H. RICHMANN.

Hoisting-Machine.

No. 160,233. Patented Feb. 23, 1875.

FIG. 5.

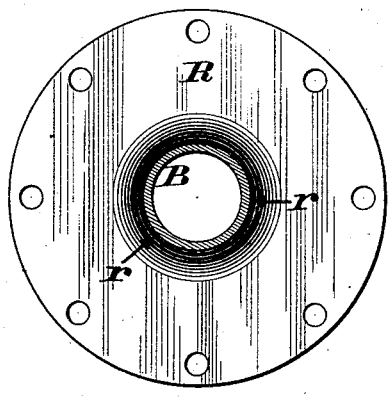


FIG. 2.

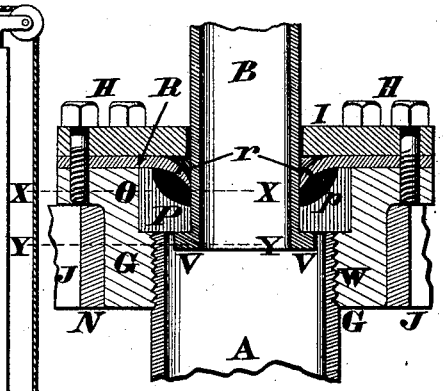


FIG. 3.

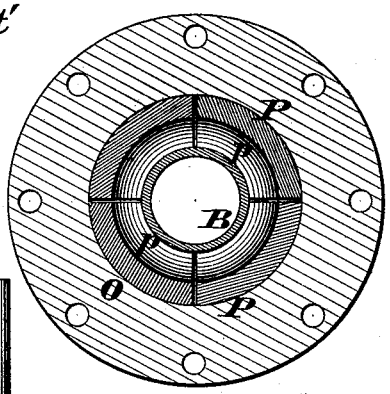


FIG. 1.

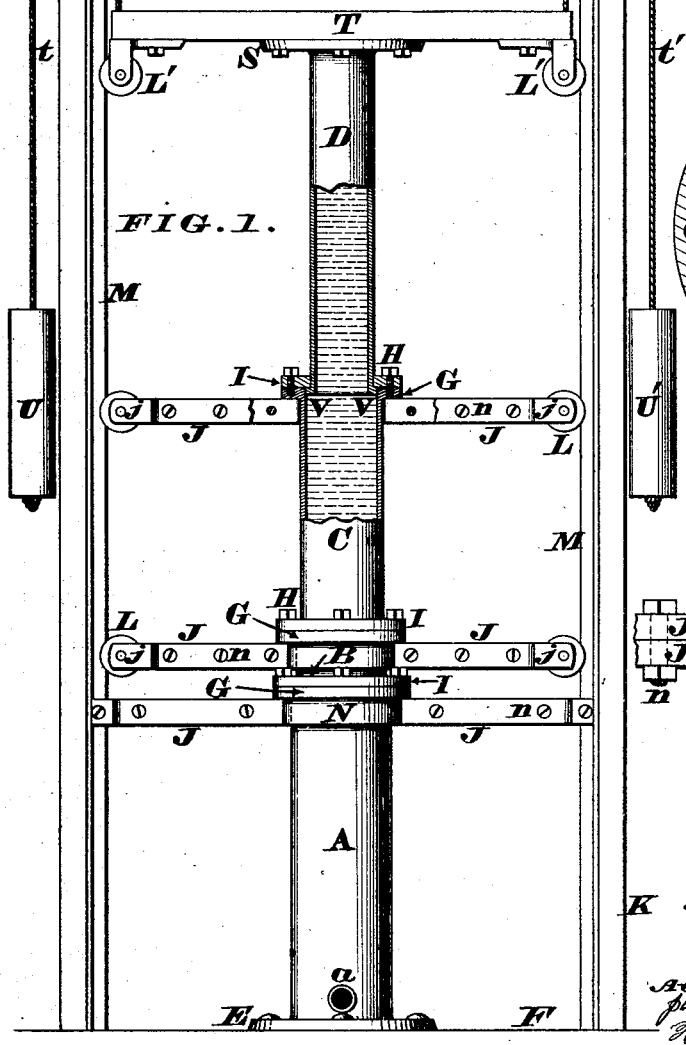
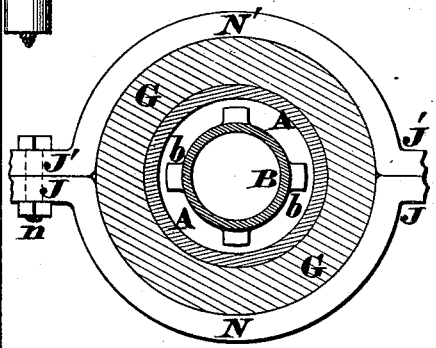


FIG. 4.



Henry Richmann
by Knight Bros. Attys.

Attest.
Jas. A. Layman
Henry Sonner.

UNITED STATES PATENT OFFICE.

HENRY RICHMANN, OF CINCINNATI, OHIO.

IMPROVEMENT IN HOISTING-MACHINES.

Specification forming part of Letters Patent No. **160,233**, dated February 23, 1875; application filed January 4, 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 Hoisting-Machine, of which the following is a specification:

My hoisting-machine consists essentially of a series of tubes or cylinders, arranged one within another, telescope fashion, that of largest diameter being planted upon the ground or other solid foundation in the vertical position, and the other tubes being nested one within another within it, the cage or platform of the hoist resting upon, and being attached firmly to the top of, the innermost tube. Each tube is furnished at its lower end with an external flange, which, in its most elevated position, presses underneath an inwardly-projecting member of the inclosing-tube, near the top of the latter, and by so doing operates to elevate such tube. This projecting member consists of an annular block, which is confined by an annular cap that is bolted fast to the top of the inclosing-tube. A leather cup or ring interposed between said cap and block operates to maintain a tight joint at the least possible expenditure in friction. The water or other fluid employed to elevate the tubes is introduced into the outermost tube through a suitable pipe. Arms which extend horizontally from the top of each inner tube are terminated by grooved pulleys or rollers, which, engaging upon vertical stanchions, operate to maintain the extended telescope in its proper rectilinear position. The telescope may be operated by the agency of water from the ordinary city main, or may derive its original impulse from a steam or other motor in the building, or by steam direct, or otherwise; and however driven is believed to combine economy of construction and motive power with absolute safety to a degree not known in other appliances of this class.

In the accompanying drawing, Figure 1 is a partially-sectionized elevation of a hoisting apparatus embodying my improvements, the platform being elevated about two-thirds of the lift. Fig. 2 is a vertical section through one of the stuffing-boxes or joints of the apparatus. Fig. 3 is a horizontal section of the same at the line *x x*. Fig. 4 is a horizontal section thereof at the line *y y*. Fig. 5 is a plan of the cupped packing-ring. Fig. 1 is to a smaller scale than the other figures.

A, B, C, and D represent a series of tubes composing my "telescope," the outermost tube, A, being, for the most part, sunk below the level of the ground or pavement of the basement, and terminating at its lower end in a spreading foot or plinth, E, which rests upon a slab, F, of masonry. The operating fluid, whether water, steam, or oil, is introduced and discharged through pipe *a*, which communicates with the lowermost tube, A, of the telescopic column. The tube A and each of the other containing-tubes B and C have a top flange, G, to which is fastened by bolts H an annular cap, I. Each of the containing-tubes has also projecting from its upper portion two or more arms, J J′, of which those of the outermost tube, A, are firmly riveted or bolted to stanchions K, while those of the other containing-tubes B and C are furnished at their extremities with rollers L, which traverse tongues or ways M upon the stanchions. The arms J J′ are bowed, respectively, at N N′, so as to fit snugly around and firmly embrace the flanges G of the tubes, to which they are permanently secured by means of screws or bolts *n*. These arms are forked at *j*, to receive the rollers L. The upper part of the flange or head of each containing-tube is counterbored, O, to receive a gland, ring, or annular block, P, which is dished or hollowed, as at *p*, on its upper interior portion, to afford room for the inner edge or lip *r* of leather cup R, which is secured between the cap and upper flange of the containing-tube. This gland P may be composed of two or more segments, so as to permit its ready application around the tube, or where applied to wrought tubes having a separable flange it may be in one piece or annulus. In Fig. 3 the gland is shown composed of four pieces, and when thus arranged the interstices between the segments afford free passage for the water to the inside of the cup-packing R. The top of the innermost tube is closed by a cap, S, upon which is secured the platform T. Fastened to this platform, or to any other suitable part of the apparatus, are ropes *t t′*, which, after passing over sheaves *k k′*, have weights U U′ secured to them, which weights serve to counterbalance said platform,

and also the movable tubes with their attachments. The platform is provided with rollers L′, which occupy the ways M upon the stanchions.

In order to insure the proper extension of the telescopic column, and at the same time to prevent any of the tubes being withdrawn from its inclosing neighbor, I provide the lower end of each of the sliding cylinders with an external flange, V. When this flange is brought into contact with the bottom of gland P it serves to elevate that tube within which said gland is fitted, and by the successive impingement of these flanges with their appropriate glands the telescopic column is extended. Lugs *b*, Fig. 4, may, if preferred, be substituted for the continuous flange V.

In order to render the apparatus as light as possible without impairing its strength, I prefer that the cylinders A, B, C, &c., should be lap-welded tubes of wrought-iron, steel, or brass, while their heads and flanges may be of cast metal, and be cast, screwed, or shrunk upon the tubes. The innermost tube may be closed at its lower end, so as to have no communication with the water.

I claim herein as new and of my invention—

1. The gland or annulus P *p*, occupying a counter-bore, O, in the head of each containing-tube, in combination with flanged or equivalent projection from the lower extremity of the contained tube and with a confining-cap, I, substantially as set forth.

2. The combination of the slidable telescopic tubes, the gland P *p*, occupying the counter-bore O in the containing-tube, the leather or other flexible cup-packing, and cap I, secured and adapted to operate as set forth.

In testimony of which invention I hereunto set my hand.

HENRY RICHMANN.

Attest:

GEO. H. KNIGHT,

O. P. CAYLOR.