

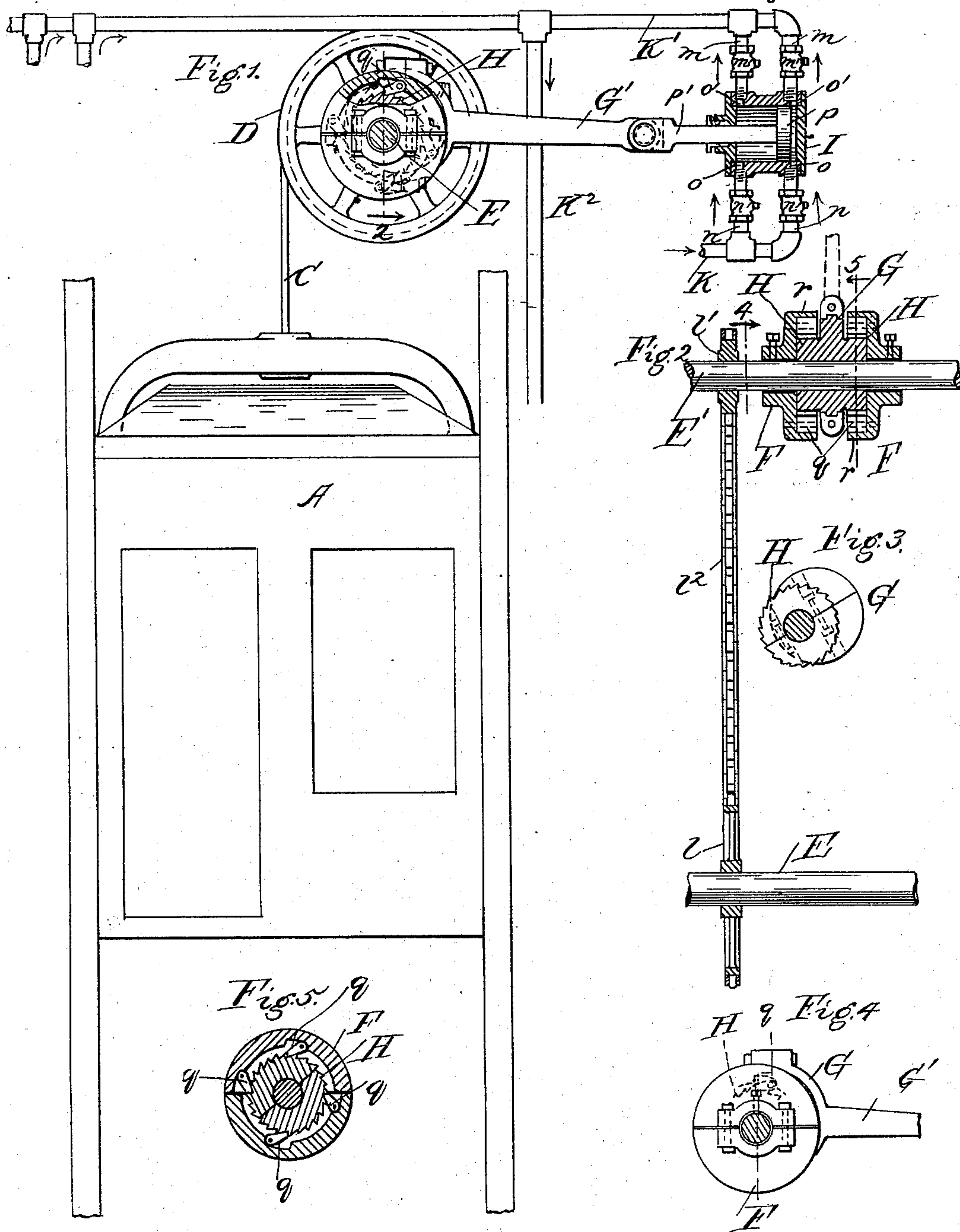
(No. Model.)

2 Sheets—Sheet 1.

I. T. DYER.
ELEVATOR ATTACHMENT.

No. 559,444.

Patented May 5, 1896.



Witnesses:
Albert M. Gerstle
John H. Lee.

Inventor:
Isaac T. Dyer,
By Durenforth ^{and} Durenforth,
Attys—

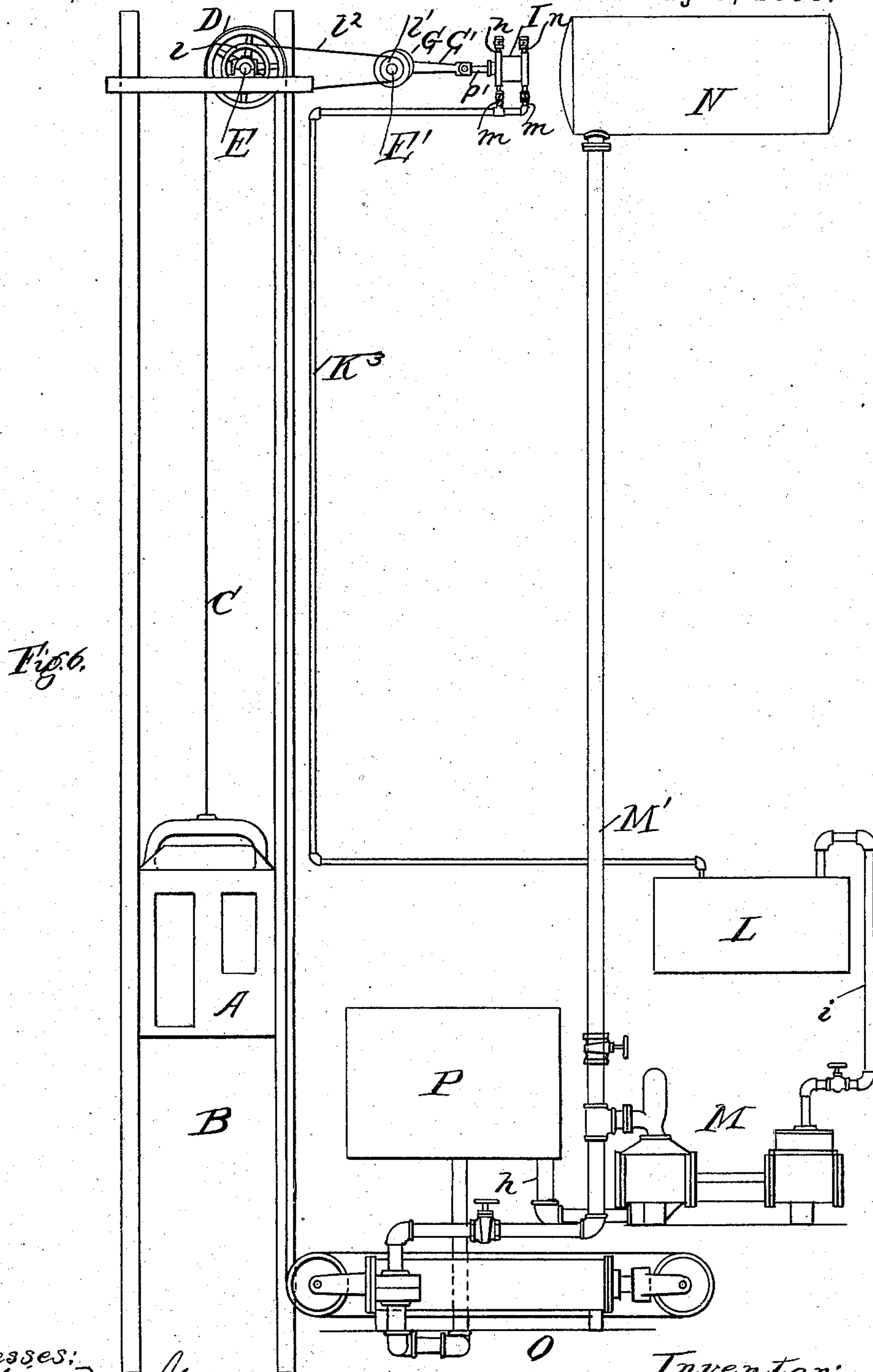
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Att'ys

UNITED STATES PATENT OFFICE.

ISAAC T. DYER, OF CHICAGO, ILLINOIS, ASSIGNOR OF TWO-THIRDS TO
RICARD O'SULLIVAN BURKE AND JOHN R. COFFEY, OF SAME PLACE.

ELEVATOR ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 559,444, dated May 5, 1896.

Application filed August 20, 1895. Serial No. 559,890. (No model.)

To all whom it may concern:

Be it known that I, ISAAC T. DYER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have
5 invented a new and useful Improvement in Elevator Attachments, of which the following is a specification.

The object of my invention is to provide as an attachment for an elevator an air-pump,
10 to be actuated by the gravity of the loaded elevator-cab in descending, to produce a supply of compressed air for some useful purpose, such as that of driving the elevator-engine, thereby utilizing the otherwise waste force of
15 the descending load.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a broken view showing an elevator-cab in elevation provided with my improved attachment, shown partly broken and partly in section. Fig. 2 is a broken sectional
20 view showing a modified construction of my improved attachment, the section being taken at the line 2 on Fig. 1 and viewed in the direction of the arrow; Fig. 3, a section taken through the rotary shaft upon which the elevator-cable is wound in raising the cab and showing the ratchet and eccentric details of my improved attachment in elevation; Fig.
25 4, a section taken at the line 4 on Fig. 2 and viewed in the direction of the arrow; Fig. 5, a section taken at the line 5 on Fig. 2 and viewed in the direction of the arrow, and Fig. 6 a view in elevation of the entire elevator provided with my improved attachment
35 in its modified form represented by Fig. 2.

A denotes the elevator-cab supported on its shaft by the cable C, fastened to be wound upon and unwound from the overhead drum
40 D on the rotary shaft E, all in the usual or any suitable manner of supporting an elevator-cab. On the shaft E are firmly fastened, to rotate with it, the flanged collars or boxes F, the annular flanges *r* of which extend to-
45 ward each other and carry on their inner sides, at suitable distances apart, the pivotal dogs *q*. Loosely supported upon the shaft E, inside the collars F, is an eccentric G, having formed upon its opposite sides, or rigidly fastened thereto, the ratchet-wheels H H, with
50

which the dogs *q* engage. The mechanism thus described is indicated by a dotted representation in Fig. 1, but is the same as that more clearly illustrated in Fig. 2 as applied to the shaft E'.
55

For the sake of convenience, to enable my attachment to be applied to a shaft E without requiring the latter to be disturbed from its operative position I form the collars F and the eccentric G with the ratchet-wheels there-
60 on in halves, whereby they may be applied to the shaft and then be bolted together, as indicated.

From the eccentric G there extends an arm G', which is pivotally connected at its outer
65 end with that of the rod *p'* of a piston *p* in a cylinder I, having the inlets *o* at one side near the opposite ends of the stroke of the piston, and the outlets *o'* in its opposite side near the opposite ends of said stroke.
70

K is an air-supply pipe having branches *n* containing inwardly-opening check-valves *n'* and leading to the inlets *o*, and K' is a discharge-pipe having branches *m* containing outwardly-opening check-valves and leading
75 to the outlets *o'*.

As shown in Fig. 1, the pipe K' affords the common discharge-pipe for more than one elevator provided each with my improved attachment, and it leads by a branch K² to the
80 point of utilization of compressed air or to storage for the same.

The operation of the attachment as thus described is as follows: When the loaded elevator-cab A descends, the rotation of the shaft
85 E, by carrying with it the collars F, causes the dogs thereon to engage the ratchet-teeth and thereby work the eccentric G, thus causing the piston *p* by its connection with the eccentric to be reciprocated, as the result of which
90 air is sucked through an inlet *o* with each stroke and forced through an outlet *o'* at each stroke under pressure into the discharge-pipes K' K². In the direction in which the drum D turns to lift the cab A the dogs *q* slip
95 over the ratchets, so that the air-pump afforded by the piston and cylinder mechanism is not then actuated, thus avoiding the sub-
100 section of the elevator to the extra load or resistance of the pump. When it is desired to

multiply the strokes of the piston *p* as to double them in each rotation of the shaft *E*, the construction illustrated in Fig. 2 may be employed, wherein a sprocket-wheel *l* is provided
5 on the shaft *E* and the collars *F* with their dogs *r*, the eccentric *G* and ratchets *H* are carried by a rotary counter-shaft *E'*, on which is provided a smaller sprocket-wheel *l'*, connected with the sprocket-wheel *l* on the shaft
10 *E* by an endless chain *l²*, and the eccentric *G* is connected by its arm *G'* from the shaft *E'* with the piston-rod *p'* of the air-pump.

By the view presented in Fig. 6, which is diagrammatic in its nature, I show how my
15 improved attachment may be connected with a hydraulic elevator system of known construction. By this view the modified construction of the attachment, as illustrated in Fig. 2, is employed, and the inlet-pipes *n* to
20 the pump are shown on the top of the cylinder *I*, while the outlet-pipes *m* are shown as extending from the underside thereof. From the outlets *m* there leads the discharge-pipe *K³* to a compressed-air holder *L*, from which
25 the compressed air is supplied through a valve-controlled pipe *i* to a pump *M*, discharging into a stand-pipe *M'*, which leads from the overhead water-tank *N* to the elevator-cylinder *O*, the latter discharging into a tank *P*,
30 from which the water is sucked by the pump *M* through a pipe *h* and forced back into the tank *N*, to be used over and over again.

As will be seen, the connection I provide between the air-pump and the power which
35 drives it, as the shaft *E* or the counter-shaft *E'*, is in the nature of an automatic eccentric-clutch operating to engage the shaft with the pump in the descent of the elevator-cab and to disengage it therefrom in the ascent of the
40 cab.

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

1. In combination with the hoisting-shaft of an elevator-cab, an air-pump, and connections between said pump and shaft actuated,
45 by the descent of the cab, to engage the pump with the shaft and to disengage it therefrom by the ascent of the cab, substantially as and for the purpose set forth.

2. In combination with the hoisting-shaft 50 of an elevator-cab, an air-pump, and an eccentric-clutch device connecting the pump with said shaft and actuated to engage the pump therewith by the descent of the cab and to disengage it therefrom by the ascent of the
55 cab, substantially as and for the purpose set forth.

3. In combination with the hoisting-shaft of an elevator-cab, an air-pump and means
60 for operating it in the descent of the cab and for disconnecting it in the ascent thereof, comprising a flanged collar *F* secured on a rotary shaft to turn therewith and carrying one or
65 more dogs *q* at its flange, an eccentric *G* carrying a ratchet *H* and loosely supported on said shaft in position to engage said dogs with said
ratchet, and a stem *G'* connecting the eccentric with the piston-rod of the pump, substantially as and for the purpose set forth.

4. In combination with the hoisting-shaft 70 of an elevator-cab, an air-pump and means for operating it in the descent of the cab and disconnecting it in the ascent thereof, comprising flanged collars *F* secured on a rotary
75 shaft to turn therewith and carrying dogs *q* at their flanges, an eccentric *G* carrying ratchets *H* and loosely supported on said shaft between said collars, said ratchets being engaged by the dogs, and a stem *G'* connecting
80 the eccentric with the piston-rod of the pump, substantially as and for the purpose set forth.

5. In combination with the hoisting-shaft of an elevator-cab, an air-pump and means
85 for operating it in the descent of the cab and for disconnecting it in the ascent thereof, comprising a counter-shaft *E'* geared to said hoisting-shaft, flanged collars *F* secured on
90 said counter-shaft and carrying dogs *q* at their flanges, an eccentric *G* carrying ratchets *H* and loosely supported on said counter-shaft between said collars, said ratchets being engaged
by the dogs, and a stem *G'* connecting the eccentric with the piston-rod of the pump, substantially as and for the purpose set forth.

ISAAC T. DYER.

In presence of—

J. N. HANSON,

J. H. LEE.