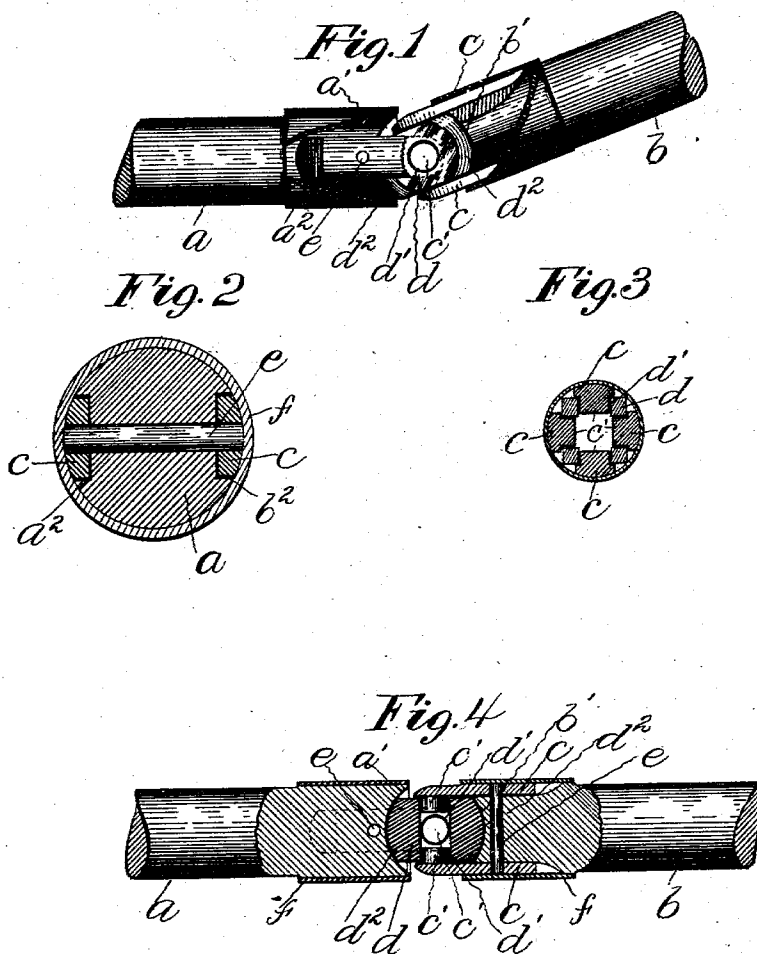


No. 634,540.

Patented Oct. 10, 1899.

G. A. PRIOR.
UNIVERSAL JOINT.
(Application filed Mar. 9, 1898.)

(No Model.)



Witnesses:
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UNITED STATES PATENT OFFICE.

GEORGE A. PRIOR, OF HARTFORD, CONNECTICUT, ASSIGNOR OF TWO-THIRDS
TO JOHN U. REED AND HERMAN A. LAWRENCE, OF SAME PLACE.

UNIVERSAL JOINT.

SPECIFICATION forming part of Letters Patent No. 634,540, dated October 10, 1899.

Application filed March 9, 1898. Serial No. 673,179. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. PRIOR, a citizen of the United States, and a resident of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Universal Joints, of which the following is a full, clear, and exact description, whereby any one skilled in the art can make and use the same.

My invention relates to the class of devices which are used to connect sections or parts of a rotary shaft or like device in such manner as to enable said sections or parts to be located at any angle with each other within certain definite limits, so that such sections or parts may be rotated together; and the object of my invention is to provide a coupling device of this kind that is simple in construction and adapted to be made as to its several parts on a screw-machine, so that the production of such a device is reduced to the lowest cost, while preserving a strong, durable, and effective joint for the purpose desired.

To this end my invention consists in the combination of the several parts making up the coupling-joint and in the details of such parts and their combination, as hereinafter described, and more particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a side view of a shaft, showing my improved joint connecting two shaft-sections placed at an angle with each other, with parts broken away to show construction. Fig. 2 is a detail view, on enlarged scale, in cross-section, through the coupling at one end of a shaft-section. Fig. 3 is a detail view, in central section, of the coupling device transversely of the axis of the shaft. Fig. 4 is a detail view, in lengthwise section, through the coupling on a plane at right angles to the plane of view of Fig. 1.

In the accompanying drawings the letters *a b* denote shaft-sections located at an angle with each other. Each of the shaft-sections has a socket with parallel side walls formed by links *c c*, fitting grooves *a² b²* in the shaft-section and the bottom of the socket being rounded and formed by the concaved end of the shaft-section. These links are located in

the groove so that their outer surface shall be flush with and conform to the outer surface of the shaft-section. On the inner ends of these links are formed tenon-pins *c'*, adapted to engage pin-sockets *d'* in the coupling-block *d*. This coupling-block is of angular shape, in the form shown being square as to cross-section, and is rounded on the ends *d²* to conform to the shape of the bottom of the sockets *a' b'* in the ends of the shaft-sections *a b*, in which sockets the ends of the coupling-block quite closely fit. The coupling-block bears with its flat portions against the parallel sides of the sockets *a' b'*, so that a rotating movement of one of the sections *a b* is communicated directly to the coupling-block and thence to the opposite shaft-section, the parallel sides of the sockets *a' b'* acting as a wrench upon the flat surfaces of the coupling-block to rotate it. Pins *e* extend through the coupling-links into the shaft-sections, in the form shown a single pin extending through the shaft-sections and through two of the links located on opposite sides of the sections, these pins serving merely to prevent any lengthwise movement of the links on the shaft-section. Ferrules *f* are located on each of the shaft-sections *a b*, surrounding and closely fitting their outer surfaces and the outer surfaces of the links *c*, supporting the thrust on the links caused by the force applied to rotate a shaft-section. The pin-sockets *d'* in the coupling-block are located centrally of the length of the block, this construction facilitating the formation of the rounded ends of the block, as in a screw-machine, and also allowing either end to fit the socket in the end of either of the shaft-sections. It will be seen from this construction that a force applied to rotate one of the shaft-sections is communicated directly to the coupling-block through the parallel sides of the sockets in the end of the shaft-section that act as a wrench, the outward thrust on these parallel sides being supported by the ferrules *e*, and that by this construction an extremely simple and strong device may be cheaply made, the parts being few and of such form as to be readily formed on an automatic screw-machine or the like.

It is obvious that the pin for holding the links against longitudinal movement on the shaft-sections may extend through the ferrule for the purpose of preventing movement of it on the shaft-section.

I claim as my invention—

1. Shaft-sections having in the ends thereof a socket with parallel sides and rounded bottom, and a coupling-block having flat surfaces engaging the flat sides of the sockets and rounded ends fitting and engaging the rounded bottom portions of the sockets.

2. Shaft-sections having in the ends thereof sockets with parallel sides and rounded bottom walls, a coupling-block located between the sections and having flat surfaces engaging the parallel sides of the sockets and rounded ends fitting and engaging the rounded bottom walls of the sockets, said sections and coupling-block having interengaging tenon-pins and sockets holding the coupling-block against separation from the shaft-section.

3. Shaft-sections having in the ends thereof sockets with parallel sides formed by links fitting grooves on diametrically opposite sides of the shaft-sections, the links, means for holding the links on the shaft-sections, and a coupling-block located between said links and having flat surfaces adapted to cooperate with the inner surfaces of the coupling-links.

4. In a shaft-coupling, in combination, a shaft-section having a concaved end, opposing links secured in grooves on the shaft-section and projecting beyond the end thereof, means for securing the links in the grooves, and a coupling-block having flat sides to engage said links and a rounded end to fit the

concaved end of the section, and means for preventing separation of the links and block.

5. In a shaft-coupling, in combination, a shaft-section having a concaved end, links secured in grooves on diametrically opposite sides of the shaft-section and forming a socket with parallel walls, a coupling-block located between said links and having flat surfaces adapted to engage said links, coupling-pins on the links engaging openings in the block, and a ferrule embracing the end of the shaft-section and links.

6. In a shaft-coupling, in combination, shaft-sections having sockets with parallel sides formed by links located in grooves on diametrically opposite sides of each of the shaft-sections, the links, a coupling-block having flat surfaces engaging the side walls of the said sockets, pins on said links engaging openings in the block, and ferrules embracing the ends of the shaft-sections and the ends of the links.

7. Shaft-sections having rounded sockets in the ends thereof, grooves located on diametrically opposite sides of the sections, coupling-links located in said grooves, tenon-pins located on the coupling-links, a coupling-block located between said links and having pin-sockets located centrally lengthwise of the block and engaged by the tenon-pins and ferrules surrounding the coupling-links.

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