

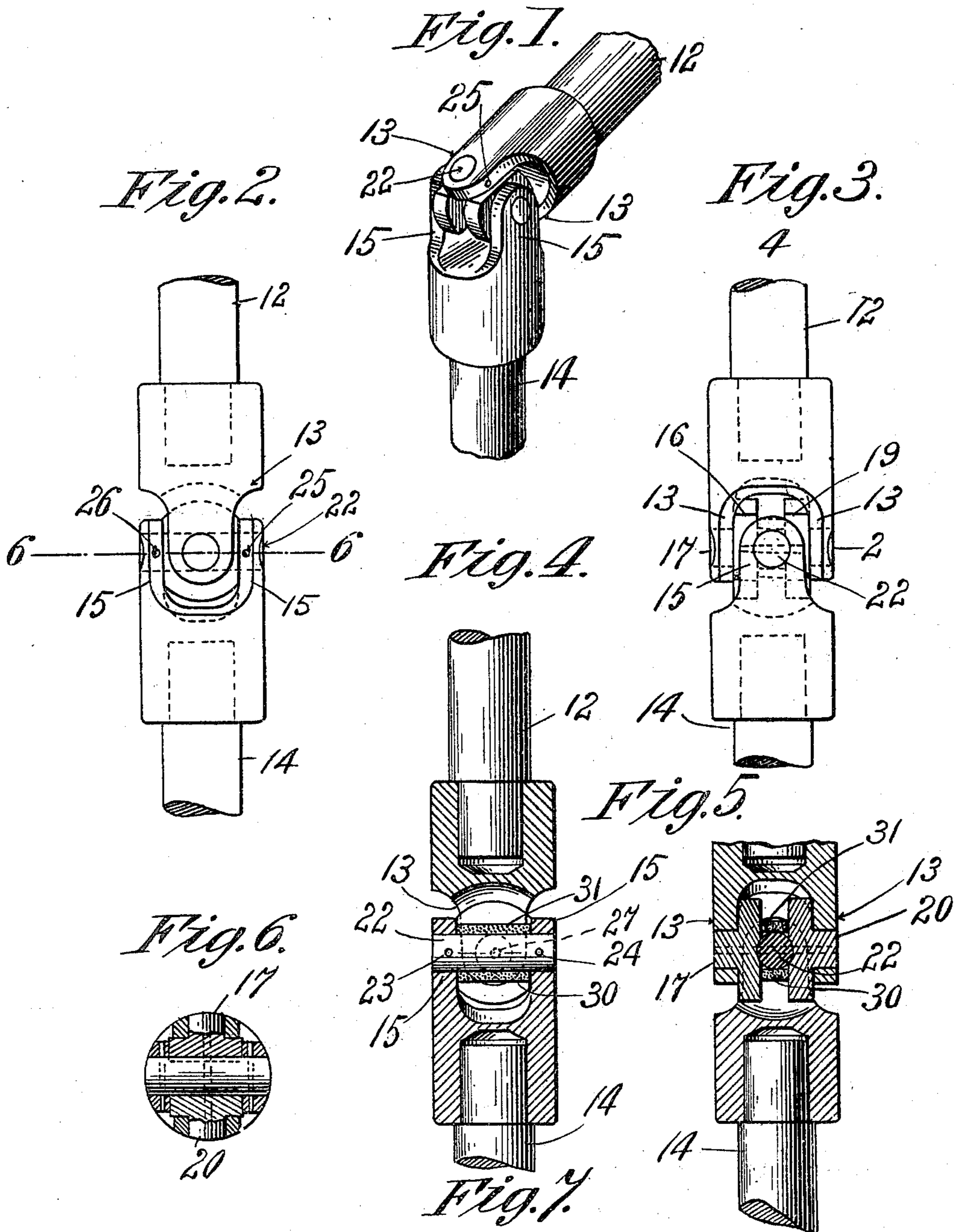
No. 719,411.

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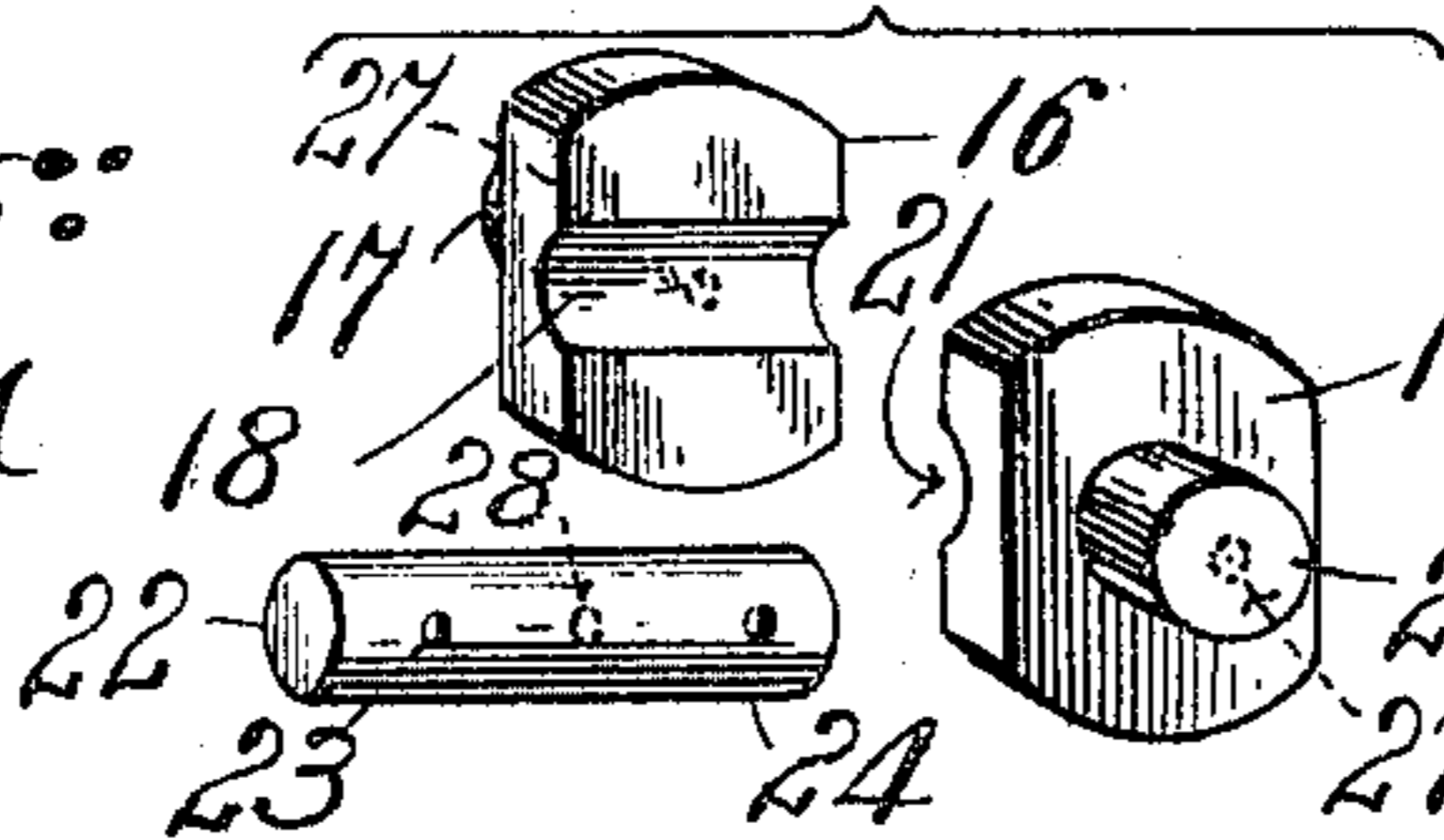
F. E. BOCORSELSKI.  
UNIVERSAL JOINT.

APPLICATION FILED JUNE 26, 1902.

NO MODEL.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

FRANK E. BOCORSELSKI, OF SPRINGFIELD, MASSACHUSETTS.

## UNIVERSAL JOINT.

SPECIFICATION forming part of Letters Patent No. 719,411, dated January 27, 1903.

Application filed June 26, 1902. Serial No. 113,278. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK E. BOCORSELSKI, a citizen of the United States of America, and a resident of Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Universal Joints, of which the following is a full, clear, and exact description.

This invention relates to improvements in universal joints of the general character shown and described in Letters Patent of the United States, granted me January 22, 1901, No. 666,406, and July 9, 1901, No. 678,093.

The objects of this invention are to materially simplify the construction of the joint in a manner to afford the utmost efficiency in operation, to insure the production of the minimized parts with entire practicability and at a reduced expense, and to permit not only an easy assemblage of the component parts of the joint, but an easy replacement of one or more of the parts, as occasion may require, after protracted use resulting in wear.

The universal joint of this invention consists of the usual two forked shaft-sections, one of which has apertures through its jaws, which are in alinement and perpendicular to the length of the shaft and to the faces of the jaws, and the other forked shaft-section having a pivot member extending from its one jaw to the other in a transverse line perpendicular to the faces of said jaws and to the length of the shaft, and two blocks, both having within their inner faces grooves in parallelism extending from edge to edge of the blocks, having by said grooves an embracing engagement with the pivot and having trunnions outwardly extending in a line perpendicular to and intersecting the middle of said inner face-grooves, the said single pivot carried by the one shaft-section constituting the means for holding said grooved blocks in separation and the trunnions thereof against displacement from the said journal-apertures therefor in the other forked shaft-section, and all substantially as illustrated and pointed out in the drawings.

In the drawings, Figure 1 is a perspective view of the improved universal joint, one of the shaft-sections thereof being shown as extended at an angle to the other. Figs. 2 and 3 are side views of the joint as seen in posi-

tions at right angles to each other. Fig. 4 is a cross-section on line 4 4 of Fig. 3. Fig. 5 is a longitudinal section through the joint on a plane at right angles to the section Fig. 4. Fig. 6 is a cross-section on line 6 6, Fig. 2. Fig. 7 is a perspective representation of the concave-faced paired blocks and the pivot.

Similar characters of reference indicate corresponding parts in all of the views.

Referring now to the drawings, 12 indicates a shaft-section having forks or jaws 13 13. 14 is another shaft-section having forks or jaws 15 15.

There are a pair of intermediate block members comprising a block 16, having a pivot or trunnion 17, preferably integral with the block, and also a partially-cylindrical groove or channel 18 in the face opposite that containing the trunnion. The other block, 19, has a trunnion 20 and a cylindrical groove 21. The trunnion of each block is in a line perpendicular to the inner and outer faces of the block and perpendicular to and centrally intersecting the partially-cylindrical groove thereof.

In assembling the parts of my universal joint I first place one of the blocks between the jaws of one of the forked sections and then cause its trunnion to engage a suitable aperture in the jaw. Thereupon the other block is inserted between the same jaws, and its trunnion is caused to engage the aperture in the other jaw of the said section. I provide a suitable pivot 22 of such diameter as to snugly fit between the now-alined grooves of the assembled blocks. The other forked shaft-section has its jaws apertured to engage the pivot 22. The pivot is inserted into one of the apertures of the latter forked section, and then the section is so positioned relative to the assembled block members that the pivot member may pass between the blocks, engaging their alined grooves, and the further advancement of the pivot will cause it to engage the other jaw of the forked section, which will bring the several members of the jaws in the relative positions as shown in the several views. It will be observed that the pairs of jaws are at right angles with each other in all of the positions in which the joint is shown, and it will be seen that the pivot engaging in the opposing parallel partially-cylindrical

grooves of the two blocks serves to hold such block members in separation and each by the trunnion thereof in pivotal engagement in the aperture of a jaw of one of the shaft-sections.

Various means may be provided preventing longitudinal displacement of the pivot 22. For instance, apertures 23 24 may be provided in the pivot and also apertures 25 26 in the jaws of the forked section engaged by the pivot, and a slender pin may be driven into the said apertures 25 26, thereby securing the pivot substantially as set forth in Fig. 6.

If preferred, an axial aperture 27 may be made through the blocks 17 20 and an aperture 28 made transversely through the middle of the pivot 22, into which said latter apertures a suitable pin may be secured, or, as simplest and fairly satisfactory, the pivot 22 may have a driving fit in the perforations therefor in the forked shaft-section by which it is carried.

In order to efficiently lubricate the joint-sections and also to exclude dirt, a suitable absorbent material 30 31 may be oppositely located between the opposite faces of the block members, being frictionally held in place.

It will thus be seen that a simple and practicable joint is provided, in which the parts are comparatively simple and easily constructed, is very quickly assembled, and the parts secured against displacement. Should any of the trunnion members become worn and require replacement, it is merely necessary to remove the retaining pin or pins and substitute either the pivot member 22 or one or both of the block members 16 19.

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

1. A universal joint consisting of two forked shaft-sections, one of which has apertures through its jaws which are in alignment, and perpendicular to the length of the shaft and to the faces of the jaws, and the other forked shaft-section having a pivot member extending from its one jaw to the other in a trans-

verse line perpendicular to the faces of said jaws and to the length of the shaft, and two blocks, both having, within their inner faces, grooves, in parallelism extending from edge to edge of the blocks, having by said grooves an embracing engagement with the pivot, and having trunnions outwardly extending in a line perpendicular to and intersecting the middle of said inner-face grooves, the said single pivot carried by the one shaft-section constituting the means for holding said grooved blocks in separation, and the trunnions thereof against displacement from the said journal-apertures therefor in the other forked shaft-section.

2. The universal joint consisting of two forked shaft-sections, one of which has apertures through to jaws which are in alignment and perpendicular to the line of the shaft and to the faces of the jaws, and the other forked shaft-section having a pivot, extending through and between its paired jaws in a transverse line perpendicular to the faces of said jaws and to the line of the shaft, and two blocks, both having, within their inner faces, grooves, in parallelism extending from edge to edge of the blocks, having by said grooves an embracing engagement with the pivot, and having trunnions outwardly extending in a line perpendicular to and intersecting the middle of said inner-face grooves, the said single pivot carried by one shaft-section, constituting the means for holding said grooved blocks in separation, and the trunnions thereof against displacement from the said journal-apertures therefor in the other forked shaft-section, and sections of absorbent material fitted in the spaces between the said blocks and located in proximity to the said block-separating pivot, substantially as described.

Signed by me at Springfield, Massachusetts, in the presence of two subscribing witnesses.

FRANK E. BOCORSELSKI.

Witnesses:

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