

(No Model.)

J. CONE.
HYDRAULIC ELEVATOR.

No. 376,859.

Patented Jan. 24, 1888.

Fig. 1.

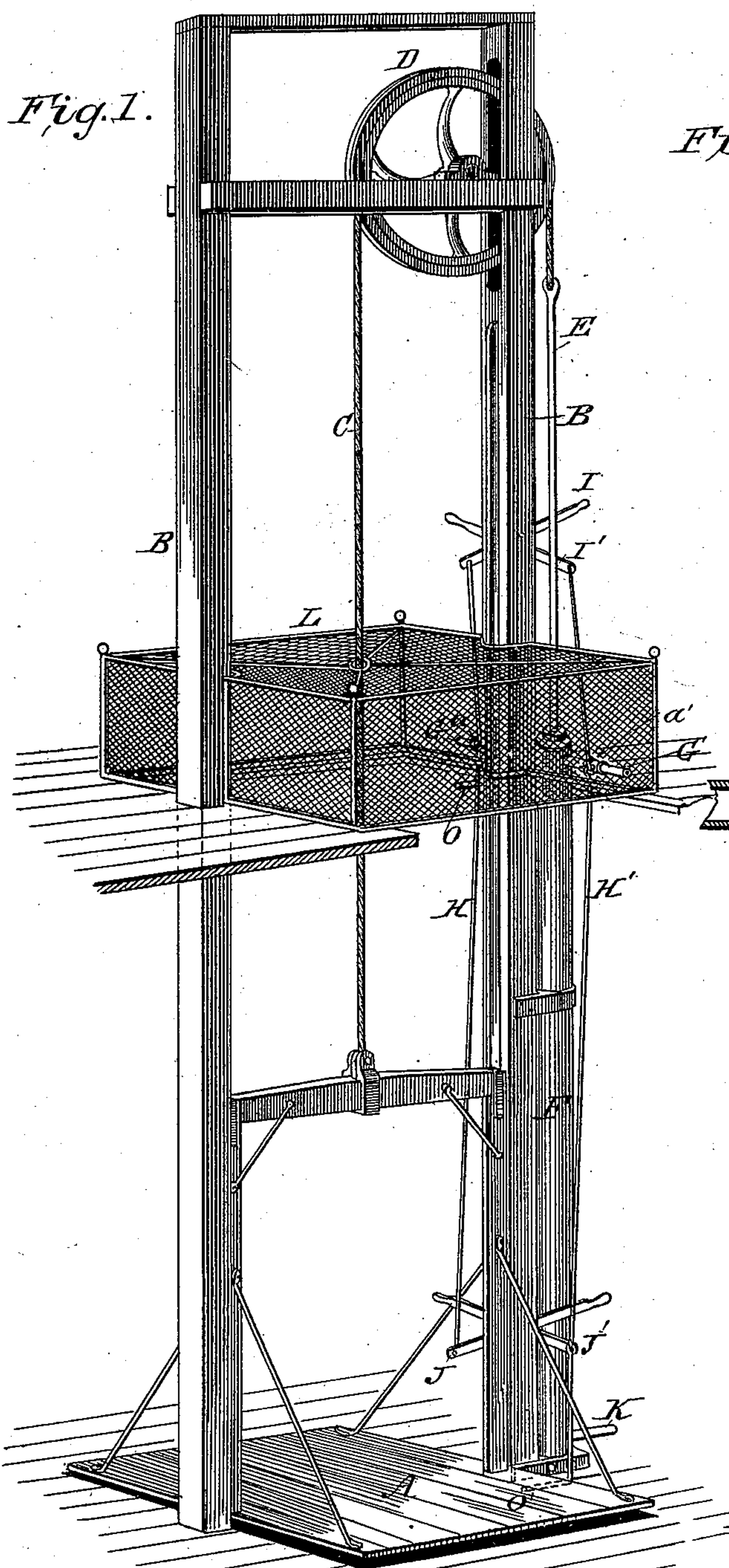
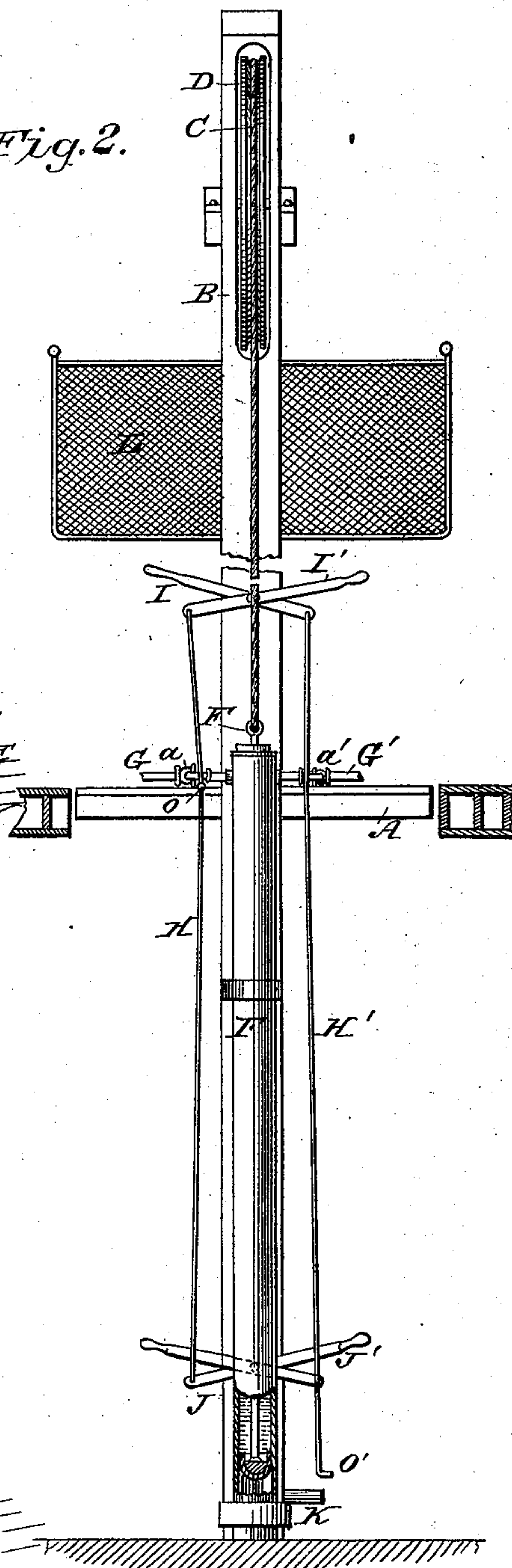


Fig. 2.



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HYDRAULIC ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 376,859, dated January 24, 1888.

Application filed December 9, 1885. Serial No. 185,151. (No model.)

To all whom it may concern:

Be it known that I, JOHN CONE, a citizen of the United States, residing at Marquette, in the county of Marquette and State of Michigan, have invented certain new and useful Improvements in Hydraulic Elevators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in elevators, and belongs to the class of hydraulic elevators operated by means of water-pressure in connection with a cylinder and piston. It is designed more particularly for use in cities and towns provided with a water-supply system where a cheap and convenient elevator is required either for freight or passengers; and it consists in certain details of construction, hereinafter described, and more specifically pointed out in the accompanying drawings, in which—

Figure 1 is a perspective view showing the elevator and its connections; Fig. 2, a side elevation, partly in section.

Generally such elevators have been constructed with the elevator-car resting upon a piston working in a cylinder placed centrally inside of the frame or casing. Again, counterpoise-weights have been used to balance the car and establish an equilibrium between the column of water and the car. Again, in some instances steam is used to force the water from a cylinder to the piston. In my device I dispense with steam-pressure, the interior cylinders, counterpoise-weights, and their connecting mechanism, and thus dispense with many items of expense, not only in first construction, but in subsequent repairs. In my device there is but one water-cylinder, and this is placed outside of one of the vertical guides.

Referring more particularly to the drawings, the elevator A passes between the guides B, the upper cross-bar being secured to a cable which passes over a pulley secured at the top and at one side of the guide-frame. This cable passes thence outside of the frame, and is attached to an exterior piston-rod, E, which enters the water-cylinder F, secured to the outside of one of the guides B. This rod E is attached to a piston moving up and down

within the water-cylinder. Near the top of the cylinder is a water-inlet pipe, G, provided with a valve, *a*, and on the opposite side of said cylinder and on line with pipe G is an exit-pipe, G', provided with a valve, *a'*. The valves *a a'* are connected to rods H H', which in turn are respectively connected with the upper and lower operating-levers, I J I' J', by means of which the rods and valves are actuated. At or near the bottom of the cylinder F is an air-pipe, K, which admits air on the up movement of the piston, and through which the air is expelled on the downstroke of the piston.

L represents a safety cage or guard resting upon the top of the elevator-frame, and designed to be left in the floor-aperture when the elevator descends.

The operation of my device is as follows: Suppose the elevator to be in position for the load on the ground floor, as shown in Fig. 1. The piston will then occupy a position near the top of the cylinder beneath the inlet-pipe G. The operator then opens the valve or cock *a* from either the upper or lower floor by means of one of the levers connecting with rod H, and the pressure of the inflowing water forces the piston downward and raises the elevator by means of the rope C, the air in the cylinder beneath the piston being expelled through opening K. Upon rod H, at a point beneath the upper floor when the cock is open, is a projection or flange, O, with which the elevator comes in contact in its upward course, and by means of which the rod is lifted and the cock *a* closed, causing the elevator to automatically stop when level with the floor, where it is securely held by the pressure of the confined column of water within the cylinder. When it is desired to lower the elevator, the cock *a'* in the outlet-pipe G' is opened in a similar manner from either floor by means of the levers I' J' and rod H', connecting therewith; and, the pressure of water within the cylinder, caused by weight of the elevator, being released, it is discharged by the ascending piston until the cock is automatically closed by the descending elevator coming in contact with a projection or flange, O', near the bottom of the rod H'. As the elevator descends, the guard or cage resting upon the top of the elevator-frame is detained in

the upper-floor opening and securely closes same. This cage may be composed of any suitable material, but is preferably made of woven wire, thereby combining strength and
5 lightness.

While I have represented an elevator adapted for a single lift of one story, it is obvious that the principle may be applied to buildings of several stories.

10 It is also obvious that the capacity of the elevator may be regulated by the size of the cylinder and inlet and outlet pipes and its speed by the cocks *a a'*.

15 Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

In a hydraulic elevator, the combination, with the main frame, the cage traveling between vertical guides forming part of the

main frame, the rope connecting the cage with 20 the piston-rod, and the pulley over which said rope runs or renders, of the vertical cylinder outside of the guides, the piston, the piston-rod, the air-vent *K* at the lower end of the cylinder, the outlet and inlet pipes *G G'*, re- 25 spectively, the valves *a* and *a'* in said pipes, the pivoted levers *I I'* and *J J'*, and the connecting-rods *H H'*, respectively provided with the arms or tappets *O O'*, all constructed and arranged substantially as and for the pur- 30 pose described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN CONE.

Witnesses:

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