To all whom it may concern:

Be it known that I, Peter Roth, a citizen of the United States, residing at New Salem, in the county of Morton and State of North Dakota, have invented new and useful Improvements in Automatic Safety Devices for Elevators, of which the following is a specification.

This invention relates to automatic safety devices for elevators and it consists in the novel features hereinafter described and claimed.

An object of the invention is to provide a device of the character indicated which is adapted to automatically operate for bringing the elevator to a state of rest in its shaft in the event that the hoisting or supporting cable should break or become disarranged.

With this object in view the invention consists in providing the guides in the elevator shaft with inwardly disposed teeth and mounting spring actuated pawls upon the beam of the elevator. The springs which operate upon the said pawls tend to force the ends of the pawls toward and in engagement with the teeth of the guides. A yoke is mounted upon the beam of the elevator and a block is slidably mounted in the said yoke. The hoisting cable is connected with the block and cables connect the said block with the said pawls. Pulleys are journaled in the said beam and the last mentioned cables are trained under the said pulleys and connected with the said pawls.

When the hoisting cable is taut the block is held in the upper portion of the yoke and the pawls are held in retracted positions in the beam and out of engagement with the teeth in the guide. Consequently under these conditions the elevator is free to move vertically between the guides. In the event that the hoisting cables should break or become disarranged the springs force the pawls in outward directions and into engagement with the teeth in the guides whereby the elevator is held at a fixed point between the guides.

In the accompanying drawing:—

Figure 1 is a side elevation of an elevator with the safety device applied;

Fig. 2 is a sectional view of the safety device showing the parts in one position;

Fig. 3 is a similar view showing the parts in another position;

Fig. 4 is a perspective view of one of the pawls.

As illustrated in the accompanying drawing, the guides 1 are such as are usually employed in the shaft of an elevator and the said guides are provided at their inner edges with inwardly disposed teeth 2. The elevator car 3 is provided at its upper portion with a cross beam 4 which is provided with a longitudinally disposed channel 5. Pawls 6 are slidably mounted in the channel 5. The shanks of the pawls 6 pass through partitions 7 located in fixed positions in the channel 5 and coil springs 8 are interposed between the heads of the pawls 6 and the partitions 7 and the said springs are under tension with a tendency to hold the ends of the pawls 6 toward and in engagement with the teeth 2 of the guides 1. A yoke 9 is mounted on the top side of the beam 1 and transversely disposed bolts 10 pass through the intermediate portion of the said yoke 9 and connect at their lower ends with the beam 4. A block 11 is slidably mounted upon the bolts 10. The hoisting cable 12 is connected at its lower end with the block 11. Pulleys 13 are journaled in the beam 4 and cables 14 are connected at one end with the block 11 and at their other ends with the inner ends of the shanks of the pawls 6. The intermediate portions of the cables 14 are trained under the pulleys 13 as best shown in Figs. 2 and 3 of the drawing.

When the elevator 3 is supported from the cable 12 the said cable is held in a taut condition whereby the block 11 is held against the under side of the intermediate portion of the yoke 9. Through the connecting cables 14 the pawls 6 are held in the retracted positions shown in Fig. 2 of the drawing. When the parts are in these positions the elevator 3 may be freely moved vertically between the guides 1. In the event that the cable 12 should become suddenly slack or break the tension of the springs 8 comes into play and the pawls 6 are moved in outward directions whereby the said pawls engage the teeth 2 and prevent the elevator 3 from falling. When the pawls 6 move to their projected positions as shown in Fig. 3 of the cables 14 are moved in a downward direction whereby the block 11 is lowered along the bolts 10. As soon as a pulling strain is exerted upon the cable 12 the block 11 is moved to its upper position in the yoke 9 and the pawls 6 are withdrawn into the channel 5 and out of engagement with teeth 2 thus freeing the elevator 3 and permit-
ting the same to be removed between the guides.

From the foregoing description taken in conjunction with the accompanying drawing it will be seen that an elevator device of simple structural arrangement is provided and that the same is automatic in its action to cause the elevator to come to a state of rest between the guides in the event that the hoisting cable should become suddenly slack as a result of breakage or disarrangement.

Having described the invention what is claimed is:

In combination with guides having inwardly disposed teeth, an elevator movably mounted between the guides and having a beam, said beam being channeled longitudinally, spring pressed pawls movably mounted in the channel, a yoke mounted upon the beam, bolts passing transversely through the yoke and connected with the beam, a block slidably mounted upon the bolts and located within the yoke and limited in its sliding movement by the yoke and beam, pulleys journaled in the channel below the upper surface of the beam, cables attached to the block and trained under the pulleys and connected with the pawls and a hoisting cable connected with the block.

In testimony whereof I affix my signature.

PETER ROTH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."