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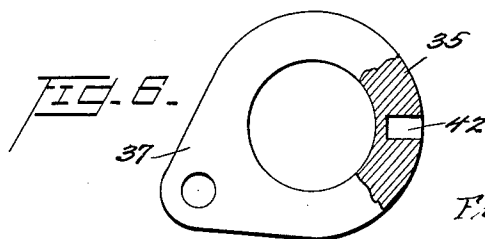
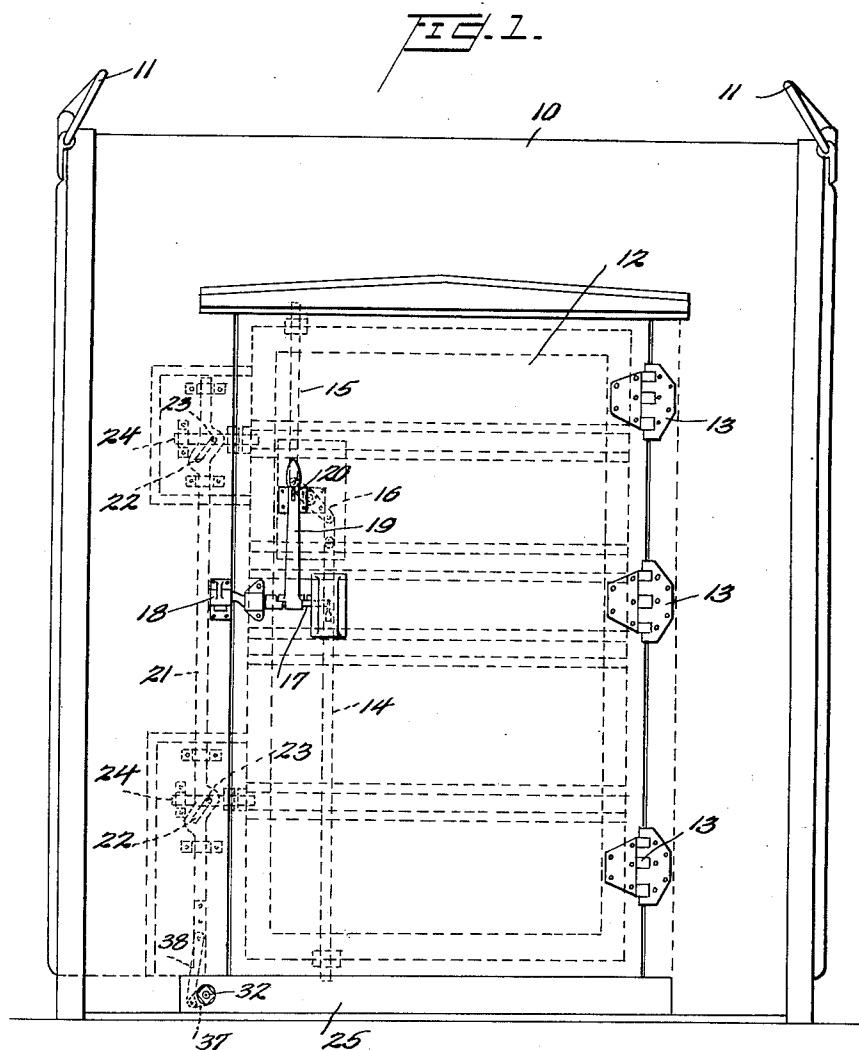
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SAFETY LOCKING MECHANISM

Filed Nov. 9, 1928

2 Sheets-Sheet 1



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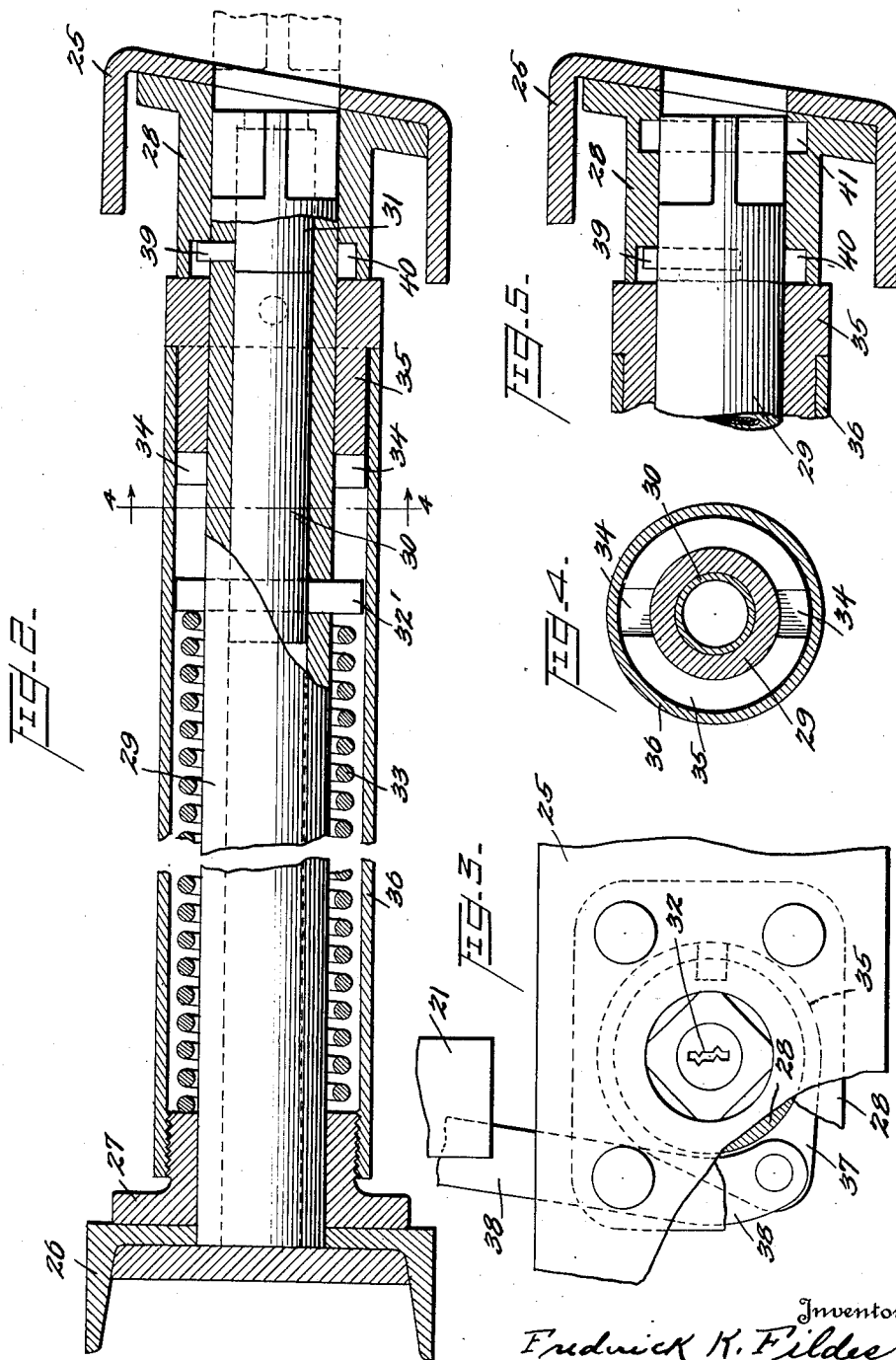
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SAFETY LOCKING MECHANISM

Application filed November 9, 1928. Serial No. 318,204.

The present invention relates to door locking mechanism and particularly to safety locking mechanism for heavy portable containers such as are now employed on railways for shipping fractional car load lots.

The object of the invention in general is to provide a safety locking mechanism for containers of this type which is readily and conveniently operable by authorized persons, but which constitutes an effective safeguard against any unauthorized operation.

For the attainment of this object, the invention provides a safety door lock comprising an operating shaft mounted for rotary and longitudinal sliding movements beneath the bottom of the container and having an operative connection with the door locking mechanism, the said shaft being adapted to be locked in a retracted position in which it is ineffective to operate the door locking mechanism. The lock for holding the shaft in its retracted inoperative position is preferably a cylindrical lock mounted in the outer end of the shaft and requiring, as an additional safeguard, two keys for its unlocking. A safety lock of this character can be conveniently operated by authorized persons while the container is resting on a car or other platform, but renders it a practical impossibility to unlock the container by other than the authorized means.

More specific objects and advantages of the invention will be pointed out hereinafter. Referring to the accompanying drawings for a description of one practical embodiment of the invention:

Fig. 1 is a front elevation of a sheet metal container equipped with door locking mechanism embodying my invention;

Fig. 2 is a sectional view showing details of the locking mechanism;

Fig. 3 is an end elevation of the mechanism shown in Fig. 2, parts being broken away and shown in section;

Fig. 4 is a section on line 4—4 of Fig. 2;

Fig. 5 is a sectional view showing a slight modification of the locking mechanism; and Fig. 6 shows a detail.

While the invention is directed to a safety door lock of more or less general applica-

tion, I have chosen for illustration in Fig. 1 a sheet metal container suitable for use in transporting goods and merchandise by rail. It will be understood that a number of such containers will be carried by a single car of the flat, or flat-bottom type, each container being loosely held on the car by specially constructed guides with the front of the container facing towards the side of the car. The drawings show a container 10 of this character provided with lifting bails 11 secured adjacent its upper edges, whereby the container is adapted to be lifted on and off a car by means of a crane or other lifting device. In the front side of the container is a door opening adapted to be closed by a door 12 which is pivoted on a vertical axis by hinges 13. The door may be provided with door operating and locking mechanism of the construction disclosed in my copending application, Ser. No. 280,056, or, in so far as the present invention is concerned, with any other suitable operating and locking mechanism. The mechanism illustrated comprises a pair of bolts 14 and 15 mounted for vertical sliding movement on the inside of the door and connected at their inner ends by short links to a rocker 16, whereby the bolts are adapted to move simultaneously and in opposite directions. These bolts are operated by a shaft 17 provided with an arm at its inner end which projects thru a slot in the door and engages a slot in bolt 14, the outer end of said shaft being offset to form a crank which is adapted to engage a keeper 18 mounted on the container at the edge of the door opening. An operating handle 19 is mounted on shaft 17, and when the door is closed and locked, a staple 20 projects thru a slot near the extremity of the handle and has a perforation thru which a padlock or seal may be passed.

In addition to the door locking mechanism just described the door is provided with additional locking mechanism to which my safety lock is applied, but the details of this locking mechanism also form no part of the invention. This mechanism is indicated by dotted lines in Fig. 1. It comprises a bar 21 mounted for vertical sliding movements

inside the container and adjacent the door opening. This bar is formed with inclined cam slots 22 which engage pins 23 fixed to horizontal bolts 24 which are adapted to be projected into locking engagement with the door and to be retracted therefrom according as the bar 21 is moved down or up. As shown in Fig. 1, the bar is at the limit of its downward movement and the bolts are projected into locking engagement with the door. When the bar is moved upwardly, by mechanism hereinafter described, the bolts 24 will be retracted from engagement with the door, and the latter can then be opened by operating the handle 19 to withdraw bolts 14 and 15.

Referring now particularly to Figs. 2 and 4, the numeral 25 designates a channel bar which forms the base of the container, and the numeral 26 designates a channel bar secured to the bottom of the container parallel to the channel bar 25. Fixed to channel bar 26 is a bearing support 27 and fixed to base bar 25 is a bearing support 28. Rotatable in bearings 27 and 28 is a hollow shaft 29 having a reduced opening in its front end. Secured in the hollow shaft 29 is a spacer tube 30 and mounted in the shaft between the front end of the spacer tube and the reduced opening of the shaft is the barrel 31 of a lock, said barrel having the front end thereof formed with a key slot 32. The lock barrel is held from endwise displacement by its engagement at one end with spacer tube 30 and at its other end with the annular shoulder formed by the reduced opening of shaft 29. Obviously the lock may be mounted and retained by means other than those illustrated. Spacer tube 30 may be secured in shaft 29 by a pin 32' which projects through apertures in the tube and shaft. This pin forms an abutment for one end of a coil spring 33 surrounding shaft 29, the other end of the spring engaging bearing support 27. Pin 32' also performs an additional function, in that it is adapted to engage sockets 34 which are formed in the inner end of a collar 35 rotatably supported on shaft 29 to clutch the collar to the shaft. A tubular casing 36 is screwed at its inner end on bearing support 27 and extends at its other end over a reduced inner portion of collar 35. Integral with the outer end of collar 35 is a crank 37, which is connected by a curved link 38 to the lower end of slotted cam bar 21.

The lock 31 may be of any suitable construction, but as a precaution against unauthorized operation, it is preferably of the two-key type, that is a lock which requires the successive insertion of two keys to effect its unlocking. As shown in Fig. 3, the parts are in locked position, the bolt 39 of the lock being projected into an annular recess 40 of bearing support 28. It will be noted that in this position the outer end of shaft 29 is re-

tracted into the bearing support 28 and is held in such position against the tension of spring 33 by the engagement of bolt 39 in recess 40. In this retracted position of shaft 29 it is inaccessible for operation, but even if by some means it should be rotated, such rotation would be ineffective to raise bar 21 and withdraw bolts 24, for the reason that sleeve 35, thru which shaft 29 is operably connected to bar 21, is in this position disconnected from shaft 29, so that rotation of the latter will have no effect on said sleeve. In order therefore to unlock door 12, lock 31 must first be unlocked by insertion of two different keys, which may be respectively in the custody of two different authorized persons. This withdraws bolt 39 and permits spring 33 to project shaft 29 into the position indicated by dotted lines in Fig. 2. In this position pin 32' is engaged with sockets 34 in sleeve 35, clutching the latter to shaft 29. A socket wrench, or other turning instrument, can now be applied to the polygonal extremity of shaft 29, whereby the latter may be rotated in a clock-wise direction, looking at Fig. 1, which will turn the crank 37 upwardly and raise bar 21, withdrawing bolts 24 from engagement with door 12. The door can now be opened by operating handle 19 to withdraw bolts 14 and 15 from their locking positions.

The lock indicated in Fig. 2 is not a spring lock and requires keys to lock it as well as unlock it. I may however use a spring lock, and have indicated such alternative use by showing in Fig. 5 another annular recess 41 in bearing support 28, bolt 39 being adapted to project into this recess when shaft 29 is in projected position, so as to lock the shaft in projected position.

It may be desirable at times to unlock the container door when the keys are not available. In order to provide for such a contingency, I form a socket 42 (Fig. 6) in sleeve 35, this socket being formed in the enlarged portion of the sleeve outside of the casing 36, so that it may be entered by the end of a suitable bar. By this means the bar 21 can be operated to withdraw bolts 24, but it is to be observed that this mode of withdrawing said bolts cannot be carried out so long as the container rests on a car or platform, and hence the provision of this alternative mode of operation does not detract from the safety of the lock, as it is quite a job to lift the container from its support, and no thief or robber would have the means of doing so.

I claim:

1. In combination with a portable container having a door in one side, bolts mounted in the inside of the container and adapted to be projected into locking engagement with the door and to be retracted therefrom, a vertically slidable bar mounted on the inside of the container having cam slots

engaging said bolts to effect their operation, a shaft rotatably and slidably mounted under the bottom of the container at right angles to the plane of said door having a polygonal extremity adapted to project from the container and to be retracted within the plane of the front wall thereof, a collar rotatable on said shaft having a crank connected to said vertically slidable bar, lock mechanism mounted in the outer end of said shaft comprising a bolt adapted to be projected into a recess formed in a relatively stationary part of the container when the shaft is retracted, said sleeve being provided with sockets and said shaft having projections adapted to engage said sockets when the shaft is unlocked and moved to its projected position, and a spring for moving said shaft to its projected position.

2. In combination with a portable container having a door in one side, means for locking the door, operating mechanism for said means comprising a shaft mounted under the bottom of the container for rotary and longitudinal sliding movements, said shaft extending transversely to the plane of the door; means for rendering said shaft ineffective to operate said locking means when said shaft occupies a retracted position in which its outer extremity is inaccessible, and a key lock for holding said shaft in said retracted position.

3. In combination with a portable container having a door in one side, means for locking the door, operating mechanism for said means comprising a shaft mounted under the bottom of said container for rotary and longitudinal sliding movements, means for rendering said shaft ineffective to operate said locking means when said shaft occupies a retracted position, a spring tending to move said shaft to a projected position, and a key lock for holding said shaft in its retracted position.

4. In combination with a portable container having a door in one side, means for locking said door, operating mechanism for said means comprising a shaft mounted at the bottom of said container for rotary and longitudinal sliding movements, means for rendering said shaft ineffective to operate said locking means when said shaft occupies a retracted position, a spring tending to move said shaft to a projected position, and a lock mounted in the outer end of said shaft having a bolt adapted to engage a relatively stationary part to hold the shaft in a retracted position.

5. In combination with a portable container having a door in one side, means for locking the door, operating mechanism for said means comprising a shaft mounted under the bottom of the container for rotary and longitudinal sliding movements, means for rendering said shaft ineffective to operate

said locking means when said shaft occupies a retracted position in which its outer extremity is inaccessible, and a lock for holding said shaft in retracted position.

6. In combination with a portable container having a door in one side, means for locking the door, operating mechanism for said means comprising a shaft mounted under the bottom of the container for rotary and longitudinal sliding movements, said shaft having a non-circular outer end adapted to be engaged by a socket wrench when the shaft is projected, and a lock for holding said shaft in a retracted position in which its outer end is inaccessible.

7. In combination with a portable container having a door in one side, means for locking the door, operating mechanism for said means comprising a shaft mounted under the bottom of the container for rotary and longitudinal sliding movements, the outer end of said shaft being adapted to be engaged by a suitable instrument to effect its rotation for unlocking the door when the shaft is projected, and a lock for holding the shaft in a retracted position where its outer end is inaccessible.

In testimony whereof I hereunto affix my signature.

FREDERICK K. FILDES.