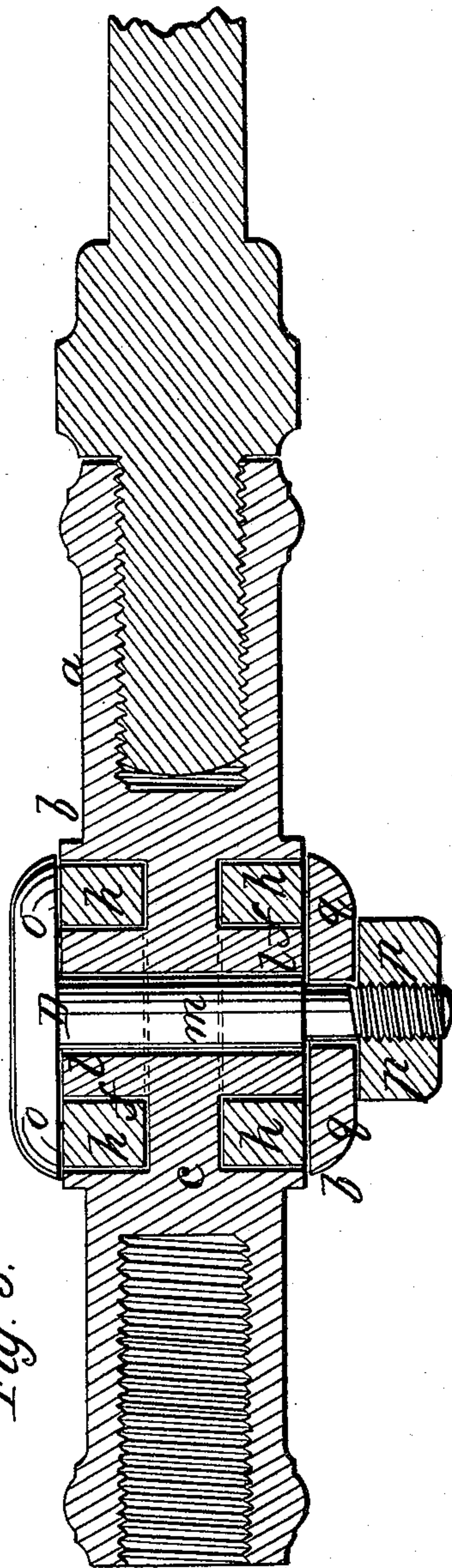
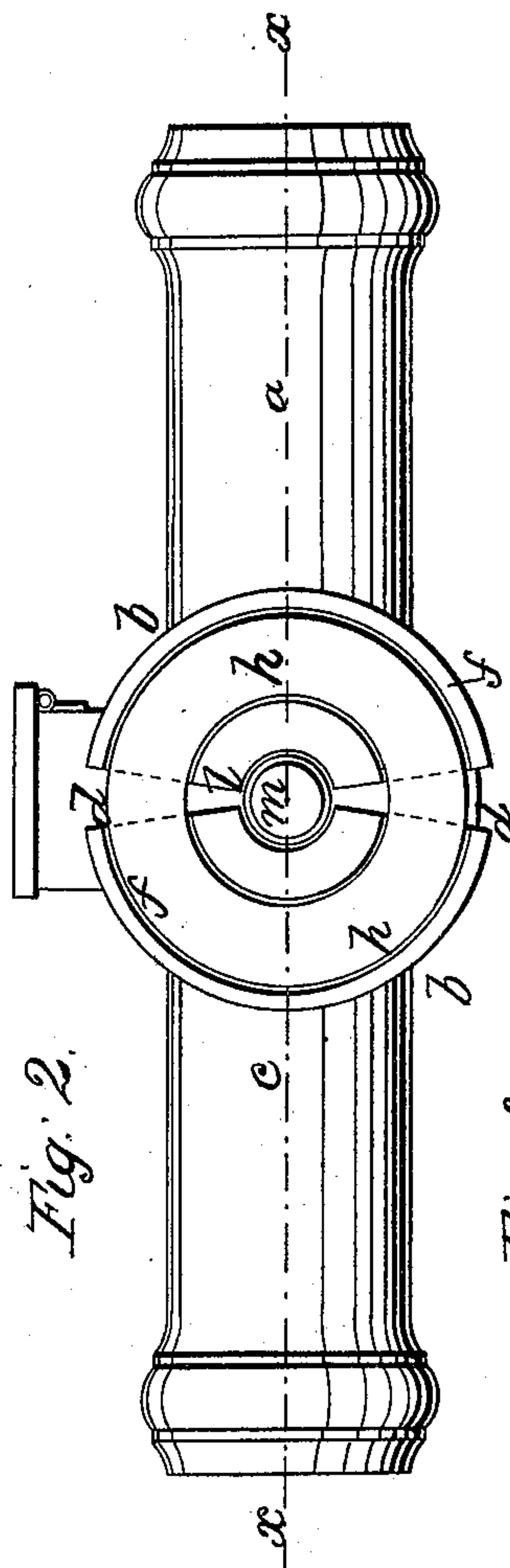
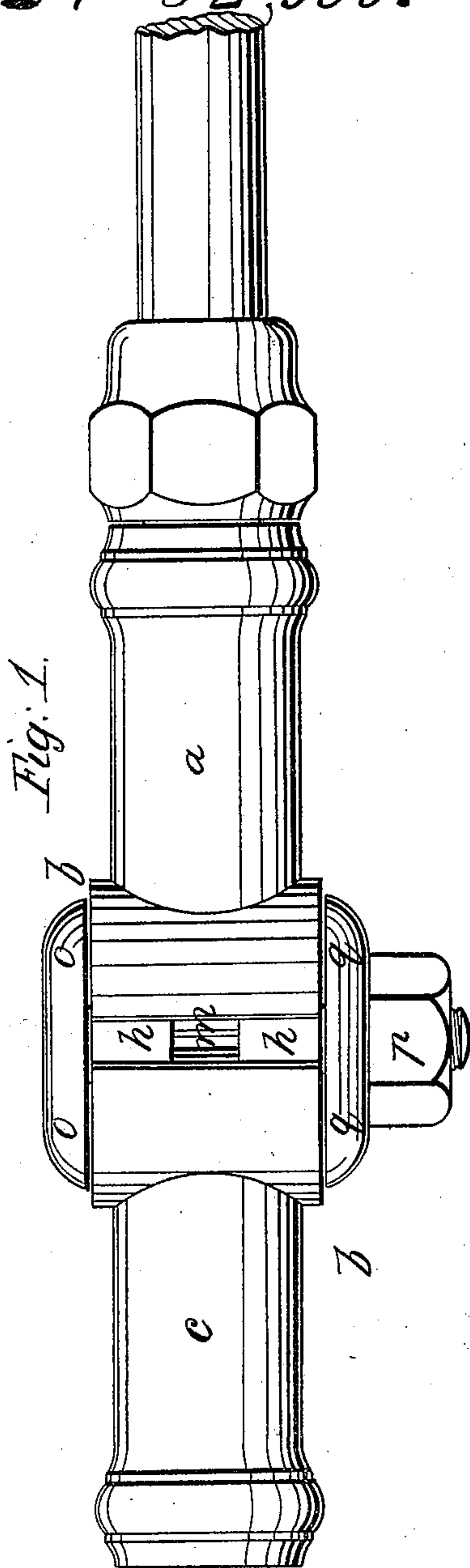


*J. K. Collins,  
Universal Joint.*

*N<sup>o</sup> 52,969.*

*Patented Mar. 6, 1866.*



*Witnesses:  
Wm Greun  
Geo Luch*

*Inventor;  
J. K. Collins  
By Munn & Co  
Attys*



# UNITED STATES PATENT OFFICE.

J. K. COLLINS, OF HUNTSVILLE, ALABAMA.

## IMPROVED KNUCKLE-JOINT.

Specification forming part of Letters Patent No. 52,969, dated March 6, 1866.

*To all whom it may concern:*

Be it known that I, J. K. COLLINS, of Huntsville, in the county of Madison and State of Alabama, have invented a new and useful Improvement in Knuckle-Joints; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

The present invention has for its principal object the relief of the center-pin of a knuckle-joint from strain upon it produced by the working of the joint; and it consists in a novel construction of the joint whereby the center-pin is entirely relieved from strain, it merely serving as a means for holding the parts constituting the joint together and besides the joint is rendered firm and strong and its resistive force to strains or breakage from use greatly increased.

In accompanying plate of drawings my improvement is illustrated, Figure 1 being a view of the joint when all its parts are secured together; Fig. 2, a view of the joint with one of its cap or covering plates removed; Fig. 3, a section taken in the plane of the line *x x*, Fig. 2.

*a a* in the drawings represent a valve-stem, in connection with which my improved knuckle-joint *b* will be explained. The contiguous ends of the valve-stem *a* and connecting-rod *c*, which are knuckle-jointed together, are each made with inclined faces *d d* from the center outward, which inclination is to correspond to the length of play which the parts are to have in their joint to accomplish the purpose to which they are to be applied.

Upon opposite sides of both the valve-stem *a* and rod *c* are similar arc-shaped square grooves *f f*, in which grooves, upon the same side of the valve-stem and rod, and extending

across their joint or from one to the other, is inserted a ring, *h*, made of corresponding shape thereto in cross-section, and of such a thickness as to be flush, or nearly so, with the side surfaces of the two parts.

Through the center aperture, *l*, of the joint, extending in a direction at right angles to the plane of the rings, is loosely passed a bolt, *m*, having upon one of its ends, *n*, and forming a part thereof, a head-plate, *o*, entirely covering the ring upon such side of the two parts of the joint, this bolt being secured in position by means of a screw-nut, *p*, upon its other end, between which and the surface of the stem and rod is a washer-plate, *q*, corresponding in size and shape to the head-plate *o* of the bolt, and also covering the ring upon such side, as before explained, for the said head-plate *o*.

From the above description it is obvious that as the joint is worked, in lieu of the two parts jointed together turning upon the center bolt or pin, *m*, as has heretofore been the case, the disadvantage of which has been hereinbefore alluded to, they turn upon the connecting-rings *h h* thereof, the bolt in my improvement simply serving as a means to hold the parts together, constituting the joint, whereby great strength and firmness is imparted to the joint, and consequently any breakage or strain thereof from use is in a great degree obviated, thus increasing the length of time to which the joint may be worked.

I claim as new and desire to secure by Letters Patent—

Connecting the two parts of a knuckle-joint together by means of one or more rings, *h h*, applied thereto, substantially in the manner and for the purpose specified.

J. K. COLLINS.

Witnesses:

JAMES MCINTOSH,  
JOHN H. MOORE.