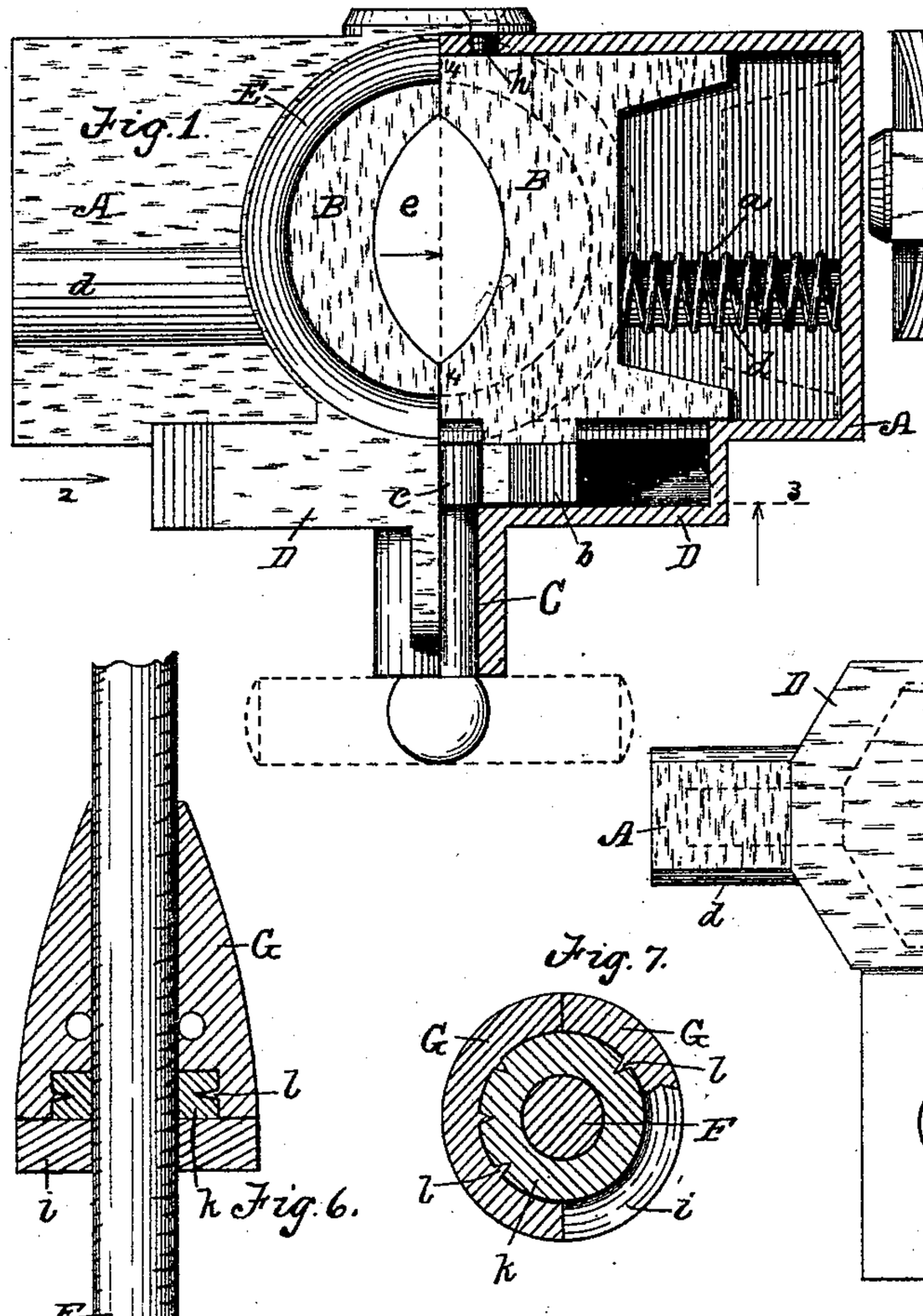
(No Model.)

J. R. HOPPER.

LOCK STOP FOR ELEVATORS.

No. 497,321. Patented May 16, 1893.

Fig. 1.



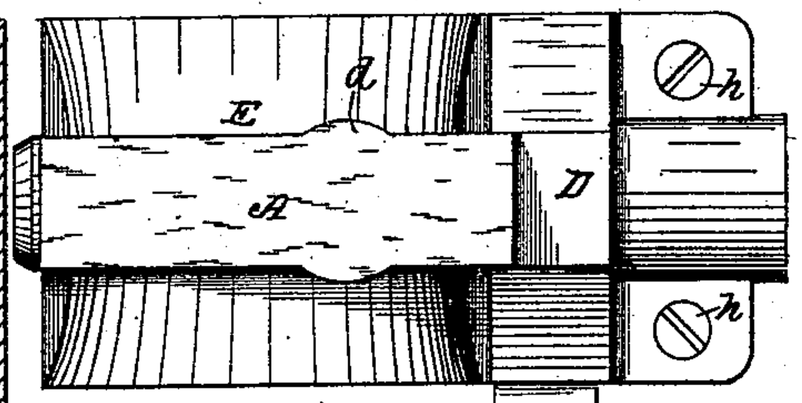
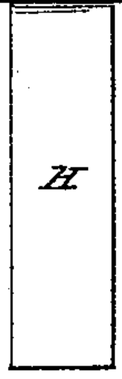


Fig. 2.



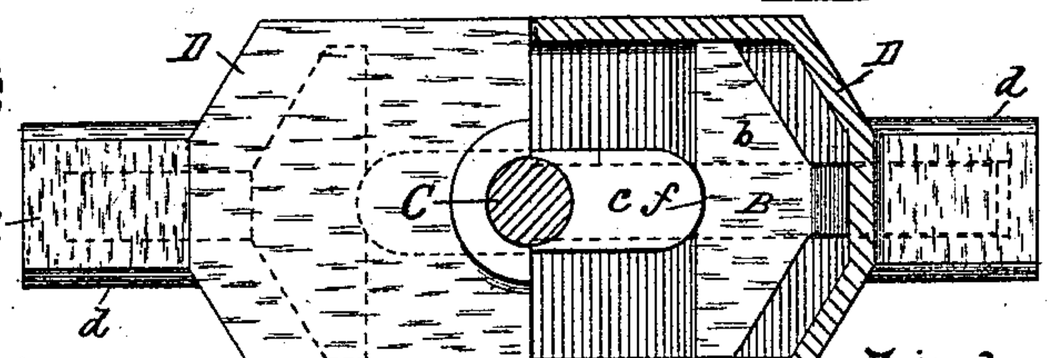


Fig. 3.

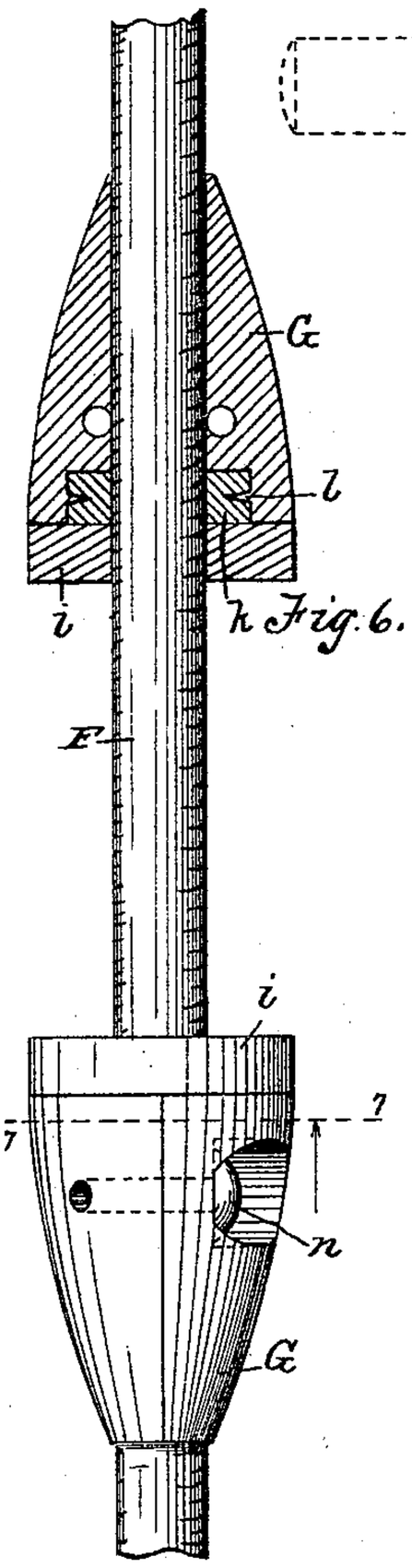


Fig. 6.

Fig. 7.

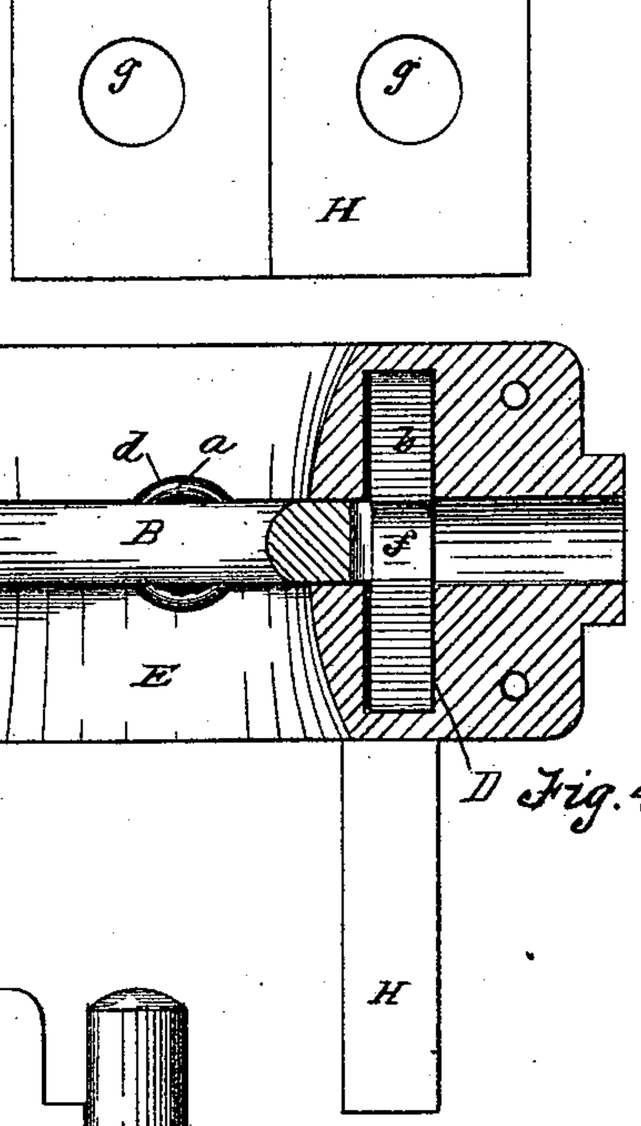
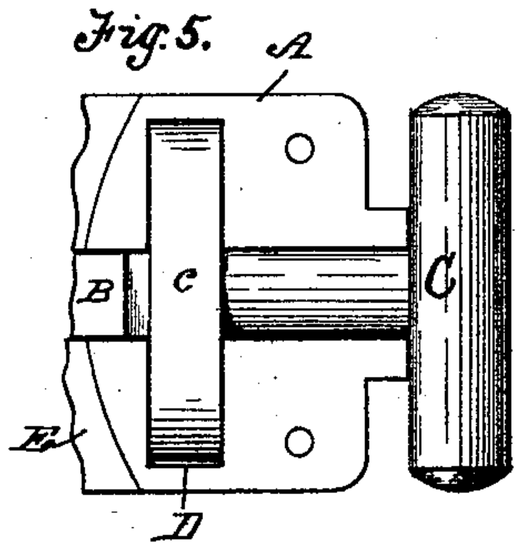


Fig. 4.

Fig. 5.



Attest:

M. L. McDermott.

M. L. Hewson

Inventor:

J. R. Hopper,

By E. B. Whitmore, Atty.

UNITED STATES PATENT OFFICE.

JOHN R. HOPPER, OF ROCHESTER, NEW YORK.

LOCK-STOP FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 497,321, dated May 16, 1893.

Application filed July 27, 1892. Serial No. 441,397. (No model.)

To all whom it may concern:

Be it known that I, JOHN R. HOPPER, of Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in Lock-Stops for Elevators, which improvement is fully set forth in the following specification and shown in the accompanying drawings.

My invention relates to that class of lock-stops for the hand ropes or cables of elevators which have opposing laterally moving jaws to catch the cones on the ropes or cables for the purpose of stopping the car; and one of the main objects of the invention is to provide a lock-stop in which the jaws move independently of each other so that in no case can a pair of cones pass them unless they are designedly thrown wide open, for the purpose.

The invention is hereinafter more fully described and particularly pointed out.

Referring to the drawings Figure 1 is a plan of my improved lock-stop, the right-hand half of the inclosing case being horizontally sectioned through the center, parts being shown in two positions by full and dotted lines. Fig. 2 is a side elevation, seen as indicated by arrow 2, in Fig. 1. Fig. 3 is a side elevation, a part of the right hand half of the inclosing case and the handle being vertically sectioned as on the dotted line 3, in Fig. 1, and viewed as indicated by arrow pointed thereon. Fig. 4 is a view of the inside of one-half of the device, sectioned on the dotted line 4 4 in Fig. 1, and viewed as indicated by the arrow pointed thereon. Fig. 5 is a detached view showing the operating handle resting in place in the inclosing case. Fig. 6 shows a portion of the hand rope or cable with a pair of adjacent cones attached. Fig. 7 is a cross section of the cable and a cone, taken on the dotted line 7 7 in Fig. 6, and viewed as indicated by the arrow pointed thereon.

Referring to the parts, A is a rectangular box constituting an inclosing case for smaller parts.

B B are the jaws for catching the cones, held to move laterally toward or from each other in bearings in the inclosing case.

C is an operating handle for the jaws, held to turn in a horizontal bearing in the case.

a a are actuating springs for the jaws held horizontally in barrels *d d* in the case, which springs serve to push the jaws toward each other and close them against the passage of the cones.

F is the hand rope or cable to be operated by hand or by the car, to stop or start the latter.

G G is a pair of cones secured rigidly to the cable, base toward base, and separated a short distance, to be caught by the jaws of the lock as the car is passing.

The inclosing case is formed with a vertical side-box D at its edge, communicating with the interior of the inclosing case, to receive vertically extended parts *b b* of the jaws. The parts *b b* stand opposite each other in the side-box, and between them is a laterally extended part *c* (sometimes called a tumbler,) of the handle in position to simultaneously press the parts *b b* and throw the jaws apart against the action of the springs, when the handle is turned in its bearing in the inclosing case. When it is wished to close or lock the jaws against the cones the handle is turned so as to bring the part *c* into a vertical position, as shown in Figs. 1 and 5, which allows the springs to push the jaws together, as shown in full lines in Fig. 1. When it is wished to unlock or separate the jaws to allow the car to pass without affecting the cable, the handle is turned to bring the part *c* into a horizontal position, as shown in Fig. 3. This pushes the jaws apart and compresses the springs behind them.

The inclosing case is further formed with a vertical circular funnel E, at its middle, extending equally above and below the case and flaring in both directions. The hand rope or cable passes vertically and centrally through this funnel and between the jaws, which latter are made concave at their edges to form an opening *e* Fig. 1, through which the cable passes freely but through which a cone, presented face first, cannot pass. The concave edges of the jaws are circular, and made with the same radius as the inner circumference of the middle or smallest part of the funnel; and the part *c* of the handle is of sufficient length to force the jaws back so that their concave edges shall coincide with the adjacent interior of the funnel. This causes the circular opening through the funnel to be

clear, allowing the cones to pass through unobstructed. The ends of the part *c* are made pointed, or convex, as shown in Fig. 3, and the portions of the faces of parts *b b* of the jaws contiguous to the ends of *c* when the latter is turned to a horizontal position, are formed with concave stop-notches *f*, Figs. 3 and 4, to receive said ends of *c*. This causes the jaws to be held securely back out of the way of the cones, so that said jaws cannot become accidentally released by the jarring of the car or from other causes, and close in the funnel when they are intended to be kept open.

The part of the handle outside of the inclosing case is preferably designed to stand in a vertical position, as shown in Fig. 5, when the jaws are closed; and it will be understood that the handle may be turned in either direction when it is wished to throw the jaws back, as both ends of the part *c* are equal and alike. The jaws, as will be seen, are entirely independent of each other so that either one may be moved back or to an open position without in any way affecting the other. This is important for it sometimes occurs that the cable presses against a jaw and opens it; and if they were so connected that the other one simultaneously opened also, as is the case with the jaws as commonly constructed, the cones might possibly both pass through the lock and the car thus pass on by a floor when it was intended to stop it. This accident cannot occur with the jaws constructed and operating as here shown, for if one is pushed back out of the way of the cones the other one will still remain in place and catch the cone; for the latter cannot pass through the lock or funnel unless both jaws are out of the way.

The inclosing case is provided with a downwardly extended part or leg H, pierced by holes *g g* by means of which to secure the lock-stop to some convenient part of the car.

The inclosing case is divided transversely and vertically into two equal parts through the axis of the funnel, the dividing plane coinciding also with the meeting edges of the jaws. This admits of the parts being put together, and the whole placed upon the cable, with great facility. The two halves of the case are solid, that is to say, each is in a single piece, which pieces are fastened together by screws *h*. The opposing parts *b b* of the jaws are set back from the meeting edges of the jaws to make space for the part *c* of the handle, which operates between the parts *b b*. The space between the latter is slightly wider than the width of the part *c* so that the jaws may fairly meet, edge to edge.

The cones are preferably made of cast iron, split or divided into halves along their axes, each half being longitudinally recessed to make room for the cable. The halves of each cone are held together and to the cable by transverse clamping screws *n*. The cones are also recessed at their bases to receive in them leather buffers to meet the jaws of the lock-stop. The basal recesses are concentric with the cones and cylindrical in form; and the buffers are each composed of two unequal cylindrical disks of leather *i k*, secured rigidly together side to side, and with a common axis. The smaller disk is formed to fit the recess in the cone and the larger disk, which has a diameter common with the cone, rests snugly against the base of the latter. The buffers are held to the cones by means of simple spurs *l* formed on the cones in position to sink into the buffers, as shown. This construction gives a good substantial body to receive the blow against the jaws, for the reason that the smaller buffer completely fills the cavity or recess in the cone, and in reality adds to the yielding surface of the cone and causes the force of the blow against the jaws to be taken up and distributed laterally when the portion of the buffer on the face of the cone is forced in on it.

In devices of this kind heretofore constructed the recess in the base of the cone has been made conical with the base or larger diameter of the recess toward the tapering end of the cone, and the buffer has been provided with a flange which projects into this recess to prevent the removal of the buffer. But as the flange does not fill the capacity this construction causes the force of the blow of the stop against the jaws to be taken up by the rim or edge of the base of the cone, which, being weakened by the reduced amount of material between the base of the recess and the tapered surface of the cone, soon breaks off a portion of the rim and thus destroys the efficiency of the cone.

What I claim as my invention is—

1. A lock stop for elevators, consisting of an inclosing case formed with a side box extending both above and below the inclosing case, the plane of the side box being at right angles with the plane of the inclosing case, the side box being formed with a cavity communicating with the cavity in the inclosing case and extending above and below said latter cavity, separate co-acting jaws, adapted to move in the inclosing case, each jaw being formed with extended parts or arms extending both above and below the jaws and at right angles with the plane of the jaw in position to occupy the cavity in the side box, and actuators for the jaws, substantially as shown and described.

2. A lock stop for elevators, consisting of an inclosing case formed with a side box extending above and below the inclosing case, the plane of the inclosing case and the side box being at right angles with each other, the side box having a cavity communicating with the cavity in the inclosing case and extending above and below said latter cavity, separate co-acting jaws, adapted to move in the inclosing case, the jaws being formed with arms or parts extending above and below the plane of the jaws and at right angles therewith in position to occupy the cavity in the side box, said arms being apart from each

other and opposite, and an operating handle between them, the arms being formed with opposing lock notches to receive the contiguous parts of the handle, substantially as shown and set forth.

3. In a lock-stop for elevators co-acting jaws and means for holding and operating them, in combination with a cable, and a pair of cones rigid with the cable with their bases turned toward each other, each cone having a concentric cylindrical cavity formed in its base, and a buffer composed of two unequal cylindrical disks of leather fastened together and with a common axis, the smaller disk occupying said opening in the cone and the larger disk lying against the base of the cone, the cone having internal spurs to pierce the part of the buffer contained within it, substantially as shown and described.

In witness whereof I have hereunto set my hand, this 23d day of July, 1892, in the presence of two subscribing witnesses.

JOHN R. HOPPER.

Witnesses:
ENOS B. WHITMORE,
M. L. MCDERMOTT.