

(No Model.)

C. BEHN.

VALVE OPERATING MECHANISM FOR ELEVATORS.

No. 414,005.

Patented Oct. 29, 1889.

Fig. 1.

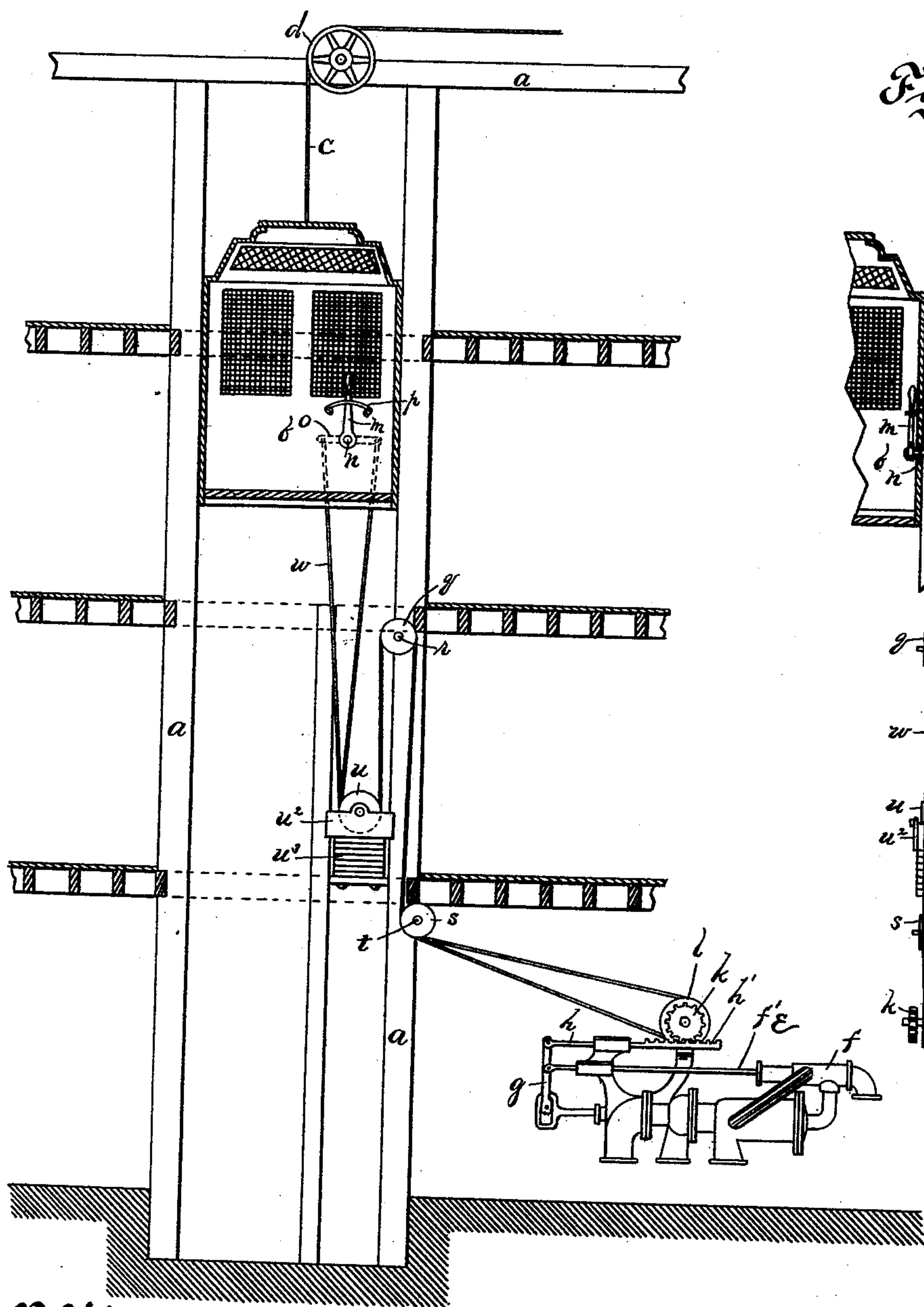
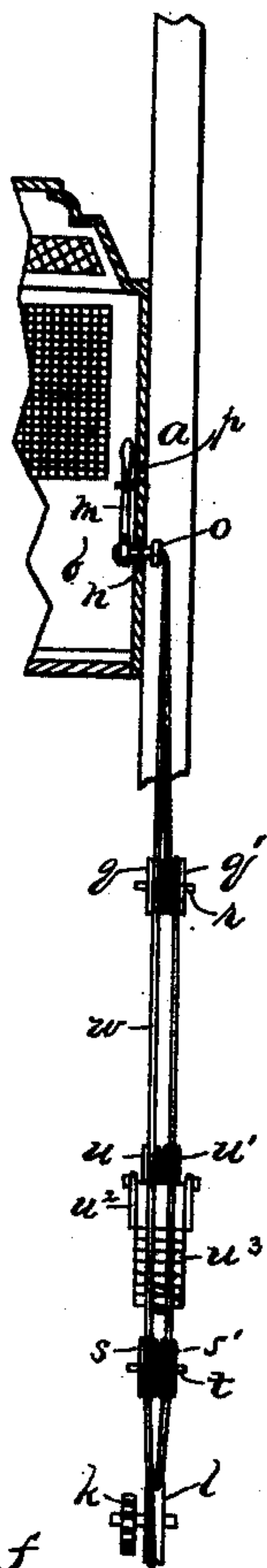


Fig. 2.



Witnesses:

Otto Hoddick.
James A. Jarrett

Inventor

Carl Behn

By.

W. T. Miller
Attorney.

UNITED STATES PATENT OFFICE.

CARL BEHN, OF BUFFALO, NEW YORK, ASSIGNOR OF ONE-HALF TO THE
HOWARD IRON WORKS, OF SAME PLACE.

VALVE-OPERATING MECHANISM FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 414,005, dated October 29, 1889.

Application filed June 30, 1888. Serial No. 278,673. (No model.)

To all whom it may concern:

Be it known that I, CARL BEHN, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Valve-Operating Mechanism for 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates particularly to an improved apparatus employed in the manipulation of the change or reversing valve of hydraulic or other elevators, and is also applicable to elevators in which these devices are connected with and serve to shift the main change or reversing valve directly, and also to those hydraulic elevators in which the said devices are connected with an auxiliary or pilot valve and by shifting the latter control the admission of water or other fluid to and its exhaust from a controlling-cylinder containing a piston on which the water or liquid acts to move the main valve.

My invention also relates to elevators in which the movement of the valve is accomplished by shifting a lever or hand-gear, which is arranged on the car and occupies a stationary position relatively to the car as the car is raised or lowered; and it consists in a novel combination and arrangement of levers, ropes, and pulleys, all of which I will now proceed to definitely describe and claim.

In the drawings, Figure 1 is an elevation in cross-section of an elevator-car and hatchway with my improved arrangement connected thereto. Fig. 2 is a side elevation of my improvement.

Referring to the drawings, *a* represents the shaft in which the elevator-car *b* is raised or lowered by the hoisting-cable *c* passing over the sheave or pulley *d* and operated by a hydraulic or steam cylinder and piston. In this instance I have shown my controlling mechanism connected to a change or reversing valve *e*, operated by hydraulic power. The

change or reversing valve *e* has connected therewith an auxiliary valve *f*, having the piston-rod *f'*, which is suitably connected to the connecting-rod *g*. This connecting-rod *g* has also connected thereto a rod *h*, sliding in bearings and formed at its other end into a rack-bar *h'*, which is held in engagement with the pinion *k*, this pinion *k* being rigidly fixed to and turning with the sheave or pulley *l*. The lever-handle *m* is keyed to a short pin *n*, which is loosely fitted in the side of the elevator-car, and has rigidly secured at its other end on the outside of the car the cross-lever *o*. The operating-lever *m* is moved by hand within the limits of the guide *p*. A little over half-way up the shaft I have arranged two pulley-wheels *q* *q'*, (see Fig. 2,) placed alongside of each other and loosely mounted upon the shaft *r*, and below the ceiling of the ground floor, in the shaft, I have arranged two guide pulleys or sheaves *s* *s'* alongside of one another, loosely mounted on a shaft *t*.

u *u'* are a pair of weighted pulleys or sheaves, which are loosely mounted on a common shaft in the frame *u²*, holding the weights *u³*. This frame *u²* is adapted to slide up and down in tracks along the side of the hatchway. These weighted pulleys pass up and down the hatchway with the car; but, as will be seen, they travel only one-half the height through which the car passes and likewise with only one-half the speed.

The flexible cord or cable *w* is fastened at one end to one end of the cross-bar *o* and passes down and around the weighted pulley *u* and up over the loose pulley *q*, then down and against the guide-pulley *s*, where it passes to and around the sheave or pulley *l*, attached to the valve and rigid with the pinion *k*. The cord or cable then passes back against the other guide-pulley *s'* and over the pulley *q'*, then down and around the weighted pulley *u'*, and up to the other end of the cross-lever *o*, where it is securely fastened.

In operation, when the elevator-car is moved, it raises or lowers with it the weighted pulleys *u* *u'*, the weighted sheaves or pulleys always taking up all the slack in the connections.

When it is desired to raise or lower the

elevator-car, the lever-handle *m* is turned to one side, which by the mechanism just described pulls one end of the cord or cable *w* and releases the other end, so as to turn the
5 pulley-wheel *l*, and with it the pinion *k*, which is in engagement with the rack-bar *h'*, which, as before described, operates the change or reversing valve *e*.

I claim—

10 The combination, with an elevator-car and its controlling-valve, of a hand-lever attached to the car, a pair of weighted pulleys traveling up and down along the side of the shaft, the loose pulleys located just above the cen-
15 tral point in the height of the shaft, the guide-

pulleys arranged at or near the bottom of the shaft, the pulley connected with the change or reversing valve, and the flexible cord passing around these pulleys, as shown, and secured at its ends to the hand-lever on the 20 side of the car, all operating substantially as herein described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CARL BEHN.

Witnesses:

W. T. MILLER,
OTTO HODDICK.