

No. 768,200.

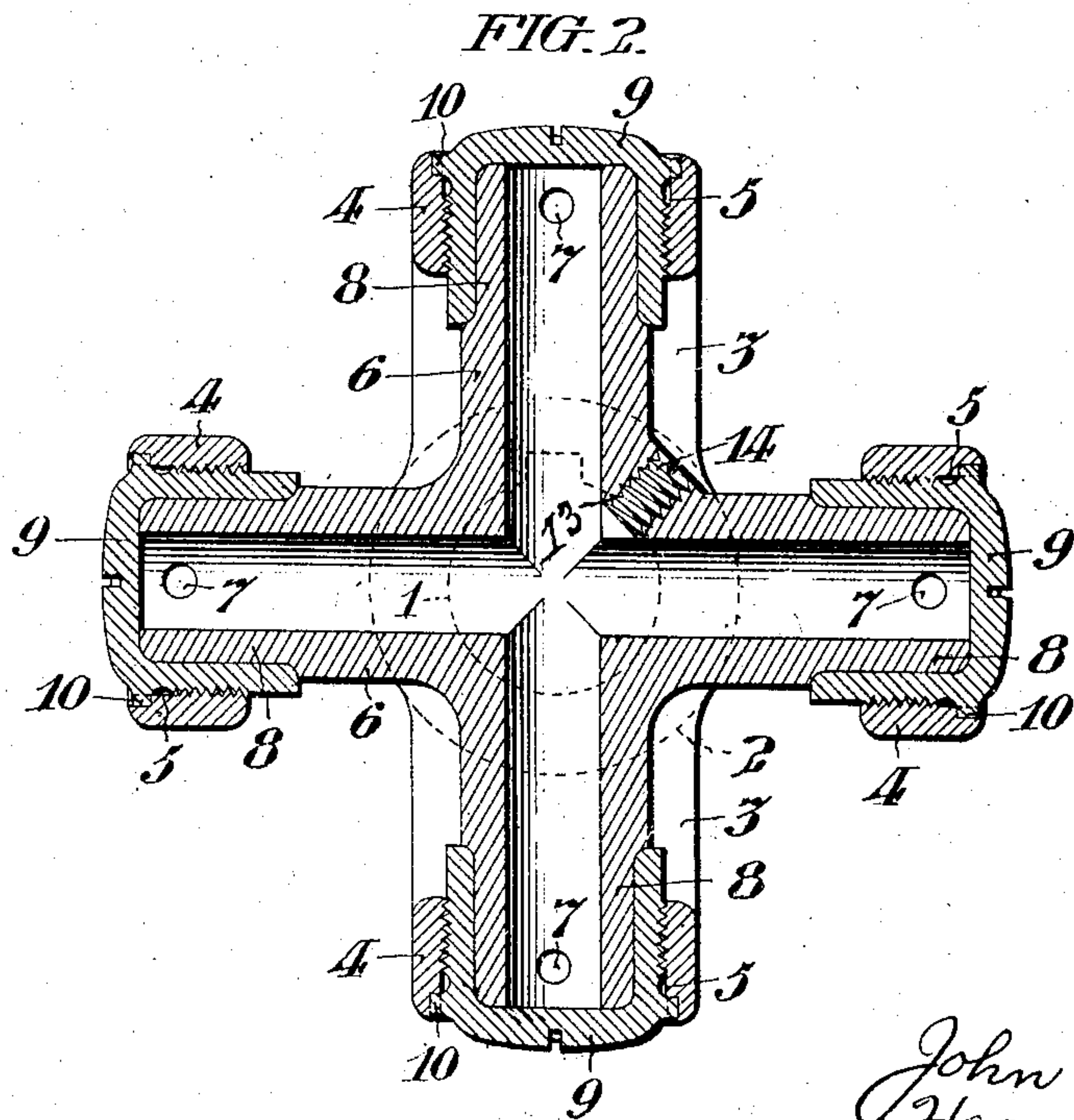
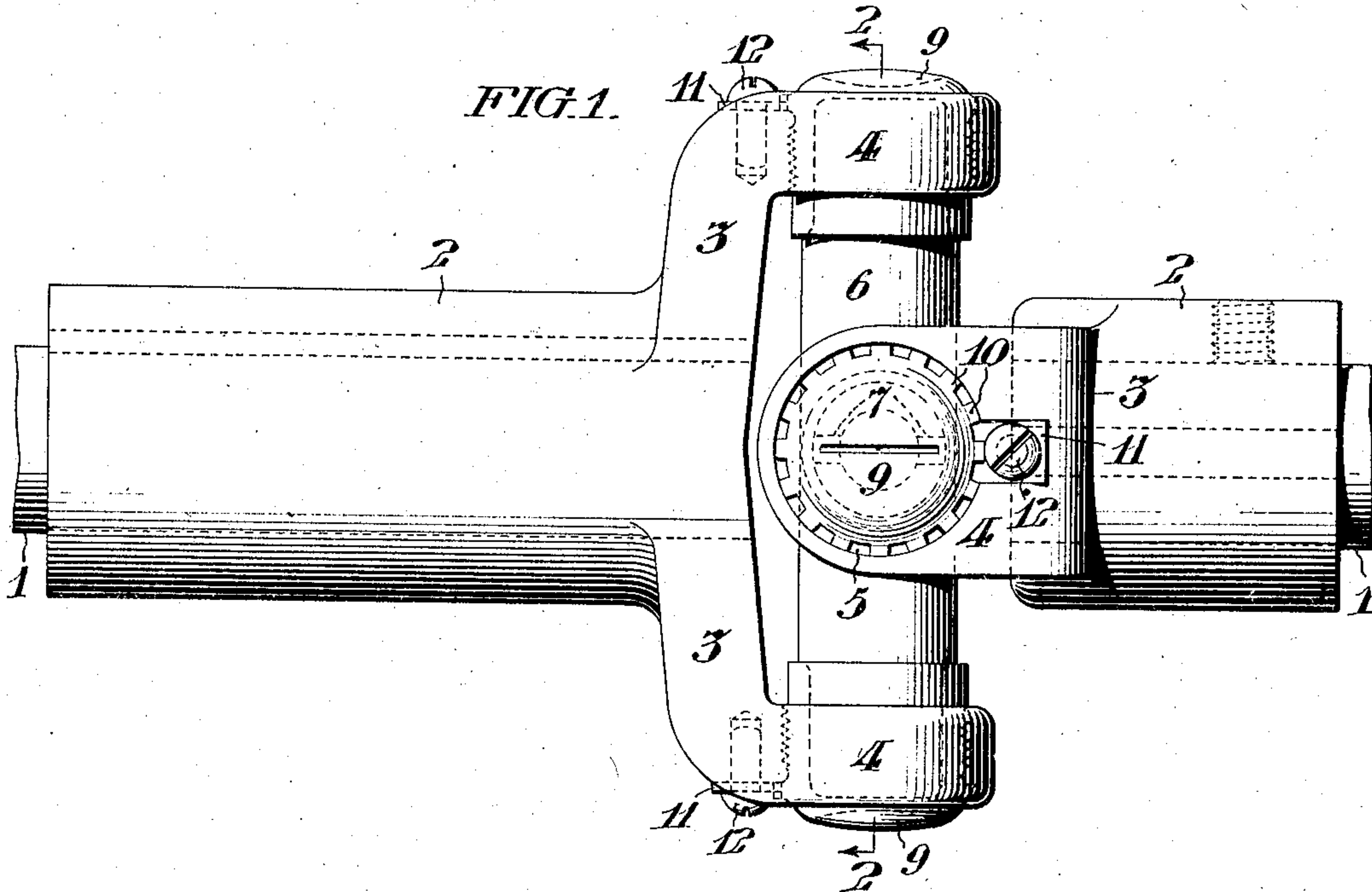
PATENTED AUG. 23, 1904.

J. C. SPEIRS & H. E. DEY.

UNIVERSAL JOINT.

APPLICATION FILED MAY 15, 1903.

NO MODEL.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN C. SPEIRS AND HARRY E. DEY, OF ARDMORE, PENNSYLVANIA,
ASSIGNORS TO THE AUTOCAR COMPANY, OF ARDMORE, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

UNIVERSAL JOINT.

SPECIFICATION forming part of Letters Patent No. 768,200, dated August 23, 1904.

Application filed May 15, 1903. Serial No. 157,207. (No model.)

To all whom it may concern:

Be it known that we, JOHN C. SPEIRS and HARRY E. DEY, citizens of the United States, residing at Ardmore, in the county of Montgomery and State of Pennsylvania, have invented certain new and useful Improvements in Universal Joints, of which the following is a specification.

This invention relates to an improvement in universal joints, and has for its object the improvement of means whereby a cross or similar device is connected to the adjacent ends of two rods or the adjacent ends of two shafts.

And a further object is to manufacture such cross or similar connecting device which shall possess the greatest possible lightness consistent with the requisite strength and which will facilitate lubrication.

To these ends, the construction hereinafter described and set forth specially in the claims, and illustrated in the accompanying drawings forming a part of this specification, is provided.

In the drawings,

Figure 1 is a side elevation of the adjacent ends of two rods or shafts connected together by means embodying our invention; and

Figure 2 is a section on the line 2—2 of Figure 1.

Referring to the drawings,

1 designates the ends of a couple of shafts or similar devices which are connected together, the said ends being provided with heads 2, which are provided with arms 3 at right angles to the longitudinal axis of the shafts, the said arms being provided with longitudinally extending portions 4 provided with screw-threaded openings 5. 6 designates a hollow device which consists of hollow arms arranged in angular relation and which is adapted to be connected to the adjacent ends of the shafts 1 in a manner to be hereinafter described. The said device 6 is illustrated as a tubular cross in which the arms are arranged at right angles to each other, but the angular relation may be altered, as desired, without departing from this invention. The end of each of the arms of the device 6 is provided

with an opening 7, and each end is also somewhat reduced, as indicated, at 8. 9 are screw-threaded bearing caps adapted to screw into the screw-threaded openings 5 provided in the longitudinal portions 4, previously referred to. In assembling the parts the reduced ends of the arms of the device 6 are passed into the openings 5 in the longitudinal portions 4 of the arms 3 and are secured therein by means of the caps 9 which are screwed into the said openings 5. Each of said caps is provided with a notched rim 10, and each rim is adapted to be engaged by a lock plate 11, which is correspondingly notched, and which is adapted to be secured to the portions 4 by means of a screw 12. It will be seen from an inspection of the figures of the drawings that the screw-threaded bearing caps 9 may be adjusted to any desired position, and that they may be held in such adjusted position by means of the lock plates 11.

The object of constructing the device 6 hollow is two-fold: first, it enables the production of a connecting cross or similar device having the requisite strength, but which is of greatly reduced weight, and second, it provides a means whereby the bearing surfaces between the reduced ends 8 thereof, and the inner surface of the bearing caps 9 may be thoroughly and constantly lubricated, the said device being provided with an opening 13 through which a suitable lubricating fluid may pass, the said opening being closed by means of a screw-threaded plug 14. The lubricant having been inserted through the opening 13 enters the hollow arms of the device and escapes through the openings 7, as is obvious.

It will be seen that we have provided a very convenient means for connecting the adjacent ends of two shafts or the adjacent ends of two connecting rods or similar devices, and that, by reason of the use of the hollow device, we secure a desirable lightness, and at the same time the requisite strength. We also provide means whereby the connections between the said device and the adjacent ends of the connecting members are always in a proper state of lubrication.

We desire it to be understood that the construction shown herein may be modified without departing from the spirit and scope of our invention, and that we do not, therefore, wish to be restricted to the precise and exact construction herein illustrated and described.

Having thus described our invention, we claim—

1. A universal joint connection comprising two coupling members having arms, the said arms being provided with perforations, a cross having hollow arms which project respectively into the said perforations, and means for securing the said hollow arms in said perforations.

2. In combination, two shafts, each of which has one of its ends arranged adjacent to one of the ends of the other, angular arms provided upon the said adjacent ends, the said arms being provided with screw-threaded openings, bearing caps having screw-threaded engagement with the said openings, and a cross adapted to have bearing engagement with the said bearing caps, substantially as described.

3. In combination, two shafts, each of which has one of its ends arranged adjacent to one of the ends of the other shaft, angular arms provided upon the said adjacent ends, the said arms being provided with openings, bearing caps secured in the said openings, and a cross adapted to have bearing engagement with the said bearing caps, substantially as described.

4. In combination, two shafts, each of which has one of its ends arranged adjacent to one of the ends of the other, arms provided upon the said adjacent ends, the said arms being provided with screw-threaded openings, bearing caps having screw-threaded engagement with the said openings, the said caps being provided at their upper or outer ends with a notched rim, a lock plate adapted to be secured to the said arms and to engage the said notched rim, and an intermediate connecting cross, each of the arms of which has bearing engagement with one of the said bearing caps, substantially as described.

5. In combination, two shafts, each of which has one of its ends arranged adjacent to one of the ends of the other shaft, arms provided upon the said adjacent ends, the said arms being provided with screw threaded openings, bearing caps having screw-threaded engagement with the said openings, the said caps be-

ing provided at their upper or outer ends with a notched rim, lock plates adapted to be secured to the said arms and to engage the said notched rim, and an intermediate connecting cross, each of the arms of which have bearing engagement with one of the said bearing caps, substantially as described.

6. In combination, two shafts, each of which has an end located adjacent to the end of the other shaft, arms mounted upon the said adjacent ends of said shafts, the said arms being provided with suitable bearings, a hollow cross, each of the arms of which is provided with an opening within the region of the said bearings, whereby a lubricating material contained within the said cross may escape to the said bearings, substantially as described.

7. In combination, a couple of shafts, each of which has one of its ends arranged adjacent to the end of one of the ends of the other, bearing caps supported upon the said adjacent ends, and a connecting device having hollow arms arranged at angles to each other, the said arms being supported in the said bearing caps, substantially as described.

8. In combination, a couple of shafts, each of which has one of its ends arranged adjacent to the end of one of the ends of the other, bearing caps supported upon the said adjacent ends, and a connecting device having hollow arms arranged at angles to each other, the said arms being supported in the said bearing caps and being provided with openings within the region of said bearing caps, substantially as described.

9. The combination with two members of a universal joint having oppositely arranged openings in each, a third member forming a connecting piece and into the openings of which first members said third member is adapted to be introduced from the inside to the outside of same, and means for securing said third member when in position in said openings.

In testimony that we claim the foregoing as our invention we have hereunto signed our names this 12th day of May, A. D. 1903.

JOHN C. SPEIRS.
HARRY E. DEY.

In presence of—
WILLIAM J. SCOTT,
E. W. MILLER.