone-shaped lugs register with the diametrically-opposite slots of the rim F, while the curved cam surfaces or lugs lie between the inner points of the intersecting pin i'. The action of the springs located in the grooves of the segments, however, keeps said segments pressed inwardly to their full extent, and consequently the circumference of the circle formed thereby narrowed, the points of the pins i' upon the opposite sides of the segments bearing against the innermost points of the elongated slots of the inwardly-extending flange which they enter. When it is desired to couple, the male section is passed into the female section until the shoulder a has passed the segments, the bevels before described facilitating the insertion. As said shoulder a during the insertion bears against the segments, its pressure thereon overcomes the action of the springs and forces said segments outwardly, increasing the circumference of the circle and changing the position of the pins from the innermost to the outermost points of the slots. The moment, however, the shoulder has passed the segments the springs immediately force the segments inwardly and cause the same to enter the groove a' of the male section, which instantly locks the device. In order to uncouple the male and female sections, all that is necessary to be done is to give the operating band or annulus a turn. As the annulus is thus turned, the screws H carried thereby are moved in the diametrically-opposite slots f, and the inner end of said screws passing into the cone-shaped lugs k^2 of the cam-ring will have the effect of changing the position of said ring, so that the curved cam-surfaces or bearing-lugs k', which were before out of engagement with the projecting ends of the pins, will now be turned so as to bear against the same and simultaneously force the segments outwardly against the pressure of the springs, thus releasing said segments from engagement with the groove a of the male section, which latter is then withdrawn, and upon completion of the quarter-turn of the cam the curved cam-surfaces k' will pass the pins, and, the pressure thereon being relieved, the springs will force the segments inwardly to their normal position, ready for another connection.

It will be seen that my device presents the advantage of providing a construction whereby the coupling may be effected by simply pressing the parts together, and that when coupled the pressure of water keeps it from leaking, while the uncoupling is accomplished merely by turning the annulus one-quarter either way.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a coupling for hose and the like, the combination of a male section, an annular rim provided at its outer end with an inwardly-extending flange or seat having transversely-elongated slots, a series of spring-actuated segments resting upon the seat and intersected by pins, the outer end of said pins bearing in the slots or grooves of the seat, and a cam-ring adapted to engage the inwardly-projecting ends of the intersecting pins and expand the same simultaneously outward, so as to relieve said segments from locked engagement with the male section, substantially as set forth.

2. In a coupling for hose and the like, the combination of a male section provided with an exterior annular groove, an annular rim provided with diametrically-opposite slots and having at its outer end an inwardly-extending seat or flange provided with transversely-elongated slots, a series of spring-actuated segments resting upon the seat and intersected by pins, the outer ends of said pins bearing in the slots or grooves of the seat, a cam-ring provided with an outwardly-extending flange, said flange having projecting therefrom a series of curved lugs or cam surfaces, and screws passing through the diametrically-opposite slots of the rim and engaging the cam-ring, so that when said screws are operated the cam-surfaces may engage the inwardly-projecting ends of the intersecting pins and expand the segments simultaneously outward, so as to relieve said segments from engagement with the groove of the male section, substantially as set forth.

3. In a coupling for hose and the like, the combination of a male section provided with an exterior annular groove, a rim provided with diametrically-opposite slots and having at its outer end an inwardly-extending seat or flange, said seat or flange provided with transversely-elongated slots or grooves, spring-actuated segments resting upon the seat and

provided with intersecting pins, the outer ends of the pins resting in the elongated grooves, a cam-ring provided upon its outer face with an outwardly-extending annular flange, said flange having projecting at regular intervals therefrom curved lugs or cam-surfaces, and the cam-ring further provided upon its inner face with lugs, an operating annulus or ring encircling the outer circumference of the rim, and screws passing through said annulus, through the diametrically-opposite slots of the rim, and engaging any two of the lugs of the cam-ring, substantially as set forth.

4. In a coupling for hose and the like, the combination of a male section having its outer end reduced and the extremity thereof beveled, an annular shoulder encircling said reduced end and also having its extremity beveled, forming an annular groove between its inner wall and the enlarged rear portion of the section, a tube provided with male threads upon its outer end and also having an interior annular shoulder, a rubber washer resting upon said shoulder, a rim provided upon its inner end with female threads registering with the male threads of the tube and also provided with diametrically-opposite slots and with an inwardly-extending flange or seat at its outer end, said flange or seat provided with transversely-elongated slots or grooves, spring-actuated segments resting upon the seat and having intersecting pins, the outer ends of which rest in the elongated slots or grooves, a cam-ring bearing upon the segments, having an outwardly-extending flange, said flange provided at regular intervals with curved lugs or cam-surfaces, and the cam-ring provided with lugs, a metallic washer disposed between the inner face of the cam-ring and the rubber washer, an operating ring or annulus encircling the outer circumference of the rim, and screws passing through said annulus, through the diametrically-opposite slots of the rim, and engaging any two of the lugs of the cam-ring, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

HERMAN C. DOMAN.

Witnesses:
GEORGE B. MCC. HILTON,
CHARLES B. WILSON.