May 30, 1950 G. HOLLAND 2,510,019

LATCH

Filed June 24, 1944 2 Sheets-Sheet 1

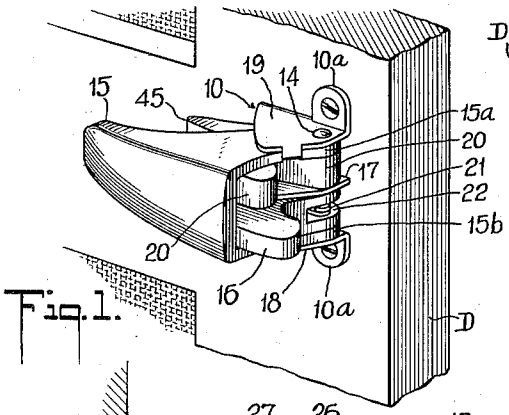


Fig. 1.

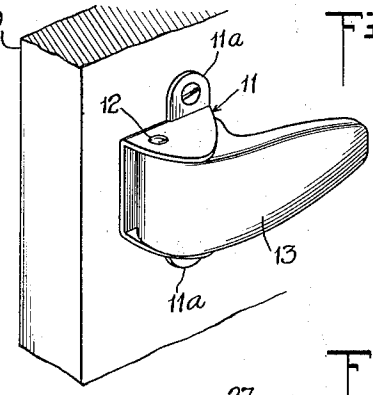


Fig. 2.

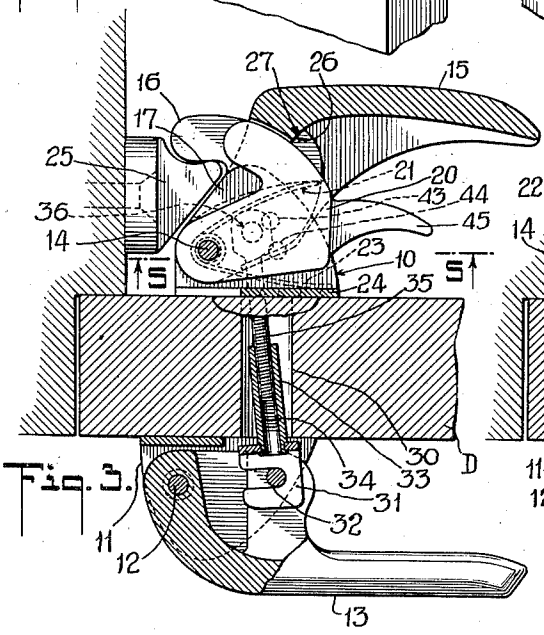


Fig. 3.

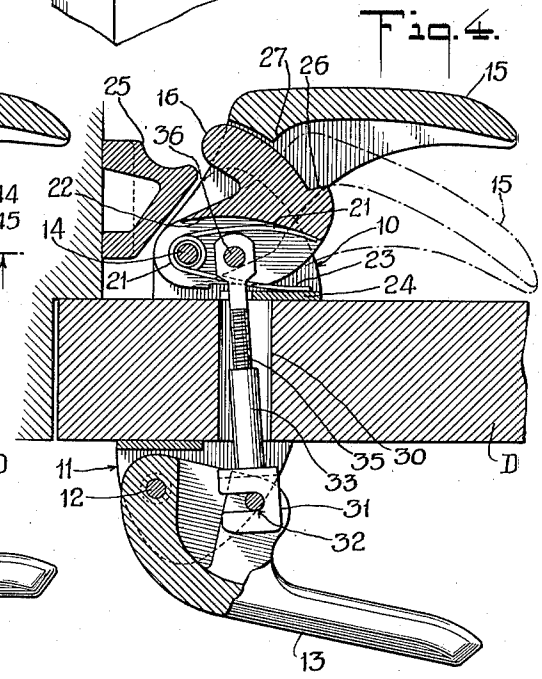


Fig. 4.

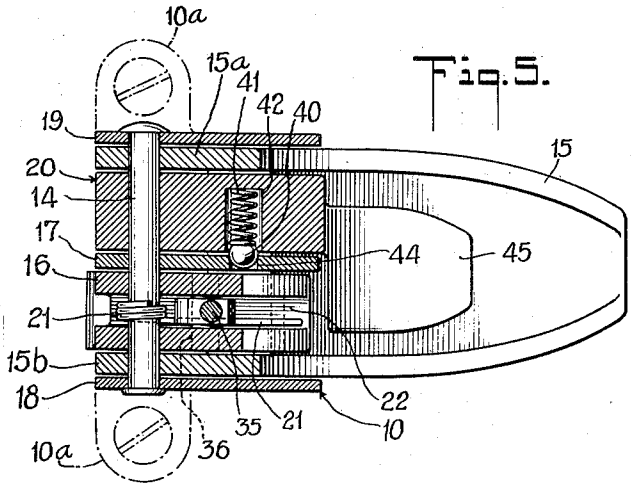


Fig. 5.

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Fig. 6.

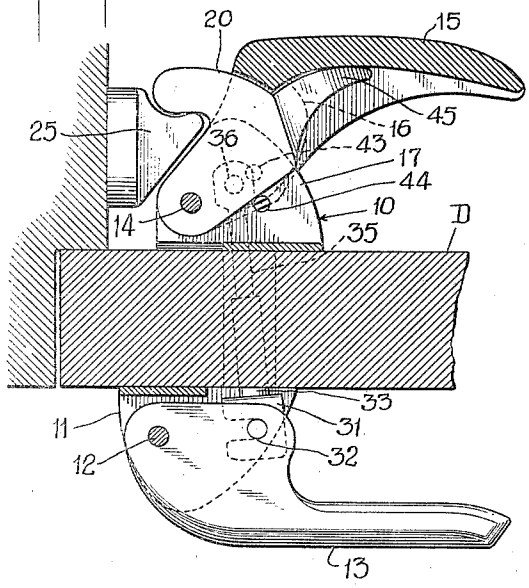
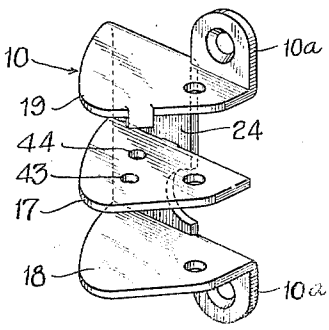


Fig. 8.



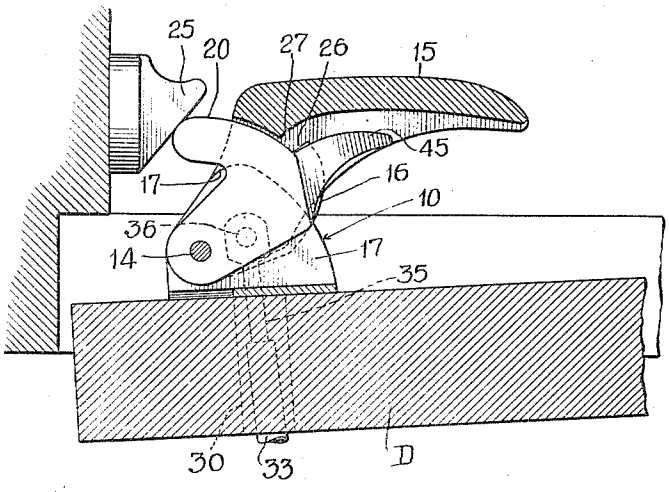


Fig. 7.

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Patented May 30, 1950 2,510,019

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2,510,019

LATCH

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Application June 24, 1944, Serial No. 541,940

20 Claims. (Cl. 292—24)

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This invention relates to a latch of the type adapted to be applied to a door, and preferably to be operated by inside and outside handles.

It is the object of this invention to contribute a latch equipped with pivoting inside and outside handles, and having suitable controls for rendering the outside handle ineffective to open the door to which the latch is applied while leaving the inside handle always effective.

It is the further object of the invention to contribute a latch having pivoting handles, in which the means that render the outside handle ineffective are automatically released upon either the closing movement of the door or upon operation of the inside pivoting handle.

One feature of my invention whereby the objects thereof are achieved, resides in the utilization of pivoting handles and a latchbolt retracted by said pivoting handles, together with a dog for rendering the outside handle ineffective, the said dog being movable at all times into a retracted position by the inside handle, and preferably also by the strike.

A further feature of my invention resides in the utilization of a dog that is cooperative with the same strike with which the latchbolt interlocks, both the dog and latchbolt being retractable by the inside handle, while merely the latchbolt is retractable by the outside handle.

A further feature of my invention resides in the manner in which the dog and latchbolt are mounted on a door for control by the inside and outside handles. A still further feature of this portion of my invention resides in the novel means of connection between the outside handle and the latchbolt, and the inside handle and latchbolt, whereby the entire latch assembly is readily applied to a door with a minimum of effort.

I have thus described the more important aspects and features of my invention in order that the description that follows may be more readily understood. However, there are several additional features which will be particularly referred to in the specification and which will form the subject matter of certain of the claims appended hereto. Those knowing the art will appreciate that I have made a contribution of considerable breadth to the art, and that those skilled in the art will readily develop latching structures utilizing the basic principles of my contribution but in other forms of mechanisms. I do not therefore wish to be limited to the particular structures I have herein set forth embodying my invention.

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Referring now to the drawings, Fig. 1 is a perspective view showing my latch as it appears from the inside of the door to which it is applied. Fig. 2 illustrates the latch as it appears from the outside of the door to which it is applied. Fig. 3 is a horizontal section through the door and latch showing the latchbolt in latching position and the dog in release position. Fig. 4 is a view of the parts of Fig. 3 showing the latchbolt released through movement of the outside handle and illustrating the action that takes place under operation of the inside handle. Fig. 5 is a section taken along lines 5—5 of Fig. 3. Fig. 6 is a view of the parts of Fig. 3 showing the dog in dogging position. Fig. 7 is a view showing the manner in which the dog is moved to release position by the strike upon closing movement of the door. Fig. 8 is a perspective view of the inside mounting member.

Referring now more particularly to the drawings, and especially Figs. 1, 2 and 8, reference numeral 10 refers to an inside mounting member while reference numeral 11 indicates an outside mounting member. Member 10 is secured to the door by screws traversing bores in its ears 10*a*, while outside mounting member 11 is secured to the door by screws traversing bores in its ears 11*a*. The outside mounting supports a shaft 12, and pivoted on shaft 12 is an outside handle 13. The inside mounting member supports a shaft 14 and pivoted on shaft 14 is an inside handle 15.

As is well illustrated in Figs. 3, 4 and 5, both the inside and outside handles are channel shaped preferably, at least where the pivot shafts 12 and 14 traverse the said handles. As a matter of interest, I prefer to manufacture the handles 13 and 15 from some plastic material although the handles may be made from metal, as those skilled in the art will appreciate. Similarly, the latchbolt and dog to be hereinafter set forth may be made from plastic or metal, as may prove desirable.

In addition to the inside handle 15, there is mounted on the pivot shaft 14 of the inside mounting member 10, a latchbolt 16 and a dog 20. It is of course seen that the flanges 15*a* and 15*b* of the inside handle 15 lie directly against the inside surfaces of a lower plate 18 and an upper plate 19 of the inside mounting member 10 as best shown in Fig. 5. Latch bolt 16 will lie between the lower flange 15*b* of the handle 15 and a central plate 17 of member 10. Between the upper flange 15*a* of the handle 15, and the central plate 17, there will lie the dog 20 as probably best shown in Fig. 5. Both the bolt 16

and the dog 20 will of course rotate about the same shaft 14 on which the handle 15 is rotatable.

A spring 21 is coiled about the shaft 14 and lies within a slot 22 in the latchbolt 16. It has one leg 23 pressing against the back plate 24 of the mounting member 10, while its other leg presses against the bottom surface of the slot 22. From the several figures of the drawings, it is readily perceived that the spring 21 will urge the latchbolt 16 into its latching position of Fig. 3, wherein it is shown in cooperation with a strike 25. A shoulder 26 on the latchbolt 16 cooperates with a surface 27 of the handle 15 whereby to urge the handle into its position of Fig. 3. In other words, the same spring 21 that maintains the latchbolt 16 in its latching position, serves also to maintain the handle 15 in its normal position of Figs. 1 and 3. Through cooperation of shoulder 26 and surface 27, latchbolt 16 is retractable from its position of Fig. 1 to its position of Fig. 4, upon swinging movement of the handle 15 from its full line position in Figs. 1 and 4, to its dash and dotted line position in Fig. 4, all as will be quite apparent.

In order to make it possible to retract the latchbolt 16 by the outside handle 13, the door D is formed with a small bore 30. Riding within this bore is a clevis 31 having a slot and pin connection at 32 with the outside handle 13. The clevis 31 is formed with a sleeve portion 33 that is drilled and tapped as at 34 for cooperation with a threaded bolt 35 that is pivotally pinned at 36 to the latchbolt 16. It will be readily appreciated by those skilled in the art that in order to apply to a door the latching mechanism thus far described, the inside and outside mounting members are first secured to the door as by screws passing through the holes in the ears 10*a* and 11*a*. By suitably rotating the clevis 31 and its sleeve portion 33 relatively to the threaded bolt 35 it is thus possible to adjust the connection between the outside handle 13 and the inside latchbolt 16 for a particular door thickness so that with the outside handle in its position of Fig. 1, the latchbolt 16 will be in latching position. The connection at 32 between the clevis and handle 13 may then be made.

Naturally, outward swinging movement of the outside handle 13 from its position of Fig. 3 to its position of Fig. 4 will retract the latchbolt against the pressure of the spring 21. In other words, from the description so far advanced, it is readily seen that the latchbolt 16 is retractable by either the inside handle 15 or the outside handle 13 at all times. It is also readily perceived that in order to make the connection between the outside handle and the latchbolt, it is only necessary to bore a small hole in the door, and that it is not necessary to mortise the door in any way for the application of the inside and outside mounting members.

The dog 20 has already been referred to generally and has been indicated as being mounted about the shaft 14 and between the upper flange 15*a* of the inside handle 15 and the central plate 17 of the inside mounting member 10. The dog 20 may be called a dogging latchbolt and is formed for cooperation with strike 25 as best illustrated in Fig. 6. As a matter of fact, it will cooperate with the strike 25 in substantially the same manner as does the latchbolt 16, whereupon it will lock the door D against opening movement just as does the latchbolt 16.

The dog 20 is preferably maintained in either a release position or a dogging position by a ball 40 that is rotatable with the dog 20 as the dog moves between its two extreme positions. A spring 41 mounted in a bore 42 of the dog 20, presses the ball 40 outwardly and into either one of detent holes 43, 44 formed in the plate 17 of the mounting member 10. As is well seen in Fig. 5, where the ball 40 is illustrated in the hole 44, the dog 20 is held in its release position of Fig. 3. By suitable pressure applied to a finger piece 45, preferably forming an integral part of the dog 20, the dog may be moved from its position of Fig. 3 to its position of Fig. 6.

In its position of Fig. 6 the dog 20 will cooperate with strike 25 to hold the door D in closed position, and will render the outside handle 13 ineffective to open the door. This is due to the fact that any movement of the handle 13 will operate the latchbolt 16 but will not in any way disturb the dog 20, and the dog 20 will remain in its position of Fig. 6, in which position it is retained by the ball 40 lying within the bore 43 of the plate 17. Movement of the inside handle 15 from its position of Fig. 6 to its dash and dotted position of Fig. 4 will retract the latchbolt 16, and will simultaneously move the dog 20 to its release position of Fig. 1. This movement of the dog will be contributed through contact of the handle 15 with the finger piece 45 of the dog. Thereafter, the dog will remain in its release position because the ball 40 will have entered the hole 44 in the plate 17 of the mounting member 10.

Should the door be open and should the dog 20 be in its position of Fig. 6 relatively to the remaining parts of the latch, it is important that the dog be released as the door is closed. Otherwise, it may be possible for someone to lock himself out of a room, all as frequently happens. I have therefore provided means whereby the dog 20 is moved to release positon upon closing movement of the door, if prior to the closing movement of the door the dog has been placed inadvertently in dogging position. Thus, as illustrated in Fig. 7, the dog will impinge against the strike 25 during closing movement of the door, and will be moved by the strike from its position of Fig. 6 to its position of Fig. 3 relatively to latch structure. It is thus readily seen that in my invention the dog is at all times retractable by the inside handle incidental to the retraction of the latchbolt, and that the dog is further automatically retracted by the closing movement of the door.

I believe that the operation and construction of my invention will now be appreciated by those skilled in the art.

I now claim:

1. In a latch of the class described, an inside handle, means mounting said handle for pivotal movement, an outside handle, means mounting said outside handle for pivotal movement, a latchbolt, means whereby said latchbolt is retracted from engagement with a strike by pivotal movement of said outside handle and also said inside handle, a dogging latchbolt, means mounting said dogging latchbolt for pivotal movement between a dogging and release position on a pivot parallel to the axis on which said inside handle is pivotally mounted, and means on said inside handle impinging against a surface of said dogging latchbolt whereby said dogging latchbolt is moved from a dogging to a release position by said inside handle, said dogging latchbolt being inoperative by the outside handle.

2. In a latch of the class described, a latch-

bolt, means pivotally mounting said latchbolt for movement from a latching to a release position, an inside and an outside handle, means mounting said inside and outside handles for pivotal movement on pivots parallel to the pivotal mounting of said latchbolt, means whereby either of said handles retracts said latchbolt, a dog, means mounting said dog for movement from a dogging to a release position, and means whereby said dog is moved from a dogging to a release position incidental to the retraction of said latchbolt by said inside handle.

3. In a latch of the class described, a main latchbolt, an inside handle, an outside handle a dog, means mounting said inside handle, latchbolt and dog for pivotal movement on parallel axes, means whereby said inside handle retracts said latchbolt and dog from a latching and dogging position respectively to a release position, and means whereby the outside handle retracts only said main latchbolt.

4. In a latch of the class described, a main latchbolt, an inside handle, an outside handle, means pivotally mounting said latchbolt and handles for pivotal movement on parallel axes, a dog, means whereby said dog is moved from a release position to a dogging position, means whereby said inside handle retracts said latchbolt and dog from a latching and dogging position respectively to a release position, and means whereby the outside handle retracts only said main latchbolt.

5. In a latch of the class described, a main latchbolt, an inside handle, an outside handle, a dogging latchbolt, means mounting said handles and latch bolts for pivotal movement on parallel axes, a spring pressing said main latchbolt to latching position, means for moving said dogging latchbolt from a release to a dogging position, means whereby said inside handle retracts said latchbolts from a latching and dogging position respectively to a release position, and means whereby the outside handle retracts only said main latchbolt.

6. In a latch of the class described, a main latchbolt, an inside handle, an outside handle, a dogging latchbolt, means whereby said dogging latchbolt is yieldingly retained in a release position until moved to a dogging position, means whereby said inside handle retracts said latchbolts from a latching and dogging position respectively to a release position, and means whereby the outside handle retracts only said main latchbolt, said dogging latchbolt being shaped so that when it contacts a cooperating strike while in dogging position, it will be cammed by said strike into release position.

7. In a latch of the class described, a main latchbolt, an inside handle, an outside handle, a dogging latchbolt, means whereby said dogging latchbolt is yieldingly retained in a release position and in a dogging position, means whereby said inside handle retracts said latchbolts from a latching and dogging position respectively to a release position, and means whereby the outside handle retracts only said main latchbolt, said dogging latchbolt being shaped so that when it contacts a cooperating strike while in dogging position, it will be cammed by said strike into release position.

8. In a latch of the class described, a main latchbolt, an inside handle, an outside handle, a dogging latchbolt, means whereby said dogging latchbolt is moved from a release position to a dogging position, means whereby said dogging

latchbolt is yieldingly retained in a release position and in a dogging position, means whereby said inside handle retracts said latchbolts from a latching and dogging position respectively to a release position, and means whereby the outside handle retracts only said main latchbolt, said dogging latchbolt being shaped so that when it contacts a cooperating strike while in dogging position it will be cammed by said strike into release position.

9. In a latch of the class described, a mounting member for application on the inside surface of a door, a latchbolt pivoted on said mounting member for cooperation with a strike, a dog pivoted on said inside mounting member independently of said latchbolt, an inside handle also pivoted on said inside mounting member, an outside mounting member for application on the outside surface of the door, an outside handle pivoted on the said outside mounting member, means of connection between said latchbolt and said outside handle extending through a bore in the door to connect said latchbolt and outside handle for movement together at all times whereby pivotal movement of said outside handle retracts said latchbolt, means whereby said inside handle retracts said dog, and means whereby said inside handle also retracts said latchbolt.

10. In a latch of the class described, a mounting member for application on the inside surface of a door, a latchbolt pivoted on said mounting member for cooperation with a strike, an inside handle also pivoted on said inside mounting member, an outside mounting member for application on the outside surface of the door, an outside handle pivoted on the said outside mounting member, means of connection between said latchbolt and said outside handle extending through a bore in the door whereby pivotal movement of said outside handle retracts said latchbolt, a dogging latchbolt also pivoted on said inside mounting member and adapted also for cooperation with a strike to maintain said door locked even when said main latchbolt is retracted, and means whereby said inside handle retracts both said dogging latchbolt and said main latchbolt from cooperation with said strike.

11. In a latch of the class described, a mounting member for application on the inside surface of a door, a latchbolt pivoted on said mounting member for cooperation with a strike, an inside handle also pivoted on said inside mounting member, an outside handle pivoted on the said outside mounting member, means of connection between said latchbolt and said outside handle extending through a bore in the door whereby pivotal movement of said outside handle retracts said latchbolt, a dogging latchbolt also pivoted on said inside mounting member and adapted also for cooperation with a strike to maintain said door locked even when said main latchbolt is retracted, and means whereby said inside handle retracts both said dogging latchbolt and said main latchbolt from cooperation with said strike, said dogging latchbolt being shaped so that when it contacts a cooperating strike while in a dogging position it will be cammed to a retracted position.

12. In a latch of the class described, a latchbolt, means pivotally mounting said latchbolt for movement from a latching to a release position, an inside and an outside handle, means mounting said inside and outside handles for independent pivotal movement on independent axes, means whereby either of said handles retracts said latchbolt, a dog, means pivotally mounting said dog

for movement from a dogging to a release position, and means whereby said inside handle moves said dog from a dogging to a release position.

13. In a latch of the class described, a latchbolt, means pivotally mounting said latchbolt for movement from a latching to a release position, an inside and an outside handle, means mounting said inside and outside handles for pivotal movement, means whereby either of said handles retracts said latchbolt, a dog, means mounting said dog for movement from a dogging to a release position, means whereby said dog moves from a dogging to a release position upon retraction of said latchbolt by said inside handle, said latchbolt and dog being adapted for cooperation with a strike, and said dog being shaped for movement from a dogging position to a retracted position through contact with the strike if moved with the door against the strike while in dogging position.

14. In a latch of the class described, a latchbolt, means pivotally mounting said latchbolt for movement from a latching to a release position, an inside and an outside handle, means mounting said inside and outside handles for pivotal movement, means whereby either of said handles retracts said latchbolt, a dog, means whereby said dog is yieldingly held in either a dogging or a release position when moved to one of said positions, means mounting said dog for movement from a dogging to a release position, and means whereby said inside handle moves said dog from a dogging to a release position when retracting said latchbolt, said latchbolt and dog being adapted for latching cooperation with a strike, and said dog being shaped for movement from a dogging position to a retracted position through contact with the strike if moved with the door against the strike while in dogging position.

15. In a latch of the class described, a main latchbolt, an inside and an outside handle, a spring projecting said main latchbolt into latching cooperation with a strike, means whereby said main latchbolt is retracted out of latching cooperation with said strike at all times by either of said handles, a dogging latchbolt, means yieldingly retaining said dogging latchbolt in a dogging position and also in a release position, and means mounting said dogging latchbolt for movement into and out of dogging cooperation with said strike independently of said main latchbolt and said outside handle while leaving said main latchbolt retractible by both said handles.

16. In a latch of the class described, a main latchbolt, an inside and an outside handle, a spring projecting said main latchbolt into latching cooperation with a strike, means whereby said main latchbolt is retracted out of latching cooperation with said strike at all times by either of said handles, a dogging latchbolt, means yieldingly retaining said dogging latchbolt in a dogging position and also in a release position, means mounting said dogging latchbolt for movement into and out of dogging cooperation with said strike while leaving said main latchbolt retractible by both said handles, and means whereby said dogging latchbolt is retracted from dogging position by said inside handle or by said strike through contact with the strike while in dogging position.

17. In a latch of the class described, a mounting member adapted for application to the face of a door, a main and a dogging latchbolt pivoted on said mounting member for movement into latching cooperation with a strike, a spring pressing said main latchbolt toward latching cooperation with said strike, and means whereby said dogging latchbolt is yieldingly held relatively to said mounting member in latching or out of latching position.

18. In a latch of the class described, a main latchbolt, an inside and an outside handle, a spring projecting said main latchbolt into latching cooperation with a strike, means whereby said main latchbolt is retracted out of latching cooperation with said strike by either of said handles, a dogging latchbolt, a part of said dogging latchbolt being accessible for manual movement of said dogging latchbolt into latching cooperation with said strike, and means whereby said inside handle moves said dogging latchbolt and main latchbolt out of said latching cooperation.

19. In a latch of the class described, a main latchbolt, an inside and an outside handle, a spring projecting said main latchbolt into latching cooperation with a strike, means whereby said main latchbolt is retracted out of latching cooperation with said strike by either of said handles, a dogging latchbolt, a part of said dogging latchbolt being accessible for manual movement of said dogging latchbolt into latching cooperation with said strike, means whereby said inside handle moves said dogging latchbolt and main latchbolt out of said latching cooperation, and means whereby said dogging latchbolt is thereafter maintained out of latching cooperation with said strike.

20. In a latch of the class described, a mounting member adapted for application to the inside face of a door, a latchbolt pivoted on said mounting member, a spring pressing said latchbolt to latching position, a handle pivoted on said mounting member, a part of said latchbolt pressing against said handle to urge the handle to an initial position, said handle through said part moving said latchbolt out of latching position, a dog also pivoted on said mounting member, and means whereby said handle also retracts said dog from dogging position.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
740,061	Stout	Sept. 29, 1903
1,331,166	Ochsner	Feb. 17, 1920
1,415,104	Meyer	May 9, 1922
1,629,614	Devereaux	May 24, 1927
1,964,058	Holtzman	June 26, 1934
2,012,732	Schmidgall	Aug. 27, 1935
2,178,530	Rightmyer	Oct. 31, 1939
2,203,317	Ferris	June 11, 1940
2,311,685	Olson	Feb. 23, 1943
2,321,724	Aldeen et al.	June 15, 1943
2,357,551	Schlage	Sept. 5, 1944