

No. 811,892.

PATENTED FEB. 6, 1906.

I. M. ADAMS.  
SAFETY DEVICE FOR MINE ELEVATORS.

APPLICATION FILED SEPT. 18, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

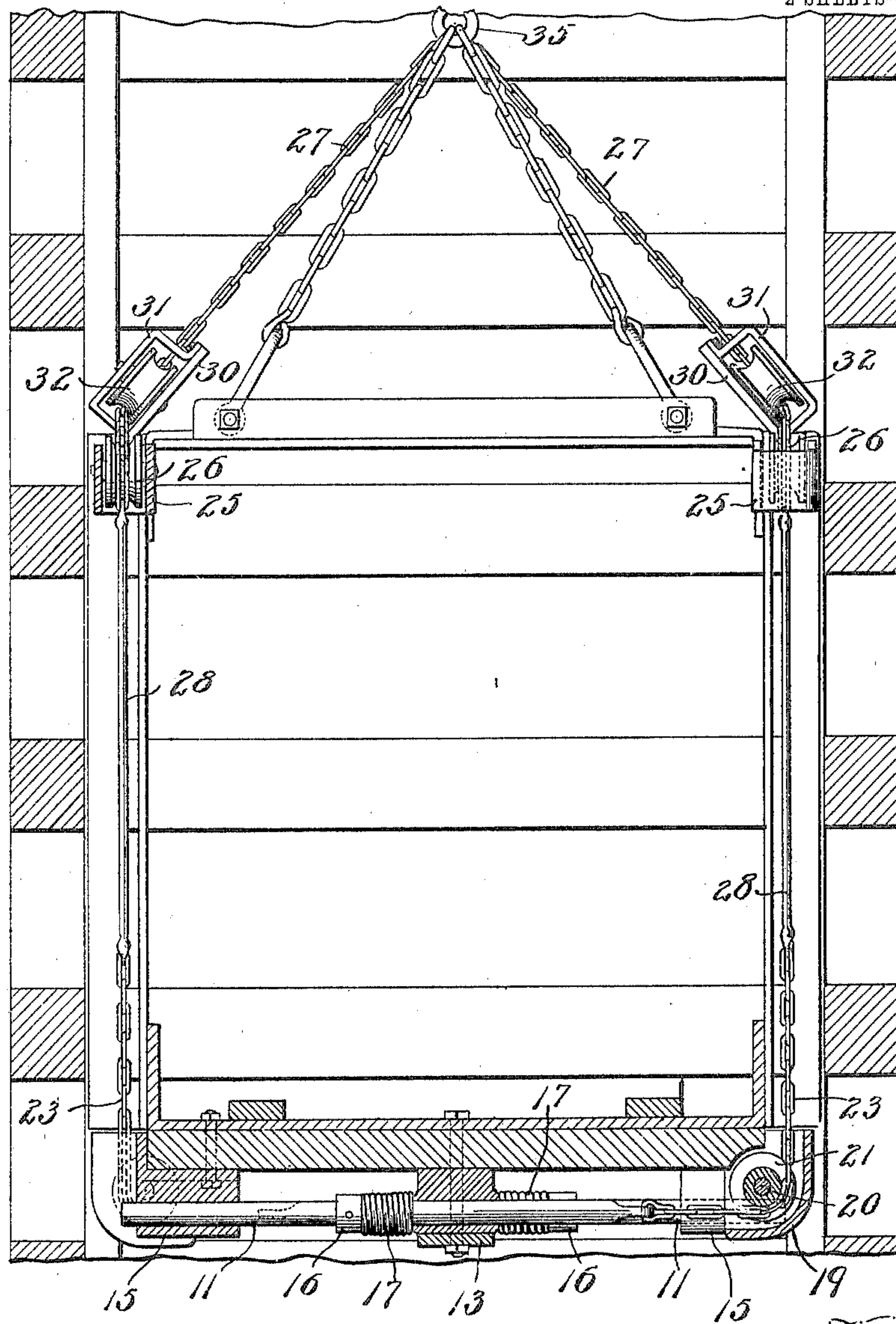
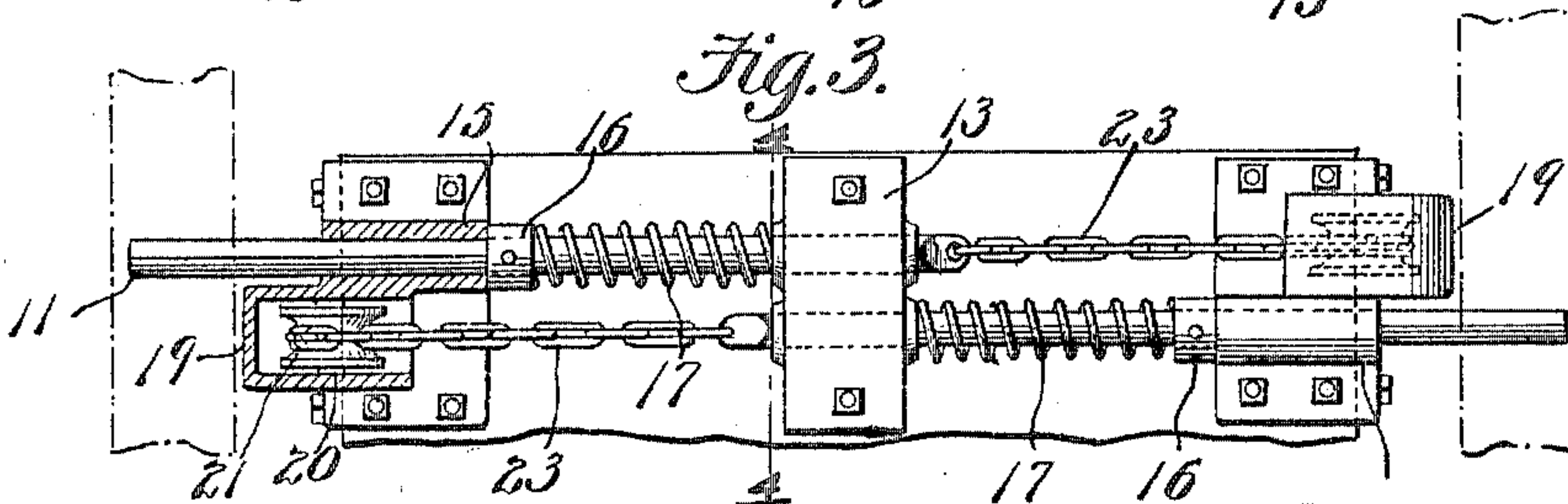


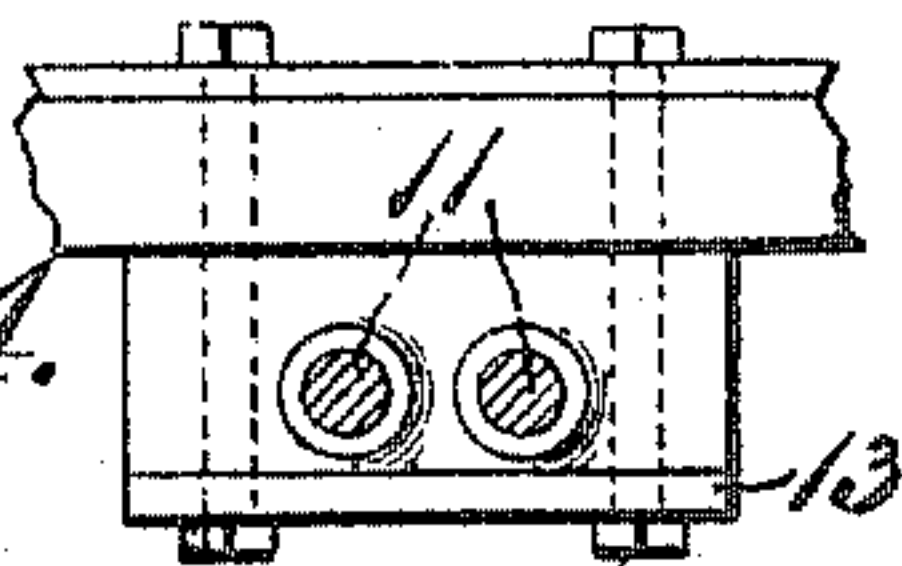
Fig. 3.



Witnesses

*E. J. Stewart*  
*J. W. Carter*

Fig. 4.



Isaac M. Adams, Inventor  
by *C. A. Snow & Co.*  
Attorneys

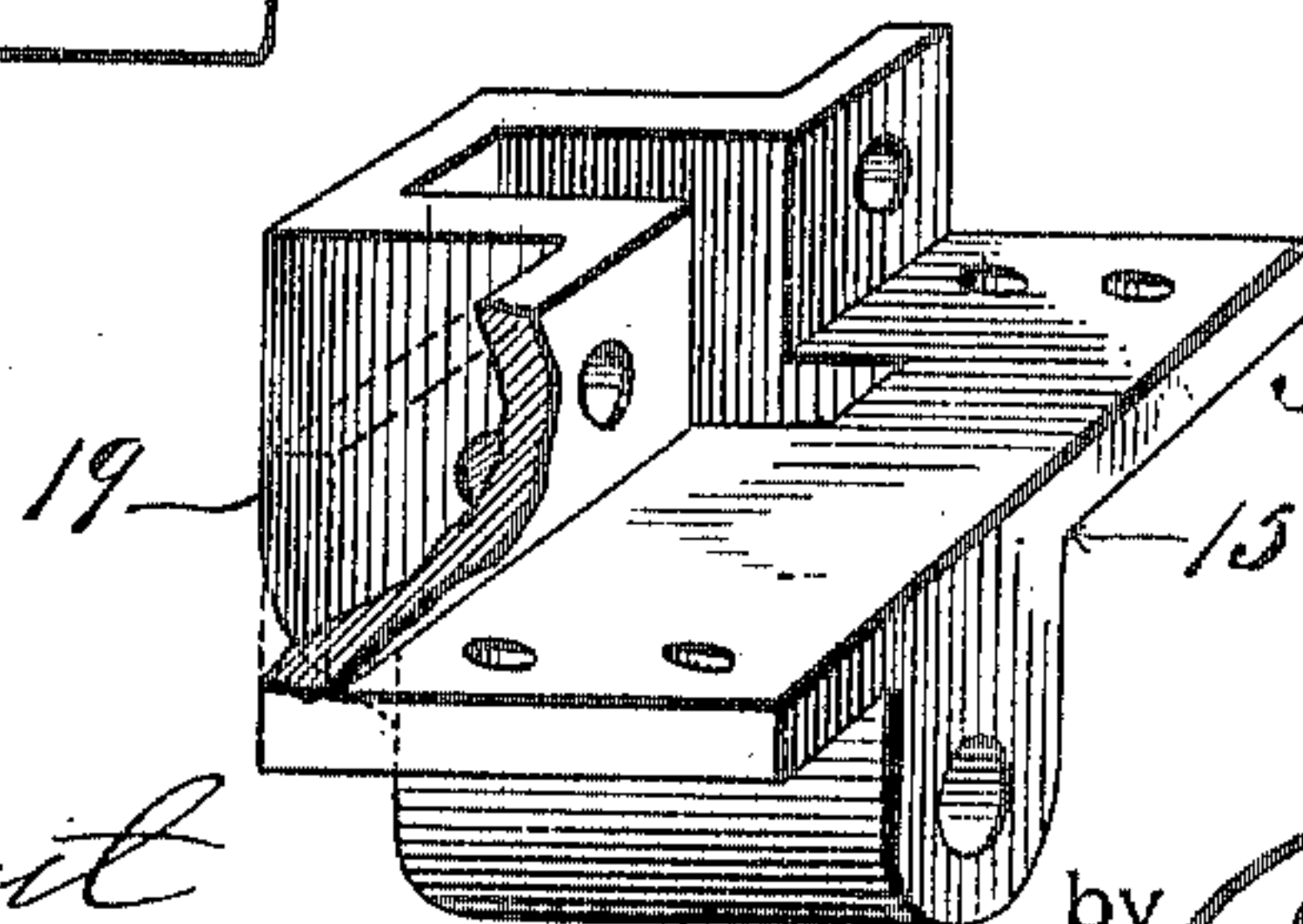
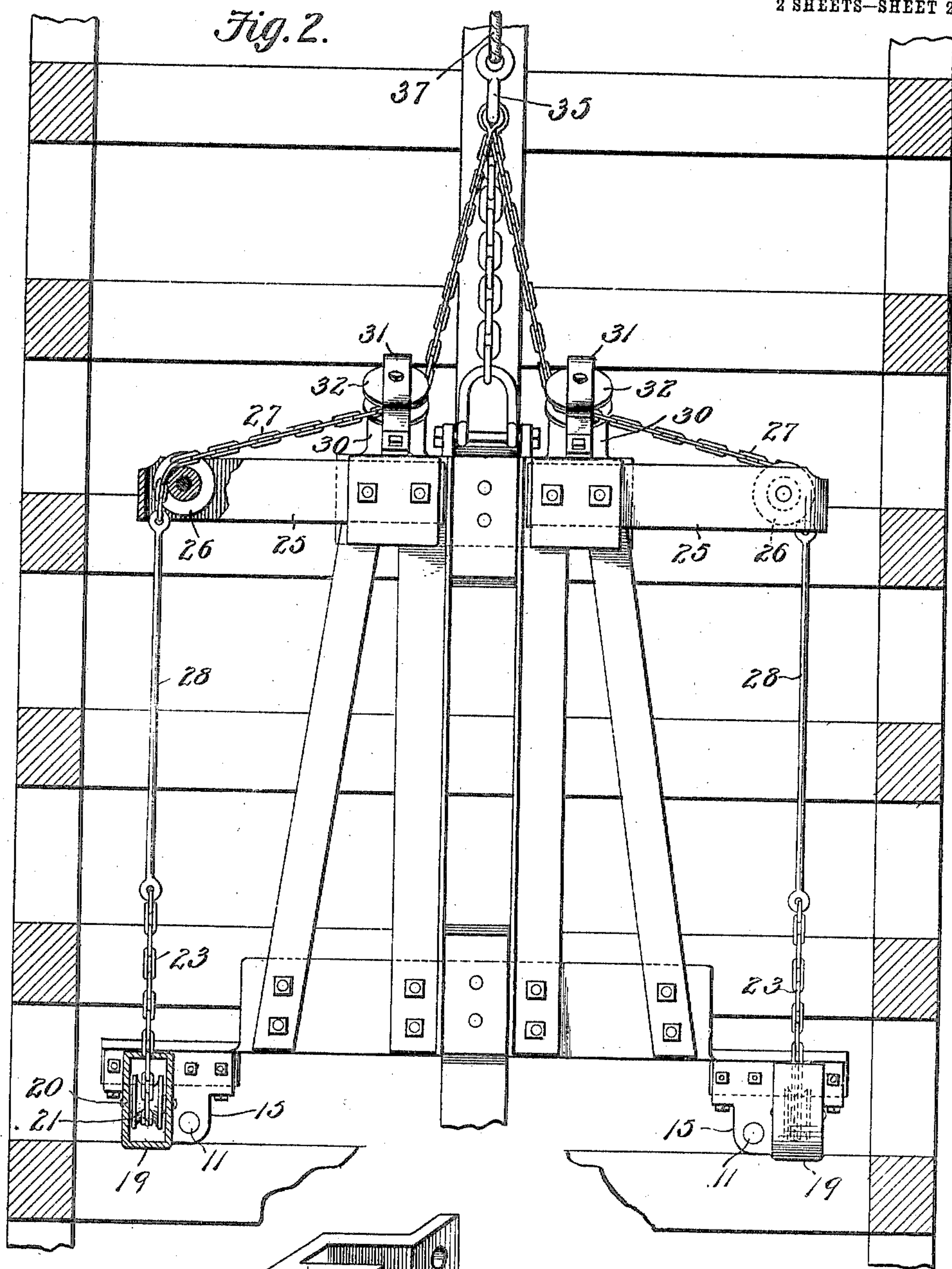
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2 SHEETS—SHEET 2.



Witnesses

*E. J. Stewart*  
*J. M. Parker*

*Isaac M. Adams,*  
Inventor

by

*C. A. Snow & Co.*

Attorneys



# UNITED STATES PATENT OFFICE.

ISAAC M. ADAMS, OF SHENANDOAH, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO WILLIAM STEIN, OF SHENANDOAH, PENNSYLVANIA.

## SAFETY DEVICE FOR MINE-ELEVATORS.

No. 811,892.

Specification of Letters Patent.

Patented Feb. 6, 1906.

Application filed September 18, 1905. Serial No. 278,981.

*To all whom it may concern:*

Be it known that I, ISAAC M. ADAMS, a citizen of the United States, residing at Shenandoah, in the county of Schuylkill and State of Pennsylvania, have invented a new and useful Safety Device for Mine-Elevators, of which the following is a specification.

This invention relates to safety appliances for elevators or cages used in mine-shafts, and has for its principal object to provide a means that will automatically arrest the downward movement of the car and lock the same in position in the event of breakage of the hoisting-cable.

A further object of the invention is to provide a locking device that will coact with the sills of the shaft-timbering at a number of points on both sides of the shaft and positively hold the car under any load which it may carry.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a sectional elevation of a car provided with a safety device constructed in accordance with the invention. Fig. 2 is an elevation looking from the side of the car, parts being broken away in order to more clearly illustrate the construction. Fig. 3 is an inverted plan view of a portion of the bottom of the car, parts being shown in section. Fig. 4 is a transverse sectional view of the central guiding-block on the line 4 4 of Fig. 3. Fig. 5 is a detail perspective view of the outer guide-block and chain-guide.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The apparatus forming the subject of the present invention is intended more especially for use in connection with mine-cages.

In all mine-shafts the timbering or lining is formed by horizontal struts or props and horizontal sills or bars, the latter being arranged at intervals varying from eighteen inches to thirty-six inches in accordance with the character of the ground. Advantage is taken of these sills or bars by providing means on the cage for automatically engaging said sills or

bars and arresting downward movement of the cage. On the bottom of the cage, near the front and rear sides thereof, are arranged transversely-disposed locking-bolts 11, that extend rather more than half the width of the cage. Each pair of bolts passes through a strong guide-block that is bolted to the under side of the central portion of the cage and bored for the passage of the bolts, and said block is further supported by a strengthening-plate 13, through which the block-securing bolts pass. The outer end of each locking-bolt 11 passes through a guiding-opening formed in a block 15, arranged near the side of the cage, and on each locking-bolt is an adjustable collar 16, between which and the central block is arranged a helical compression-spring 17, tending to thrust the bolt outward beyond the side of the cage. The guide-block 15 is preferably formed integral with a bracket and guide member 19, that is provided with bearings for the reception of a short shaft 20, carrying a sheave 21, and through this guide and over the sheave passes a chain 23, one end of which is connected to the bolt. From each side of the vertical frame members of the cage project arms 25, carrying sheaves 26, the arms projecting around the outer faces of the sheaves and forming guides for chains 27, that pass over said sheaves. The lower ends of these chains are connected to the lower bolt-chains by means of vertically-disposed rods 28, which, being arranged at the frame sides of the cage, will not interfere with the movement of the coal or ore carrying cars to or from the platform. The upper frame members are further provided with brackets 30, which, in connection with straps 31, form supports for sheaves 32, said sheaves forming additional guides for chains 27. All four of the chains 27 pass upward on converging lines and are connected to a hoisting-ring 35, to which the lower end of the hoisting-cable is attached, and from this ring extend the hoisting cables or chains 37, that are connected to the cage in the usual manner and are intended to form the sole supports therefor, no strain being imposed on the chains 27 under ordinary conditions with the exception of tensional strain to keep said chains taut and maintain the bolts in retracted position. The chains 27 and their connecting-bars are of sufficient strength to support the cage in case one of



the main chains or cables 37 should break. In case of breakage of the hoisting-cable the springs will instantly thrust the bolts outward beyond the sides of the cage, and the projecting ends of the bolts will engage the transverse sills of the shaft-timbering and arrest the downward movement of the cage, the cage being positively locked no matter what the load may be.

10 Having thus described the invention, what is claimed is—

1. A safety device for mine-elevators, comprising a pair of spring-projected bolts arranged in parallel relation at the bottom of the cage, each bolt extending inward from the side of the cage to a point beyond the median line thereof, a guide-block arranged at the central portion of the bottom of the cage and having openings for the passage of said bolts, guide-blocks arranged at the outer edges of the cage-platform for the passage of the bolts, said blocks being also arranged to form shaft-supports, chain-guides, shafts having bearings in said blocks, sheaves mounted on the shafts, chains extending

around said sheaves and connected to the bolts, said chains being connected to the hoisting-cable and tending to hold the bolts retracted while the cable remains intact.

2. A safety device for mine-elevators, comprising a plurality of locking-bolts arranged in pairs, each pair of bolts extending from the side of the car to a point beyond the median line thereof, a guide-block arranged at the center of the cage, and having openings for the reception of said bolts, auxiliary blocks arranged at the sides of the car for the reception of the bolts, means for projecting said bolts, chains extending from the bolts, connecting-bars coupled to said chains, and auxiliary chains extending from the upper ends of said bars to the hoisting-ring.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ISAAC M. ADAMS.

Witnesses:

FRANK C. HALL,  
W. J. DILLON.