(No Model.)

N. LEIDGEN

DOOR CLOSER.

No. 346,294. Patented July 27, 1886.

Fig. 1.

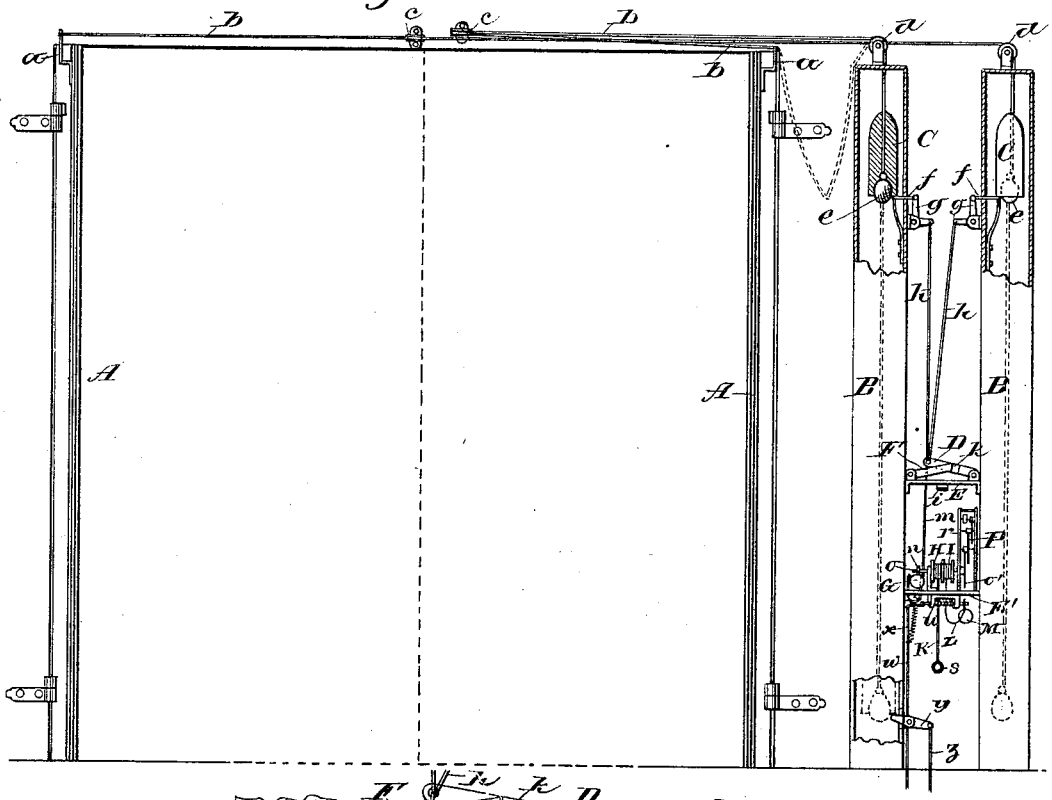
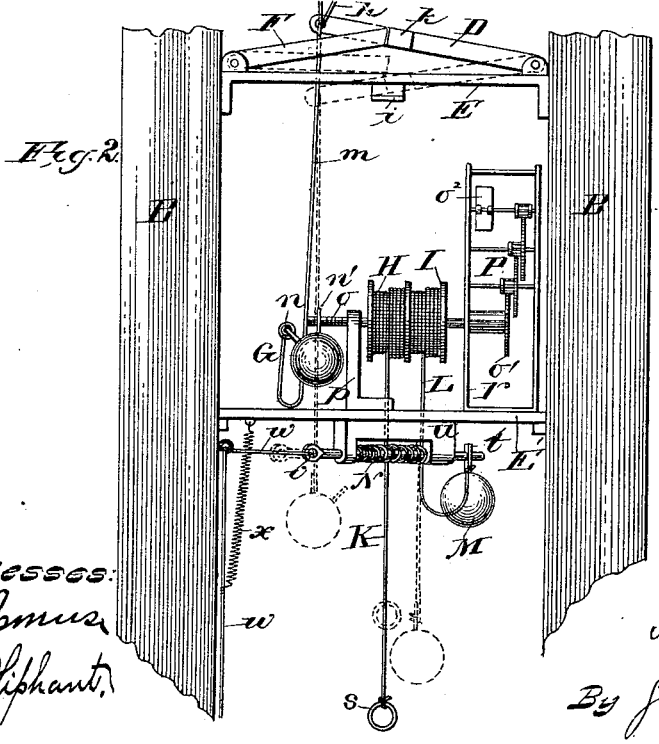


Fig. 2.



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UNITED STATES PATENT OFFICE.

NICLAUS LEIDGEN, OF MILWAUKEE, WISCONSIN.

DOOR-CLOSER.

SPECIFICATION forming part of Letters Patent No. 346,294, dated July 27, 1886.

Application filed December 7, 1885. Serial No. 184,927. (No model.)

To all whom it may concern:

Be it known that I, NICLAUS LEIDGEN, of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain new and useful Improvements in Door-Closers; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to improvements in automatic door-closing devices, being particularly applicable to the doors of fire-engine houses; and it consists in certain peculiarities of construction and arrangement of operative parts, as will be hereinafter described with reference to the accompanying drawings, in which—

Figure 1 represents an elevation of my device operatively connected to a pair of doors, and Fig. 2 an elevation of a part of my device on an enlarged scale.

A A represent the doors of an engine-house in their open position. The upper inner corner of each door has secured thereto an arm, *a*, to which is fastened one end of a cord, *b*, or its equivalent. The cords *b b* are passed over pulleys *c c*, secured to the wall above the doors, and are carried back over pulleys *d d* upon the upper ends of vertical boxes B B. The free ends of the cords enter in said boxes. These free ends of the cords have permanently affixed thereto counter-weights *e e*, which, as the doors are ordinarily opened or closed, act of their own gravity to automatically take up the slack and keep said cords taut, thereby preventing them from becoming tangled or broken. Centrally perforated, so as to loosely fit upon the cords *b b*, are counter-weights C C for the doors A A, said weights being recessed at their lower ends to fit upon the cord-weights *e e*, and are normally supported by spring-stops *f f*, operatively connected to bell-cranks *g g*, the latter being pivotally secured upon the outside of the vertical boxes B B.

To the horizontal arm of the bell-cranks *g g* are secured the upper ends of cords *h h*, their lower ends being made fast to a lever, D, pivotally connected to a plate or bar, E, said plate or bar being bolted or otherwise secured to and between the vertical boxes B B, and provided with a central depending bracket or seat, *i*, to receive the lever D when depressed, as will be hereinafter more fully described. This lever D is provided with a lug, *k*, designed to come against the free end of a brace-lever, F, pivotally connected to the end of a plate or bar, E, opposite that where connection is established between this latter and said lever D.

Secured to the free end of the lever D is a depending cord, *m*, having secured to its lower end the hanger *n* of a weight, G, said weight being provided with another hanger, *n'*, having an eye adapted to fit upon a screw-threaded shaft, *o*, journaled in standards *p r*, and carrying drums H I. The drum H has wound thereon a cord, K, or its equivalent, provided at its free end with a ring, *s*, or other suitable hand-hold.

Wound upon the drum I is a cord, L, or its equivalent, having secured to the free end thereof a weight, M, said weight being provided with a hanger, *t*, having an eye adapted to fit upon one end of a spring-bolt, N, operatively hung in a bracket, *u*, on the under side of a plate or bar, E', this latter part being secured to the boxes B B. The opposite end of the spring-bolt is provided with an eye, *v*, to which is made fast the end of a cord or wire, *w*, designed to have its other end secured to the lever of the engine-heater, (not shown,) and a spring, *x*, connects said cord or wire with the plate or bar E'.

To one end of the shaft *o*, carrying the drums H I, is keyed a pinion, *o'*, designed to operate a train of clock-work, P, provided with a fan, o^2, this construction serving as a governor to regulate the speed of said shaft when revolved; but instead of this clock-work mechanism I may employ any suitable governor to secure the same results.

Pivotally secured to one of the boxes B is a latch, *y*, one end of which extends into said box, and its other end has fastened thereto a cord, *z*, or its equivalent, designed to connect with the stop-cock of a gas-meter.

In the operation of my invention, the several parts being in the position illustrated by full lines in the drawings, the doors of the house are opened, ready for the engine to be run out. When the lever of the engine-heater

is actuated to disconnect said heater and engine, the cord or wire *w* is operated thereby to draw the spring-bolt N, thus causing the hanger *t* of the weight M to be forced off. The weight M, being thus freed, acts by gravity to unwind the cord L, and thereby revolve the drums H I and screw-threaded shaft *o*. This revolution of the shaft *o* causes the hanger *n'* of the weight G to travel until it becomes disengaged from said shaft, when the weight falls and by its connection *m* with the pivoted lever D acts to depress the same to the position shown by dotted lines, Fig. 2, and said lever, being connected by the cords *h h* to the bell-cranks *g g*, operates the latter, and thus withdraws the spring-stops *f f*, supporting the door-weights C C. These weights, being free, will fall, and by their connections *b b* with the doors A A cause the latter to close, and one of said weights in its descent striking the pivoted latch *y* will operate the cord *z*, connected to the gas-meter stop-cock, thereby automatically turning down the lights in the engine-house. During the day, or at other times when not needed, this gas-meter connection can be readily cut off by simply detaching the cord *z* from the latch *y*.

By having the drum-shaft *o* screw-threaded the closing of the doors may be accurately timed, accordingly as the hanger of the weight G is placed upon said shaft.

When the engine has returned to the house, the doors being opened, the weights C C and *e e* are drawn up, and the weight G being lifted the pivoted lever D is brought up from the bracket or seat *i* to its normal position by the contracting force of the springs on the stops *f f*, these stops at the same time coming into place to support said weights C C. The cord K is now unwound from its drum H, and the cord L by this operation rewound upon the drum I. The weight M is now suspended on the bolt N, which latter has been returned to its normal position by the force of its spring, the spring *x* at the same time operating to take up the slack and keep taut the lever cord or wire *w*. This operation being completed, the weight G is hung upon the screw-threaded shaft *o* near to or as far from the end thereof as may be desirable, and the device is in position for a new operation, leaving the weights *e e* free to keep taut the cords *b b*, and not interfering with the ordinary opening or closing of the doors.

By the employment of a device similar to the one above described the doors of engine-houses can be automatically closed on the departure of the engine, thereby saving valuable time, and permitting the entire force to leave the house with said engine.

Though I have shown the device as operating a pair of doors, it is obvious that said device can be employed on a single door, or by suitable connections act to close more than one pair.

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

1. A door-closer consisting of a suitable cord or its equivalent secured at one end to the door and provided at its free end with a counter-weight, a door-weight adapted to loosely fit the cord and be normally suspended by a suitable stop, and a mechanism to automatically release said door-weight, substantially as and for the purpose set forth.

2. A door-closer consisting of weighted cords or equivalents suitably connected to the door or doors, suitable bell-cranks provided with spring-stops adapted to normally suspend the cord-weights, a pivoted lever operatively connected to said bell-cranks, and a mechanism designed to depress the lever, and thus liberate said weights, substantially as and for the purpose set forth.

3. A door-closing device consisting of a suitable cord or equivalent secured at one end to the door, and provided with a suitable weight, and a mechanism constructed to normally suspend said weight and automatically bring it into action, in combination with a pivoted latch designed to connect with the stop-cock of a gas-meter and be operated by the weight as the latter descends, substantially as set forth.

4. A door-closer consisting of weighted cords or equivalents suitably connected to the door or doors, spring-stop bell-cranks adapted to normally suspend the weights, a pivoted lever operatively connected to said bell-cranks and having its free end united to a weight, a revolving screw-threaded shaft designed to normally retain said latter weight, and a mechanism for automatically setting in motion the screw-threaded shaft, substantially as and for the purpose set forth.

5. A door-closer consisting of weighted cords or equivalents suitably connected to the door or doors, spring-stop bell-cranks adapted to normally suspend the weights, a pivoted weighted lever operatively united to said bell-cranks, a revolving screw-threaded shaft designed to normally retain the lever-weight and carrying suitable drums, the latter respectively wound with a weighted and non-weighted cord, a spring-bolt adapted to suspend the cord-weight, and a mechanism for disengaging said weight and bolt to automatically operate the closing device, as set forth.

6. In a door-closing device, the vertical boxes B B, having pivotally connected thereto the spring-stop bell-cranks *g g*, and provided at their tops with pulleys *d d*, the pulleys *c c*, secured to a wall above the doors, and weighted cords *b b*, suitably connected to said doors and adapted to operate upon the several pulleys, in combination with a pivoted lever, D, operatively united to the bell-cranks, a revolving screw-threaded shaft hav-

ing a suitable speed-governor and drums H I, carrying cords K L, the spring-bolt N, cord or wire *w*, designed to connect said bolt with a lever mechanism, and the weights G M, respectively provided with hangers *n' t*, all arranged to operate substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

NICLAUS LEIDGEN.

Witnesses:
E. G. ASMUS,
P. J. REILLY.