Sept. 22, 1964 F. ODEND'HAL 3,149,867

DOOR FASTENER

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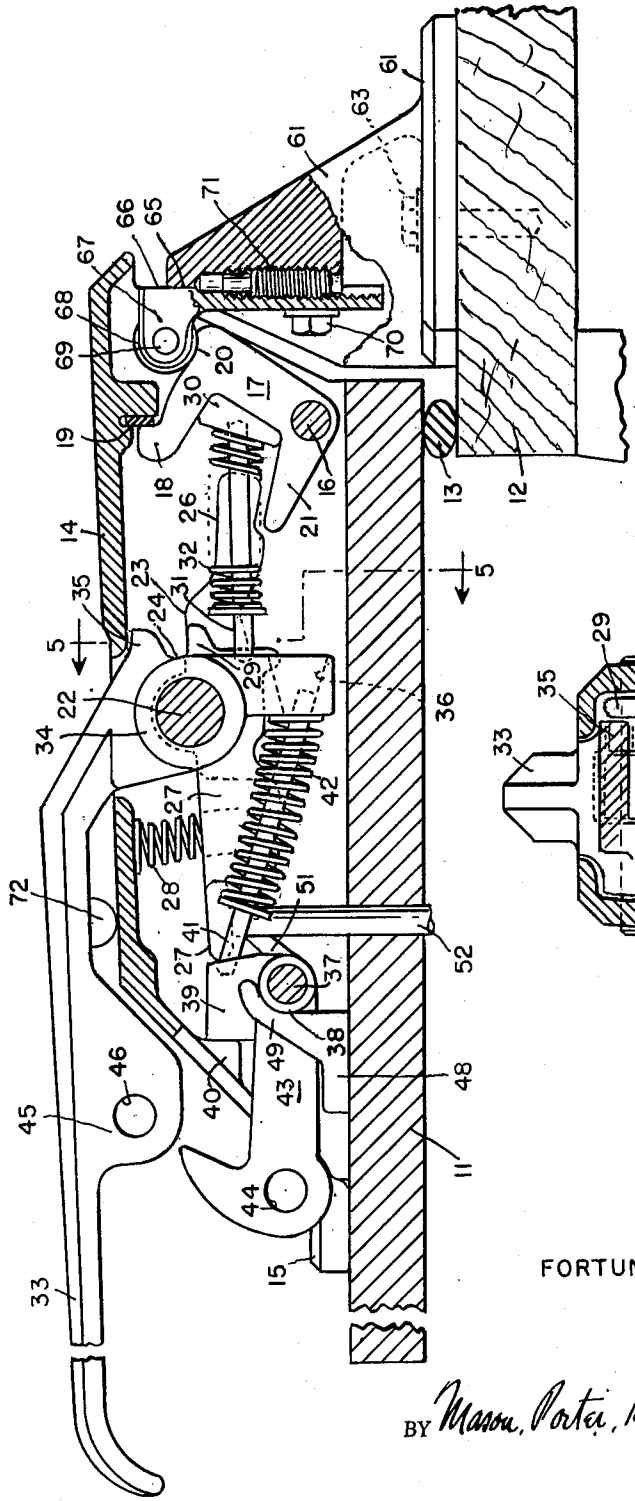


FIG. 1.

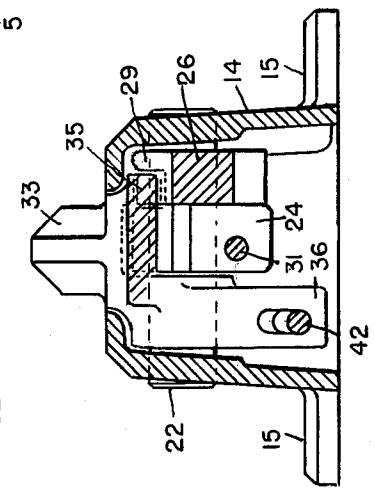


FIG. 5.

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DOOR FASTENER

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FIG. 2.

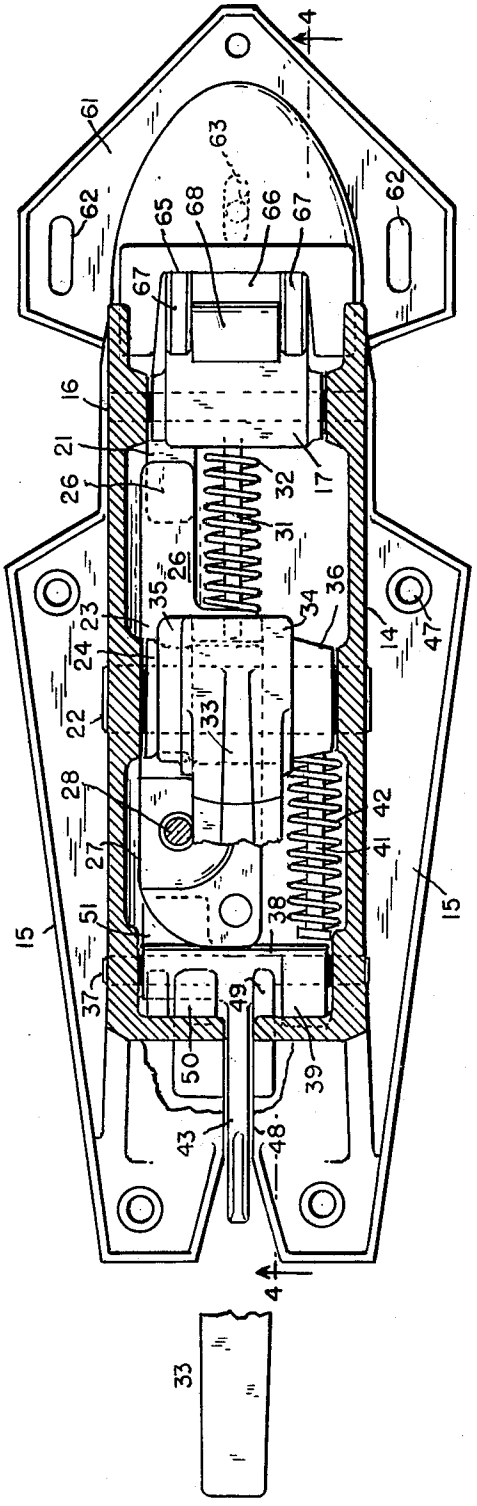
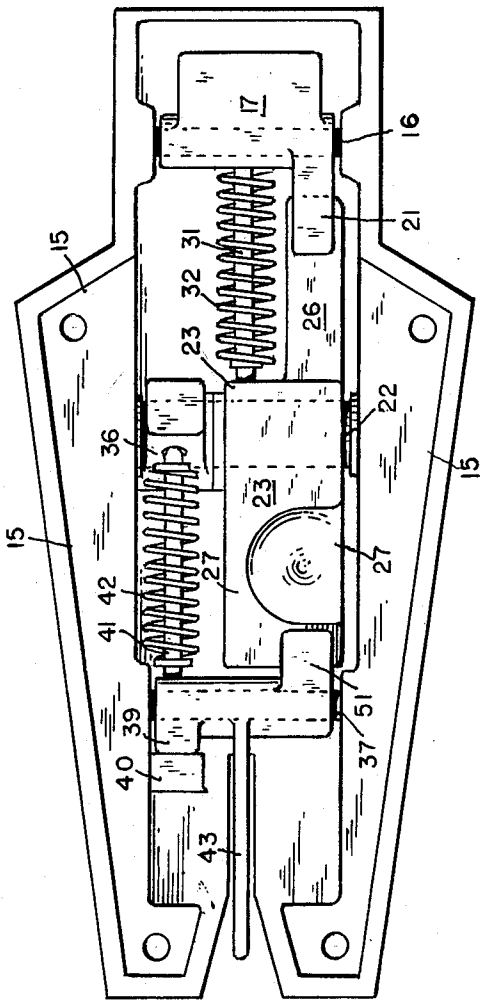


FIG. 3.



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DOOR FASTENER

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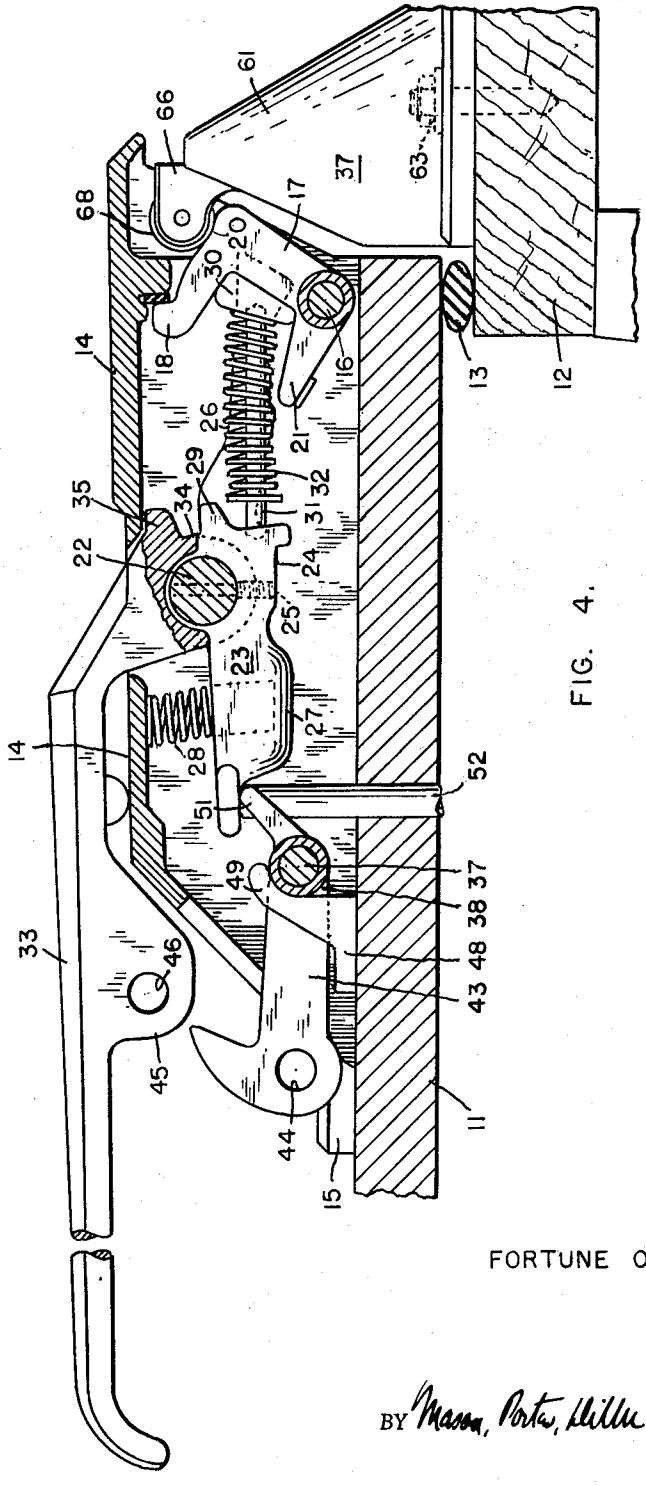


FIG. 4.

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DOOR FASTENER

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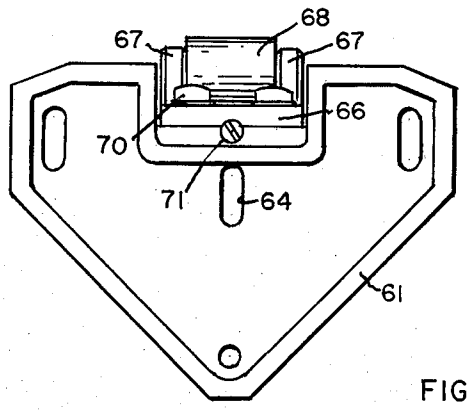


FIG. 7.

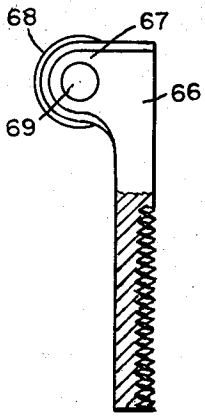


FIG. 6.

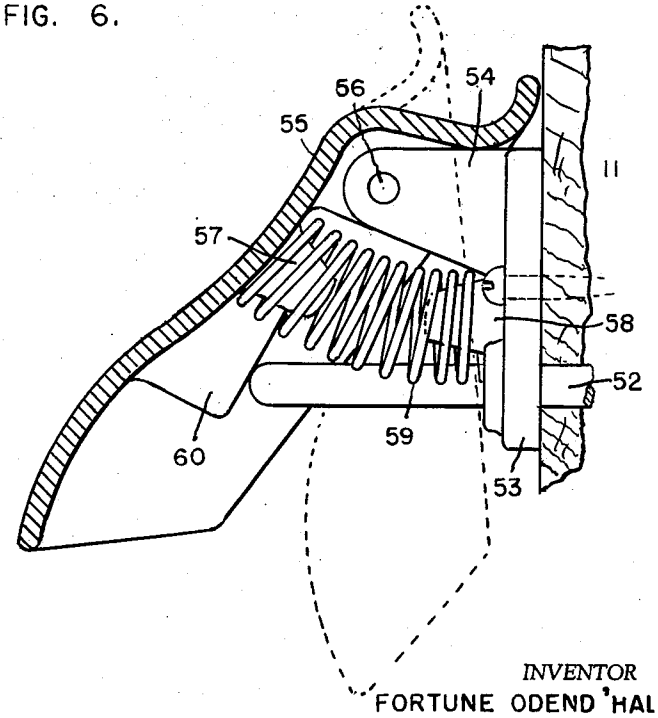


FIG. 8.

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United States Patent Office 3,149,867 Patented Sept. 22, 1964

3,149,867

DOOR FASTENER

Fortune Odend'hal, Hagerstown, Md., assignor to Jamison Cold Storage Door Company, Hagerstown, Md., a corporation of Maryland

Filed Oct. 26, 1961, Ser. No. 147,935
11 Claims. (Cl. 292—226)

The following specification relates to a door fastener of the type used in heavy construction, specifically for latching the door of a cold storage compartment and the like.

Door fasteners of this type must provide firm closing operations to withstand severe operating conditions. Moreover they must be capable of close and precise adjustment, such that there is a minimum leakage of air and loss of the desirable cold or low temperature. Such a door should be capable of being fastened with a padlock or the like, so that unauthorized opening is prevented. At the same time it is essential that the door even when normally closed by the fastener shall be capable of being opened from the interior of the compartment.

One of the objects of this invention is to provide an improved latch retracting means operated by the customary door handle.

Another object of the invention is to provide a spring tension for the latch which will be strongest when the door is closed, but which will be readily reduced in the operation of retracting the latch by means of the handle.

It is a further object of the invention to so interconnect the handle lock and the latch retracting means that the latter is rendered inoperative from the latch side of the door whenever the handle is fastened in the locked position.

A still further object of the invention is to prevent unauthorized removal of the latch mechanism from the door, when the fastener is padlocked.

Among the objects of the invention is to provide an improved operator for the latch retracting means so that when necessary, the latch will be retracted and the door released for opening from within, regardless of the normal provisions for holding the latch in fastened position or regardless of the padlocking.

An incidental feature of the invention is to provide precise spacing between the latch and keeper to enable the door to be held in a position of maximum closure and subject to adjustment for this purpose.

It is also a feature of the invention to provide a concealed guard against the unauthorized removal of the keeper.

The above and other objects of the invention will be readily understood from the following description of the preferred form as illustrated by way of example on the accompanying drawings in which:

FIG. 1 is a side elevation of the improved door latch mechanism and keeper partly in section;

FIG. 2 is a plan view of the same with the latch mechanism casing in horizontal section;

FIG. 3 is a bottom view of the latching device;

FIG. 4 is a longitudinal vertical section on the line 4—4 of FIG. 2;

FIG. 5 is a transverse vertical section on the line 5—5 of FIG.1;

FIG. 6 is a side elevation of the keeper roller mounting partly in section;

FIG. 7 is a bottom plan view of the keeper and

FIG. 8 is a side elevation partly in section of the inner emergency release.

Briefly considered, the invention comprises improved means for enabling the single movement of the handle to retract the latch when desired. The handle itself is maintained resiliently in a closed or inoperative position.

When the handle is operated, an intermediate lever retracts the latch against the force of a compression spring. It is also possible to withdraw the latch by means of a plunger operated from within the door.

The operation of locking the handle into its inoperative position for example by means of a padlock, serves also to render the latch operating means inoperable from the exterior.

To provide the greatest precision in holding the door in its latched position, the keeper has been designed for adjustment with a great degree of precision.

As shown on the drawings, the door 11 is hinged to the wall 12 in the usual manner, with its free edges against an elastic gasket 13.

The door fastener proper consists of a casing 14 which is a hollow metal casting. Its base has outwardly flaring flanges 15, 15 by which it is screwed in place along the opening edge of the door.

A transverse fixed pivot pin 16 extends across the front opening of the casing 14. This pin carries a loosely journaled latch 17. The latch has a laterally projecting arm 18. This arm rests against a cushioned stop 19 in the inner surface of the casing above the pivot pin 16.

The upper surface of the latch 17 is slightly recessed as shown at 20 to receive the roller of the keeper and to hold the same except when the opening movement for the door slightly compresses the gasket 13. The opposite end of the latch 17 has a lateral foot or extension 21 by which the latch is retracted.

A rockshaft 22 is transversely journaled midway in the casing 14.

An operating lever 23 has an intermediate collar 24 firmly held on the rock shaft 22 by means of set screw 25 (FIG. 4). The front end 26 of the lever 23 overlies the latch foot 21. The front end 26, when so positioned and when the fastener is padlocked, rises to contact with arm 18 and thus blocks the retraction of latch 17. The rear end 27 of the lever is provided with a depression which forms a seat for the coil compression spring 28, the opposite end of which rests against the inner surface of the casing 14.

The collar 24 is provided with a detent 29.

A removable block 30 is fitted into the back of the latch 17. This block 30 forms a seat for a rod 31, the opposite end of which is held in a recess in the collar 24.

A coil compression spring 32 extending from a stop on the rod 31 to the block 30, serves to hold the latch 17 in extended, closed position. When, however, the lever 26 is depressed, movement of the pin 31 serves to relax spring 32 so as to facilitate the retraction of the latch 17 by the lever 26.

A hand lever 33 has a collar 34 which is loosely journaled on the shaft 22. This collar carries a presser foot 35 which overlies an extension of the detent 29. A rubber bumper 72 holds the handle to prevent the foot 35 from striking the casing.

The collar 34 has a depending block 36. (FIG. 1). The rear of the casing has a transverse pivot pin 37. This carries a loose sleeve 38. The sleeve 38 has a block 39 which rests against a stop 40 on the casing. The block 39 is recessed to receive a pin 41 which extends into an aperture in the block 36.

A helical compression spring 42 is carried by the pin 41 against the side of the block 36.

An arm 43 is also carried by the loose sleeve 38. This arm has an opening 44. A fin 45 is provided depending from the handle 33. This has a corresponding opening 46 with which the opening 44 registers. A padlock or the like may be used to fasten the arm 43 in position adjacent the fin 45. In normal operation, the sleeve 38 is held with its block 39 against the stop 40 and thus main-

tains the coil spring 42 in compression and resists the opening movement of the handle 33. The rubber bumper 72 limits the downward movement of the handle 33.

Means are provided to prevent the retraction of the casing 14 from the edge of the door 11 even when the screws are removed from the openings 47 in the base flanges 15. A guard plate 48 is fastened to the face of the door 11 opposite the sleeve 38. This plate 48 has two forwardly projecting hooks 49 and 50. These project upwardly and partially surround the sleeve 38 as shown in FIGS. 2 and 4. In this way the removal of the screws holding the flanges against the door is ineffectual to permit the removal of the fastener. The fastener still remains in place, being held in front by means of the roller of the keeper and in the rear by the hooks 49, 50.

The sleeve 38 also carries a tongue 51 (FIG. 4). This tongue extends forwardly and serves as a rest or support for the rear portion 27 of the lever 23. The tongue 51 is held up by the pressure from the coil spring 42 acting through the block 39.

The means for retracting the latch 17 from within the door 11 in the event of an emergency, includes a plunger 52 which is slidably carried in the door 11. The forward end of this plunger is held against the portion 27 of the lever 23. The rear face of the door 11 carries a plate 53 through which the plunger 52 slides.

The plate is screwed in place. It carries a bracket 54. This in turn supports a push plate 55 hinged to the bracket by means of the pivot pin 56.

A boss 57 on the inside of the push plate, and a boss 58 on the opposite surface of the plate 53 carry a coil spring 59. This holds the push plate retracted, and the plunger 52 likewise retracted by means of the springs holding the lever portion 27 down.

An abutment 60 on the inner face of the push plate 55 rests against the end of the plunger 52.

Moderate pressure from push plate 55 compresses spring 59 and advances plunger 52 outwardly against the lever end 27. As a result, pressures of springs 28 and 32 are forcibly overcome. The forward end 26 of the lever 23 is brought down against the end 21 of the latch 17 with sufficient force to retract the latter. The door is thus free to swing open.

In order to establish precise relative positions for the latch 17 and the keeper 61, the latter is subject to extremely precise adjustment. The keeper 61 is a hollow casting held on the face of the wall 12 opposite the door fastener by screws passing through a hole and a plurality of slots in the base 62 of the keeper. Bolts passing through the screw hole and the slots 62 are fastened from the outside.

However, a bolt 63 is fastened through the central slot 64 and into the wall 12. It is completely surrounded by the keeper 61 and not accessible in the manner in which the other bolts are. It follows that unauthorized removal of the exterior bolts is still ineffective to permit removal of the keeper structure.

The front face 65 of the keeper is machined in a plane perpendicular to the wall and the base. It serves to hold a bracket 66. This bracket has forwardly projecting ears 67 between which a roller 68 is carried on a pivot pin 69. The roller 68 is faced with slightly resilient material so that it will spring into the recess of the latch 17 as shown in FIG. 1.

The rear face of the bracket 66 and the front face of the standard of the keeper 61 are bolted together by means of bolts 70. The adjoining portions are then drilled on an axis slightly back of the plane between the two parts. The hole is then tapped with a machine screw thread.

A headless screw 71 having a similar machine thread can then be screwed into the joint opening.

The set screw inserted in the portion of the hole in the keeper 61 is held in position by reason of the fact that more than one-half of the circumference of the screw is held in this hole. The bracket can be fitted then on the projecting part of the screw.

After the bracket 66 is mounted in rough adjustment opposite the latch 17, loosening of the bolts 70 permits movement of bracket 66 in either direction in various positions on the matching set screw threads to obtain the precise adjustment required.

The improved keeper as above described is the subject of a divisional application for patent filed November 23, 1962, Ser. No. 239,552.

The mechanism above described is extremely easy to latch and unlatch and is of rugged construction. It can be easily adjusted and operated with maximum efficiency.

The assembled fastener is proof against unauthorized removal. A s ingle movement of the handle withdraws the latch through the operation of the intermediate lever. The lever is also operated independently from the opposite side of the door in an emergency. Precise adjustment of the latch and keeper is also provided.

Numerous minor changes in structure and material can be carried out within the scope of the invention as defined in the following claims.

What I claim is:

1. A door fastening comprising a casing having a transverse pivot pin, a latch on the pin, a foot on the latch, a transverse rock shaft journaled in the casing, an operating lever having an intermediate collar fixed on the rock shaft, the lever having a free rear end and a front end overlying the foot of the latch, spring means on the collar for holding the latch extended, a compression spring between the casing and the rear end of the lever, and a handle loosely journaled on the rock shaft, said handle having a presser foot, and a detent on the collar of the lever for engagement by the presser foot.

2. A door fastening comprising a casing having a transverse pivot pin, a latch on the pin, a stop on the casing for holding the latch, a foot on the latch, a transverse rock shaft journaled in the casing, an operating lever having an intermediate collar fixed on the rock shaft, the lever having a free rear end and a front end overlying the foot of the latch, spring means on the collar for holding the latch extended, a compression spring between the casing and the rear end of the lever, and a handle loosely journaled on the rock shaft, said handle having a presser foot, and a detent on the collar of the lever for engagement by the presser foot.

3. A door fastening comprising a casing having a transverse pivot pin, a latch on the pin, a foot on the latch, a transverse rock shaft journaled in the casing, an operating lever having an intermediate collar fixed on the rock shaft, the lever having a free rear end and a front end overlying the foot of the latch, a compression spring between the collar and the latch, a compression spring between the casing and the rear end of the lever, and a handle loosely journaled on the rock shaft, said handle having a presser foot, and a detent on the collar of the lever for engagement by the presser foot.

4. A door fastening comprising a casing having a transverse pivot pin, a latch on the pin, a foot on the latch, a transverse rock shaft journaled in the casing, an operating lever having an intermediate collar fixed on the rock shaft, the lever having a free rear end, a support for the rear end, resilient means for holding said support in operative position, said lever also having a front end overlying the foot of the latch, spring means on the collar for holding the latch extended, a compression spring between the casing and the rear end of the lever, and a handle loosely journaled on the rock shaft, said handle having a presser foot, and a detent on the collar of the lever for engagement by the presser foot.

5. A door fastening comprising a casing having a transverse pivot pin, a latch on the pin, a foot on the latch, a transverse rock shaft journaled in the casing, an operating lever having an intermediate collar fixed on the rock shaft, the lever having a free rear end and a front end overlying

the foot of the latch, spring means on the collar for holding the latch extended, a compression spring between the casing and the rear end of the lever, a handle loosely journaled on the rock shaft, said handle having a presser foot, a detent on the collar of the lever for engagement by the presser foot and means transversely slidable within the casing for rocking the rear end of the lever.

6. A door fastening comprising a casing having a transverse pivot pin, a latch on the pin, a foot on the latch, a transverse rock shaft journaled in the casing, an operating lever having an intermediate collar fixed on the rock shaft, the lever having a free rear end and a front end overlying the foot of the latch, spring means on the collar for holding the latch extended, a compression spring between the casing and the rear end of the lever, a handle loosely journaled on the rock shaft, said handle having a presser foot, a detent on the collar of the lever for engagement by the presser foot, a block on said rock shaft, a transverse rear pivot pin, a loose sleeve carried by the said pin, a second block on said sleeve opposite said first block, a compression spring between said blocks and a tongue on the sleeve beneath the rear end of the lever.

7. A door fastening comprising a casing having a transverse pivot pin, a latch on the pin, a foot on the latch, a transverse rock shaft journaled in the casing, an operating lever having an intermediate collar fixed on the rock shaft, the lever having a free rear end and a front end overlying the foot of the latch, spring means on the collar for holding the latch extended, a compression spring between the casing and the rear end of the lever, a handle loosely journaled on the rock shaft, said handle having a presser foot, a detent on the collar of the lever for engagement by the presser foot, a depending block on the handle, a rear transverse pivot pin, a loose sleeve thereon, a second block on the sleeve, an abutment on the casing and a compression spring between the two blocks.

8. A door fastening comprising a casing having a transverse pivot pin, a latch on the pin, a foot on the latch, a transverse rock shaft journaled in the casing, an operating lever having an intermediate collar fixed on the rock shaft, the lever having a free rear end and a front end overlying the foot of the latch, spring means on the collar for holding the latch extended, a compression spring between the casing and the rear end of the lever, a handle loosely journaled on the rock shaft, said handle having a presser foot, a detent on the collar of the lever for engagement by the presser foot, a depending block on the handle, a rear transverse pivot pin, a loose sleeve thereon, a second block on the sleeve, an abutment on the casing for said block, a compression spring between the two blocks and an arm on the sleeve for locking engagement with the handle.

9. A door fastening comprising a casing having a transverse pivot pin, a latch on the pin, a foot on the latch, a transverse rock shaft journaled in the casing, an operating lever having an intermediate collar fixed on the rock shaft, the lever having a free rear end and a front end overlying the foot of the latch, spring means on the collar for holding the latch extended, a compression spring between the casing and the rear end of the lever, a handle loosely journaled on the rock shaft, said handle having a presser foot, a detent on the collar of the lever for engagement by said presser foot, a rear transverse pivot pin, a loose sleeve thereon, an independently mounted guard plate and means on the guard plate to hold said sleeve.

10. In combination with a door, a door latch therefor, said door latch comprising a casing having an open base, a transverse pin in the casing, a guard plate mounted on the face of the door, and forwardly projecting hooks on the plate partly surrounding the pin.

11. In combination with a door, a door latch therefor, said door latch comprising a casing having an open base, a transverse pin in hte casing, a guard plate mounted on the face of the door, forwardly projecting hooks on the plate engaging the pin in the rear and a plunger projecting in front of the pin.

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