

N. S. BROWN.

LIFT OR HOIST.

APPLICATION FILED SEPT. 21, 1908.

1,040,874.

Patented Oct. 8, 1912.

4 SHEETS—SHEET 1.

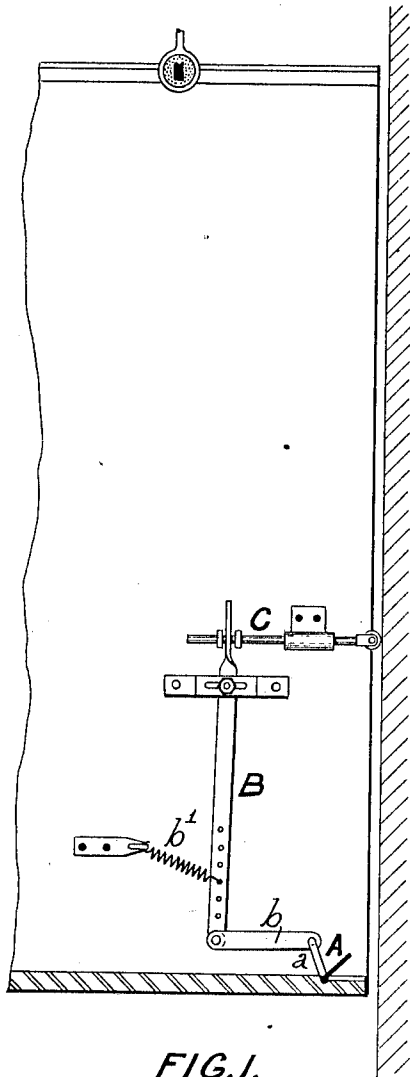


FIG. 1.

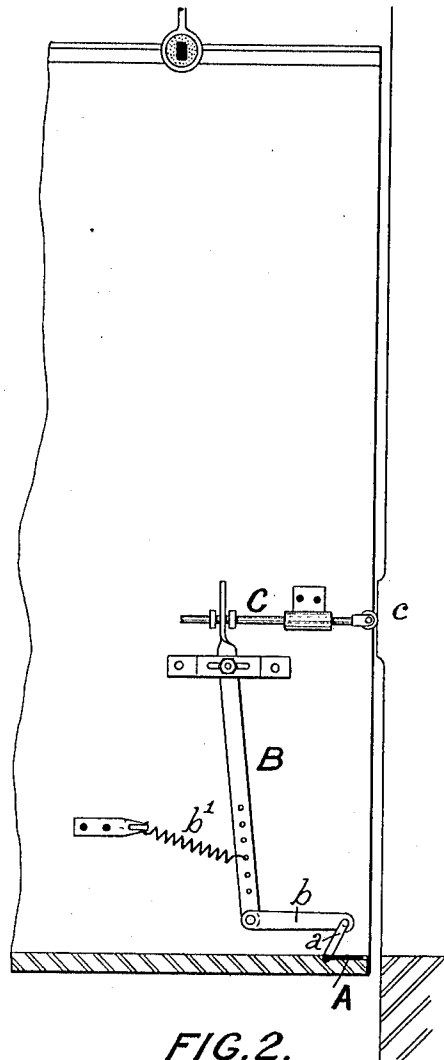


FIG. 2.

WITNESSES.

W. D. Cooper
Chas. H. Foster

INVENTOR

Norman S. Brown
By James L. Norris
att'y.

N. S. BROWN.

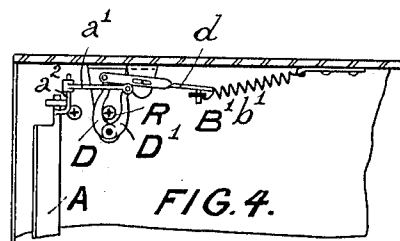
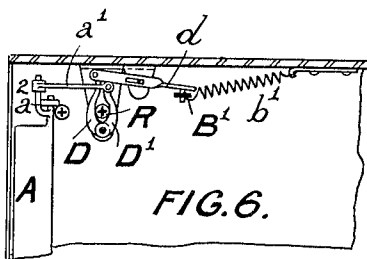
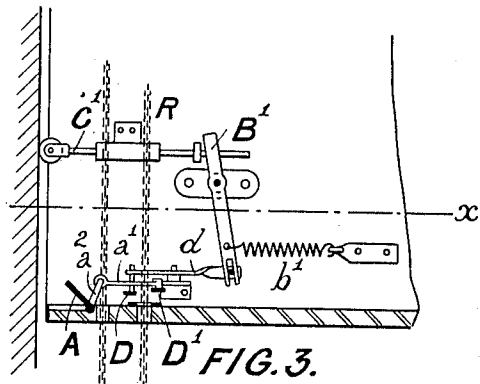
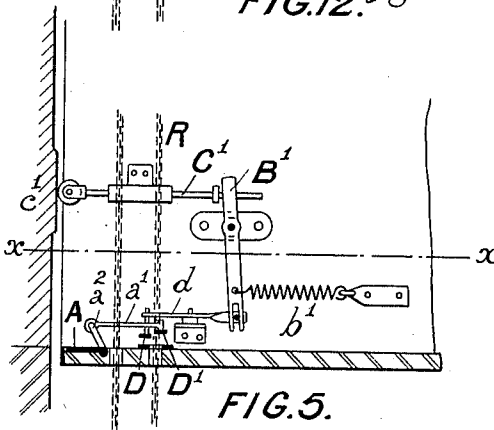
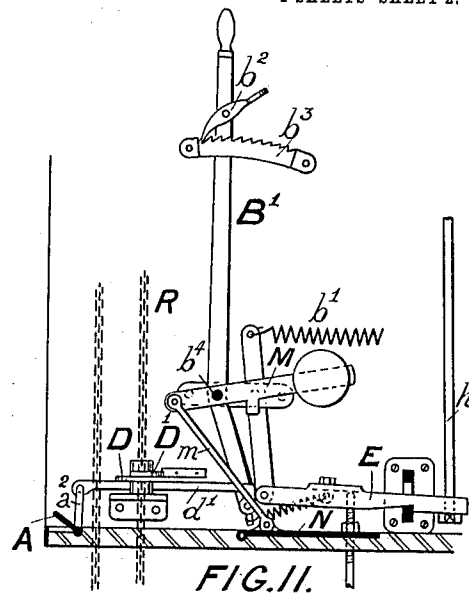
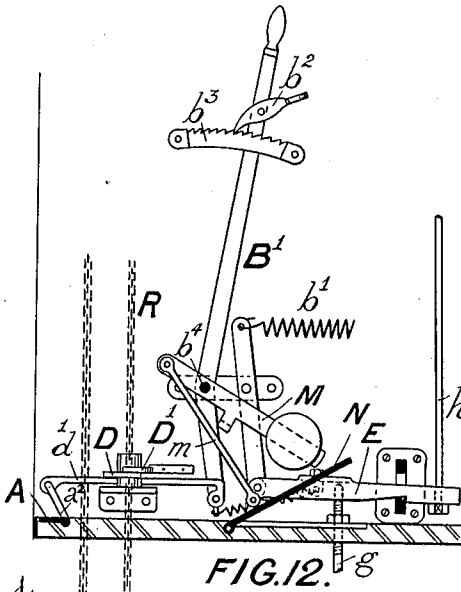
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4 SHEETS—SHEET 2.



WITNESSES.

W. H. Hester
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LIFT OR HOIST.

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4 SHEETS-SHEET 3.

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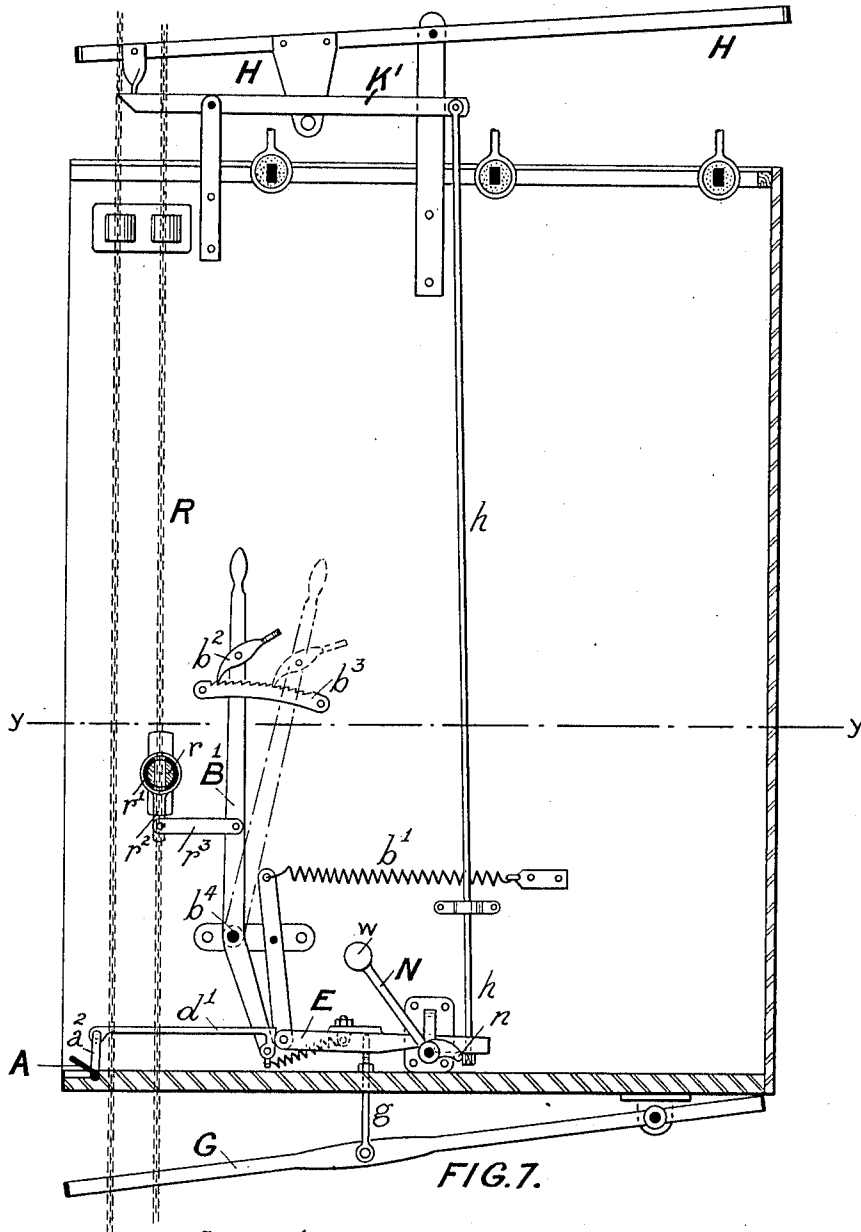


FIG. 7.

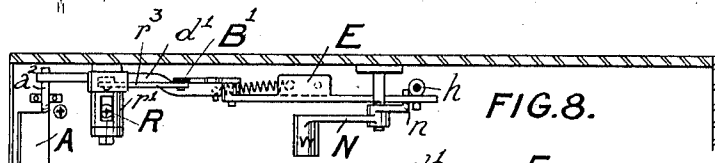


FIG. 8.

WITNESSES.
[Signature]
[Signature]

INVENTOR
Norman S. Brown
[Signature]
James L. Norris
[Signature]

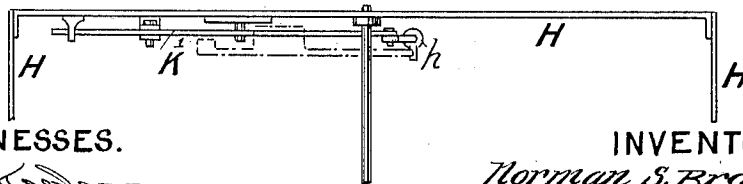
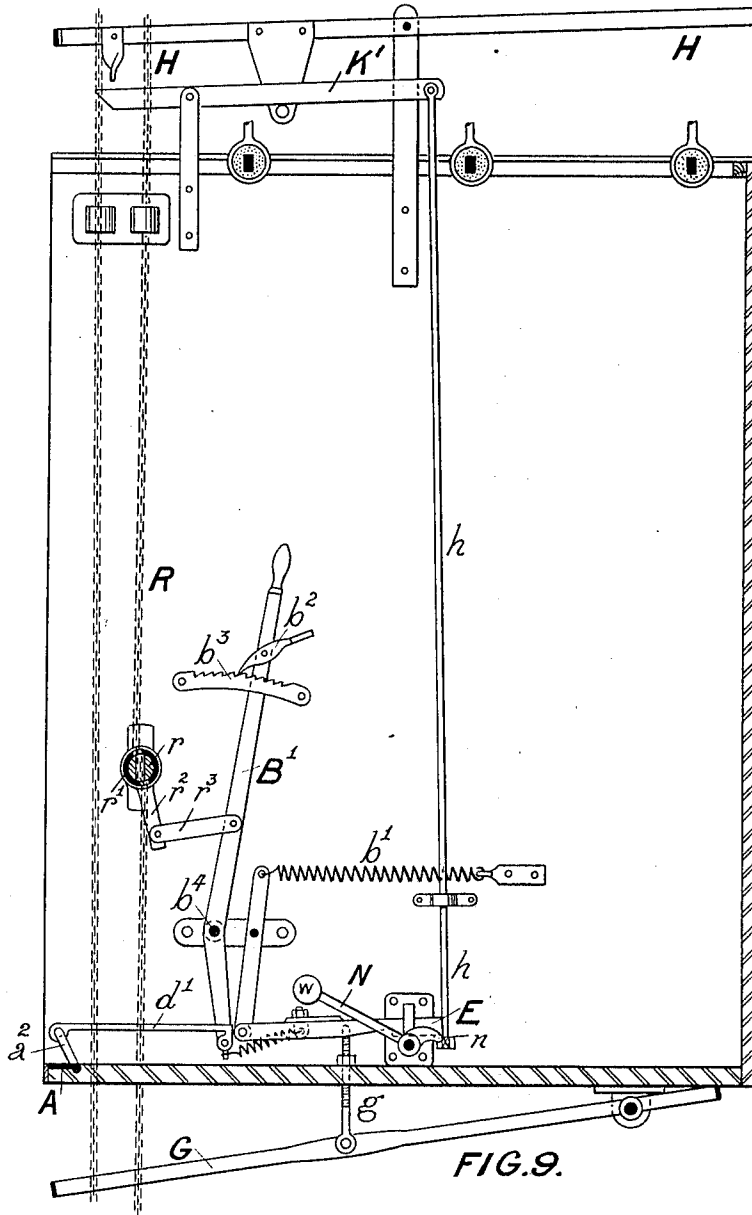
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4 SHEETS—SHEET 4.

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WITNESSES.

W. B. Gage
Ed. Heller

INVENTOR

Norman S. Brown

FIG. 10.

By James L. Norris
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UNITED STATES PATENT OFFICE.

NORMAN SEDDON BROWN, OF WIGAN, ENGLAND.

LIFT OR HOIST.

1,040,874.

Specification of Letters Patent.

Patented Oct. 8, 1912.

Application filed September 21, 1908. Serial No. 454,045.

To all whom it may concern:

Be it known that I, NORMAN SEDDON BROWN, British subject, residing at Wigan, county of Lancaster, England, have invented certain new and useful Improvements in Lifts or Hoists, of which the following is a specification.

This invention relates to improved safety devices for the cages of lifts or hoists to prevent accidents to persons employed in or about the same.

In carrying out the invention I place along the front edge of the cage floor a hinged or pivoted plate or bar capable of being raised or lifted along its front edge, which is connected by a cranked arm and suitable links with a cam or lever by which it is operated and with a device for gripping the hand or starting rope for the purpose of stopping the cage.

The invention will be fully described with reference to the accompanying drawings forming part of the specification in which sufficient of a cage is shown to illustrate the invention.

Figure 1 is a sectional elevation through the cage showing the invention in its simplest form the apparatus and the plate or bar A being in the position which they assume when the cage is traveling between two floors. Fig. 2 is a similar elevation showing the position of the apparatus and the plate A when the cage is at rest or opposite a floor level. Fig. 3 is a sectional elevation showing one arrangement of device connected to the plate A for gripping the hand rope or chain R the apparatus being in its position when the cage is traveling between two floors. Fig. 4 is a sectional plan of same on line $x-x$. Fig. 5 is a sectional elevation of same showing position of the apparatus when cage is at rest opposite a floor level. Fig. 6 is a sectional plan of same on line $x-x$. Fig. 7 is a sectional elevation of another arrangement of the invention showing the position of the apparatus when the cage is traveling between two floors. Fig. 8 is a sectional plan of same on line $y-y$. Fig. 8^a is a further modification of the mechanism for gripping the hand rope or chain and illustrated in plan view, partially in section. Fig. 9 is a sectional elevation of same showing position of the apparatus when cage is at rest opposite a floor level. Fig. 10 is a plan showing cradle H and lever K'. Figs. 11 and 12 illustrate

sectional elevations of still further modifications of the invention.

Along the front edge of the floor of the cage a plate or bar A is hinged or pivoted provided with a cranked arm a by which it can be rocked in its bearings from a flat or horizontal position level with the floor when the cage is at rest, to an inclined or raised position when the cage is traveling so that should the foot of a person (or any article) be resting upon the plate A when horizontal it will be moved back by the raising of the plate, A.

A simplified form of the invention is shown by Figs. 1 and 2, and therein is illustrated a plate A operated by a lever B connected by links or levers b with the crank arm a this lever being moved on the starting of the cage to raise the plate A and on the stopping of the cage to place the plate A again in a horizontal position.

The lever B may be actuated automatically by a sliding bolt C and a cam piece c . The wall of the well of the lift being at each floor fitted with a cam piece c with which the sliding bolt comes in contact so that as the cage approaches each floor the lever B is moved to place the plate A flat and as the cage leaves the floor the lever B is moved in the reverse direction by a spring b' to raise the plate A. The lever B is disposed on one side of the cage and on the opposite side of the cage is a lever B', as shown by Figs. 7, 9, 11 and 12, and said lever B may be actuated by an attendant and provided with means for locking the same similar to that shown in connection with the lever B' and consisting of a pawl b^2 and ratchet b^3 connected therewith to hold it in the desired position. The attendant will in this case, move the handle before starting the cage to raise the plate A and again after stopping the cage to lay the plate flat.

As shown by Figs. 3, 4, 5, 6, 8^a, 11 and 12 the plate A has a pair of gripping levers D D' connected thereto and between which the hand rope or chain R passes, said levers operating to grip the rope should the plate be forced down while the cage is in motion and the hand rope or chain R being moved with the cage will stop its motion. In all of the figures except Figs. 1 and 2 the main operating lever is designated by the character B', the sliding bolt by C', and the cam piece by c' wherever the latter is shown.

The two gripping jaws D D' are pivoted

one at either side of the rope or chain R— (preferably at the other side of the cage to the lever B) and the jaw D' is connected by a link a' to a cranked arm a^2 on the plate A, so that when the plate A is horizontal the jaw D' is forced against the chain or rope, R. The lever B', sliding bolt C' and cam c' are connected by a sliding bar or lever d with the gripping jaw D so that when the lever B' is pushed back by the cam c' the jaw D is moved to relieve the pressure on the other side of the chain or rope R. In any intermediate position should the plate A be depressed the chain will be gripped and the cage stopped.

In another arrangement, see Fig. 8^a the pivoted gripping lever D is connected by a slot and pin with the connecting rod d' which attaches the actuating lever B' with the cranked arm a^2 of the plate A, and the gripping lever D' is held adjacent to the rope or chain R by a spring d^2 ; when therefore the plate A is moved into the horizontal position the levers D D' grip the handrope or chain R.

Instead of the jaws D and D' to grip the chain R a gripping device may be formed of a stationary stud r with a vertical slot through which the chain passes, see Figs. 7, 8 and 9 and a sleeve r' rotatable thereon with slots top and bottom through which the chain passes. The rotation of the sleeve r' on the stud r grips and locks the chain R, the sleeve r' being connected to the lever B' by a lever r^2 and link r^3 so that the movement of the hand lever B' to lower and raise the plate A grips and releases the chain R.

As shown by Figs. 7, 8, 8^a and 9 behind the connecting rod d' a spring catch E is mounted which when released will force the plate A into horizontal position and cause the rope or chain R to be gripped to stop the movement of the cage. The spring catch E is operated by a safety device placed in any position on the cage. A rod or lever G may be placed below the cage with a projecting pin or rod g so that if the rod G comes in contact with an obstruction below the cage the pin g forces up the spring catch E and releases it causing the gripping levers D D' or the gripping device r' to act. Or a rod or lever or cradle H may be pivoted upon the top of the cage with a connecting rod or link h connecting it with the spring catch E. Should the rod or lever H come into contact with an obstruction and be depressed at either end it raises the connecting rod or link h —through the intervention of the lever K'—and releases the spring catch E causing the gripping levers D D' to act.

A weighted lever N is pivoted with one member n below the catch E and the weight w is held up by the leg of the lift attendant when at his post in the cage. Should the attendant leave his post the weight w causes

the lever N to fall and release the catch E thereby stopping the cage and preventing it being started again until the attendant resumes his position.

What I claim as my invention and desire to protect by Letters Patent is:—

1. In apparatus for the cages of lifts or hoists to prevent accidents the combination with the cage of a rocking plate A placed along the front edge of the cage and movably attached along its inner edge, a lever for operating the same, and a cranked arm and link by which the lever is connected with the rocking plate substantially as described.

2. In apparatus for the cages of lifts or hoists to prevent accidents the combination with the cage of a hand rope or chain, a rocking plate A placed along the front edge of the cage movably attached along its inner edge, a lever for operating the same, a cranked arm and link by which the lever is connected with the rocking plate and means connected to said rocking plate for gripping the hand rope or chain substantially as described.

3. In apparatus for the cages of lifts or hoists to prevent accidents the combination with the cage of a hand rope or chain, a rocking plate A placed along the front edge of the cage, a lever for operating the same, a cranked arm and link by which the lever is connected with the rocking plate means for gripping the hand rope or chain and means for setting the gripping device in operation on the cage coming into contact with an obstruction substantially as described.

4. In apparatus for the cages of lifts or hoists to prevent accidents the combination with the cage of a rocking plate A placed along the front edge of the cage a rope or chain R, a lever for operating the rocking plate, a cranked arm and link by which the lever is connected with the rocking plate a stationary stud r provided with a slot through which the chain R passes, a sleeve r' provided with slots rotatable thereon a lever r^2 and link r^3 by which the sleeve is connected with the operating lever substantially as described.

5. In apparatus for the cages of lifts or hoists to prevent accidents the combination with the cage of a rocking plate A placed along the front edge of the cage, a lever for operating the same, a cranked arm and link by which the lever is connected with the rocking plate a pawl b^2 pivoted on the lever and a quadrant rack b^3 with which the pawl engages substantially as described.

6. In apparatus for the cages of lifts or hoists to prevent accidents the combination with the cage of a rocking plate A placed along the front edge of the cage, a lever for operating the same, a rope R, a cranked arm and link by which the lever is connected

with the rocking plate means for gripping the rope R and a spring catch E placed behind the link d' by which when released the lever is operated substantially as described.

5 7. In apparatus for the cages of lifts or hoists to prevent accidents the combination with the cage of a rocking plate A placed along the front edge of the cage, a lever for operating the same, a rope R, a cranked arm and link by which the lever is connected
10 with the rocking plate means for gripping the rope R and a spring catch E placed behind the link d' by which when released the lever is operated and means for releasing
15 the spring catch E substantially as described.

8. In apparatus for the cages of lifts or hoists to prevent accidents the combination with the cage of a rocking plate A placed
20 along the front edge of the cage, a lever for operating the same, a rope R, a cranked arm and link by which the lever is connected with the rocking plate, means for gripping the rope R and a spring catch E placed behind
25 the link d' by which when released the lever is operated, and the lever G and rod g for releasing the spring catch E substantially as described.

9. In apparatus for the cages of lifts or
30 hoists to prevent accidents the combination with the cage of a rocking plate A placed along the front edge of the cage, a lever for operating the same, a rope R, a cranked arm and link by which the lever is connected
35 with the rocking plate, means for gripping the rope R and a spring catch E placed behind the link d' by which when released the lever is operated the levers H and K and the rod h for releasing the spring catch E
40 substantially as described.

10. In apparatus for the cages of lifts or

hoists to prevent accidents the combination with the cage of a rocking plate A placed along the front edge of the cage, a lever
45 for operating the same, a rope R, a cranked arm and link by which the lever is connected with the rocking plate, means for gripping the rope R and a spring catch E placed behind the link d' by which when released
50 the lever is operated a weighted lever N provided with a member n and a weight w for releasing the spring catch E substantially as described.

11. In apparatus for the cages of lifts or hoists to prevent accidents the combination
55 with the cage of a rocking plate A placed along the front edge of the cage, a lever for operating the same, a rope R, a cranked arm and link by which the lever is connected with the rocking plate means for gripping
60 the rope R and a spring catch E placed behind the link d' by which when released the lever is operated, the lever G and rod g connected thereto, the levers H and K and the rod h connecting same with the catch E
65 substantially as described.

12. In apparatus for the cages of lifts or hoists to prevent accidents the combination with the cage of a rocking plate A placed
70 along the front edge of the cage, a lever for operating the same, a cranked arm and link by which the lever is connected with the rocking plate and the auxiliary lever B' link a' and crank a'' substantially as described.

In testimony whereof I have hereunto set
75 my hand in presence of two subscribing witnesses.

N. SEDDON BROWN.

Witnesses:

J. OWDEN O'BRIEN,
HARRY BARNFATHER.