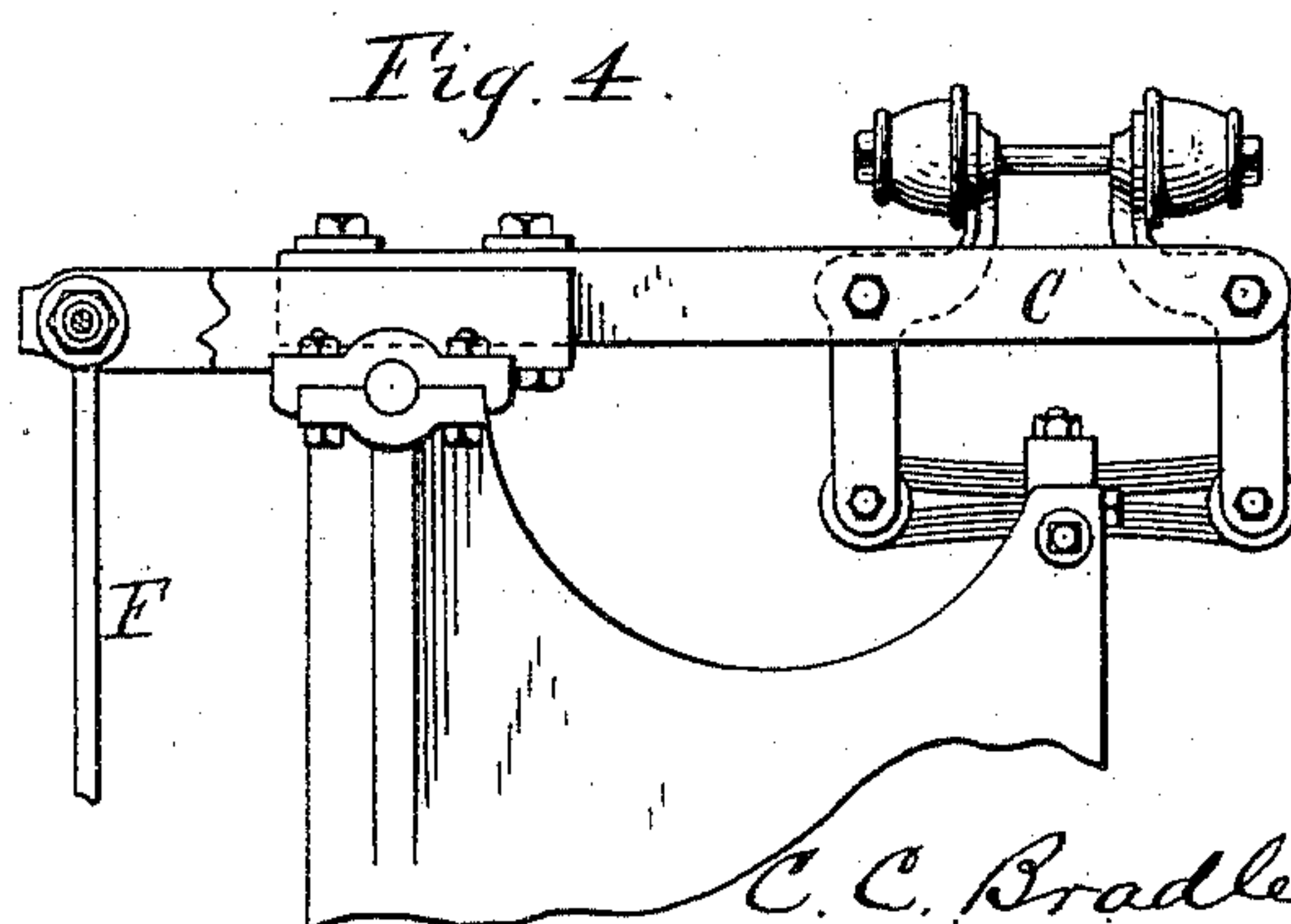
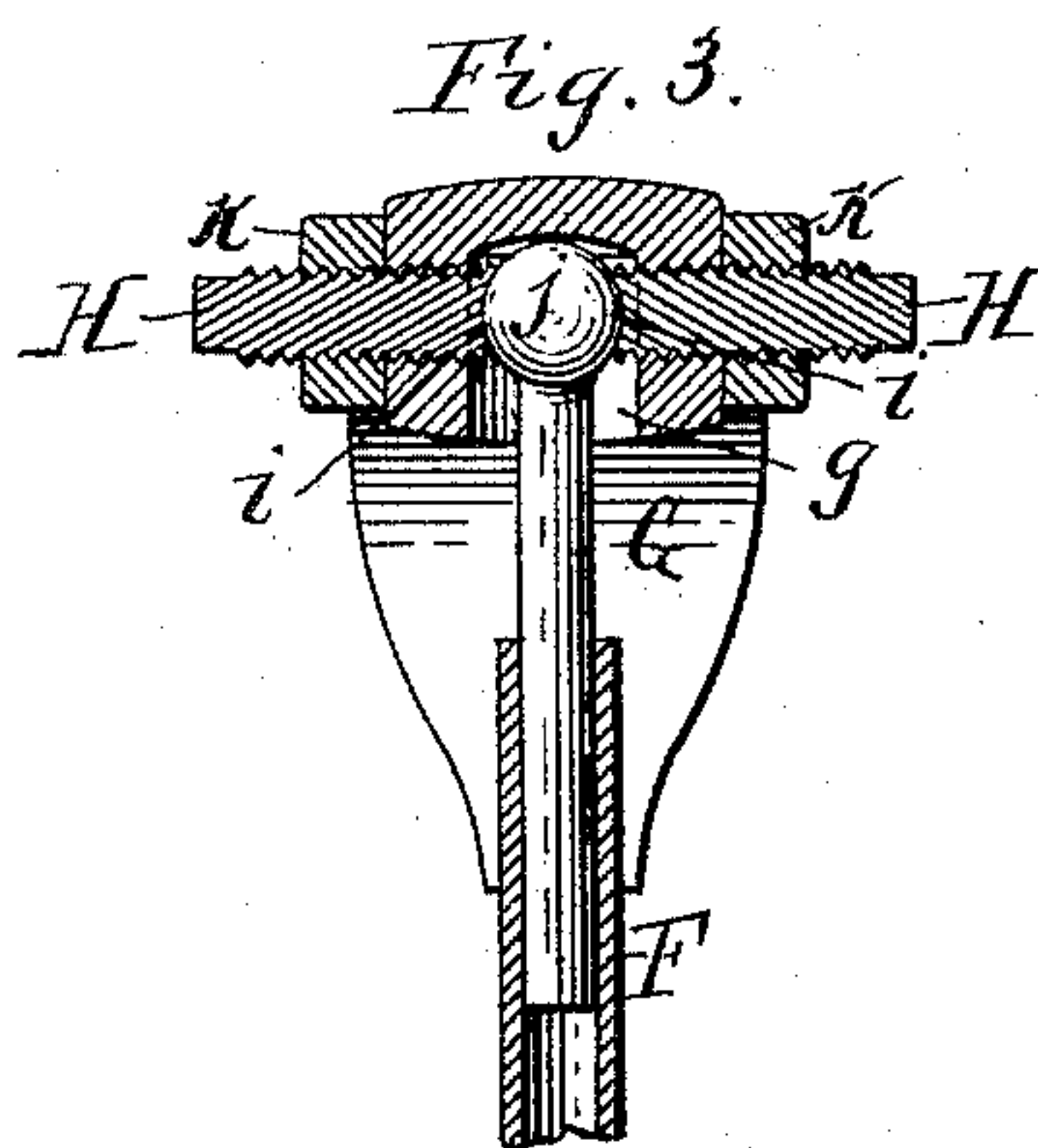
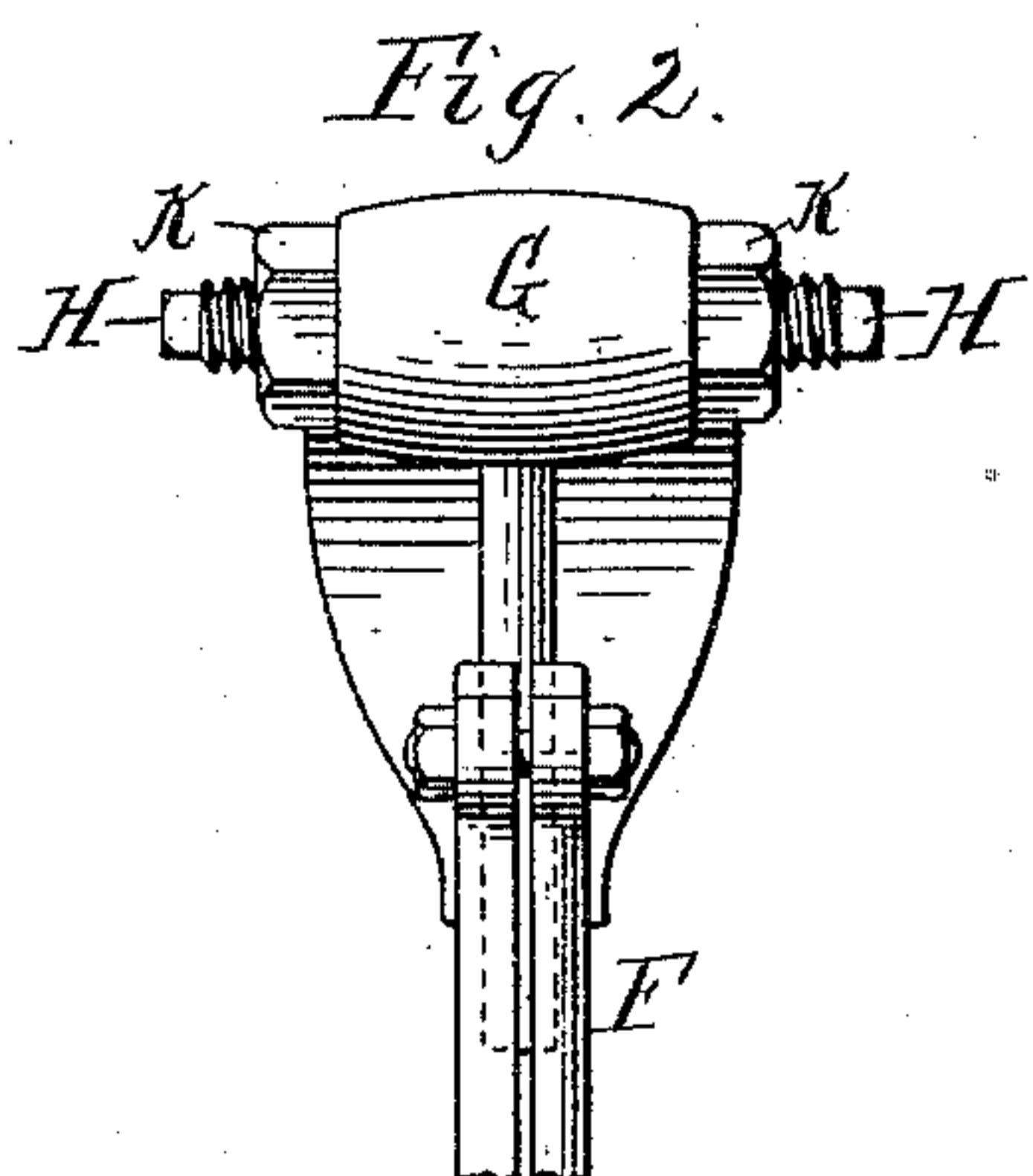
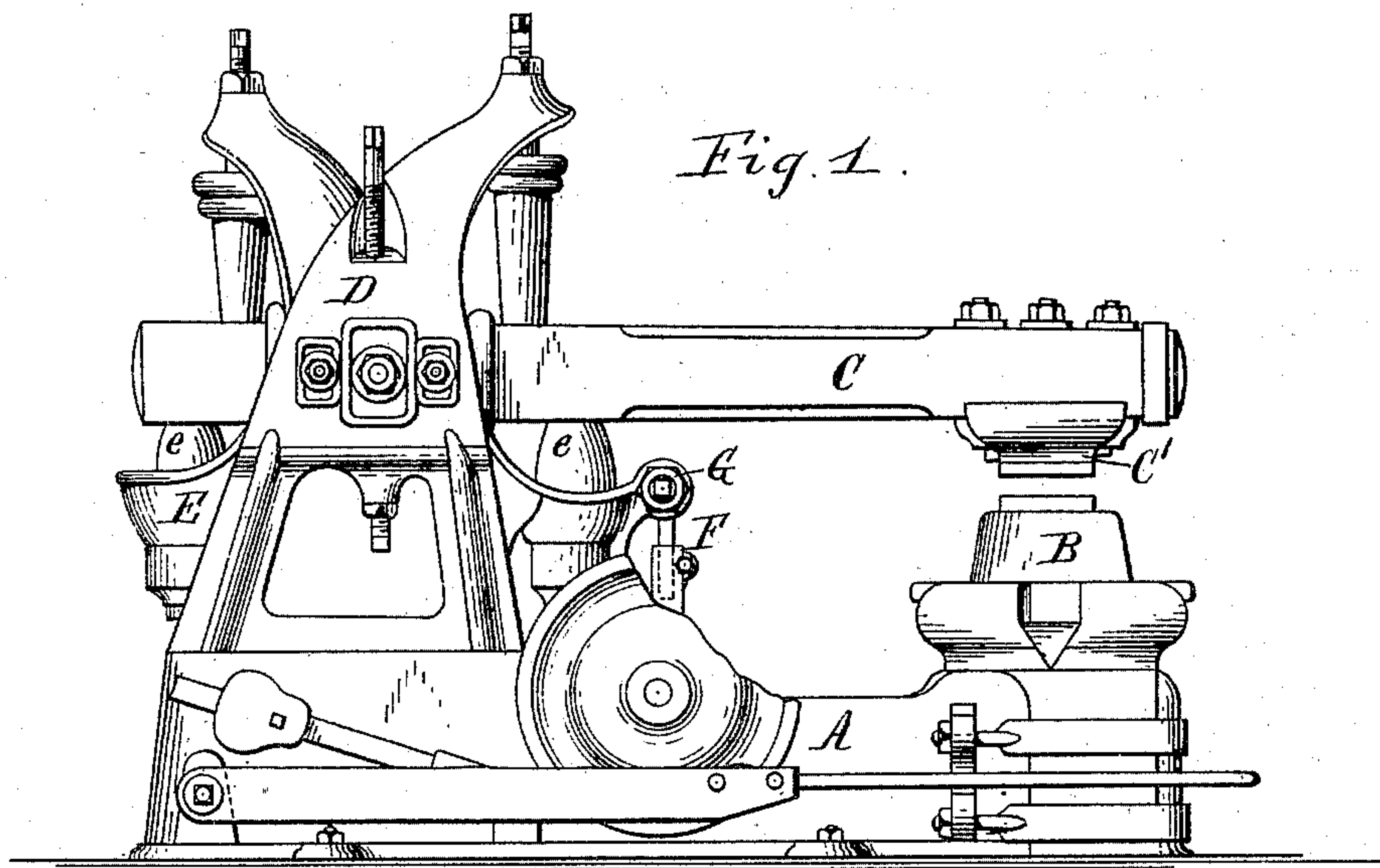


(No Model.)

C. C. BRADLEY.  
POWER HAMMER.

No. 497,012.

Patented May 9, 1893.



Witnesses:  
Emil Neuhaert  
C. F. Geyer.

C. C. Bradley, Inventor.  
By Wilhelm & Bonner,  
Attorneys.



# UNITED STATES PATENT OFFICE.

CHRISTOPHER C. BRADLEY, OF SYRACUSE, NEW YORK.

## POWER-HAMMER.

SPECIFICATION forming part of Letters Patent No. 497,012, dated May 9, 1893.

Application filed April 20, 1891. Serial No. 389,701. (No model.)

*To all whom it may concern:*

Be it known that I, CHRISTOPHER C. BRADLEY, a citizen of the United States, residing at Syracuse, in the county of Onondaga and State of New York, have invented a new and useful Improvement in Power - Hammers, of which the following is a specification.

This invention relates to the connection whereby motion is transmitted from the driving shaft of the power hammer to the helve, and which consists usually of an eccentric and connecting rod. The helve which is commonly constructed of wood, is liable to become warped by heat and continual use, or to be more or less tilted by an uneven adjustment of the bearings or boxes in which its journals oscillate. This produces cramping of the eccentric and the joint between the helve and the connecting rod and also causes shifting of the eccentric strap.

The object of my invention is to retain the eccentric and its strap in accurate alignment at all times, and it consists to that end of an improved joint which affords the requisite freedom of movement of the parts to avoid the objections above mentioned.

In the accompanying drawings: Figure 1 is a side elevation of a power hammer provided with my improvement, the hammer being of the type in which the helve is actuated by an oscillating buffer-yoke. Fig. 2. is a front elevation of the joint on an enlarged scale. Fig. 3. is a transverse section of the same. Fig. 4. is a fragmentary side elevation showing my improved joint applied to a power hammer of the type in which the actuating rod is connected directly to the helve.

Like letters of reference refer to like parts in the several figures.

A represents the bed of the hammer, B the anvil, C the helve carrying the ram C', and D the standards between which the helve is pivoted in the ordinary manner.

E is the oscillating yoke having the buffers *e* which strike against the under side of the helve on opposite sides of its pivot, and F is the actuating rod connected at its upper end to the forwardly projecting arm or lug G of the oscillating yoke and at its lower end to the strap of the eccentric. The latter is not

shown in the drawings. The lug G is provided in its under side with a cavity or recess *g*.

H H represents bearing screws arranged in threaded openings in opposite sides of the lug G and projecting into the recess of the lug. The inner ends of these screws are provided with concave or spherical cavities *i*.

The actuating rod F is provided at its upper end with a spherical knuckle *j* which is seated in the spherical cavities *i* of the bearing screws H, the cavities of the two screws constituting together a spherical socket or bearing for the knuckle of the connecting rod. The recess of the lug G is made considerably larger than the knuckle, so that the latter does not come in contact with the walls of the recess but bears solely against the concave seats of the screws. The latter are formed with square or flat sided outer ends for turning them by a suitable wrench and they are clamped in place in the lug G by jam nuts *k* arranged on the screws and bearing against the outer faces of the lug.

By connecting the actuating rod with the helve by means of a spherical joint all cramping or twisting of the connected parts is obviated, the knuckle of the connecting rod being free to adapt itself to any position which the helve or its actuating yoke may assume by warping or from an uneven adjustment of the pivots of the helve or its yoke. The eccentric and the strap thereof are thus maintained in true alignment, even if the socket portion of the joint be out of line, thereby avoiding uneven wear of the eccentric and its strap and rendering these parts more durable.

By causing the spherical knuckle of the connecting rod to bear only against the concave inner ends of the adjusting screws, the wear is received solely by the screws, which are cheaply replaced. The wear upon the screws is readily taken up by loosening their jam nuts and screwing the same farther into the recess of the lug.

In Figs. 1, 2, and 3 my improved joint is represented as applied to a power hammer having a buffer yoke actuated by the eccentric rod and which in turn imparts motion to the helve, but it is obvious that the joint may

also be used in connection with hammers in which the eccentric rod is connected directly to the helve, as illustrated in Fig. 4.

I claim as my invention—

- 5 The combination with the helve, of an actuating rod having a convex spherical knuckle, and a socket connected with the helve and provided with adjusting screws having concave spherical bearing surfaces at their inner

ends between which the knuckle of the actuating rod is clamped, substantially as set forth.

Witness my hand this 17th day of April, 1891.

CHRISTOPHER C. BRADLEY.

Witnesses:

BENJAMIN STOLZ,  
THEO. L. POPP.