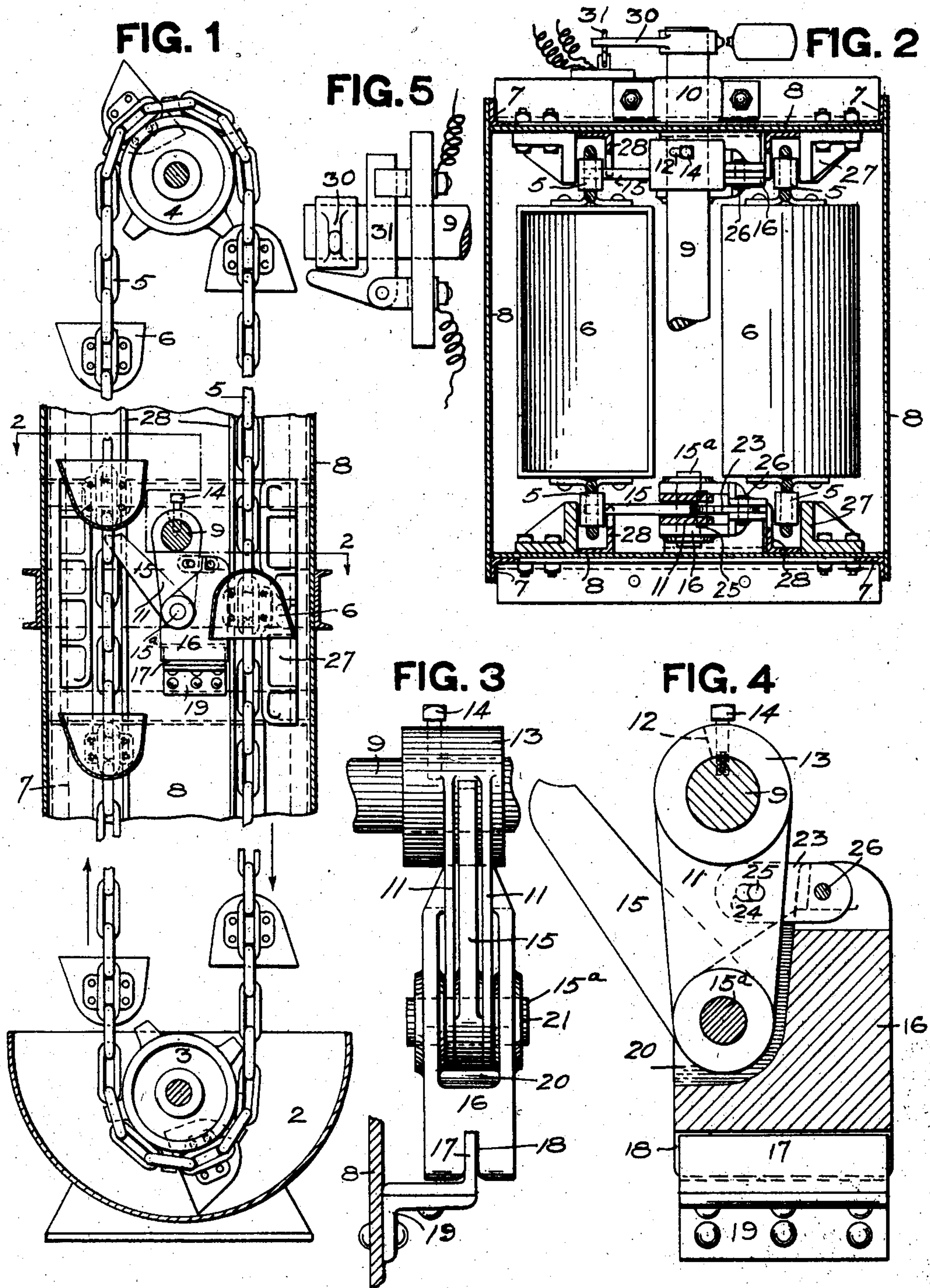


No. 834,883.

PATENTED NOV. 6, 1906.

W. J. BEACH.  
SAFETY DEVICE FOR ELEVATORS.

APPLICATION FILED JUNE 11, 1906.



WITNESSES.

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# UNITED STATES PATENT OFFICE.

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## SAFETY DEVICE FOR ELEVATORS.

No. 834,883.

Specification of Letters Patent.

Patented Nov. 6, 1906.

Application filed June 11, 1906. Serial No. 321,221.

*To all whom it may concern:*

Be it known that I, WILLARD J. BEACH, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Safety Devices for Elevators; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to a safety device for elevators, and more especially to that class of elevators in which an endless chain is employed carrying buckets.

The object of my invention is to provide a simple and efficient form of safety device for such elevators which will come into play immediately upon the parting of the chain and which will act not only on the ascending side of the chain, but likewise on the descending side.

To these ends my invention comprises the novel features hereinafter set forth and claimed.

To enable others skilled in the art to make and use my invention, I will describe the same with reference to the accompanying drawings, in which—

Figure 1 is a side elevation, partly broken away, of an elevator with my improved safety device applied thereto. Fig. 2 is an enlarged cross-section on the line 2 2, Fig. 1; and Figs. 3, 4, and 5 are enlarged detailed views.

Like numerals indicate like parts.

My invention is adapted for use in connection with many forms of chain elevators, and I have illustrated it in connection with a very simple form, in which the numeral 2 designates the base or hopper of the elevator; 3, the lower sprocket-wheel mounted therein, and 4 the upper sprocket-wheel. The chains 5 may be of any ordinary construction, which have secured to their links at suitable intervals buckets 6. The framework supporting the elevator comprises the vertical angle-bars 7, which are connected at intervals by plates 8, riveted thereto. These plates and angle-bars form the elevator-shaft.

The safety devices which I am about to describe may be installed at different points in the elevator-shaft or a single one may be employed, as desired.

A shaft 9 is journaled in bearings 10, supported by the plates 8, and depending from

said shaft 9 is the rock-arm 11, which has a recess 12 formed in the hub 13 of said arm 11, which is adapted to engage the pin 14 in the shaft 9.

Mounted loosely on the pin 15<sup>a</sup> on the lower end of the arm 11 is the pawl 15, which is normally in the path of the ascending portion of the chain 5, but which permits the ascending of said chain without interference.

A friction-block 16 is arranged to rest upon the guide-support 17, said block having the recess 18, which engages said support. This support 17 is supported by the bracket 19, secured to the plate 8 of the frame. This friction-block 16 is recessed, as at 20, and within said recess the arm 11 enters said block having the opening 21, through which the pin 15<sup>a</sup> passes, which connects the lower end of the arm 11 to said block. Connected to the arm 11 is the link 23, said link having the slot 24, engaging the pin 25 on said arm, the opposite end of said link entering the recess 20 in said block and secured therein by the pin 26.

The castings 27 are bolted to the plates 8, and said castings form friction-faces for the chains when the safety device is thrown into operation, as fully hereinafter set forth.

The angle-bars 28 form guideways for the chains 5.

Secured to the end of the shaft 9 is the arm 30, which is adapted to come in contact with the switch 31 of any ordinary construction and break the circuit and stop the motor which drives the elevator.

In the drawings two strings of endless chains are employed, connected by the buckets, as well as two safety devices, as illustrated in Fig. 2.

When the elevator is in operation and traveling in the direction indicated by the arrows, Fig. 1, the safety device remains inactive, the pawl 15 simply being thrown back out of the way of the ascending portion of the chain as each link passes it. If, however, a break occurs above the pawl in the ascending portion of the chain, that portion below the break will of course drop and start to fall down the shaft, whereupon the pawl 15 will be in position to catch the chain at once or will drop into the first space in the chain that comes along, whereupon the falling chain will be arrested, and at the same time the downward



movement of the pawl will act through its connection with the arm 11 to move the friction-block 16 toward the right, carrying said friction-block over into contact with the descending portion of the chain and acting to arrest said chain by the friction created between said chain and the faces of the castings 27 and the friction-block 16. The friction-block 16 rests ordinarily upon the support 17, and when said block moves into frictional contact with the chain it is slightly lifted therefrom. In this position of the friction-block 16 the pin 25 and the link 23 will move to the left of the slot 24. When the frictional block is at rest on the support 17, the pin 25 will be over at the right of said slot and allow said block to rest evenly on said support.

As the block 16 moves over the arm 11 is slightly shifted, so as to carry the pin 14 over, and with it the shaft 9. This rocking of shaft 9 throws the arm 30 into contact with the switch 31, and the motor is stopped.

In my improvement I have provided a simple device by means of which the broken section of chain is prevented from falling, while at the same time a brake is applied to the other side of the chain, so as to check it in its descent. The device not only becomes operative when the chain breaks, but is of advantage in the case of high elevators handling heavy material, where the device will act to stop the chain from running backward in case it should happen that the power is thrown off while the elevator is loaded.

What I claim is—

1. In an elevator, the combination with a suitable frame, of an endless chain carrying buckets, a movable friction member adapted to engage one portion of said chain, and a pawl carried thereby normally in the path of the other portion of said chain.

2. In an elevator, the combination with a suitable frame, of an endless chain carrying buckets, a sliding friction-block adapted to engage one portion of said chain, and a pawl carried thereby normally in the path of the other portion of said chain.

3. In an elevator, the combination with a

suitable frame, of an endless chain carrying buckets, a rock-arm, a movable friction-block connected to said arm adapted to engage one portion of said chain, and a pawl carried by said block normally in the path of the other portion of said chain.

4. In an elevator, the combination with a suitable frame, of an endless chain carrying buckets, a movable friction-block having a recess therein, a rock-arm entering said recess and connected to said block, and a pawl carried by said block normally in the path of one portion of said chain.

5. In an elevator, the combination with a suitable frame, of an endless chain carrying buckets, a movable friction-block, a rock-arm connected thereto at its lower end, a link connecting said arm to said block between the ends of said arm, and a pawl carried by said block normally in the path of one portion of said chain.

6. In an elevator, the combination with a suitable frame, of an endless chain carrying buckets, a support on said frame, a sliding friction-block engaging said support, and a pawl carried by said block normally in the path of one portion of said chain.

7. In an elevator, the combination with a suitable frame, of an endless chain carrying buckets, a movable friction-block, and means for throwing said friction-block against the chain.

8. In an elevator, the combination with a suitable frame, of an endless chain carrying buckets, a rock-arm, a movable friction-block connected to said arm adapted to engage one portion of said chain, a shaft on which said rock-arm is mounted, means for turning said shaft by the movement of said rock-arm, a switch operated by the movement of said shaft, and a pawl carried by said block normally in the path of the other portion of said chain.

In testimony whereof I, the said WILLARD J. BEACH, have hereunto set my hand.

WILLARD J. BEACH.

Witnesses:

J. R. KELLER,

ROBT. D. TOTTEN.