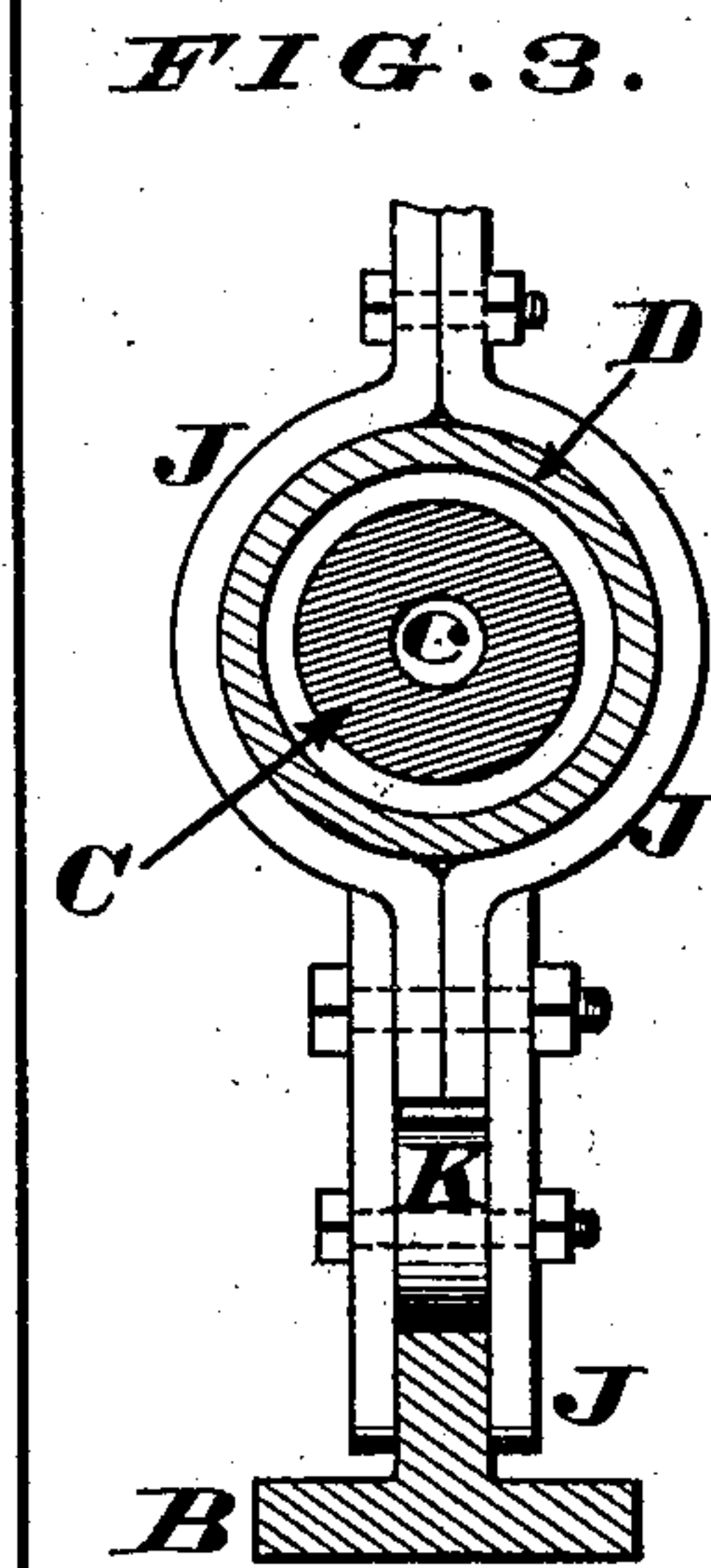
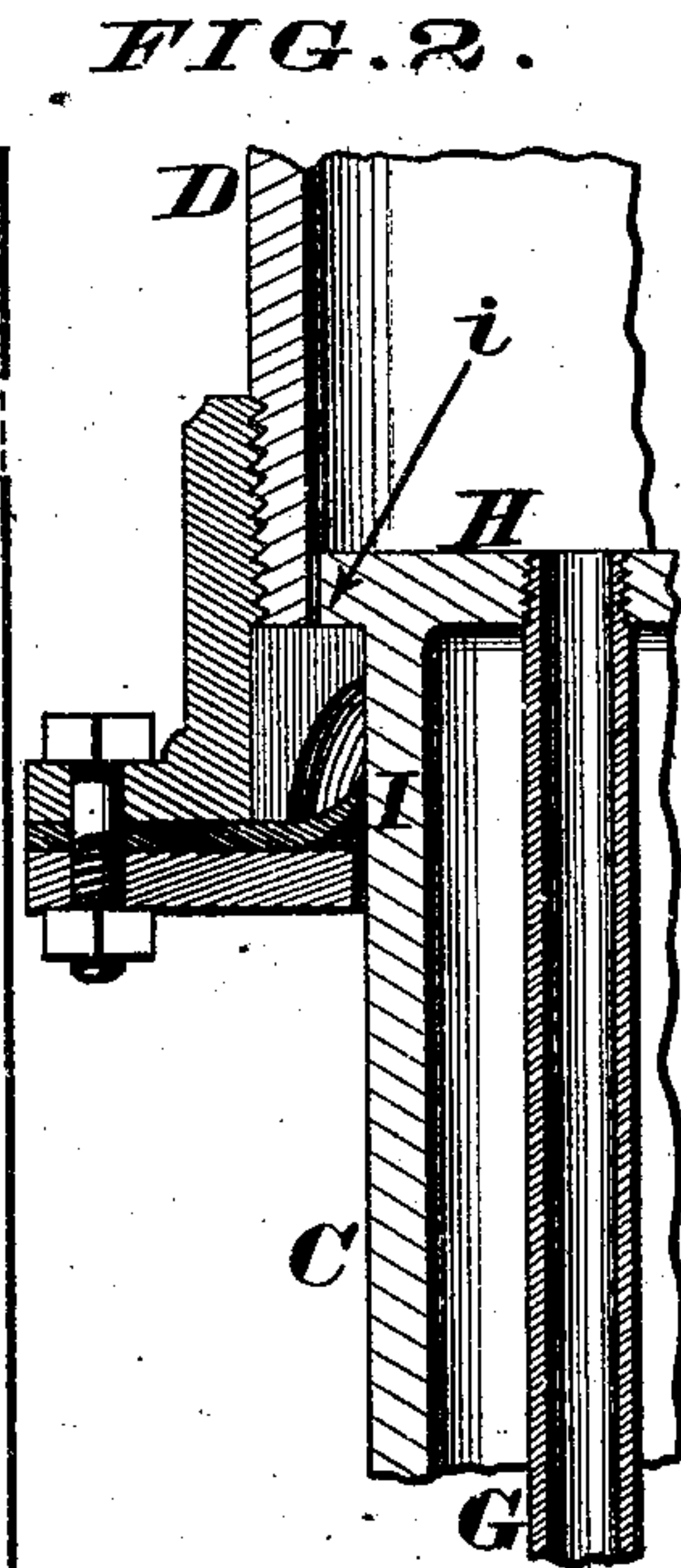
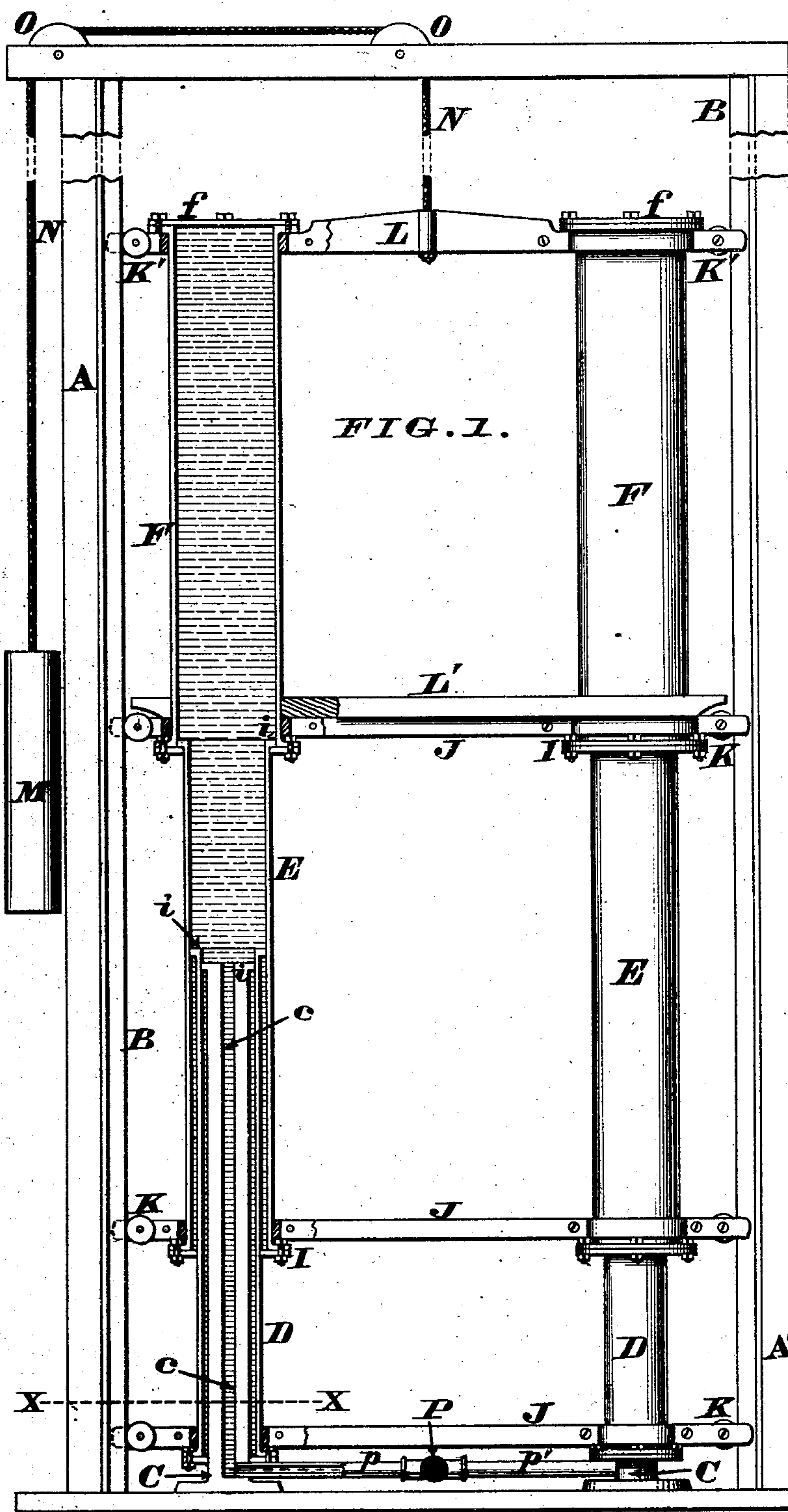


H. RICHMANN.  
Hydraulic Hoist.

No. 160,232.

Patented Feb. 23, 1875.



Henry Richmann  
By Knight Bros.

Att'ys.

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Jas. H. Gayman.  
Henry Tanner.



# UNITED STATES PATENT OFFICE.

HENRY RICHMANN, OF CINCINNATI, OHIO.

## IMPROVEMENT IN HYDRAULIC HOISTS.

Specification forming part of Letters Patent No. **160,232**, dated February 23, 1875; application filed January 13, 1875.

*To all whom it may concern:*

Be it known that I, HENRY RICHMANN, of Cincinnati, Hamilton county, Ohio, have invented a new and useful Hydraulic Hoist, of which the following is a specification:

This is an improvement in the class of hydraulic hoists in which the water or other impelling fluid operates through the instrumentality of one or more columns composed of nested tubes, which are adapted to slide one within another, telescope fashion; and a principal feature of my present improvement consists in an arrangement and adaptation of the "telescope" whereby the smallest member of the series is made to rest upon the ground or foundation, and becomes the common abutment of all the others, each tube in succession serving as the piston or abutment of that immediately outside of it, and so on upward and outward throughout the series, the cage or platform being preferably fastened to the lower ends of the outermost tubes, which tubes are thus made component parts of the cage or platform frame.

In the accompanying drawing, Figure 1 is a representation of that form of my invention which employs two extensible columns on opposite sides of the platform, one of the telescopes being shown in elevation, and the other one in axial section. Fig. 2 is an axial section through a tube-coupling, and portions of the lowest two tubes in their condition of greatest extension. Fig. 3 is a section on the line X X, being on a larger scale than Fig. 1, and smaller than Fig. 2.

A A' represent two parallel stanchions, having guide plates or ways B, such as are customarily employed in hoisting apparatus. Each extensible column is composed of a series of nested cylindrical members or tubes, C, D, E, and F. Of these, the lowest and smallest member, C, is made sufficiently tubular to permit the passage of the water or other impelling fluid. Said fluid may be conducted through a pipe, G, Fig. 2, which, traversing a cap or plug, H, in the top of the member C, communicates with the inclosed space formed by the congeries of nested tubes, as shown in Fig. 2; or this lowermost or fixed member of the column may be a simple cast cylinder, whose axial bore *c* serves as conduit for the

fluid. To each inclosed member the corresponding inclosing member is fitted by a water-tight sliding joint, I, the inclosing tube being preserved from the possibility of entire withdrawal by means of flange or shoulder *i*. These shoulders also serve to enable the upper tubes to lift the lower ones. The outermost tube is closed at top by a cap, *f*.

Although one, two, or more such telescopic columns may be combined, the preferred number for most situations will be two, as in the present illustration, and each column may consist of two, three, or more component tubes, to suit the requirements of the situation or the views of the builder, it being observed that any two or more columns in a given hoist are precise fac-similes of one another.

The lower part of each pair of sliding members or tubes is united and firmly held against lateral deflection by stays or braces J, which, projecting beyond their respective tubes, constitute at their extremities journal-bearings for rollers K, adapted to traverse the ways B, for the purpose of maintaining the extensible column in a truly vertical line. A beam, L, which unites the upper parts of the outermost tubes, and extends beyond the same, also serves to brace the columns at this part, and has bearings for rollers K', of similar functions to rollers K. The said beam also serves as the upper member of the cage, the two outermost tubes F constituting the side posts of the cage, and the brace *j*, which connects their lower parts, serving to support the floor L' of said cage or platform. The beam L may further serve as a point of attachment for a rope or wire cable, N, which, passing over sheaves O O, serves to suspend a body, M, of any desired weight, which operates to partially or to any desired degree counterbalance the weight of the cage and distended columns. P represents an inlet-pipe, having branches *p p'*, which communicate either with the central channel *c* of the lower tube, or else with a pipe, G, traversing said tube. The object of this branched pipe is to admit water into and discharge it from the extensible columns, and for this purpose the main P may be provided with any suitable form of cock or valve.

With the described duplicated and braced

arrangement of extensible column the two series operate to mutually support one another, and enable the platform to maintain its horizontality, even with a heavy load unequally distributed upon it.

The above-described hoist is cheap and simple in construction, and entirely free from the dangerous casualties of those whose platforms are suspended wholly by wire cables, while, as compared with telescopic hoists, whose larger members are the supporting ones, the described arrangement possesses the important advantage of requiring no excavation in the ground or below the level of its initial position, such as now involve great expense, and, in some situations, endanger the foundation-wall of the building.

I claim as new and of my invention—

1. The described arrangement whereby the outermost tubes F in a coupled series are made in conjunction with the parts J L L', to constitute the cage or platform.

2. The combination of inverted telescopic water-columns C D E F, stays J, beam L, rollers K K', and guiding-stanchions A B, A' B, for the purpose set forth.

In testimony of which invention I hereunto set my hand.

HENRY RICHMANN.

Attest:

GEO. H. KNIGHT,  
JAMES H. LAYMAN.