

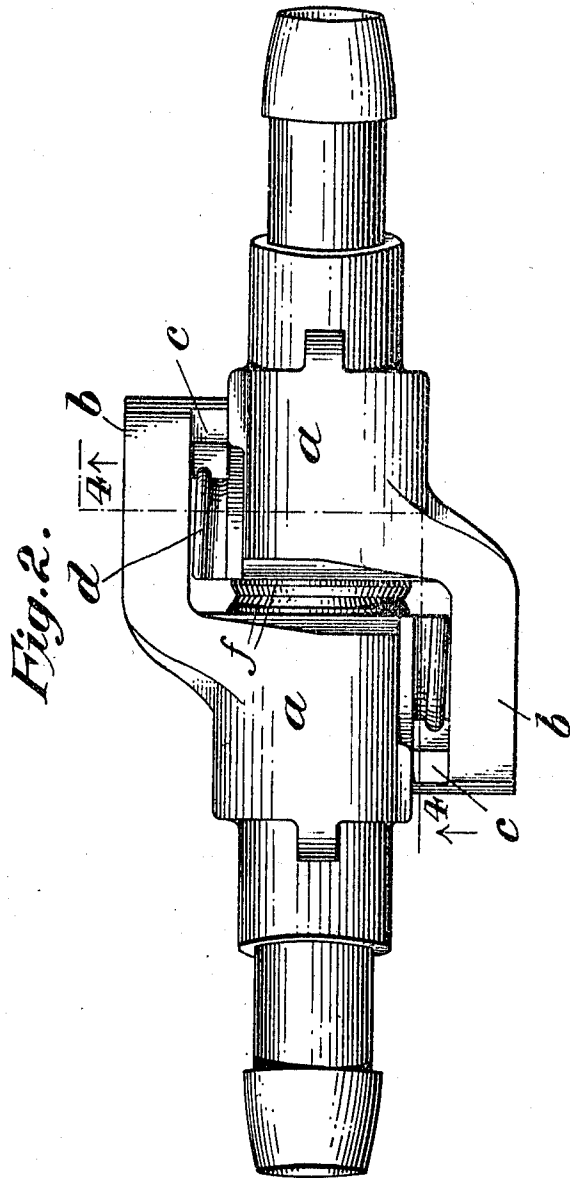
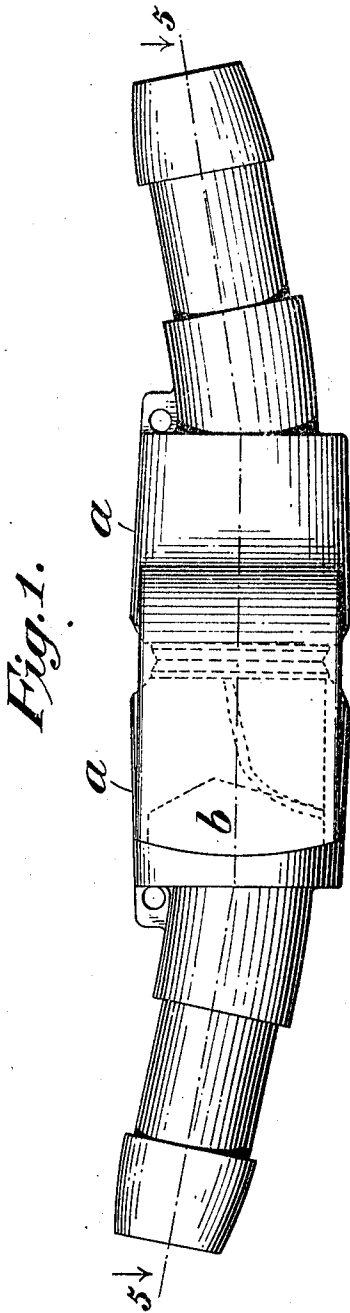
J. E. WARD.
PIPE COUPLING.

APPLICATION FILED APR. 23, 1908.

945,298.

Patented Jan. 4, 1910.

2 SHEETS—SHEET 1.



Attest:
Edgewood
W. H. Jennings

Inventor:
by *John E. Ward*
Maude Wendell Stacey Atty'r.

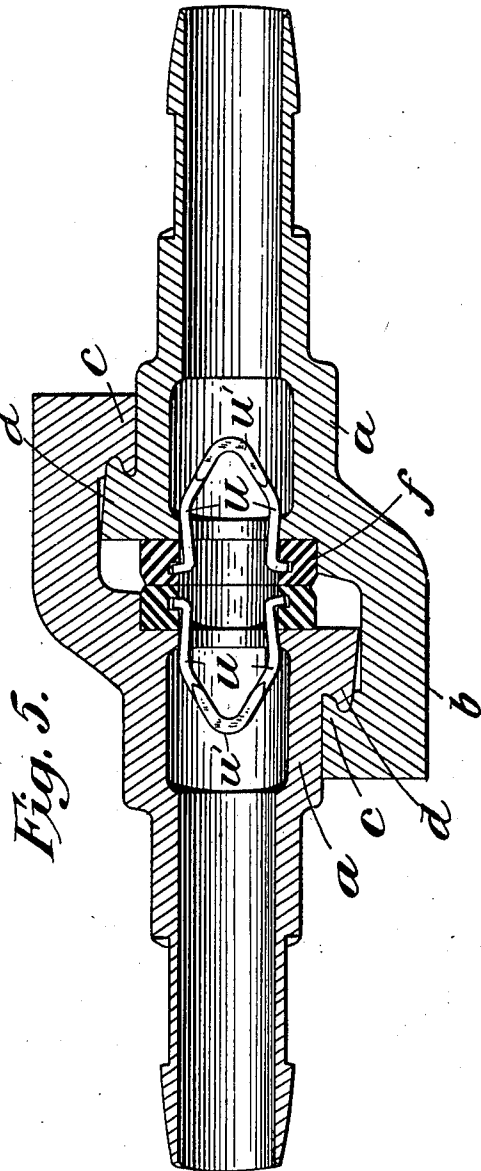
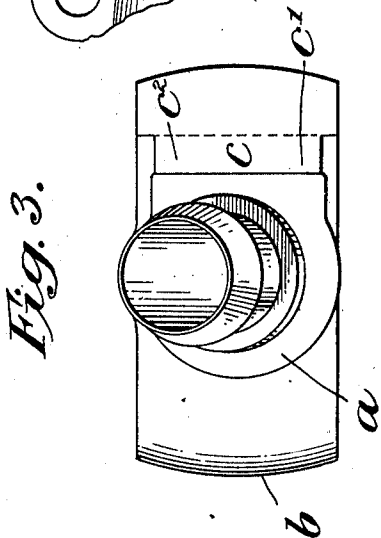
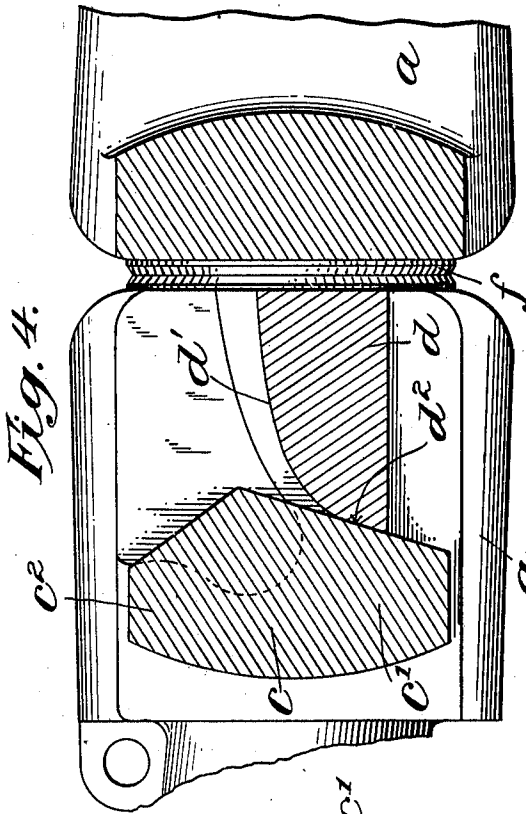
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Attest:
Edgeworth Burns
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Inventor:
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UNITED STATES PATENT OFFICE.

JOHN E. WARD, OF NEW YORK, N. Y., ASSIGNOR TO WARD EQUIPMENT COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

PIPE-COUPLING.

945,298.

Specification of Letters Patent.

Patented Jan. 4, 1910.

Application filed April 23, 1908. Serial No. 428,801.

To all whom it may concern:

Be it known that I, JOHN E. WARD, a citizen of the United States, and a resident of the borough of Manhattan, of the city of New York, in the county and State of New York, have invented certain new and useful Improvements in Pipe-Couplings, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

One object of this invention is to provide means in a reversible pipe coupling which shall tend to hold the parts of the coupling more firmly together when coupled, or, in other words, which shall tend to prevent their twisting or working loose from each other after having been fastened together. The well known form of reversible pipe coupling comprises two members both of which are exactly similar in construction, and each of which is provided with a body portion, an arm projecting from the body portion, and what are known respectively as the toe and heel of the coupler, the former being secured upon the end of the arm and the latter upon the body portion, so that when the two members of the coupling are coupled together, the toe on either coupling member will engage the heel upon the other coupling member. As couplers of this type have been constructed heretofore, the heels have generally been provided with a curved engaging surface for the toe so that in the act of coupling and uncoupling, the toes would slide readily upon their respective heels; but with the heels thus constructed, each toe and its complementary heel, when the two members of the coupling were fastened together, would have such a narrow strip or area in which their contacting surfaces actually meet (in some cases the contact being called "tangential") that the coupling was not secure against shocks or vibrations in the coupling plane. Moreover, any tendency which the members of the coupling might have to twist the one upon the other would increase the insecurity of the coupling. To overcome these objections in this type of pipe coupling, it is proposed, in accordance with the present invention, to form each heel of the coupler so that a portion of its working or contacting surface shall be straight for a substantial length for the purpose of having a considerable area or strip upon the heel meet and bear against a

like area or strip upon the complementary toe. Each heel is formed, as before, with part of its surface curved so that in coupling or uncoupling, the toes may be conveniently moved into and out of their fastening positions. Then again, to reduce the possibility of one member of the coupling twisting upon the other member, the toes upon both members are made to bear squarely against the respective body portions of the coupler and for this purpose the toes are elongated so as to extend substantially across the arms of the coupler and, when the two members of the coupler are fastened together, these toes extend practically from the top to the bottom thereof. To cooperate with the elongated or extended toes, the body portions of the coupler are formed with a surface which is co-extensive with the surface of the toes and both of these surfaces are carefully machined so that when the two members of the coupling are secured together, the surfaces upon each of the toes will rest flatly against the corresponding surfaces upon the body portions of the coupler.

Another object of the invention is the provision of an improved retaining piece for the gaskets in a pipe coupling. This improved retaining piece, together with the other improvements will be more fully described hereinafter with reference to the accompanying drawings in which,

Figure 1 is a view in side elevation of a pipe coupling embodying the improvements. Fig. 2 is a plan view. Fig. 3 is a view in end elevation. Fig. 4 is a sectional view, the plane of section being indicated by the line 4—4 in Fig. 2 and, Fig. 5 is also a sectional view, the plane of section being indicated by the line 5—5 in Fig. 1.

The drawings are intended to illustrate a pipe coupler of the general type referred to and commonly known as a reversible train pipe coupling. The body portion or head *a* of each member of the coupling has a forwardly projecting arm *b*, the latter being provided with a fastening toe *c* which is adapted to engage the heel *d* upon the body portion of the other member. Each heel *d* is provided with a curved portion *d'* and a straight portion *d''* of substantial length, whereby as the two members are coupled, the toes will move freely over the curved portions of the heels and be brought into engagement with the straight portions of

the heels against which straight portions the toes will bear while the members remain coupled (Fig. 4). It will be easy to see that the straight portions upon the heels will
 5 present a much longer strip and therefore a much greater area in which each toe meets or bears upon its complementary heel when the two members are coupled, than in a case where the working surfaces of the heels are
 10 curved throughout and where the contact between the toes and heels is merely tangential. With such a long contact between the toes and heels there is little likelihood that the coupling will be opened, after it
 15 has once been fastened together, by any ordinary shock or jar in the plane of coupling.

It will be noted that the working surface c' upon each coupling toe only extends for
 20 a certain portion of the length of the toe, and so far as the fastening together of the two members of the coupling is concerned, the toe need not be any longer than this working surface. In accordance with the
 25 present improvements, however, the toe is elongated or extended by providing the additional portion c'' so that it extends substantially from one side to the other across the
 30 corresponding arm b . The long surface which this toe presents is adapted to rest down upon the body portion of the other coupling member and the surface of said
 35 body portion is carefully machined, as is also the surface of the toe, so that when the two members are coupled together these surfaces shall rest flatly in contact with each
 40 other (Figs. 2 and 3). Both of the surfaces are machined so that they are preferably made parallel with the plane of coupling, and it is only necessary to finish such a part
 45 of each body portion as shall form a surface co-extensive with the surface of the corresponding toe. With such a construction where the long toe rests flatly against a co-extensive surface upon the body portion, it
 will practically be impossible to twist the members of the coupling when they are fastened together.

In this type of coupling a gasket is ordinarily provided, one in each of the ports of the respective heads of the coupling, so that when the two members of the coupling are brought together the working faces of the two gaskets will abut against each other to
 55 form a tight joint. In the present case a solid hard rubber gasket f is illustrated in connection with each gasket and is provided with a V-shaped retaining piece, the free ends r of which enter the gasket and the bends u at the upper end of which bear
 60 upon the shoulders in the ports of the coupling to retain the gaskets in position therein. Each fastening piece is preferably con-

structed from suitable steel wire and for the purpose of making it more resilient is flattened at the apex u' , as illustrated. 65

Many variations may be made in the construction of the coupler and gasket shown and described herein without avoiding the spirit of the invention. 70

I claim as my invention:

1. In a pipe coupling, the combination of a fastening toe on one member, and a fastening heel on the other member having a curved portion for the toe to engage during
 75 coupling and a straight portion for the toe to rest against when coupled, said fastening toe being elongated so as to extend substantially from top to bottom of the coupling and adapted to rest squarely upon the body
 80 portion of the coupling.

2. In a pipe coupling, the combination of a fastening toe on one member, and a fastening heel on the other member having a curved portion for the toe to engage during
 85 coupling and a straight portion for the toe to rest against when coupled, said toe having a fastening portion and an extended portion, and the entire toe being adapted to rest squarely against the coupler body. 90

3. In a pipe coupling, the combination of a fastening toe on one member, a fastening heel on the other member having a curved portion for the toe to engage during coupling and a straight portion for the toe to
 95 rest against when coupled, said toe being elongated so as to extend substantially from top to bottom of the coupling and a co-extensive flat portion upon the body part of the other member upon which the toe is
 100 adapted to rest when the two members are coupled, the contacting surfaces of the toe and said flat portion being so finished that the one will rest squarely against the other.

4. In a pipe coupling, the combination of
 105 a fastening toe on one member, a fastening heel on the other member having a curved portion for the toe to engage during coupling and a straight portion, for the toe to rest against when coupled, said toe being
 110 elongated so as to extend substantially from top to bottom of the coupling, and a body portion upon the other member formed with a fastening projection for the toe to engage and a co-extensive flat portion for the toe to
 115 rest against, the parts being so constructed that the toe will lie squarely against said flat portion substantially from the top to the bottom of the coupling.

This specification signed and witnessed
 120 this 18th day of April, A. D., 1908.

JOHN E. WARD.

Witnesses:

LUCIUS E. VARNEY,
 HOMER H. SNOW.