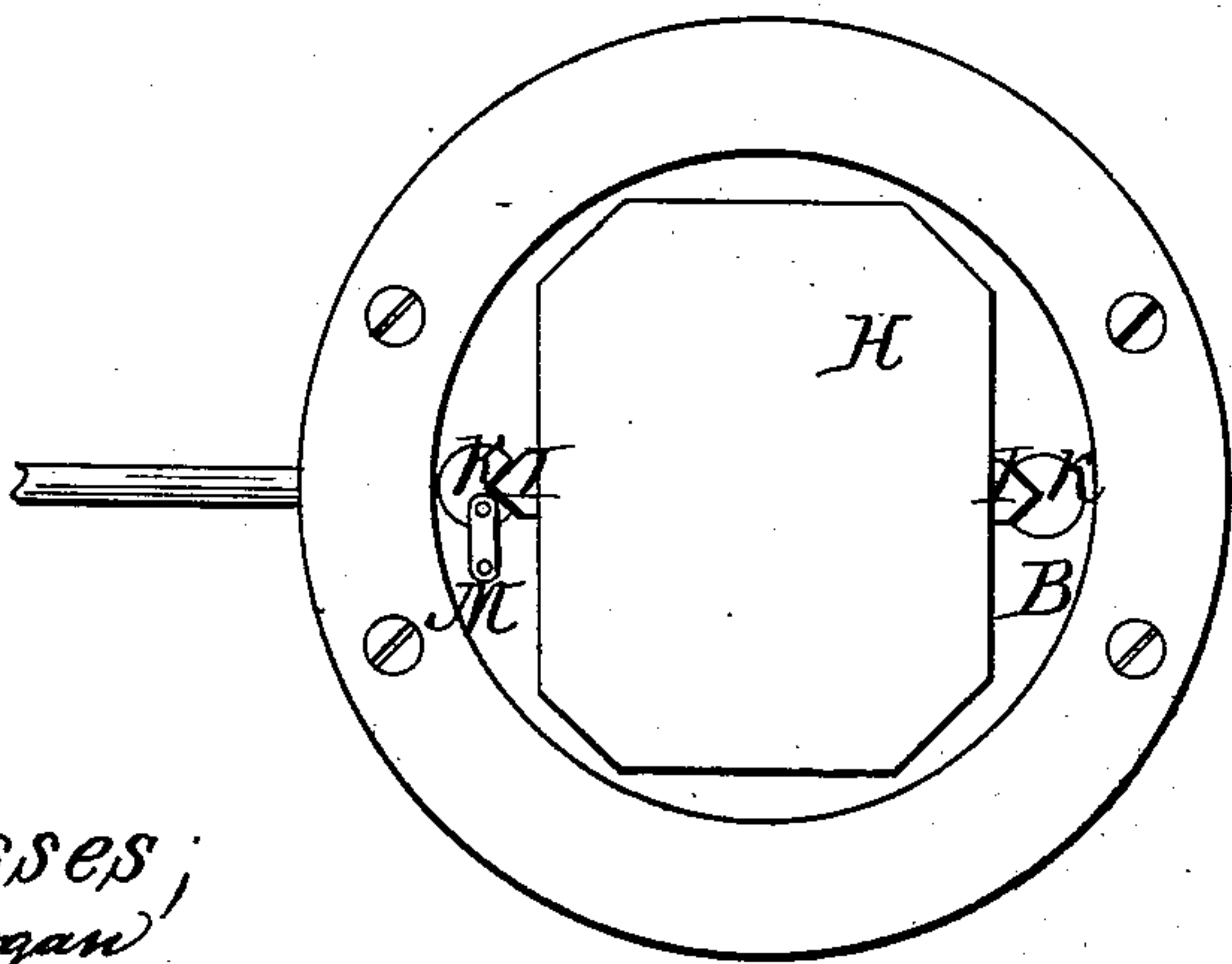
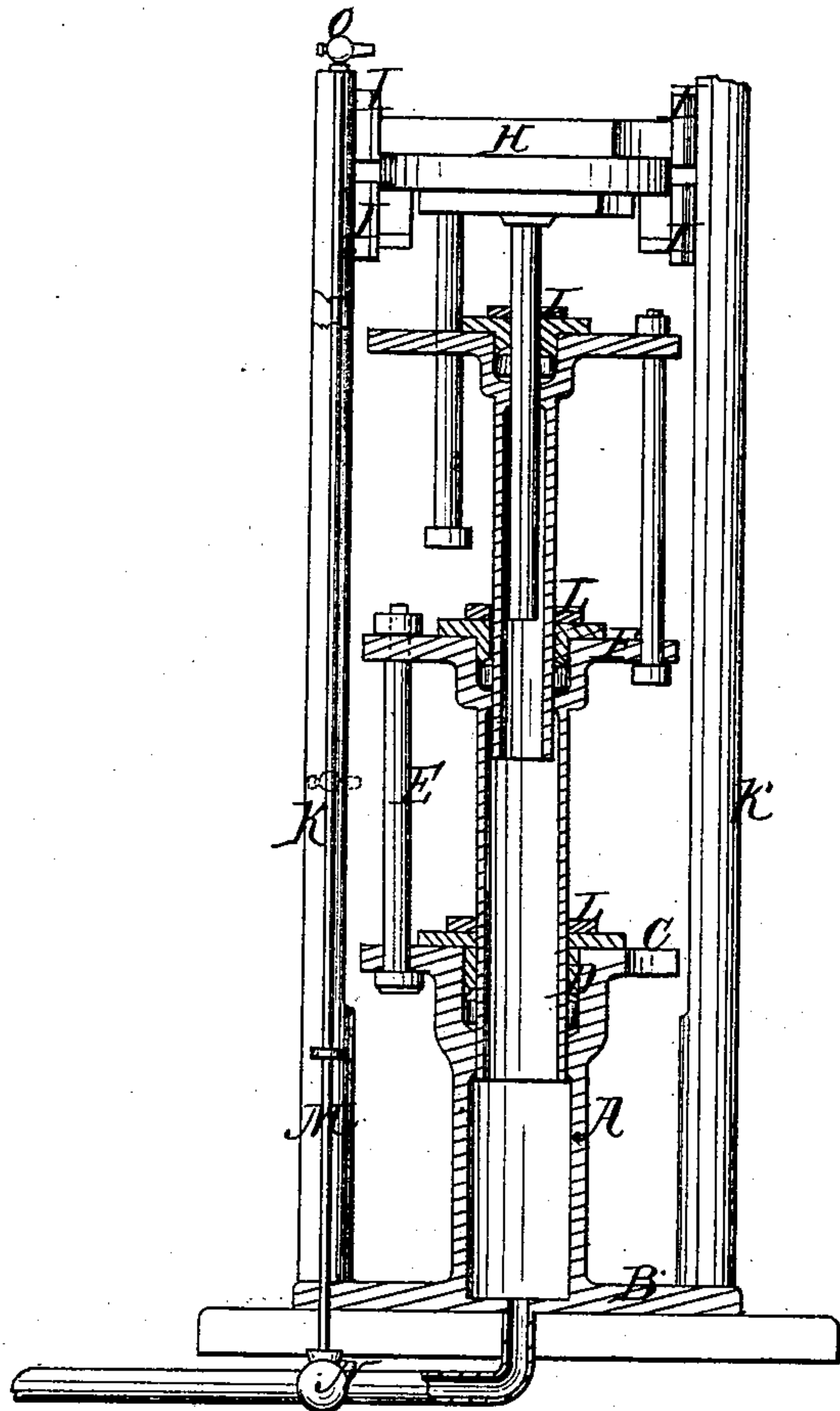


*E. T. Hope,*  
*Hydraulic Jack,*  
*N<sup>o</sup> 81,276. Patented Aug. 18, 1868.*



*Witnesses;*  
*Amos Morgan*  
*Geerton*

*Inventor;*  
*E. T. Hope*  
*Per Munroe*  
*Atty.*

# UNITED STATES PATENT OFFICE.

ERWIN T. HOPE, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN ELEVATORS.

Specification forming part of Letters Patent No. **81,276**, dated August 18, 1868.

*To all whom it may concern:*

Be it known that I, ERWIN T. HOPE, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and improved Elevator; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

The nature of this invention relates to improvements in elevators, such as are used in hotels, warehouses, &c.; the object of which is to provide a hydraulic elevator of more simple and cheaper construction than those now in use.

It consists of an arrangement of a series of vertical telescopic tubes and a plunger, on the top of which the carriage is supported, and moved between suitable vertical guides, when the said telescopic tubes are extended by the action of water forced in at the bottom to the lower tube, which is stationary.

Figure 1 represents a sectional elevation of my improved elevator, and Fig. 2 represents a plan view of the same.

Similar letters of reference indicate corresponding parts.

A represents a vertical stationary tube, provided with an enlarged base, which is firmly secured to a suitable bed. It is also provided with a flange, C, at the top, in which a stuffing-box, D, is fitted, and by which it is connected, by the rods E, to a similar flange, F, of a movable tube, G, which is fitted to work as a plunger within the base of the tube A.

Any suitable number of such tubes may be arranged one within the other, to rise one out of the other by the action of the water, when forced in at the bottom, and connected by the rods E, to prevent each tube being forced too high on the uppermost tube; or it may be a solid plunger.

A carriage, H, is supported and provided with slides, I, to work in the grooved posts or guides K K. I prefer to make the slides double on each side, and separate them as much as possible, for the purpose of giving greater stability to the carriage.

L represents springs, ranged around each cylinder and between the same, for the pur-

pose of preventing serious results from concussion when the tubes settle down together. I also propose to provide similar springs between the heads of the rods E and the flanges of the tubes, for a similar purpose, when the tubes are being extended.

Each succeeding tube should be made as much longer than the preceding one as the length of the stuffing-boxes, so that, when they are in a contracted position, all the tubes will reach to the bottom of the fixed tube A; and they may be so arranged that, when the water is introduced, the lowest tubes will rise first, and the next succeeding, or the topmost may be moved first.

M represents a rod, connected at the bottom with a three-way cock, N, and running to the top of the ways, whereby the flow of water into the tubes for elevating the carriage may be stopped by persons on the carriage, or on any of the floors, and whereby the cock may be turned to allow the water to flow out, for the purpose of allowing the carriage to descend.

The top of the rod is provided with an arm, O, which, projecting into the path of the carriage, will be moved thereby to close the cock, and prevent the further ascent of the carriage when it has arrived at the highest point which it is desired to allow it to go. Another arm may also be provided at the bottom, to close the cock, and thereby stop the descent of the carriage at any point.

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

1. The combination, with the telescopic tubes, of a carriage, H, and ways K, substantially as and for the purpose described.

2. The combination, with the telescopic tubes, of the rods E and cushions L, substantially as and for the purpose described.

3. The combination of the telescopic tubes, provided with cushions L and stuffing-boxes D, and connected by rods E, the grooved ways K, carriage H I, three-way cock N, and rod M, having arms, as described, all substantially as herein set forth and shown, for the purposes specified.

ERWIN T. HOPE.

Witnesses:

T. L. LAUBACH,  
HENRY D. MOORE.