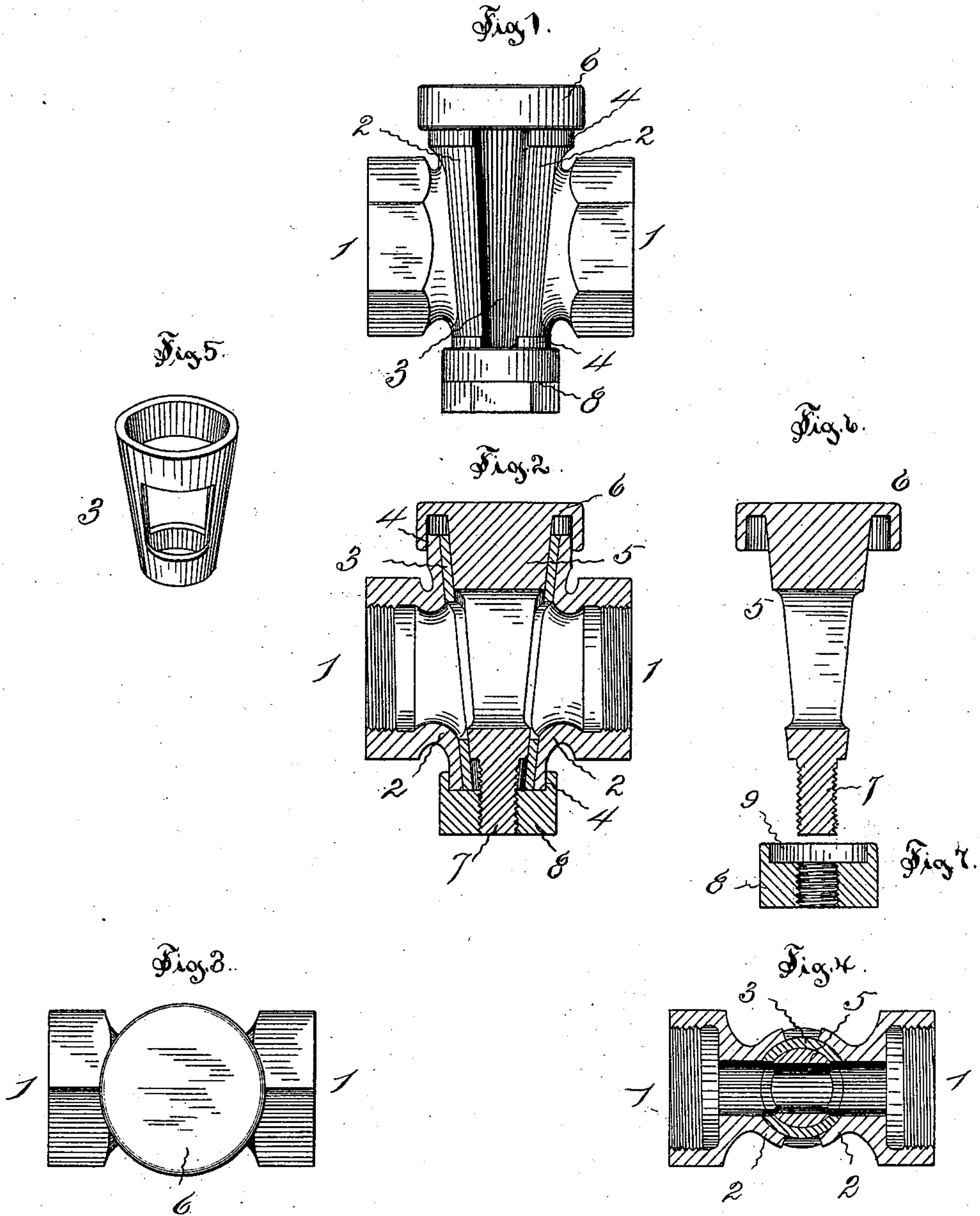


(No Model.)

D. W. MAGEE.  
FLEXIBLE JOINT.

No. 551,194.

Patented Dec. 10, 1895.



Witnesses  
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# UNITED STATES PATENT OFFICE.

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## FLEXIBLE JOINT.

SPECIFICATION forming part of Letters Patent No. 551,194, dated December 10, 1895.

Application filed August 21, 1895. Serial No. 560,002. (No model.)

*To all whom it may concern:*

Be it known that I, DANIEL W. MAGEE, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Flexible Joints, of which the following is a specification.

The invention relates to the class of joints that are adapted and intended for use in air or steam pipe systems on railway-cars to give the necessary flexibility to allow for the increase of distance or position between the adjacent ends of cars when rounding curves or changes of level between the ends of the cars.

The object of the invention is to provide a simple and cheap joint of this class which can be easily made and put together, which can be readily kept tight with a minimum amount of wear on the packing, and in which the package can be quickly renewed when necessary.

To this end the invention resides in details of the construction of the parts making up the whole joint, as more particularly hereinafter described and pointed out in the claims.

Referring to the accompanying drawings, Figure 1 is a side view of the joint. Fig. 2 is a central vertical longitudinal section of the joint. Fig. 3 is a top view. Fig. 4 is a central horizontal longitudinal section. Fig. 5 is a detail view of the packing or lining or interior shell. Fig. 6 is a detail section of the plug, and Fig. 7 is a detail section of the nut for drawing the plug so that it will fit the packing or lining.

The exterior metallic shell is made of two parts that have threaded ends 1 for attachment to the ends of the pipes of the system and that have segmental portions 2 that are inclined outwardly from each other in such manner that when held together there is left between them a cylindrical tapering opening at right angles to the fluid-way or opening through the threaded ends. This tapering opening is larger at the top than at the bottom, and it fits closely the walls of the tapering lining or packing or interior shell 3 that is formed circular in cross-section of any suitable packing material, as rubber and asbestos compounds. The segmental portions of the shell are so machined at the top and bottom on the outside as to leave straight

vertical exterior faces 4 around the top and bottom edges.

The plug 5, which has a suitable fluid-way, is made tapering of a size slightly larger in diameter than the lining-shell 3, so that it will fit tightly therein, and is provided at the large end with an integral recessed flange 6 and at the smaller end with a threaded hub 7.

The lining or packing is placed in the tapering opening between the segmental sections of the shell, or it may be stated that the segmental portions of the shell are placed against the outside walls of the packing or lining and then the plug is inserted within the lining. The recess in the flange that is integral with the large end of the plug has vertical interior side walls that loosely fit the vertical exterior side walls at the top edges of the segmental sections so that the flange that is integral with the plug loosely holds the upper ends of the segmental portions of the shell against the lining that fits the plug.

A nut 8, which has a shallow recess in its inner face, is screwed on the threaded hub on the end of the plug and when contact is made with the bottom edges of the segmental portions of the shell the plug is drawn down into the lining until a tight joint is made between the parts. The recess 9 in the inner face of the nut has vertical interior walls that loosely fit the vertical exterior walls of the lower ends of the segmental portions so as to hold the latter together against the lining. The upper end of the plug and the walls of the nut that is screwed onto the lower end of the plug hold the segmental portions of the shell from moving outward but do not force them inward, while the tapering walls of the plug when drawn inward by the nut forces the lining outward against the walls of the segmental portions of the shell which are thus held outward against the vertical interior walls of the recess in the flange integral with the larger end of the plug and vertical walls of the recess in the nut that is screwed upon the hub at the smaller end of the plug.

With this construction the two parts of the segmental shell are always on the same circle and they always bear evenly against the interior walls of the recess in the flange and recess in the plug. There are no tapering shoulders to form and none to bind tightly.



All wear on the packing is taken up by turning the nut at the bottom and drawing in the plug. This screwing up of the nut does not draw the parts of the shell together so as to  
5 change the arcs of the circles which they occupy and thus change the shape of the circle between them but draws the plug inward in such manner as to expand the packing outward evenly and firmly without changing  
10 the position of the segmental parts of the shell or so moving them that the arcs of the circle which they occupy are different from the original circle. With this form there is no abnormal wear on the packing, lining or  
15 interior shell, for as the parts of the shell are not drawn together and the segments made to occupy arcs of different circles, the wear on the packing will be even all around.

The device is simple, cheap, readily made  
20 and kept tight and very flexible. There is no great wear on the lining or interior shell and if that part becomes completely cut out it may be quickly and cheaply renewed.

I claim as my invention—

25 1. A flexible joint consisting of a shell formed in two sections which have inclined segmental portions with vertical exterior wall faces at their upper and lower ends, a tapering plug having a recessed flange at the up-  
30 per end, the recess in said flange having ver-

tical interior walls that loosely fit the vertical exterior walls of the upper ends of the segmental portions of the shell, packing between the inclined segmental sections and the tapering walls of the plug, and a recessed  
35 nut screwed upon a hub at the smaller end of the plug, the recess in said nut having vertical interior walls that loosely fit the vertical exterior walls of the lower edges of the segmental portions of the shell, substantially  
40 as specified.

2. A flexible joint consisting of a circular tapering interior shell having a fluid-way, two inclined segmental portions adapted to be connected with pipe ends loosely fitting the ex-  
45 terior walls of the circular tapering interior shell, a circular tapering plug loosely fitting the interior walls of the circular tapering interior shell, said plug having a flange on its larger end with a recess loosely receiving the  
50 upper ends of the segmental portions and a threaded hub on its lower end, and a nut screwed upon the threaded hub, said nut having a recess that loosely receives the lower ends of the segmental portions, substantially  
55 as specified.

DANIEL W. MAGEE.

Witnesses:

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