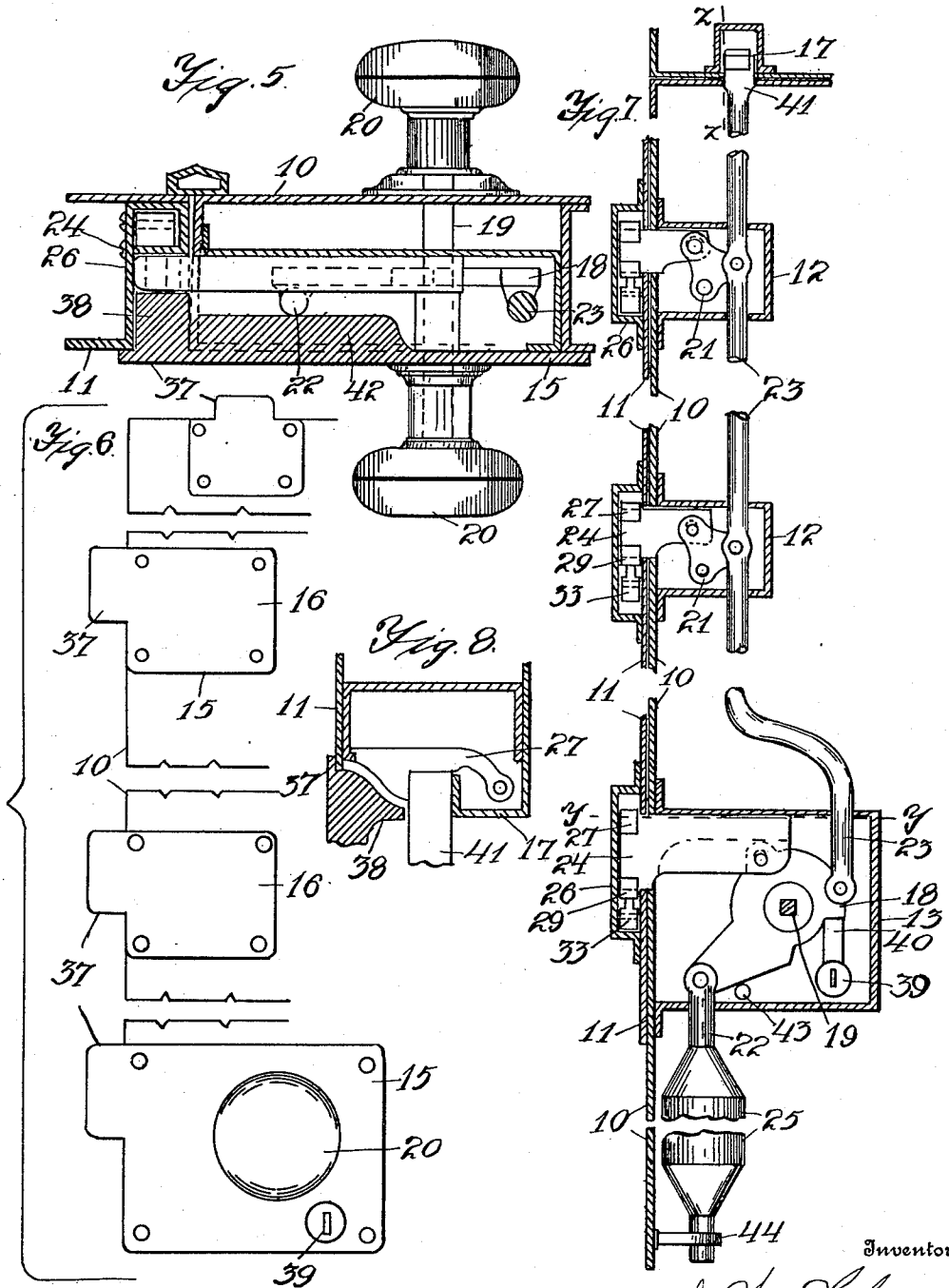


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 KEEPER FOR DOOR BOLTS.
 APPLICATION FILED MAY 27, 1908.

997,257.

Patented July 4, 1911.

2 SHEETS—SHEET 2.



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KEEPER FOR DOOR-BOLTS.

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To all whom it may concern:

Be it known that I, ARVID W. EKBERG, a citizen of the United States, residing at Jamestown, in the county of Chautauqua and State of New York, have invented certain new and useful Improvements in Keepers for Door-Bolts, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

The invention relates to door locks and is a divisional application of my invention, as shown in my application Serial Number 421,980 for a gravity lock; and the objects of my improvement are, first, to provide a gravity lock for fire-proof swing doors which is positive or absolute in its action, and toward this end there is entire omission of all springs or parts whose power to act could be overcome by intense heat; second, to provide a plurality of novel locks operable from a common center or master lock and from either side of the door; and third, to provide a novel keeper or bolt latching mechanism.

The action of the lock is accomplished entirely by a weight and crank arm over which intense heat has no effect. The lock is shown applied to a door of sheet metal construction in which the hollow sheet metal gives ample room for the action of the parts. It is apparent, however, that a wooden cored, or sheeted door may be channeled along the face of the stile to allow use of the connecting parts of the plurality of locks within the door, and also within the door jamb for the keeper mechanism; or the parts may be supplied with a casing suitable for attachment on the outside of the door, the same as a rim lock. The plurality of locks are rendered necessary in order to securely hold the door along its front edge very much as it is held along the rear edge by its hinges, as against the warping power of intense heat. It is apparent that if the door was only locked at one point midway of its height, the upper and lower corners of a metallic door might be warped out of shape by the intense heat

and thereby allow the flames to enter through the opening so made. This would destroy its fireproof quality. By arranging a plurality of locks or latches at the side, top, or bottom of the door, this danger is entirely overcome.

In the drawings, Figure 1 is an elevation of the escutcheons of a series of locks; and Fig. 2 is a vertical sectional view of the door edge through said series of locks, and showing the latches or keepers for the bolts. Fig. 3 is a sectional view of one of the latches at line X X in Fig. 2, showing the parts in normal locked position; and Fig. 4 is a similar sectional view showing the gravity action of the latches in the process of engaging the bolt. Fig. 5 is a sectional view at line Y Y in Fig. 7. Fig. 6 is a front elevation of the escutcheons of a different arrangement of a series of locks from that shown in Figs. 1 and 2, the door being broken away between the locks; and Fig. 7 is a vertical sectional view of the edge of the door showing the arrangement of a similar series of locks. Fig. 8 is a sectional view at line Z Z of the latch at the top of the door.

Similar numerals refer to corresponding parts in the several views.

The numeral 10 indicates the door, and 11 the edge of an adjacent door, or door jamb or casing, which parts are here shown as constructed of hollow sheet metal and the bolt and latch mechanisms are inserted within the same in suitable openings in the edges of the parts.

The lock is preferably composed of a plurality of parts according to the size and especially the height of the door. Thus, for example, in a common sized door the three locks 12, 13 and 14, as shown in Figs. 1 and 2, will hold the edge of the door firmly in place, the three locks being so spaced along the edge of the door as to securely hold the same. It is apparent that the large central lock 13 may be used by itself to form a simple and convenient bolt or lock. The locks 12, 13 and 14 are covered by suitable escutcheons or face plates 15 and 16, the escutch-

eons being of proper size to cover the lock and latch.

Doors for fire walls in shops and foundries oftentimes reach the height of 12 to 15 feet. For such doors it is apparent that a series of auxiliary locks are necessary above the main central lock 13. These are shown in Figs. 6 and 7 in which the master lock 13 is beneath the auxiliary locks 14 and an additional lock 17 is placed at the top of the door and operated in a manner herein-after set forth.

The locks are constructed in the following manner: The bolts 24 are preferably made of sufficient strength to firmly hold as against any strain that may be put upon them, usually about three-eighths inch in thickness by three-fourths inch in width, and of sufficient length to accomplish their purpose and have about a three-fourths inch throw. The front edges of the bolt are made square to receive and hold hook latches or keepers 27 and 29. The rear edges of the bolt are preferably rounded so as to easily press through between the latches. The bolt 24 for the central lock 13 has preferably a lengthwise channel along its lower side to receive therein the circular crank 18 which crank is pivotally attached to said bolt within said channel by means of a suitable pin. The bolts 24 in the auxiliary locks 14 and 16 are slid back and forth by means of bell cranks 21 which are attached to circular crank 18 of lock 13 by means of connecting rods or links 22 and 23, pivotal connection being given at all these connection points by means of suitable pins and the connection of the cranks 18 and 21 to their respective bolts is also arranged by providing elongated openings for the pins, preferably in the bolts so that there will be sufficient take-up at the pivotal point and the bolts will be caused to slide horizontally back and forth without the circular movement of the cranks being imparted to them, as would be the case if there was no take-up or elongation of the opening. The action of these parts is attained by means of a cross shaft 19 through the crank 18 of the master lock 13 and knobs 20 on shaft 19 each side of the door, crank 18 being connected to bell crank 21 by means of links 22 and 23.

A weight 25 is provided on link 22 and the links are pivotally attached to the different cranks, as shown, so that the weight 25 normally holds the bolts 24 in an extended position beyond the edge of the door and the only manner in which the bolts 24 can be withdrawn from this normal extended position is by turning knobs 20 and simultaneously operating the cranks, thereby withdrawing the bolts from their extended position. It is obvious, however, that as

soon as the knob 20 is released the weight 25 will cause the cranks and bolts to return to their normal extended position. It is also apparent that link 23 may be extended and pivotally attached to a series of locks, as shown in Fig. 7, and that the upper end 41 of said rod or link may be used as a bolt for a latch 17 at the top of the door. The weight 25 in this arrangement of locks is preferably attached to a rod on an extended arm 42 on crank 18, so as to obtain a more powerful leverage over the lengthened link 23 and such a plurality of locks. Stop pins 43 are so placed as to limit the movement of the cranks. A staple 44 guides weight 25.

Latches 17 and 26 are provided on the edge of the adjacent double door or door jamb 11 for each of the bolts 24 and 41. Latch 26 is preferably composed of the upper and under latch parts 27 and 29. Upper latch part 27 is pivotally attached at 28 to the supporting plate. The front end has a downwardly extending angular catch to engage the front corner of the bolt 24. The under latch part 29 has an upwardly extending rear end which is pivotally attached at 30 and an upwardly extending front catch to engage the front side of bolt 24. The oppositely inclined rear ends of these two latch parts are so turned toward one another in order to preserve a straight draw on the bolt so that the latch parts will not slip or draw off from the same. It will have a positive engagement on the bolt.

Each of the latch parts 27 and 29 has an inclined or sloping front portion 31 which is engaged by the bolt as the door is closed and the rounded inner edges of the bolt strike the same and press the two latches apart. It is apparent that the upper latch 27 will fall of its own weight and its front end is caught by an inward projecting lip 32 on the door which holds it in position when the bolt is withdrawn. The lower latch 29 is operated by a weight lever 33, which is pivotally attached at 34 and has a leverage on the under side of latch 29, to allow the latch sufficient movement to escape the bolt as it presses through between the latch parts. The outer end of the latch engages a lip 35 on the door similar to lip 32 and for a similar purpose. A single latch 27 is all that is necessary to hold bolt 41 at the top of the door.

The casing or door 11 has an opening 36 in its edge which allows the bolt to enter between the latches 27 and 29 while held in the extended position by weight 25. It is apparent that the bolt, while thus firmly held, will press the two latches apart and that when the latches return to normal position because of their gravity action, the bolt will be held firmly and can not be with-

drawn except as it is turned by means of knob 20, thus it is obvious that the bolt can enter between the two latches but can not escape therefrom so long as it extends 5 beyond the edge of the door.

The escutcheons 15 and 16 have an extension 37 which entirely covers opening 36. Extension 37 is preferably so formed on its inner side 38 as to exactly fill the space between the inclined faces 31 of the latches when in their normal locked position, so that said latches can not be tampered with when the door is closed. The extension 38 of extension 37 of the escutcheon is continued in a thickened portion 42 extending toward the knob in order to strengthen part 37. It is apparent that part 37, as the door is closed, will strike on the jamb or adjacent double door each side of opening 36 of the latch simultaneous with the door, striking upon the stop on the jamb and that therefore the extension 37 becomes a parallel stop for the door. It is also apparent that if the extension 37 was not strengthened, it could easily be bent by the slamming of the door shut, and thereby destroy its usefulness in covering the opening to the latch. In order to lock the bolts 24 and 41 so that they can not be withdrawn by turning knobs 20, a cylinder lock 39 with bolt 40 is provided in lock 13 so that the bolt 40 may be placed in locking engagement with the crank 18 and prevent the turning of the crank and hence the consequent withdrawal of bolts 24 from the latches 27 and 29 in all the locks. It is apparent that the cranks always have to be turned to the right to withdraw the bolts. The bolt 40 for lock 39 may enter a slot in crank 18, as shown in Fig. 2, or may bear against a projection on the crank, as shown in Fig. 7.

It is apparent that either one of the latches 27 or 29 would alone be sufficient to hold either bolt 24 or 41 though not as securely as the two latches. Such a modification, however, would not depart from my invention.

The latch 26 takes the place of a striking plate on the door jamb or adjacent door as in double doors and the engagement of the bolt 24 is entirely within this striking plate or latch, thus departing entirely from the usual form of latches or locks as used upon doors at the present time.

In order to withdraw the bolts from their extended position, it is apparent that the links 22 and 23 will invariably have a pulling strain as they are actuated by the master lock. This is essential since if a pushing strain were necessary to withdraw these bolts in order to unlock the door in times of intense heat when the rods become so heated that they will bend under strain, it is ap-

parent that the pushing strain would cause the links to bend and thereby block the action of the lock, rendering the operator unable to withdraw the bolts. With my arrangement of these bolts and link connection so that there is invariably a pulling strain, it is apparent that no such mishap can happen. It is also obvious that all these parts may be attached to the outside of the door and a suitable casing provided for them so that they may be attached to any form of door desired.

I claim as new:

1. In a latch, a suitable bolt, a hooked keeper engaging said bolt from its lower side, and a weighted actuating lever for said hooked keeper.

2. In a latch, a suitable bolt, hooked keepers having pivotal attachment to be pressed apart by said bolt and hold the same, the lower of said keepers having a weighted actuating lever.

3. A latch comprising a suitable bolt, gravity actuated keepers pivotally attached on the door jamb above and below said bolt to hold the door when closed, said jamb having an opening to admit said bolt between said keepers, and an escutcheon for said bolt extending over said jamb opening and filling the space therebetween.

4. In a latch, a suitable bolt, hooked keepers engaging said bolt on the upper and under sides, and a gravity actuating lever for the under keeper.

5. In a latch, a suitable bolt, pivotally mounted hooked keepers for said bolt, a gravity-actuated lever for the under keeper, said keepers having oppositely beveled fronts to be pressed apart by said bolt.

6. In a latch, a bolt extending beyond the edge of the door, a hooked keeper pivotally mounted on the door jamb horizontally opposite its hooked end when in the locking position, and a suitable stop for said hooked keeper.

7. In a latch, a suitable bolt, gravity actuated keepers for said bolt pivotally attached to the door jamb to be pressed apart by said bolt, and a projection on said door to fill and cover the space between said keepers when in locking position.

8. A latch comprising a suitable bolt, a pivotally attached hooked keeper 29 for the under side of said bolt, and a weighted lever 33 to actuate said keeper, substantially as and for the purpose specified.

9. A latch comprising a suitable bolt 24, hooked keepers 27 and 29 for the upper and under sides of said bolt to be pressed apart thereby, stops 32 and 35 for said keepers, a weighted lever 33 to actuate said under keeper, and a suitable covering for said keepers when in locking position.

10. A latch comprising a suitable bolt, a
keeper for said bolt consisting of a casing 26
having an opening 36 therein to admit said
bolt, hooked keepers 27 and 29 pivotally
5 mounted in said casing horizontally oppo-
site their hooked end when in normal lock-
ing position, a weight-lever 33 pivotally
mounted in said casing to actuate the under
keeper, and a covering 37 having a projec-
10 tion 38 thereon to protect said opening 36,

substantially as and for the purpose speci-
fied.

In testimony whereof I have signed my
name to this specification in the presence
of two subscribing witnesses.

ARVID W. EKBERG.

Witnesses:

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A. W. KETTLE.

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