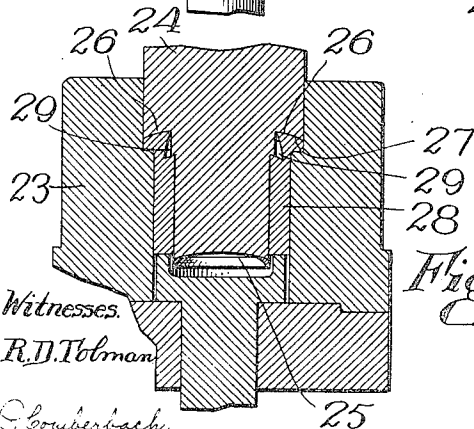
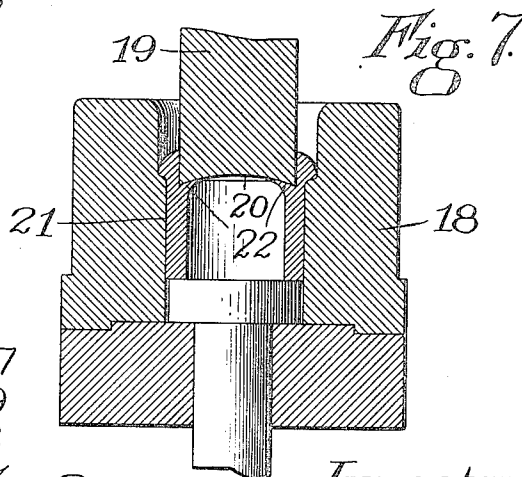
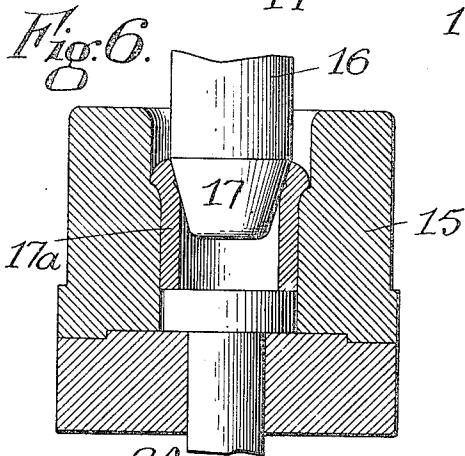
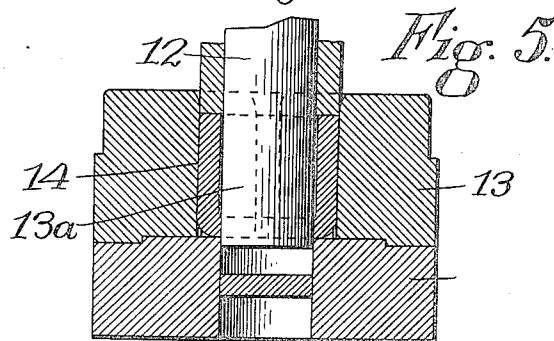
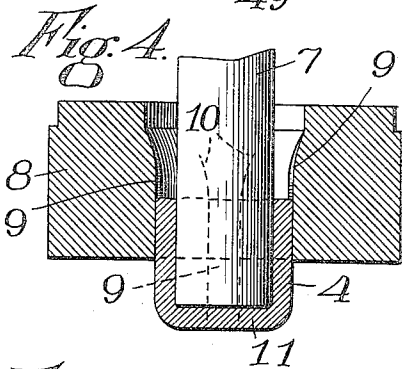
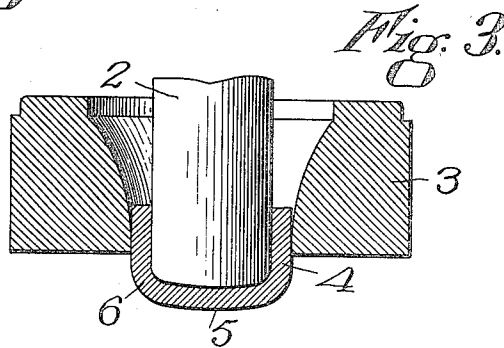
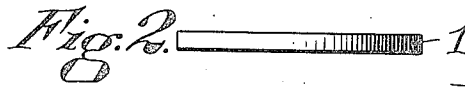
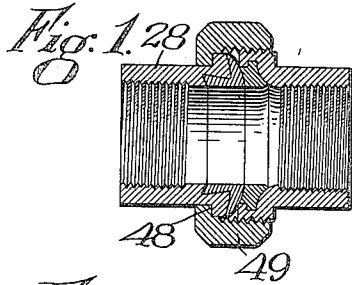


H. G. CARLSON.
METHOD OF MAKING A MALE MEMBER OF A UNION COUPLING.
APPLICATION FILED FEB. 19, 1913.

1,150,249.

Patented Aug. 17, 1915.

2 SHEETS—SHEET 1.



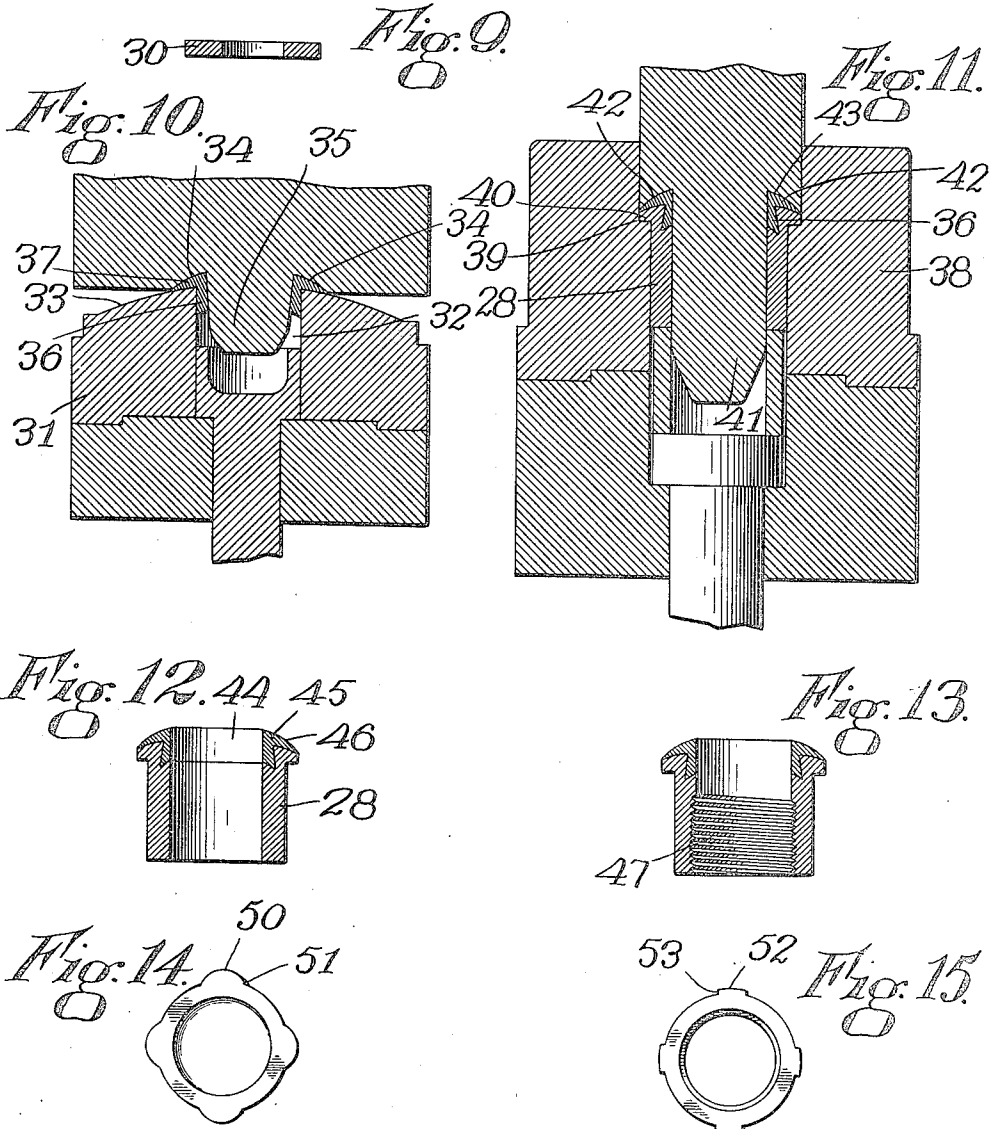
Witnesses.
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Witnesses.

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METHOD OF MAKING A MALE MEMBER OF A UNION-COUPLING.

1,150,249.

Specification of Letters Patent.

Patented Aug. 17, 1915.

Application filed February 19, 1913. Serial No. 749,304.

To all whom it may concern:

Be it known that I, HJALMAR G. CARLSON, a citizen of the United States, residing at Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented a new and useful Improvement in Methods of Making a Male Member of a Union-Coupling, of which the following, together with the accompanying drawings, is a specification.

The present invention relates to a method of constructing the male member of a union coupling of sheet metal, and provided with a brass or other noncorrosive bushing.

Referring to the accompanying drawings, Figure 1 represents a central sectional view of a union coupling containing a male member constructed in accordance with the present invention. Fig. 2 is a side view of a circular disk of sheet metal from which the body portion of said male member is constructed. Fig. 3 represents the punch and die for forming the circular disk into a cup shape. Fig. 4 represents the punch and die employed in the second step, said die being provided with longitudinal recesses adapted to form exterior ribs upon the cup shaped blank. Fig. 5 represents the punch and die used in the third step. Figs. 6, 7 and 8 represent respectively successive steps in the formation of the blank. Fig. 9 represents an annular plate of brass or other noncorrosive material from which the bushing is made. Fig. 10 represents a punch and die for shaping the blank shown in Fig. 9, and forming thereon an outwardly projecting lip. Fig. 11 represents the punch and die and illustrates the process of inserting the noncorrosive bushing shown in Fig. 10 into the sheet metal body portion represented in Fig. 8. Fig. 12 shows a detached view of the male member of the union coupling with its brass bushing inserted. Fig. 13 represents the same, provided with an internal screw thread. Fig. 14 shows an end view of the male member of the coupling showing exterior ribs formed on the body portion. Fig. 15 is an end view of the male member of the coupling showing the ribs flattened and compressed in width in order to form

sharp shoulders for the engagement of a wrench.

Similar reference characters refer to similar parts in the different views.

In carrying the present invention into effect I first start with a circular blank 1, represented in Fig. 2, which is shaped by an appropriate punch 2 and die 3 into the form of a cup 4, having a solid end 5 and rounded corners 6. The cup shaped blank 4, as formed in Fig. 3, is next still further compressed by a cylindrical punch 7 and die 8, said die having a tapered opening therethrough, provided on its inner surface with shallow recesses 9, the upper end of each of said recesses being slightly flaring, as indicated by the broken lines 10, Fig. 4, by which projecting ribs are formed upon the outer periphery of the blank.

The lower end of the punch 7 is at right angles with its axis, and the compression of the cup shaped blank in the die 8 affords sufficient resistance to cause the closed end 11 of the cup shaped blank 4 as it leaves the die 8 to be squared. A concentric hole is next punched in the solid end of the blank by a punch 12 and die 13, forming a cylindrical blank 14 open at one end and having a concentric hole at the opposite end slightly smaller than the interior diameter of the blank. The blank 14 is next forced into a die 15 by a punch 16 having a tapered end 17 by which one end of the blank 14 is expanded, the blank then assuming the shape shown at 17^a, Fig. 6. The blank 17^a, Fig. 6 is then placed in a retaining die 18, and a punch 19 having its lower end concave, as shown at 20, Fig. 7, is forced into the interior of the blank, the sharp edge of the punch cutting its way into the blank, represented at 21, and forming the interior lips 22, the metal forming said lips being sheared from the inner wall of the blank 21 to provide a recess to receive a noncorrosive bushing. The blank 21 is next placed in a retaining die 23 and subjected to the action of a reciprocating punch 24, having its lower end concave, as shown at 25, Fig. 8, the sharp corners of the punch 24 serving to shear off the inner projecting

lips 22, Fig. 7. The punch 24 is also provided with a shoulder 26 presenting a concave surface in order to give a convex contour 27 to the end of the blank, which is represented in Fig. 8 at 28. The blank 28 shown in position in the retaining die 23 in Fig. 8 is now in proper shape to form the body portion of the male member of a union coupling, being provided with a recess 29, into which a bushing of some non-corrosive material, such as brass, is expanded, as hereinafter described.

Fig. 9 represents an annular blank 30 of noncorrosive material, such as brass. By means of a die 31, having a cylindrical opening 32 coöperating with a circular punch 35, the inner edge of the annular blank 30 is forced downward into the opening 32 and the outer edge of the annular blank 30 is expanded over the convex surface 33 of the die and crowded into the concave recess 34 surrounding the circular punch 35. The action of the punch 35 and die 31 shapes the annular blank 30 into the form shown at 36, Fig. 10, forming a cylindrical bushing having an outwardly extended lip 37. The blank 28 is then removed from the die 23 and placed in a retaining die 38 having an interior shoulder 39 to support the exterior shoulder 40 on the blank 28. The bushing formed by the punch and die shown in Fig. 10 is then forced downward upon the end of the blank 28 by means of a punch 41 having a shoulder 42 surrounding the punch and presenting a concave face to fit the convex surface of the bushing. The outwardly extended wings of the bushing are thereby forced down upon the convex face of the blank, and the body portion of the bushing is expanded by the punch 41 into the recess 29, forming a bushing for the sheet metal blank 28 and presenting a convex surface 43 to fit a corresponding surface on the female member of the union coupling.

Figs. 12 and 13 are detached views, in Fig. 12 showing the form of the blank 28 as removed from the die 38, and having inserted in one end a bushing 44 having an outwardly extended flange 45 overlapping the end of the blank and presenting a con-

vex surface 46 to fit a corresponding concave surface on the female member of the coupling.

In Fig. 13 the male member of the union coupling is completed by providing the blank 28 with an interior screwthread 47. The application of the male member shown in Fig. 13 is represented in Fig. 1, in which the body portion of the blank 28 provided with a right angled shoulder 48 is drawn into contact with the female member of a coupling by means of a clamping nut 49.

When the cup shaped blank 4 is forced through the die 8 having recesses to form ribs, the ribs 50 thus formed have rounded corners where they join the cylindrical surface of the member, as shown at 51, Fig. 14. During the movement of the blank 14 through the die 13, the ribs 50 are compressed in width forming a narrower rib as shown at 52, and having a right angle between the rib and the cylindrical surface of the male member, as shown at 53, Fig. 15. This sidewise compression of the ribs by crowding them into recesses 13^a in the die 13 which are narrower than the recesses 9 in the die 8, makes the edges 53 of the ribs 52 at right angles to the surface of the male member, enabling the latter to be better held by the jaws of a wrench.

I claim,

1. The within described method of forming a sheet metal male member of a union coupling, comprising forming a cup shaped blank having a concentric hole in one end, expanding the opposite end to form an exterior shoulder, shaving the inner wall to form an annular recess, and expanding a bushing into said recess.

2. The method of making the male member of a union coupling, comprising forming a cylindrical blank, shaving material from the inner wall of the blank to form an annular recess at one end, and expanding a bushing into said recess.

Dated this 13th day of February 1913.

HJALMAR G. CARLSON.

Witnesses:

PENELOPE COMBERBACH,
NELLIE WHALEN.