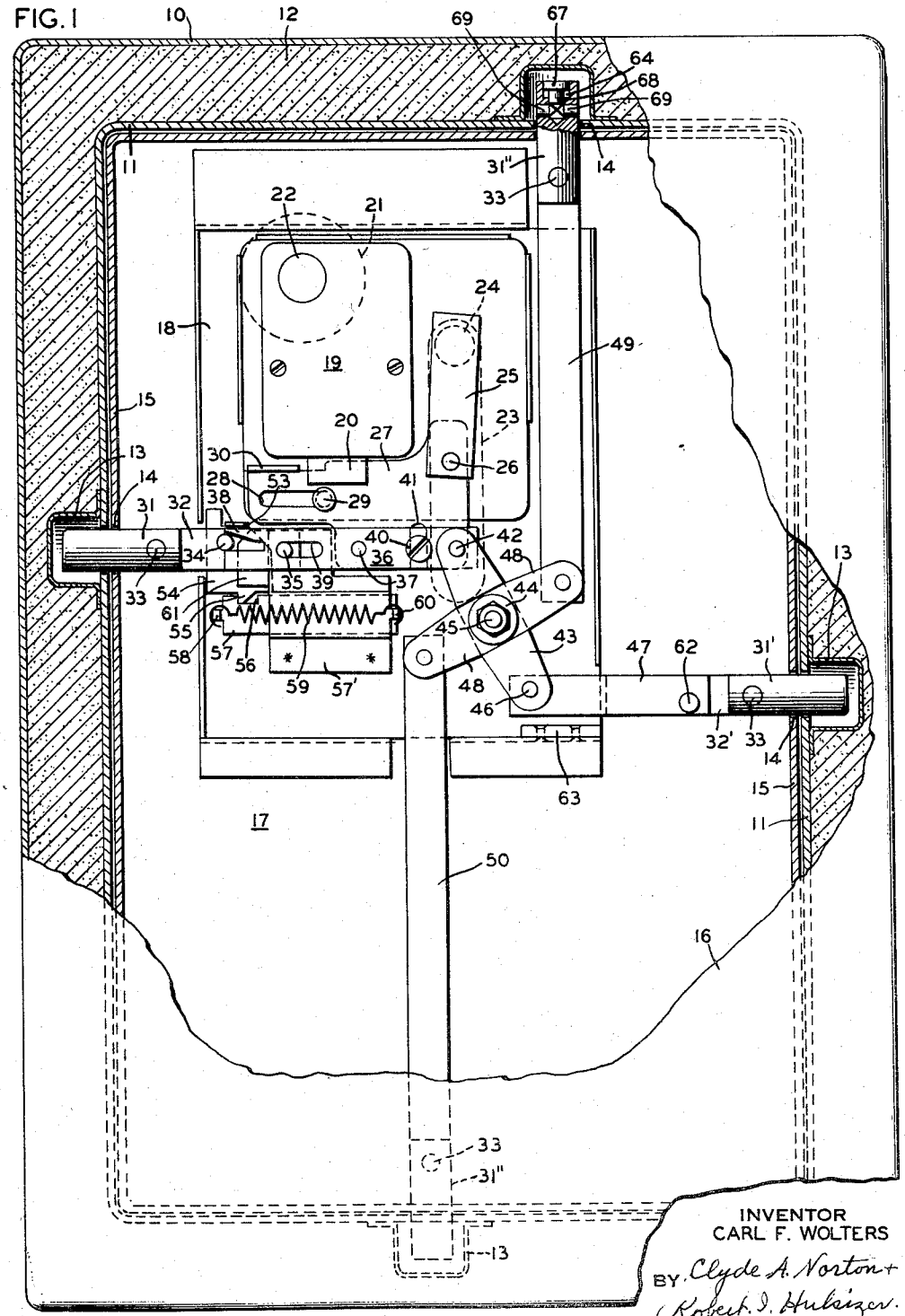
Aug. 2, 1960 C. F. WOLTERS 2,947,160

BOLT RELOCKING DEVICE FOR SAFES

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FIG. 1



INVENTOR
CARL F. WOLTERS
BY Clyde A. Norton +
Robert J. Hulsizer.
ATTORNEY

Aug. 2, 1960 C. F. WOLTERS 2,947,160

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FIG. 2

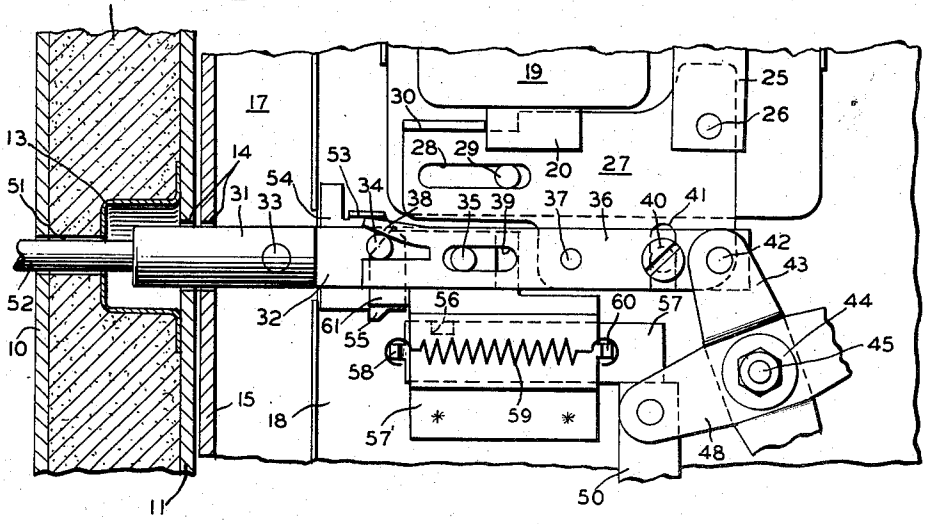


FIG. 3

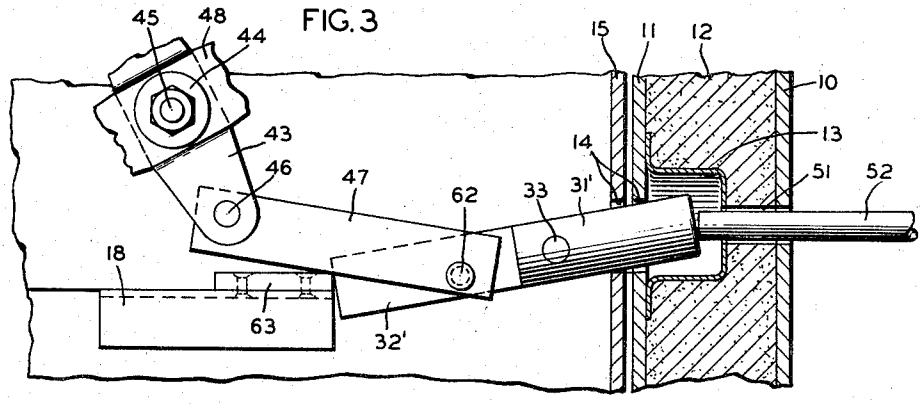
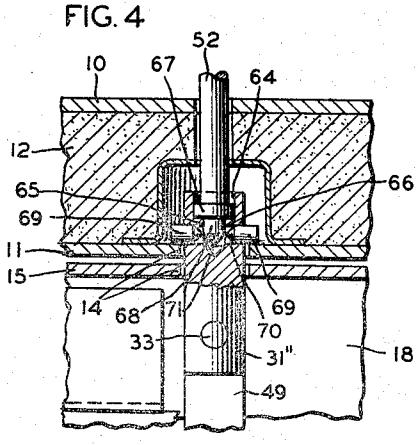


FIG. 4



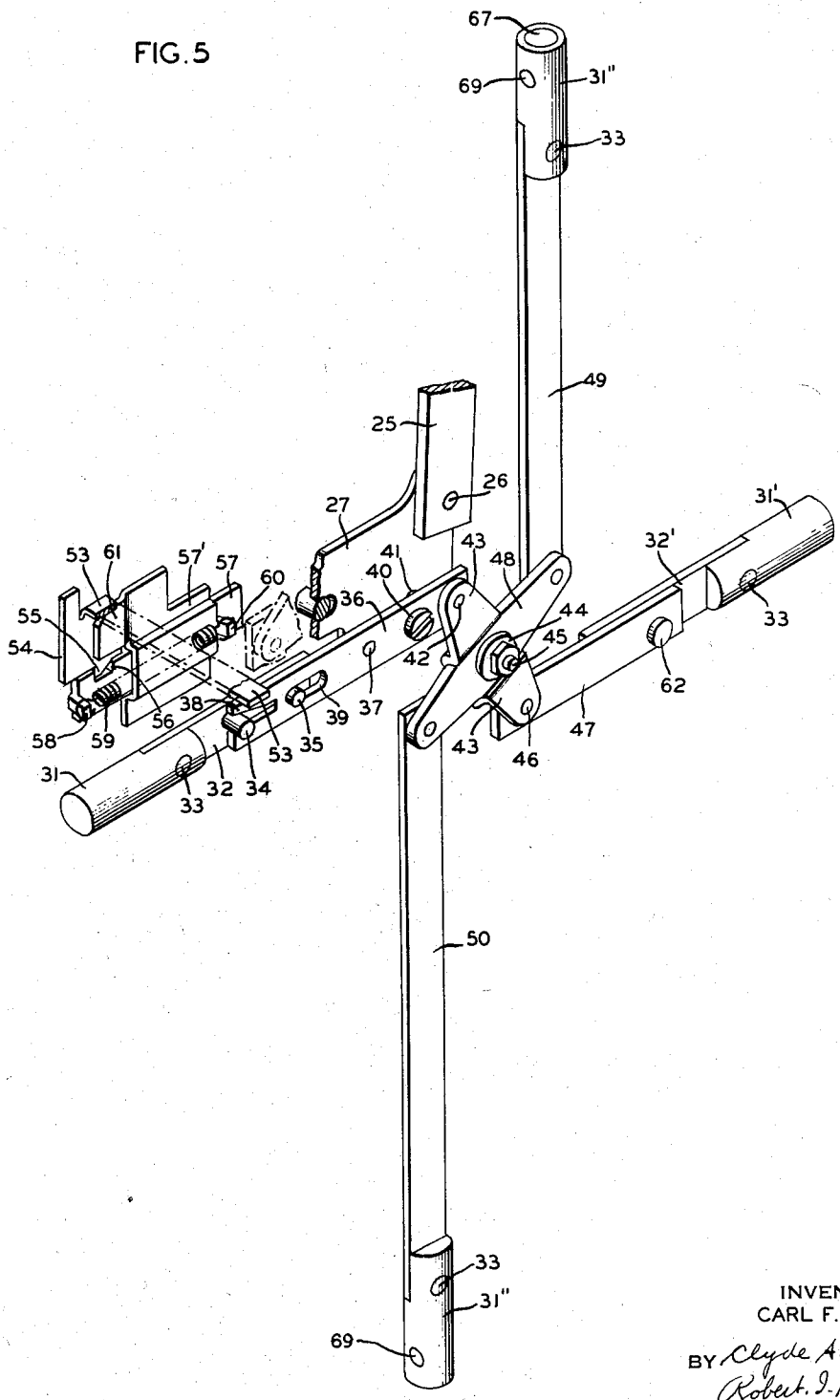
INVENTOR
CARL F. WOLTERS
BY Clyde A. Norton +
Robert J. Hulsizer
ATTORNEY

Aug. 2, 1960 C. F. WOLTERS 2,947,160

BOLT RELOCKING DEVICE FOR SAFES

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FIG. 5



INVENTOR
CARL F. WOLTERS
BY Clyde A. Norton +
Robert J. Hulsizer
ATTORNEY

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BOLT RELOCKING DEVICE FOR SAFES

Carl F. Wolters, New Canaan, Conn., assignor to Sperry Rand Corporation, New York, N.Y., a corporation of Delaware

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2 Claims. (Cl. 70—1.5)

This invention relates to new and useful improvements in safe locking means and has particular reference to means adapted, after safe has been locked, to prevent the bolts from being retracted when an attempt is made to drill through the walls of the safe to drive the bolts back.

A main object of the invention is to provide means which automatically becomes effective when any bolt is thus illegally even partly retracted to block any further retraction of that bolt and all the others.

In general each bolt has associated therewith mechanical means which is moved immediately upon any attempt to drive the bolt back from the outside of the safe and this movement is so associated with the cooperative elements within the safe that further retractive movement is prevented. Several forms of means are illustrated to activate what I choose to call the relocking means. In one form a lock slide is released immediately upon the initial illegal retractive movement of a bolt and said slide is moved to a position where it blocks any retractive movement of a linkage associated with all the bolts.

In another form the end of the bolt is provided with a depressible plate which, when depressed, will project one or more locking plugs laterally from the bolt to prevent it from being fully retracted from the recess in which it is disposed when in locking position.

Still another form involves pivoting the bolt and an associated extension plate on a connecting link by an offset pivot point whereby any attempt to drive the bolt back will cause the extension plate to rock sufficiently to dispose an inner end thereof closely adjacent a fixed blocking plate within the safe thus preventing further retractive movement.

It is to be borne in mind that these several means become almost immediately effective so that the slight retractive movement necessary to bring them into play is not nearly sufficient to retract the bolts completely free from their recess.

The present preferred form of the invention is illustrated in the drawings of which,

Fig. 1 is a vertical cross section through a safe, with the rear wall broken away and looking toward the front door of the safe;

Fig. 2 is an enlarged partial section showing one means of relocking a bolt;

Fig. 3 is a similar view showing another means of relocking a bolt;

Fig. 4 is a similar view showing still another means of relocking a bolt; and,

Fig. 5 is a partial enlarged perspective of the mechanism.

Referring now to the specific forms of the relocking means shown in the drawings, it will be seen that there is provided a safe casing of spaced steel walls **10** and **11** with intervening fire-proof material such as cement **12**. This casing is provided with metal lined recesses **13** to receive the ends of the locking bolts. Alined apertures **14** are provided both in the inner wall **11** and the closely

adjacent wall **15** of the door of the safe to permit the passage of the bolts into the recesses.

In Figure 1 the rear wall **16** of the safe is cut away to show the rear face **17** of the wall of the door and to this rear face a supporting plate **18** is suitably spotwelded. On this plate **18** the casing **19** to the usual combination lock is fastened. This lock has a bolt **20** adapted to be projected downwardly when the knob **21** of the combination lock on the outside of the door is turned on shaft **22**. In Figure 1 the bolt **20** is shown in its operative locking position. Also on the outside of the door is a handle **23** fixed to a rotatable shaft **24** extending through the wall **17** and the plate **18** and having fixed to its inner end a dependent arm **25** which is pivotally connected at **26** to a slidable plate **27**. This plate has a slot **28** therein in which rides a headed pin **29** fastened to the plate **18** whereby the movement of the plate **27** under the direction of the swinging arm **25** is guided. This plate **27** also has a horizontal extending flange **30** at its left hand upper edge lying to the left of the bolt **20** when the bolt is in its operative position so that no movement of the plate **27** is possible when the bolt is in this position.

When the bolt **20** is retracted into its casing there is no obstruction to the sliding movement to the right, as viewed in Figure 1, of the plate **27** which then can be moved by the swinging of the handle **23** on the outside of the door to retract the bolts.

Each bolt on the outer portion thereof which enters the recess **13** is in the form of a solid cylinder **31** which is cut away at the rear end thereof to form a flat surface against which an extension plate **32** is disposed and fastened thereto by a rivet **33**. In this respect and as thus far described the construction of all the bolts is the same. However, further description of the bolt construction and operation will vary because there are provided three forms of means to prevent the illegal forcing of the bolts from the outside of the safe.

With special reference to the left hand horizontal bolt **31** shown in Figures 1, 2 and 5 the extension plate **32** thereof is provided with two spaced pins **34** and **35**. These pins are operatively related to a connecting link **36** which at **37** is pivoted to the plate **27** and at its left end is formed like a fork, the upper arm **38** of which is much thinner than the lower arm and is much more readily laterally displaceable under applied pressure. When the bolt **31** is in the projected position shown in Fig. 2 the pin **34** lies snugly between the arms of this forked left end of the link plate **36**. The pin **35** rides in a slot **39** in the link plate **36** to guide the movement of the extension plate **32**. At the right end of the connecting link **36** it is provided with a headed pin **40** which is disposed for sliding movement in an open ended slot **41** in the lower edge of plate **27** as shown. In the extreme right end of the connecting link **36** it is pivotally connected by pin **42** to an arm **43** fixed to a sleeve **44** rotatable on a shaft **45** fixed, in any suitable manner, to the supporting plate **18**.

This arm **43** extends beyond the sleeve **44** and at its other end is pivotally pinned at **46** to a connecting link **47** related to the right hand horizontal bolt **41** in a manner to be later described. Another similar arm **48** is fixed to the sleeve **44** and at its opposite ends is connected to the connecting links **49** and **50** respectively of the upper and lower bolts **31''**, as shown particularly in Figures 1 and 5. It is apparent therefore that any horizontal movement of the plate **27** to the left, as viewed in Figure 2, will rock this pair of arms **43** and **48** to project the four bolts into their recess and similarly any movement of said plate **27** to the right, as viewed in Figure 5, will turn these arms and cause the retraction of the four bolts from their recesses.

Referring back to the operation of the left hand hori-

zontal bolt 31, it is assumed that the arm 23 has been swung to the left, as viewed in Figure 1, and the plate 27 has been moved to the left thus rocking the arms 43 and 48 and projecting the bolts into their recesses as shown in that figure. Now referring to Figure 2, if someone illegally bores a hole 51 through the left side of the safe wall and inserts a suitable tool 52 and drives it in against the end of this bolt 31 this will cause the bolt to move slightly to the right, whereupon the pin 34 will move slightly to the right and will lift the weaker arm 38 of the fork on connecting link 36 and force it against a horizontal flange 53 on a latch plate 54 and thus lift said latch plate. The lower edge of this latch plate is provided with a dependent toe 55 which normally lies in a notch 56 in a locking slide plate 57. This slide plate is housed in a covering plate 57' spot-welded against the supporting plate 18 and provided with an offset channel in which said locking slide plate moves. One end of this locking slide plate is provided with a projecting lug 58 to receive one end of a spring 59 the other end of which is attached to a projecting lug 60 on the other end of the cover plate 57'. This cover plate 57' has a laterally projecting portion 61 which confines the vertical movement of the latch plate 54 and the upper edge of this portion 61 acts as a stop for the horizontally projecting flange 53 on the upper edge of latch plate 54 to limit the downward movement of said latch plate.

It is obvious then that this illegal movement of the bolt 31 will release the latch plate 54 and cause the lock plate 57, under the influence of spring 59 to snap to the right until the lug 58 encounters the left edge of the cover plate 57'. This position of the lock plate 57 is shown in Figure 2 and in this position it lies over the upper end of the extension 50 of the lower bolt 31'' thus preventing any rocking of the arms 43 and 48 and thus preventing the full retractions of the bolts from the recess by this illegal means.

Another construction of relocking device is shown in the drawings and is illustrated in connection with the right hand horizontal bolt 31' shown particularly in Figures 1, 3 and 5. The extension piece 32' of this bolt is pivoted at 62 to the connecting link 47 which joins the plate 32' with the lower end of arm 43. It will be noted that the pivot point 62 is disposed substantially below the horizontal mid-line of the bolt 31' and its extension piece 32' as shown particularly in Figure 1. Just below the connecting link 47 at its left end as seen in Figure 1 is disposed a horizontal flange or blocking plate 63 which is fastened in any suitable manner to the lower portion of the supporting plate 18. As seen in Figure 1 the end of the extension piece 32' of this bolt terminates just short of the right end of this blocking plate. If one seeking to illegally open the safe bores a hole in the wall thereof and introduces a rod 52 in the manner above described to try to move the bolt back, it will be seen that any pressure thus exerted, due to the offset disposition of the pivot point 62 will cause the extension piece 32' to swing around this pivot point so that its left end is swung down, as shown in Figure 3 to a position closely adjacent the right end of this blocking plate 63 whereby no more than slight retraction of the bolt is possible.

Still another form of construction which relocks the bolt mechanism, after an attempt to unlock it, is shown in Figures 1, 4 and 5 with particular reference to the upper and lower bolts 31'' shown. In this form of construction, as shown in Figure 1, the outer end of the bolt 31'' is bored to form a chamber 64 and the bottom of said chamber is apertured as at 65 to connect the chamber 64 with the transverse passage 66 therebelow in the bolt. Snug fitting plate 67 is disposed for movement within the chamber 64 and has an integral dependent portion 68 of reduced diameter to pass through the aperture 65. Normally the plate 67 is disposed in the chamber 64 with its top edge flush with the outer face of the bolt as shown in Figure 1. Normally disposed within the transverse passage 66 are disposed, at outer ends thereof, locking plugs 69 which lie with their outer faces flush with the outer periphery of the bolt as shown in Figure 1. Adjacent ends 70 of these plugs are tapered and the lower end of the reduced portion 68 of the plate 67 is tapered as shown as shown at 71. It is apparent that if someone bores a hole into the bottom or top of the safe, in the manner above described, and introduces a rod or tool 52, this tool will encounter the plate 67 and depress it, which will cause the locking plugs 69 to be forced outwardly, as shown in Figure 4, sufficiently far to lie back of the inner wall 11 of the safe and thus prevent any further movement of the bolt.

It is apparent that in using any one or more of these forms of relocking devices any illegal attempt to retract the bolts by boring through the outer wall of the safe will only permit a very slight retraction of the bolts not sufficient to move them clear of their recess but sufficiently far to cause an alteration in the disposition of the associated parts to positively block any further retraction movement.

What I claim as my invention is:

1. In a safe having a bolt, said safe having a recess into which said bolt extends when advanced to locking position, locking plugs disposed within the bolt and adapted for lateral movement therefrom into said recess, and means on the bolt and moved when force is applied to said means through the walls of the safe to contact and advance said plugs from the bolt into said recess and prevent the retraction of the bolt from the recess.

2. In a safe having a bolt, said safe having a recess into which said bolt extends when advanced to locking position, locking plugs disposed within the bolt and adapted for lateral movement therefrom into said recess, the adjacent ends of said plugs being tapered, a plate disposed in the top of the bolt and adapted to be moved inwardly when force is applied to the plate through the walls of the safe, the inner end of said plate being tapered and cooperating with the tapered ends of said plugs to advance them into the recess and block the retraction of the bolt therefrom.

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