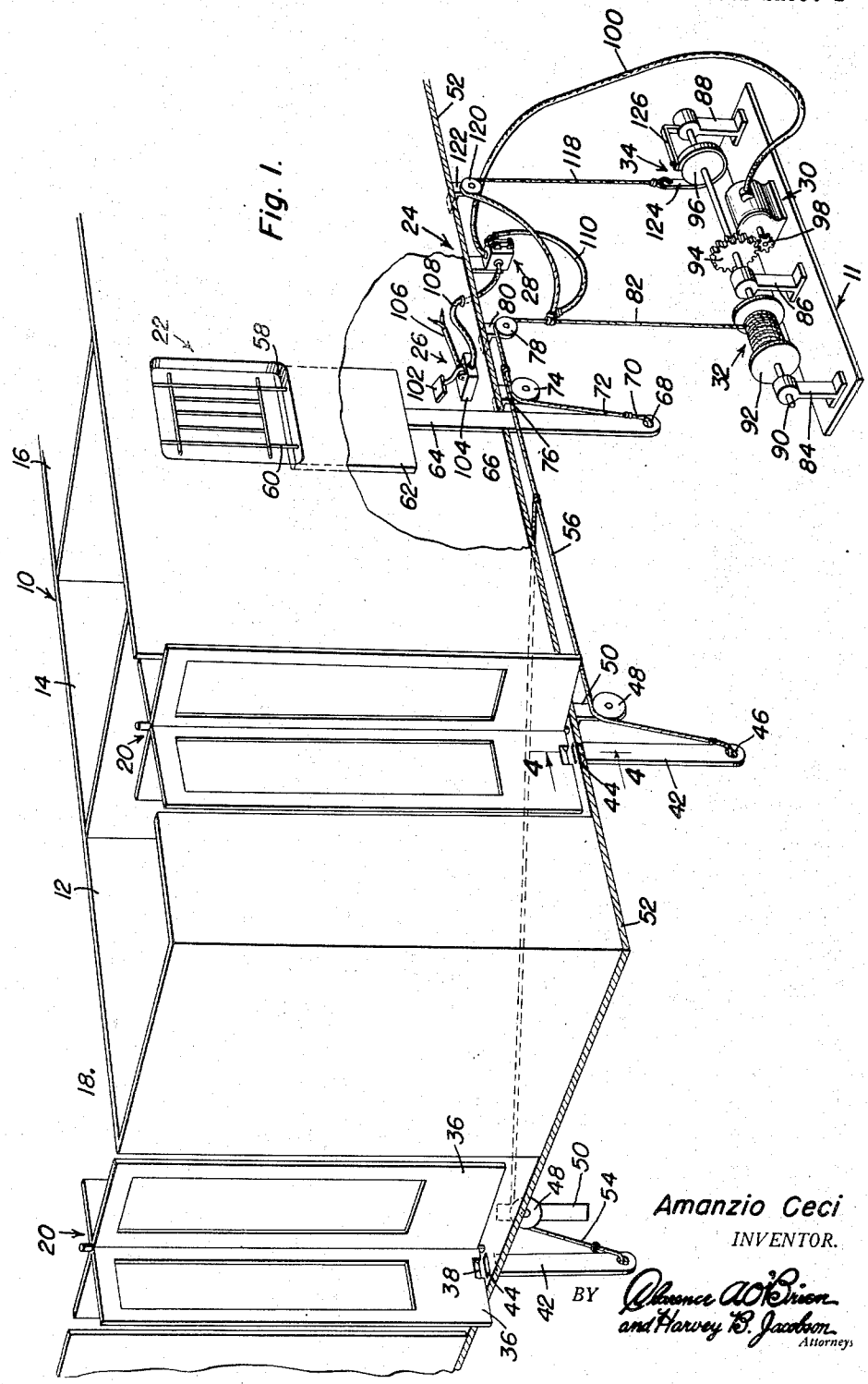
Nov. 30, 1954 A. CECI 2,695,574

LOCKING APPARATUS

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Fig. 1.



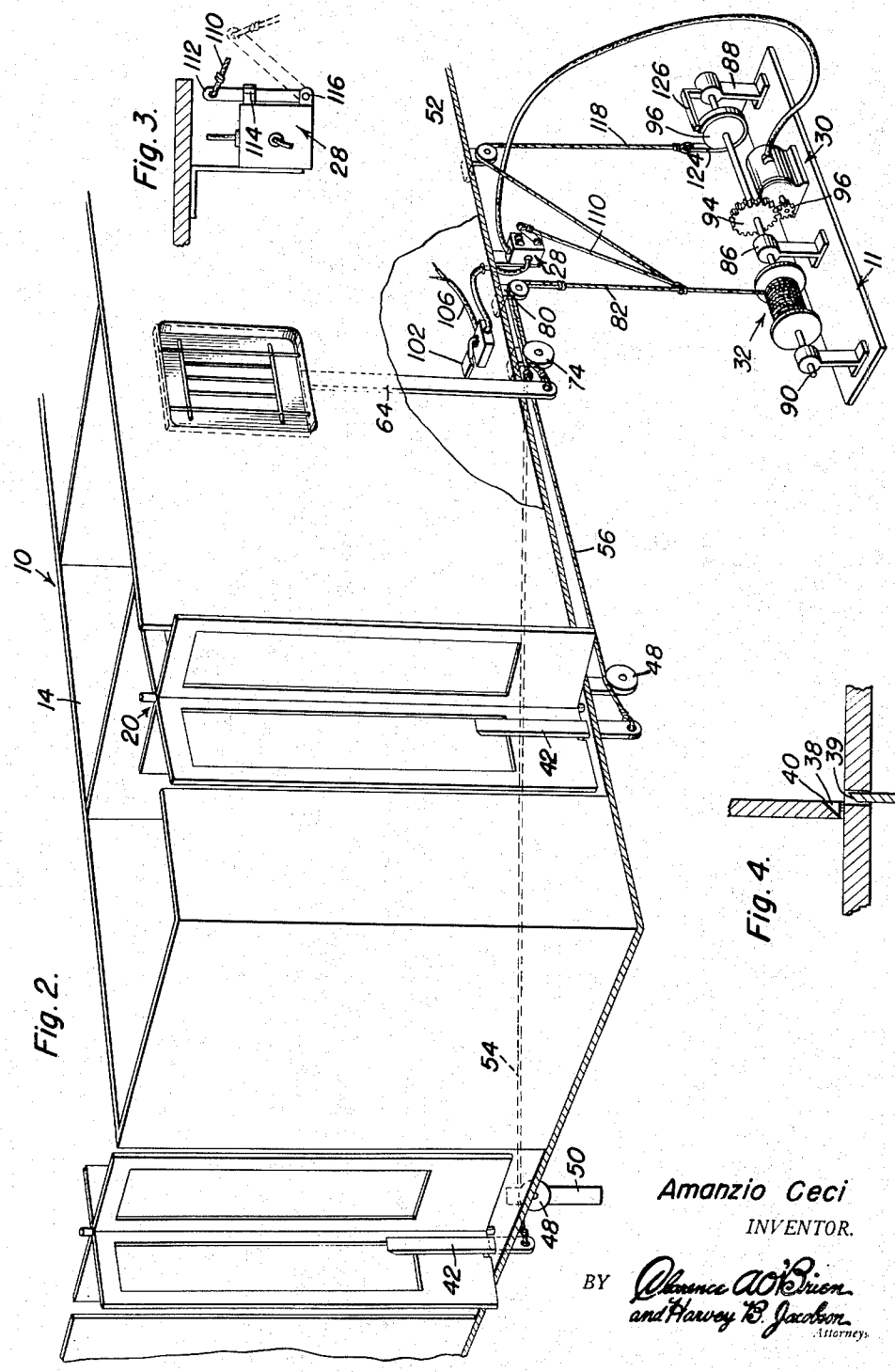

Amanzio Ceci
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

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Amanzio Ceci
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

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# LOCKING APPARATUS

Amanzio Ceci, Peckville, Pa.

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4 Claims. (Cl. 109—3)

The present invention relates to improvements in locking apparatus and more particularly to a device which is well adapted for use in banks and the like to prevent the occurrence of a successful bank hold-up.

An object of the present invention is to provide a locking apparatus which is operable by a single actuating switch behind a teller's window whereby an electric motor will be actuated for winding a cable means which is, in turn, connected to a plurality of reciprocable elements, the reciprocable elements comprising locking means for doors and closure means for the windows.

A further object of the present invention is to provide a cut-off switch in the electrical circuit between the actuating switch and the electrical motor whereby when the reciprocable elements reach their uppermost position, as in an emergency, the cut-off switch will be actuated for deactuating the motor.

A still further object of the present invention is to provide an arrangement including a brake means associated with the cable means whereby when the reciprocable elements reach their uppermost positions, the brake means will be in applied relation and will prevent further rotation of the winding winch for the cable means and will also prevent releasing movement of the locking elements and closure elements.

Various other objects and advantages will become apparent from the detailed description to follow.

The best form in which I have contemplated applying my invention is clearly illustrated in the accompanying drawings, wherein:

Figure 1 is a perspective view of a bank or the like having rotating doors and tellers' windows with the locking apparatus of the present invention associated therewith and in the actuated position;

Figure 2 is a perspective view similar to Figure 1 but wherein the actuating switch is in actuated position and the various reciprocable elements are in their uppermost emergency positions for locking the revolving doors and closing the teller's window;

Figure 3 is a detail view showing the cut-off switch which is employed in combination with the various other elements of the locking apparatus; and

Figure 4 is a vertical detail sectional view taken substantially along the plane of line 4—4 of Figure 1.

Referring more particularly to the drawings, wherein like numerals designate like parts throughout, the numeral **10** designates a building structure such as a bank or the like having a plurality of rooms **12**, **14**, **16** and **18**, with revolving doors designated generally by the numeral **20** and tellers' windows designated generally by the numeral **22**. The locking apparatus of the present invention is designated generally by the numeral **24** and includes an actuating switch **26**, a cut-off switch **28**, an electric motor **30**, winding means **32** and brake means **34**.

The bank **10** is shown in Figures 1 and 2 as comprising a building structure having a pair of revolving doors **20** for gaining entrance to the several rooms within the structure. The revolving doors **20** are of conventional structure but have the lower ends of the individual panels **36** formed with recessed portions **38** provided by diagonal cuts at **40**, as shown best in Figure 4.

Each of the revolving doors **20** is provided with a reciprocable locking element **42** which is engaged in a slot **44** formed in the floor of the building structure **10**. The locking element **42** is simply an elongated flat bar having an aperture **46** in its lower end.



Adjacent to each of the locking elements **42** are pulleys **48** which are rotatably supported on the brackets **50** secured to the underside of the floor wall **52** of the building structure **10**. A first cable **54** is connected to the locking element **42** at the extreme left of Figure 1 and extends across the underside of the floor **52** for connection to the second cable **56** which is, in turn, connected to the locking element **42** in the center of Figure 1.

The teller's window **22** is formed with a slot immediately behind the window opening at **58** and behind the bars **60**. The closure plate **62** is connected to a downwardly extending elongated bar **64** which is engaged through an opening **66** in the floor wall **52**. The lower end of the bar **64** has an aperture **68** formed therein for receiving the cable end **70** of the cable **72**. A pulley **74** is supported on the bracket **76** secured to the underside of the wall **52** and the cable **72** is engaged thereover for connection to the second cable **56**. The third cable **72** is then passed over another pulley **78** supported on the bracket **80** and extends downwardly at **82** for winding on the winding means **32**.

Supported on the platform **11** in the basement of the building structure **10** are a plurality of bearing brackets **84**, **86** and **88** which rotatably support the shaft **90**. The winding winch **92**, gear **94** and brake drum **96** are secured for rotation with the shaft **90**. The motor **30** is supported on the platform **11** and has a pinion **98** secured to its shaft for engagement with the gear **94** whereby the shaft **90** can be rotated. An electric cable **100** connects the electric motor **30** with the cut-off switch **28**.

The actuating switch **26** is preferably positioned within the teller's booth **14** and has a foot pedal **102** pivotally supported on the base **104** containing a switch actuatable by the pedal **102**. A cable **106** connects the switch **26** with a source of electrical power while a cable **108** connects the switch **26** with the cut-off switch **28** and electric motor **30**. The electric motor **30** is connected in circuit with the source of power by the cables **100**, **108**, **106**, when the switches **26**, **28** are closed.

Inasmuch as the third cable **72** has its downwardly extending portion **82** connected to the winch **92**, actuation of the switch **26** by holding the pedal **102** down will result in energizing the electric motor **30** which will operate the winding means **32** for winding of the cable **82** about the winch **92**, thereby effecting upward movement of the reciprocable locking element **22** and closure element **62**.

A cable **110** is connected to an intermediate portion of the downwardly extending cable portion **82** and has its other end connected to the lever **112** of the cut-off switch **28**, as best seen in Figure 3. The cut-off switch **28** is substantially of conventional form but is provided with a pair of clamping fingers **114** for maintaining the lever **112** in its uppermost position, and releasing the lever **112** for pivoting about the pin **116** upon pulling of the cable **110** in response to downward movement of the cable portion **82**. The lever **112** is adapted to be manually set in its uppermost position. It will thus be seen that when the closure and locking elements reach their uppermost positions, the cable **110** will be under tension and will actuate the cut-off switch, thereby opening the circuit to the electrical motor **30** and preventing further winding of the winding means **32**.

Another cable **118** is connected to an intermediate portion of the downwardly extending cable portion **82** and is engaged over the pulley **120** supported on the bracket **122** secured to the underside of the floor **52** of the building structure **10**. The cable **118** has its free end connected to the brake band **124** which is engaged over the brake drum **96** and has its opposite end secured to the angulated bracket **126**. The bracket **126** is fixedly secured to the upper end of the upstanding bearing element **88**.

In view of the foregoing, it will be seen that when the cut-off switch **28** is actuated, the brake band **124** will be frictionally engaged with the brake drum **96** whereby further rotation of the winding winch and electrical motor will be prevented in either direction.

Looking once again at Figure 4, it will be seen that when the locking elements **42** are reciprocated upwardly, the beveled ends **39** will move upwardly and be inter-

posed in the path of the revolving doors **20** whereby rotation will be prevented. Should the upper ends **39** of the locking elements **42** be in line with a door disposed thereover, the beveled end **39** will engage the beveled face **40** of the underside of the revolving doors to revolve the door from obstructing position whereby the continued upward movement of the locking elements may be accomplished.

Any conventional means, not shown, may be provided for reversing the motor **30** to provide for operating the winch **92** to unwind the cable **82**. When the cable **82** is thus unwound, the brake drum **96** will frictionally rotate in the brake band **124** until tension is relieved on said cables **82**, **118** sufficiently for the brake band **124** to release said drum **96**. The elements **42**, **64** will descend by gravity as the cable **82** is unwound and take up slack in the cables **54**, **56**, **82**.

In view of the foregoing description, taken in conjunction with the drawings, it is believed that a device has been provided which will accomplish all of the objects hereinabove set forth.

Having described the invention, what is claimed as new is:

1. Locking means for a closure having opening movement comprising an elongated member slidably mounted for projection endwise into the path of opening movement of the closure, cable wind-up means for projecting said member including an operating motor and a pull cable operatively connected to said member to project the same, a switch for energizing said motor, a cut-out switch for said motor, means for opening said cut-out switch when said member has been projected, directly connected to and operated by pull of said cable, a brake for said wind-up means, and means operated by said cable to set said brake when said member is projected.

2. Locking means for a closure having opening movement comprising an elongated member slidably mounted for endwise projection into the path of opening movement of the closure, cable wind-up means for projecting said member including an operating motor and a pull cable operatively connected to said member to project the same, a switch for energizing said motor, a brake for said wind-up means, and means directly connected to and operated by said cable to set said brake when said member is projected.

3. Locking means for a closure having opening movement comprising an elongated member slidably mounted for projection endwise into the path of opening movement of the closure, cable wind-up means for projecting said member including an operating motor and a pull cable operatively connected to said member to project the same, a switch for energizing said motor, a cut-out switch for said motor, means for opening said cut-out switch when said member has been projected, directly connected to and operated by pull of said cable, a brake for said wind-up means, and means operated by said cable to set said brake when said member is projected, said means for opening the cut-out switch comprising a cable connection between said pull cable and cut-out switch.

4. Locking means for a closure having opening movement comprising an elongated member slidably mounted for endwise projection into the path of opening movement of the closure, cable wind-up means for projecting said member including an operating motor and a pull cable operatively connected to said member to project the same, a switch for energizing said motor, a brake for said wind-up means, and means directly connected to and operated by said cable to set said brake when said member is projected, said last means comprising a flexible pull connection between said cable and said brake.

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