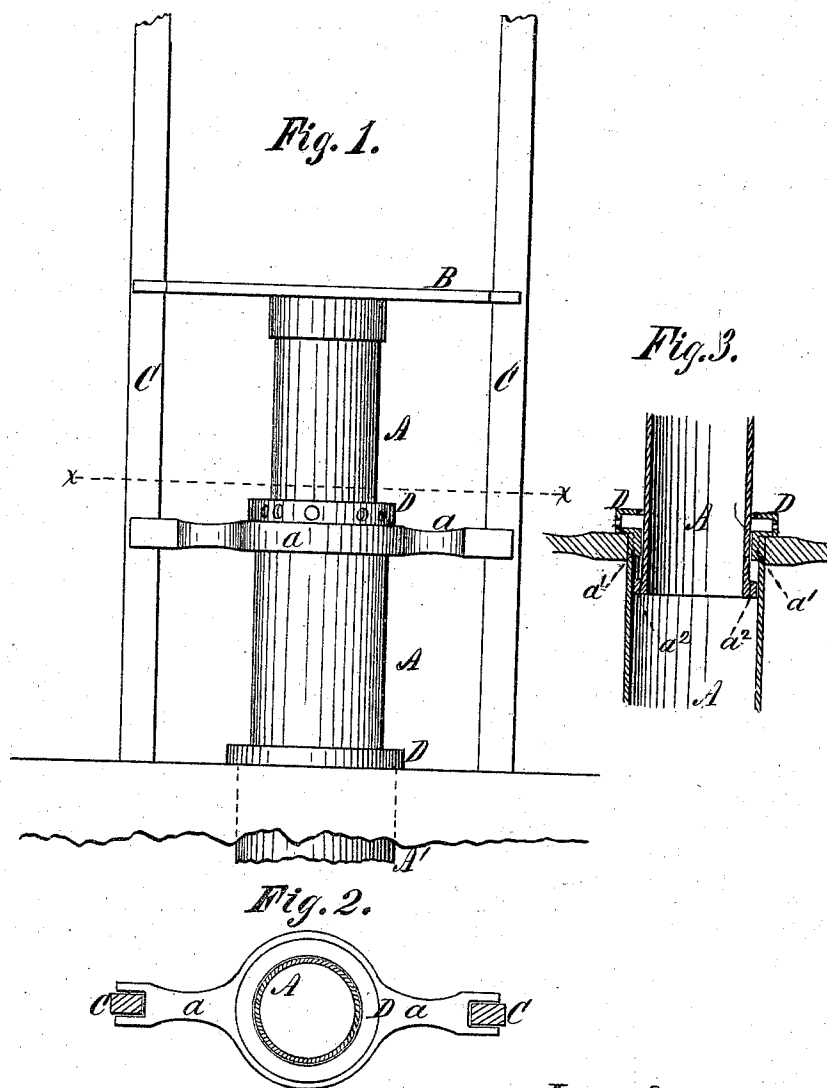


F. G. JOHNSON & S. I. THURSBY.

Hydraulic-Elevators.

No. 148,123.

Patented March 3, 1874.



Witnesses:
 Asa Farr
 J. M. Quincy.

Inventors:
 Frank A. Johnson.
 S. I. Thurstby.

UNITED STATES PATENT OFFICE.

FRANK G. JOHNSON AND SAMUEL I. THURSBY, OF BROOKLYN, N. Y.

IMPROVEMENT IN HYDRAULIC ELEVATORS.

Specification forming part of Letters Patent No. 148,123, dated March 3, 1874; application filed April 3, 1873.

To all whom it may concern:

Be it known that we, FRANK G. JOHNSON and SAMUEL I. THURSBY, both of the city of Brooklyn, in the county of Kings and State of New York, have invented certain Improvements in Hydraulic Elevators, of which the following is a specification:

Our improvement pertains to elevators for buildings, &c., in which a series of telescopic tubes are extended, to raise a platform which they support, through the agency of a fluid forced into them from below, as in the patent of E. F. Hope, No. 81,276, dated August 18, 1868; and consists in providing against the entire displacement of one tube from another in case of accident to any of the collars or stops upon the inner ends of the movable tubes, by means of flanges or guides secured to the top of each tube, (excepting that directly supporting the platform,) so that, should the end of one tube, from any cause, escape beyond the packing-joint between it and the one in which it slides, it will be still held in line, against lateral displacement, by the guide-flange upon the tube in which it slides, said flange being made so as to allow the escape of the liquid through it from the interior of the tubing, under the circumstances stated, the effect of which is to cause the tubes to gradually descend into each other, and thus prevent further damage.

In the accompanying drawings, Figure 1 is a side elevation, illustrating the arrangement of the apparatus; Fig. 2, a horizontal section in plane of line *x x*, Fig. 1; and Fig. 3, a vertical section, showing the arrangement of the guide-flange, &c.

The number of telescopic tubes, *A A*, employed is regulated according to the height to which the platform is to be elevated. Those tubes situated between the platform *B* and the lower stationary tube *A'*, (into which the liquid first enters,) are guided and centralized by the vertical ways *C C*, through the medium of the horizontal cross-heads *a a*, which are rigidly affixed to the upper ends of said tubes *A*. The

ends of the cross-heads *a* are bifurcated, so as to clasp the guideways *C C*, as shown in Fig. 2, or otherwise formed to suitably bear against said ways, according to the construction of the latter. Guide-flanges *D* are affixed to the upper ends of each of the tubes *A A'*, excepting that which directly supports the platform, to act as guides to the ends of the tubes, which they encircle, should the latter rise, from any cause, above the packing-joint *a'* between the tubes. These flanges or collars *D* are hollow, and are perforated or otherwise formed to allow the escape of liquid from them, and they extend up and encircle the tube next above a sufficient distance to enable them to retain the end of said tube against lateral displacement, if, by reason of the accidental detachment of its flange or stop *a'*, it should escape beyond the packing-joint, as above mentioned, in which case the liquid would also rise into the collar *D*, and from thence escape and allow the end of the tube to descend again into the tube next below.

The use of the cross-head *a* insures the alignment of the tube during extension, and counteracts any tendency to lateral displacement, and consequent friction and undue strain upon the packing box and joint employed to render the tubing water-tight, and at the same time simplifies the construction of the apparatus.

By the use of the guide-flanges *D*, preserving the alignment of the tubing in case of accident, as stated, and providing for the gradual lowering or closing of the tubing under such circumstances by the escape of liquid from the interior of the tubing, the apparatus is rendered more safe and reliable.

What we claim is—

The guide-flange *D*, arranged and constructed substantially as described, and for the purpose specified.

FRANK G. JOHNSON.
SAML. I. THURSBY.

Witnesses:

JOHN HAYES,
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