E. E. HAUER.

UNIVERSAL JOINT.

APPLICATION FILED SEPT. 25, 1913.

1,185,199.

Patented May 30, 1916.

Fig. 1.

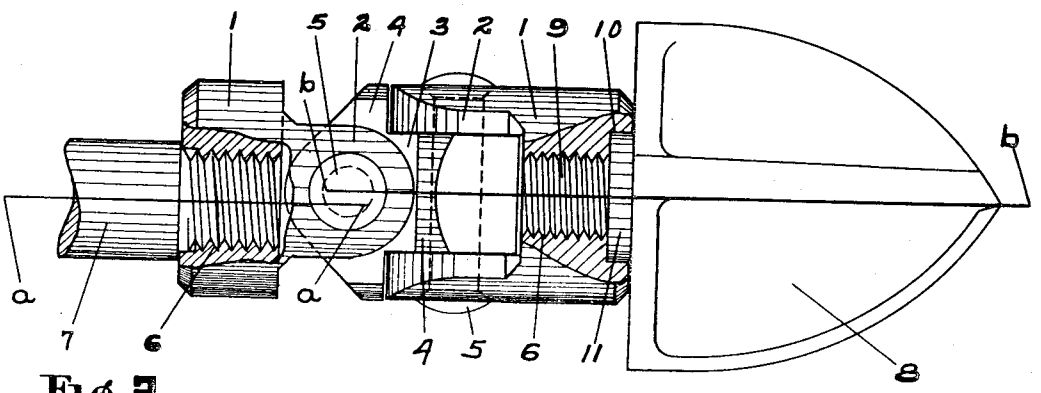


Fig. 2.

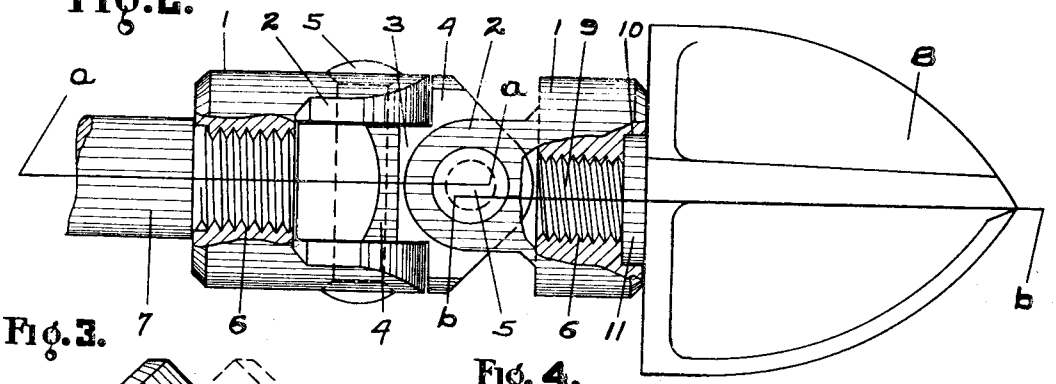


Fig. 3.

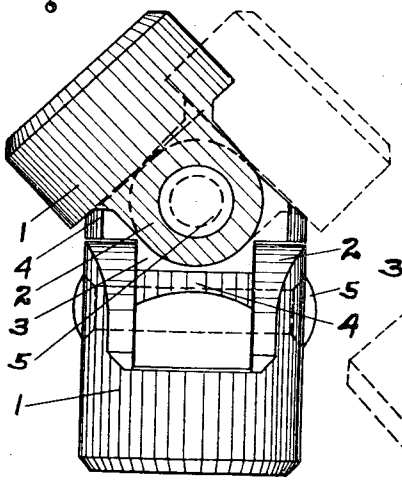


Fig. 4.

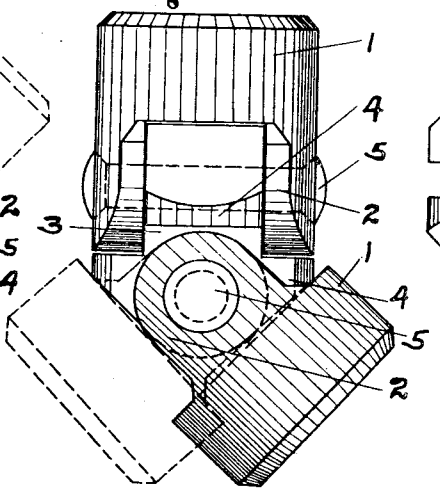
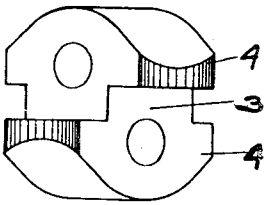


Fig. 5.



Witnesses

Grover Allgire

Floyd McKean

Inventor

Elmer E. Hauer

By

Percy Norton

Attorney

UNITED STATES PATENT OFFICE.

ELMER E. HAUER, OF SPRINGFIELD, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO ELLIOTT COMPANY, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

UNIVERSAL JOINT.

1,185,199. Specification of Letters Patent. Patented May 30, 1916.

Application filed September 25, 1913. Serial No. 791,764.

To all whom it may concern:

Be it known that I, ELMER E. HAUER, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Universal Joints, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to universal joints and more particularly to a universal joint adapted to connect tube cleaners with the driving means therefor, although it may be used for other purposes.

The object of my invention is to provide an improved coupling simple, compact and durable with means for preventing its locking in extreme angular position and arranged so that the cleaner head will deliver a greater blow in the operation of cleaning a tube.

With these and other objects in view my invention consists of the constructions and combinations hereinafter described and set forth in the claims.

In the accompanying drawings which from a part of this specification Figure 1 is a universal joint or coupling embodying my invention, shown secured to a driving shaft and having a cleaner head secured thereto; Fig. 2 is a like view taken at right angles to Fig. 1; Figs. 3 and 4 show the coupling in different angular positions and Fig. 5 is a view of the intermediate member of the coupling.

Like numerals represent the same parts in the several views.

In the drawings 1 represents the end members of the coupling, each end member having longitudinally extending ears 2, the ears of one end member being disposed at right angles to those of the other and being rounded at the ends as shown. An intermediate member 3 rounded at its respective ends as shown and having transversely extending ears 4 which when the coupling is in assembled position project over the ends of the longitudinally projecting ears of the end members is pivoted to said longitudinally projecting ears by pivot pins 5, said pivot pins being disposed at right angles to each other as shown. It will be noted that the rounded ends of the intermediate member 3 permit of its turning upon the pivot pins 5 and that the transversely extending ears 4 projecting over the rounded ends of the longitudinally projecting ears 2 keep the end members 1 from meeting and prevents locking of the parts when the coupling is in extreme angular position.

The end members 1 are provided with longitudinally extending screw-threaded openings 6 and a driving shaft 7 is shown secured to one end and a cleaner head 8 to the other end. Said openings 6 are disposed at one side of the axial center as particularly shown by the lines *a*—*a* and *b*—*b* in Figs. 1 and 2; and further the openings 6 of the respective ends are off-set at right angles to each other the opening of each end member being off-set from the axis thereof in a longitudinal plane extending mid-way between the ears of said member. I have found this particular arrangement of the off-set openings most effective to increase the force of the blows.

To increase the strength of the connection with the cleaner head and prevent breaking of the screw-threaded stem 9 of the cleaner head 8, a counterbore 10 is provided at the outer end of one of the openings 6 to receive a projection 11 of the cleaner head. It will be further noted that owing to the particular form of the intermediate member 3 a relatively short coupling is obtained which is material when employed with tube cleaners in cleaning bent tubes.

Having thus described my invention I claim:—

1. In a universal coupling, end members having longitudinally extending ears forming recesses, a pivot pin in each end member extending through the recess thereof and an intermediate member extending into the recesses of the respective end members and pivoted to said pivot pins, said intermediate member having at each of its opposite ends a pair of oppositely disposed transversely extending ears projecting over the ends of the longitudinally extending ears of the end members, substantially as described.

2. In a universal coupling, end members having longitudinally extending ears forming recesses, a pivot pin in each end member extending through the recess thereof and an intermediate member extending into the recesses of the respective end members and pivoted to said pivot pins, said intermediate member being rectangular in cross-

section forming two pairs of longitudinally extending walls and having at each of its opposite ends oppositely disposed transversely extending ears projecting over the ends of said longitudinally extending ears, two oppositely disposed walls of the transversely extending ears at one end projecting in the same planes with the walls of one pair of said longitudinally extended walls and two oppositely disposed walls of the transversely extending ears at the other end projecting in the same planes with the walls of the other pair of longitudinally extended walls, substantially as described.

3. In a universal coupling, end members each having a pair of longitudinally extending ears forming a cross-slot with its opposite walls in planes parallel with each other, a pin in each end member extending through the slot thereof, and an intermediate member having at each of its opposite ends a pair of transversely extending ears projecting from opposite sides thereof, the respective pairs being arranged at right angles to each other, one pair extending into one of said cross-slots and the other pair into the other cross-slot, the respective pairs having side walls in planes parallel with each other abutting the walls of said slots, said intermediate member being pivoted to the pins in the respective slots and the transversely extending ears projecting over the ends of the longitudinally extending ears, substantially as described.

In testimony whereof I have hereunto affixed my signature in the presence of two witnesses.

ELMER E. HAUER.

Witnesses:
J. P. MALOY,
OLIVER H. HAUSE.