

(No Model.)

2 Sheets—Sheet 1.

T. W. HEERMANS.
LIMIT STOP FOR ELEVATORS.

No. 480,583.

Patented Aug. 9, 1892.

Fig. 1.

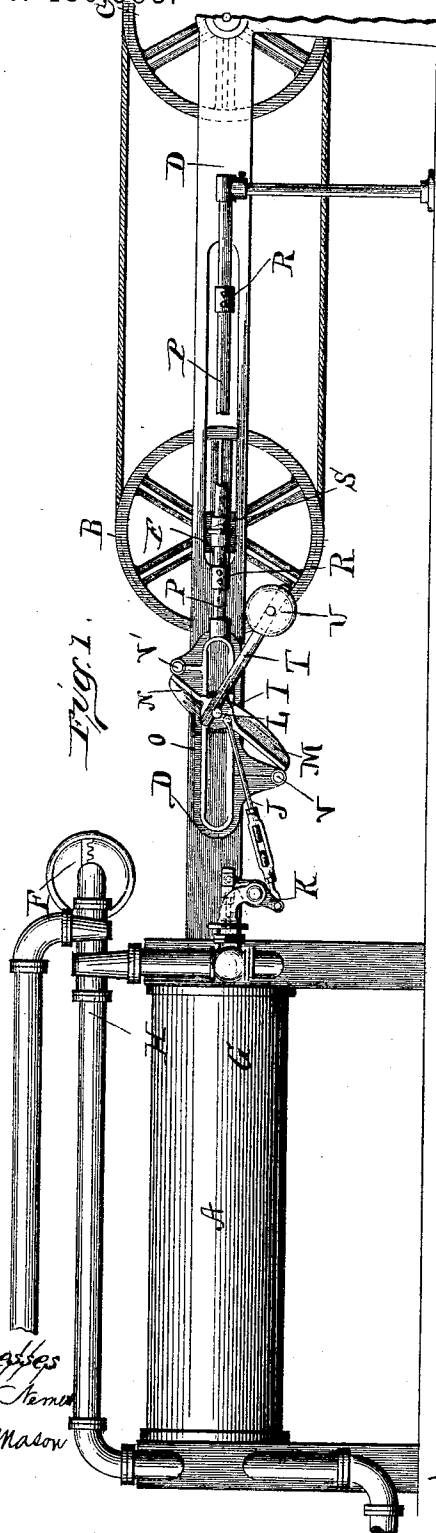
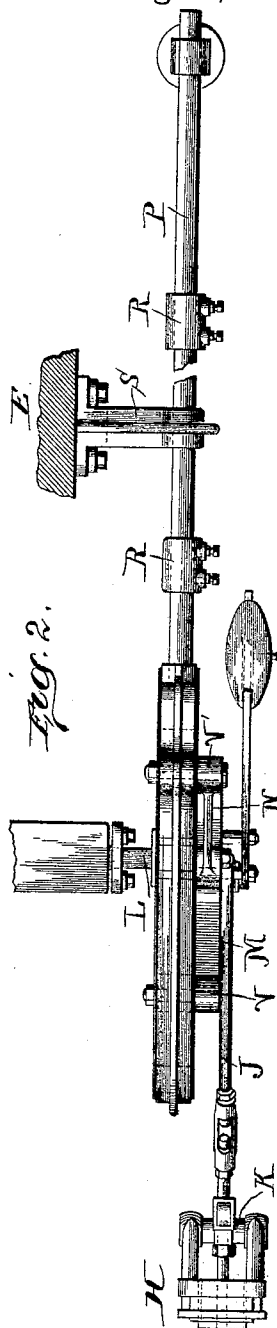


Fig. 2.



Witnesses
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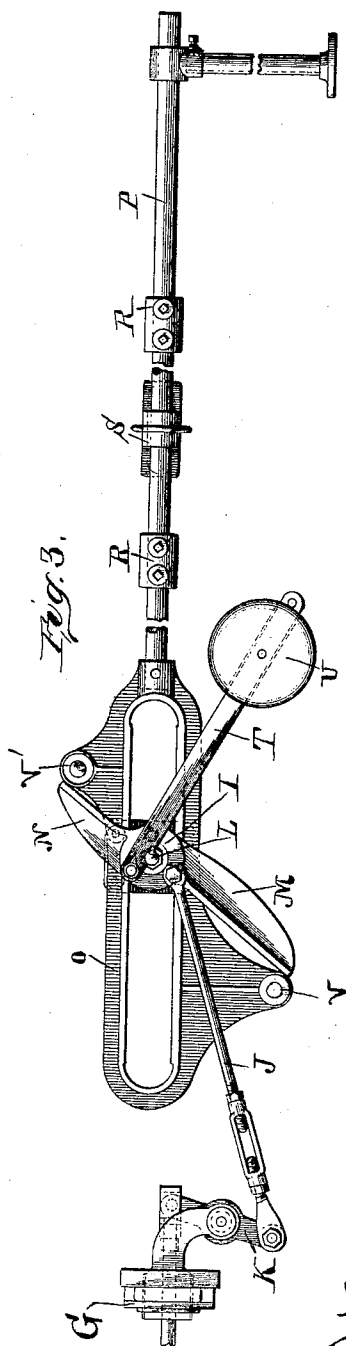
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2 Sheets—Sheet 2.

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Witnesses
Elias Kemett.

[Signature]

Inventor:
T. W. Heermans
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UNITED STATES PATENT OFFICE.

THADDEUS W. HEERMANS, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE NATIONAL COMPANY, OF ILLINOIS.

LIMIT-STOP FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 480,583, dated August 9, 1892.

Application filed June 26, 1891. Serial No. 397,657. (No model.)

To all whom it may concern:

Be it known that I, THADDEUS W. HEERMANS, residing at Chicago, in the county of Cook, in the State of Illinois, have invented
5 certain new and useful Improvements in Limit-Stops for Elevators, of which the following is a specification.

My invention relates more especially to hydraulic elevators in which as ordinarily constructed the car passes over the entire length
10 of its travel at a single stroke of the elevator-piston.

My device is designed to shut off the flow of fluid to or from the elevator-cylinder as
15 the piston approaches the limit of its travel at either end of the cylinder.

In the drawings, Figure 1 is a side elevation of the elevator-cylinder and a portion of its attachments sufficient to illustrate my invention. Fig. 2 is a plan view on a larger scale
20 of the devices forming the limit-stop, and Fig. 3 is a side elevation of the same.

A, Fig. 1, is the elevator-cylinder.

B represents the movable sheaves connected
25 to the piston-rod, and C represents the fixed sheaves mounted upon a girder D, extending to the cylinder. Said girder D serves as a guide for the cross-head E, in which the sheaves B are journaled.

30 F is the control-valve by which the admission and exhaust of fluid through the pipe H to and from the cylinder A is governed. A valve G is inserted in the passage-way between the control-valve F and the cylinder A.

35 The valve G is connected to a lever I by a rod J and rock-shaft K. The lever I is supported by a stud L, fastened to the girder D, and is provided with arms M N, projecting on each side of its fulcrum. A slide O is likewise
40 supported upon the stud L and is connected to a rod P extending parallel to the girder D. Upon the rod P are adjustable stops R R. An arm S is fastened to the cross-head E. Its outer end projects between the stops R R, being provided with an opening through which
45 the rod P passes. Secured to the lever I is an arm T, at the outer end of which is a weight U. Upon the slide O are two projections V V', which make contact with the opposite
50 faces of the arms M N, respectively.

In order to diminish friction, the projections V V' are given the form of rollers mounted upon studs.

The operation of the device is as follows: In the position shown in Fig. 1 the weight U
55 has moved to its lowest possible point, the arms M N being in simultaneous contact with the projections V V', respectively. In this position the valve H is open. The adjustable stops R R are so set upon the rod P that the
60 arm S, attached to the cross-head, comes in contact with one or the other stop just as the piston approaches the limit of its movement at either end of the cylinder. The contact of the arm S with either stop R moves the rod
65 P longitudinally. The effect of this movement is to push the slide O to the right or left, as seen in Fig. 1, the movement in either direction raising the weight U and closing
70 the valve H through the action of the projection V' on the arm N, or V upon the arm M. The flow of fluid is thus gradually stopped or checked so that the piston comes to rest. The valve H is not made perfectly tight, and a
75 certain leakage may take place through it. This permits the reversal of the movement of the piston, notwithstanding the closure of the valve H when the position of the control-valve is changed, the speed of such movement
80 being dependent upon the amount of leakage through the valve H until the reverse travel of the piston is sufficient to permit the re-opening of said valve by the action of the weight U.

What I claim as new, and desire to secure
85 by Letters Patent, is as follows:

1. The combination, in a limit-stop for elevators, of a valve in the passage between the control-valve and the cylinder, a lever connected to said valve, having arms projecting
90 each side of the fulcrum, a slide having projections engaging with said arms on their opposite sides, and a rod connected to said slide, having stops thereon engaging with a moving part connected to the elevator-piston, substantially as described.

2. The combination, in a limit-stop for elevators, of a valve in the passage between the control-valve and the cylinder, a lever connected to said valve, having arms projecting
100

each side of the fulcrum, a slide having projections engaging with said arms on their opposite sides, a rod connected to said slide, having stops thereon engaging with a moving
5 part connected to the elevator-piston, and a weight or its equivalent connected to said lever, adapted to move said first-named valve to its open position, substantially as described.

3. The combination, in a limit-stop for elevators, of a valve H in the passage between the
10 control-valve and the cylinder, a lever I, mounted upon a stud L and provided with oppositely-projecting arms M N, a slide O, sup-

ported upon said stud L and having projections V V' engaging with opposite sides of the
15 arms M N, respectively, a rod P, having stops R R thereon and connected to the slide O and the arm S, secured to the cross-head E and operating between said stops R R, and the weight U, adapted to maintain the arms M N in con-
20 tact with the studs V V', respectively, substantially as described.

THADDEUS W. HEERMANS.

Witnesses:

ELSIE NEMETT,
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