T. B. JEFFERY.

LOCK.

APPLICATION FILED MAY 18, 1908.

921,711.

Patented May 18, 1909.

2 SHEETS—SHEET 1.

Fig. 2.

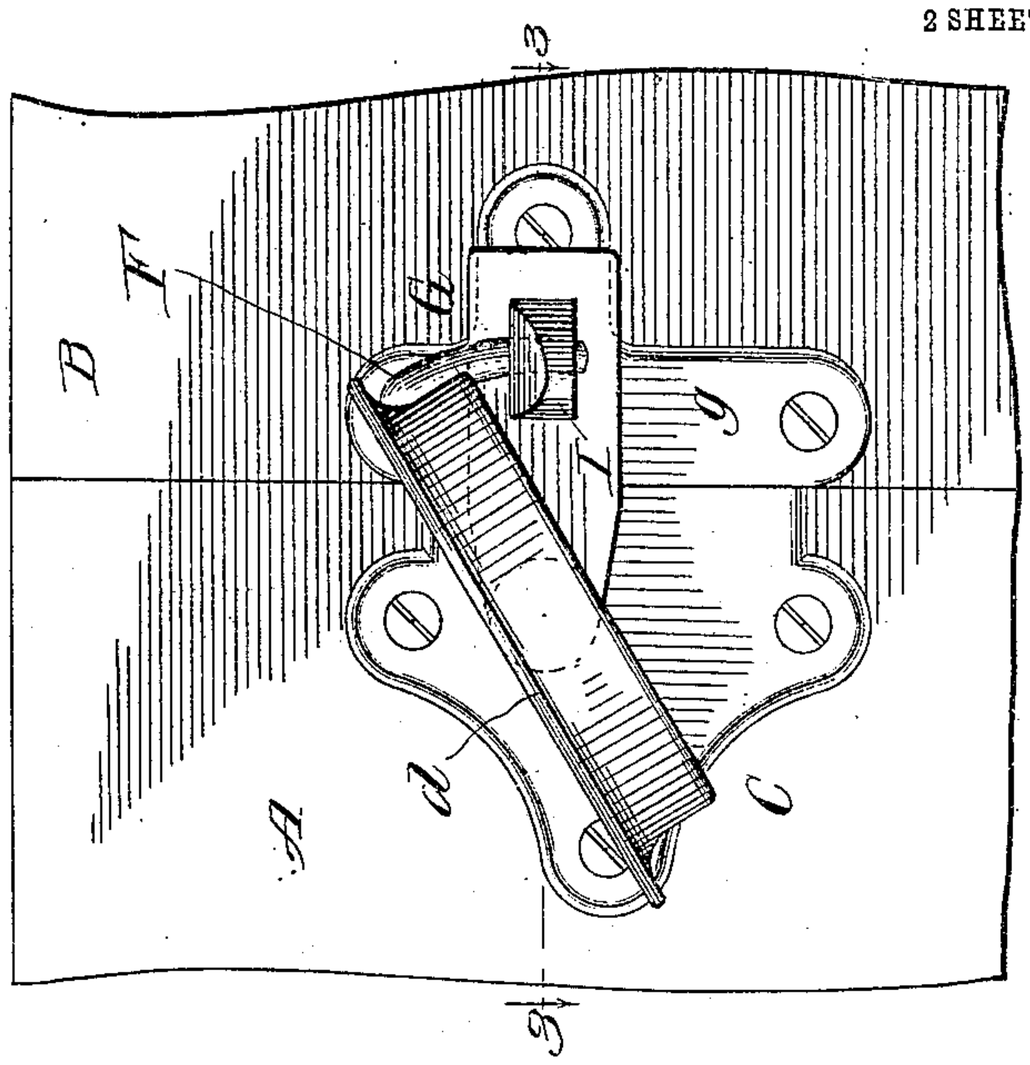
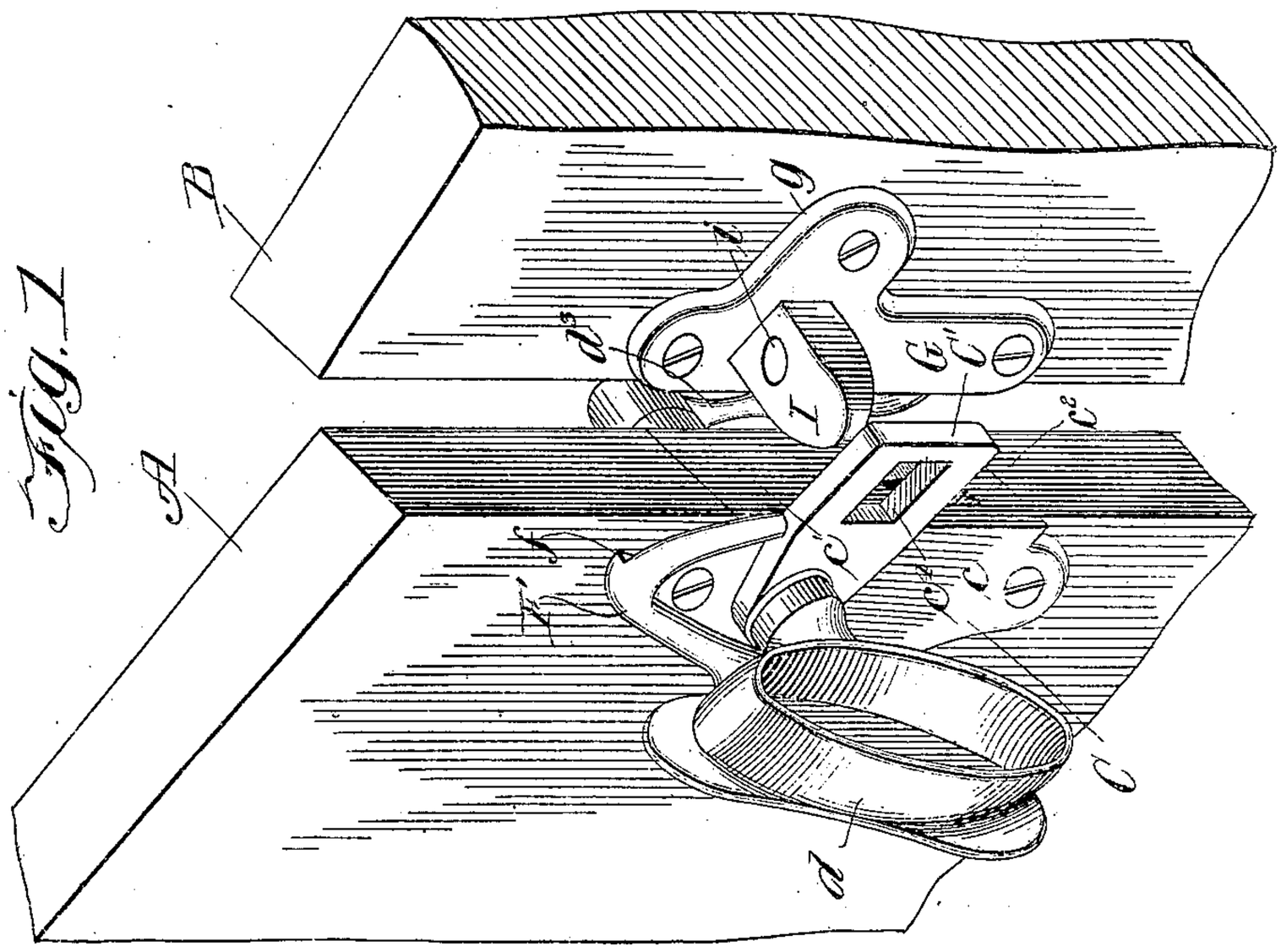


Fig. 1.



Witnesses:

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2 SHEETS—SHEET 2.

Fig. 3.

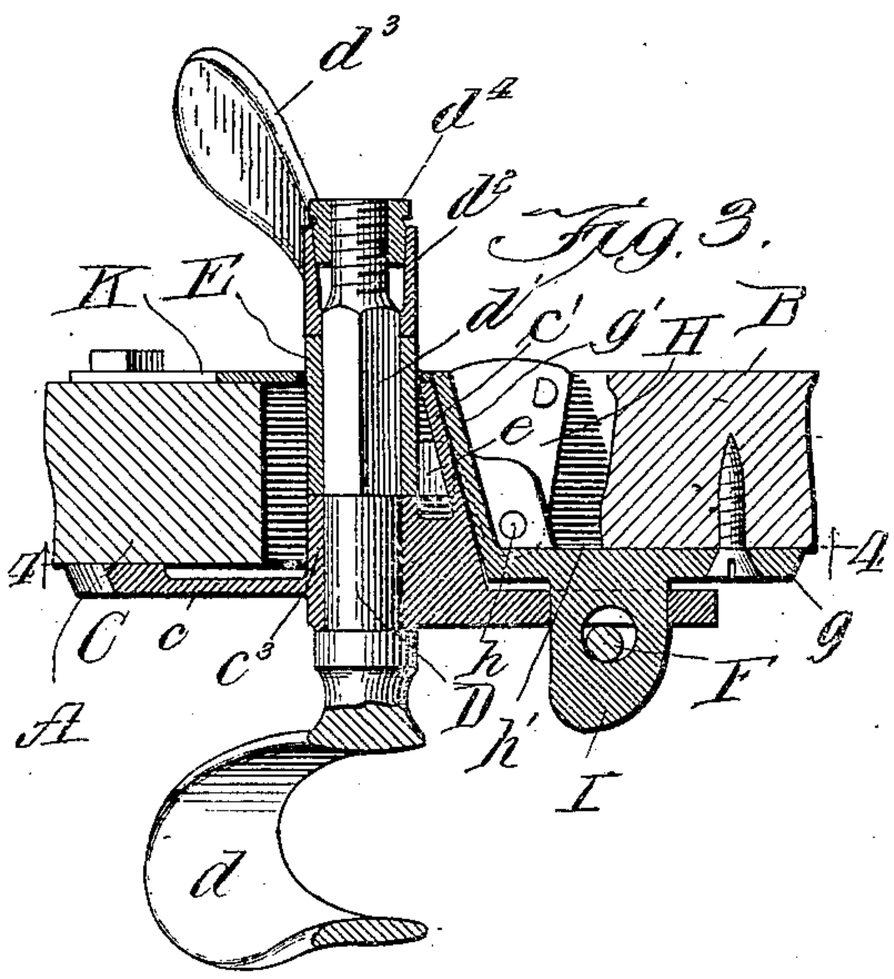


Fig. 6.

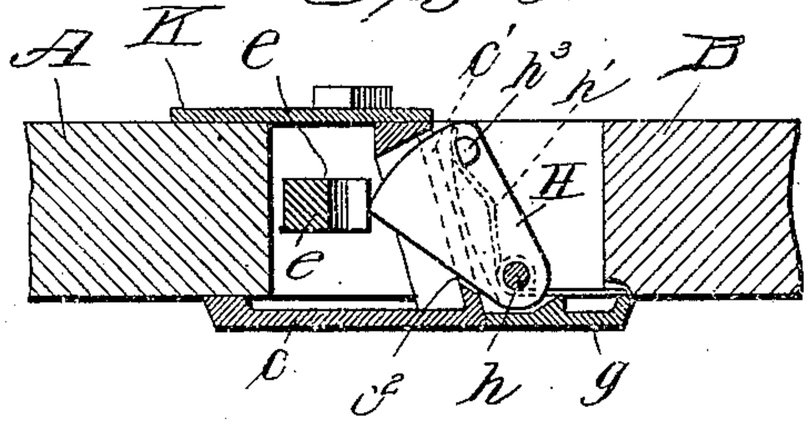


Fig. 5.

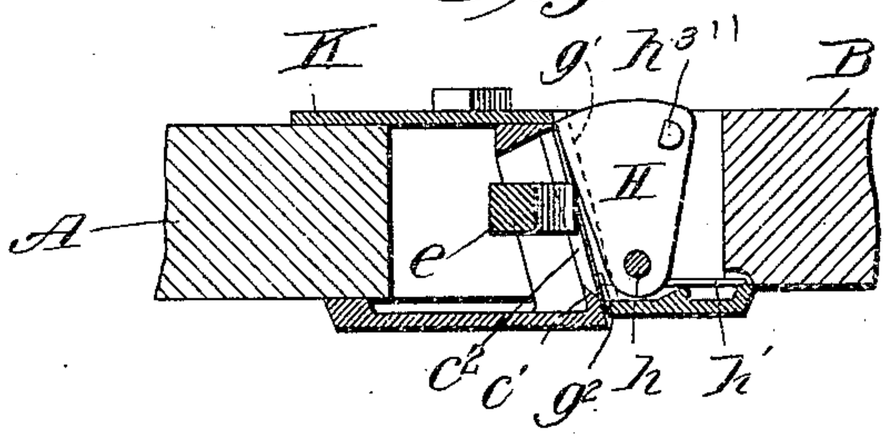
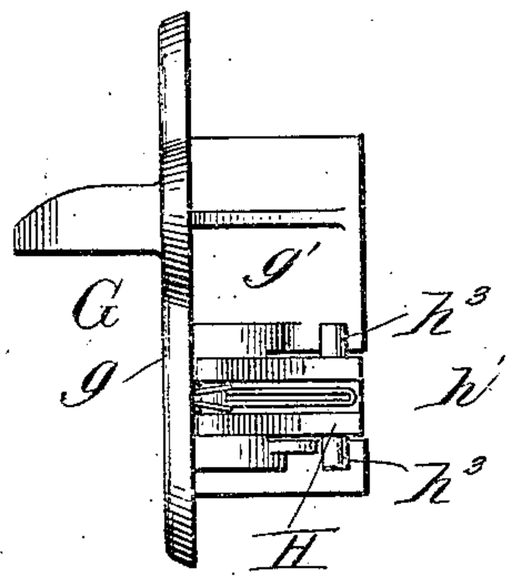
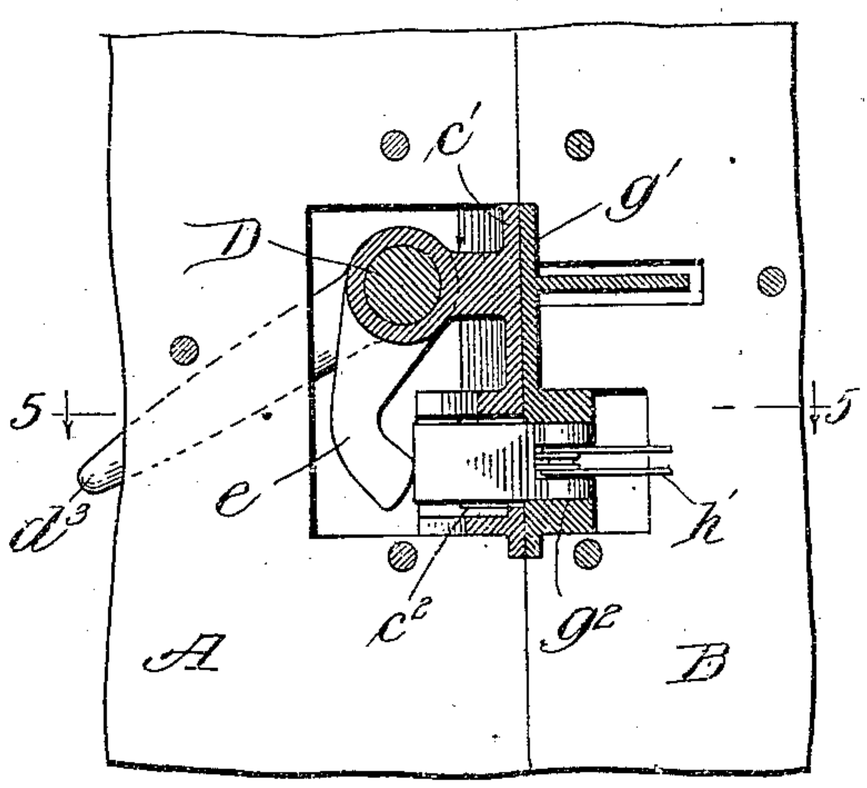


Fig. 4.

Fig. 7.





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UNITED STATES PATENT OFFICE.

THOMAS B. JEFFERY, OF KENOSHA, WISCONSIN.

LOCK.

No. 921,711. Specification of Letters Patent. Patented May 18, 1909.

Application filed May 18, 1908. Serial No. 433,424.

To all whom it may concern:

Be it known that I, THOMAS B. JEFFERY, a citizen of the United States, residing at Kenosha, county of Kenosha, State of Wisconsin, have invented a certain new and useful Improvement in Locks, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to latch devices for securing together two relatively movable members as, for example, the door and frame of an automobile and it has for its object to improve such devices.

It is desirable, in automobiles, to have a latching device for the door which may be manipulated conveniently both in opening and closing the door, which will lock the door securely in its closed position without permitting the door to rattle, and which is not apt to be jarred loose so as to permit the door to swing open.

In one of its aspects the present invention may be regarded as comprising a novel latching device which may be readily manipulated to unlatch and which will automatically assume the latching position upon the closing of the door or the like with which it is associated and which will form a double lock so that a door may be rigidly locked in its closed position under normal conditions and be securely held even if one of the locks should become injured.

In a further aspect the invention may be regarded as comprising a novel form of latching device which will automatically lock two parts together when they are brought into predetermined positions and which will afford a manually actuated lock if the automatic device should become deranged.

In further of its aspects the present invention may be regarded as comprising novel features of construction and arrangement of parts which coöperate to form a simple, durable and effective latching device.

The various features of novelty which characterize the present invention will be pointed out with particularity in the appended claims, but for a full understanding of my invention in its various aspects and of its object and advantages, reference is to be had to the following detailed description taken in connection with the accompanying drawings, wherein:—

Figure 1 is a perspective view of a fragment of an automobile door and frame showing a preferred form of latching device in the condition to permit the door to be closed; Fig. 2 is a front elevation of the parts shown in Fig. 1, the door being closed and the latching device being in the condition to which the closing of the door brings it; Fig. 3 is a section taken on line 3—3 of Fig. 2; Fig. 4 is a section taken on line 4—4 of Fig. 3; Figs. 5 and 6 are sections taken on line 5—5 of Fig. 4, Fig. 5 showing the condition just before the door is completely closed, and Fig. 6 showing the positions which the parts take as soon as the door is completely closed; and Fig. 7 is a side elevation of the parts of the latch carried by the door frame, viewing the same from the right of Fig. 4.

Broadly speaking, my invention consists of a two-part latch device each of which is adapted to be secured to one of two movable members which it is adapted to secure in place and each of which includes a catch which is adapted to enter into locking engagement with a shoulder on the other part so that a double latching is obtained. One of the catches is preferably made spring-actuated and there is associated with the other catch a dog of some kind which lies in the path of the spring-actuated catch so that when the two members are brought into the relative position which they are to occupy when locked together, the spring-actuated catch automatically assumes its locking position and at the same time engages with the dog so as to throw the other catch into its locking position. The dog and the catch which it actuates are preferably associated with one or more handles so that upon moving one of the handles the latter catch is moved out of its locking position and the dog is actuated so as to effect the release of the other catch. It will be seen that these various features may be constructed and arranged in many different ways in order to produce the results desired. For the sake of simplicity I have illustrated, however, only one construction and arrangement of parts, namely, one which I regard as extremely simple and practical; but I do not

desire to be understood as limiting myself to the single preferred embodiment of my invention illustrated.

Referring to the drawings, A and B represent two relatively movable members as, for example, the swinging door and the door frame of an automobile. Mounted at the free edge of the door is a bracket C which may conveniently consist of a plate-like member c fastened to the outer face of the door and a portion c^1 extending at an angle to the member c and lying flush with the edge of the door, the width of the member c^1 being approximately equal to the thickness of the door. The member c^1 is provided with an opening c^2 which is adapted to receive a catch to be hereinafter described.

c^3 is a boss or hub projecting inwardly from the plate c and forming a bearing and support for a revoluble shaft D which extends through the door. On the outer end of the shaft is a handle d. The inner portion of the shaft may conveniently be made square as at d^1 for the purpose of receiving a sleeve E and a sleeve or hub d^2 on the end of the handle d^3 arranged upon the inner side of the door. The members E and d^2 are made of such lengths that when they are slipped in place upon the shaft and the nut d^4 or other fastening means is placed upon the shaft, axial movement of the shaft within its supporting bearing is prevented through the engagement of the handle d on one side of the bearing and the sleeve E on the other side. On the outer end of the shaft, and preferably between the main portion of the handle d and the door, is a hook-like catch F which is adapted to interlock with a fixed portion or shoulder upon the frame when the door is closed. Secured to the sleeve E is a downwardly projecting dog e which is free to swing into and out of the opening c^2 in the bracket C when the shaft is rotated.

Mounted upon the edge of the door frame at the same level as the bracket C is a bracket G which may conveniently consist of a plate-like portion g secured to the outer surface of the frame and a portion g^1 extending at an angle to the member g and lying flush with the edge of the door frame. Upon this is pivoted a catch H, the pivot h thereof being illustrated as a vertical one. This catch is arranged within a slot g^2 which, when the door is closed, registers with the slot c^2 in the edge of the door.

h^1 is a spring which tends to throw the catch outwardly so as to lie in the path of the edge of the door when the door is being closed. When the door is moved to its closed position it will be seen that the spring-actuated catch is engaged by the edge thereof and is forced rearwardly toward the tension of its spring until, just as the door assumes its completely closed position, the catch is released and immediately springs outwardly and enters the slot c^2 in the edge of the door. As long as the catch occupies this position the door is prevented from being opened. In order that a strong spring may be used and maintained under tension even when the door is open I prefer to provide lugs h^3 on the catch H which, when the catch occupies its normal position engage with the rear face of the part g' of the bracket and limit the outward movement of the catch. When it is desired to unlock the door, either the handle d or the handle d^3 may be grasped and the shaft rotated thereby. This rotation of the shaft swings the dog e outwardly toward the edge of the door and into engagement with the spring catch. The parts are so proportioned that the dog is enabled to push the catch entirely out of the slot in the edge of the door before the dog is brought to rest by striking against a portion of its supporting bracket. After the shaft has been turned sufficiently to carry the spring-actuated catch into its inoperative position the doorway may be pushed outwardly.

On the front of the bracket G is a projection or nose I having therein a hole i for receiving the hook F when the door is closed. The bracket C may be provided with an extension C′ having an opening c^4 therein of such size and shape and so located that when the door is closed the projection I enters the opening c^4 and forms a positive guide for accurately positioning the door in the frame. The member C′ is preferably placed between the catch F and the door so that when the door is closed and the catch in engagement with the opening in the projection I it in effect forms a pin for retaining the member C′ in place. The parts are preferably so arranged that when the hook-like catch is swung downwardly it bears against the front face of the member C′ and therefore any strain is transmitted to the door through the member C′ instead of through the supporting arm of the catch.

I have heretofore referred to the automatic latching of the door upon closure thereof by reason of the engagement of the catch H with the walls surrounding the socket c^2 in the edge of the door. As the spring-actuated catch assumes this latching position, however, it engages with the dog e and of course moves it in the reverse direction from that which the dog traveled in swinging the catch out of engagement with the door. The parts are so proportioned that this movement of the dog by the catch is sufficient to throw the hook-like catch on the door into the position indicated in Fig. 2, namely, so as to extend well into or even through the opening in the projection I on the frame. Consequently the door is latched by two separate devices, namely, the spring-

actuated member carried by the frame and the hook-like member carried by the door. It will be seen that even if the spring-actuated catch should become inoperative for any reason the door could be securely latched in place manually by turning one of the handles until the catch on the door was brought into operative relation with the coöperating member on the frame. Ordinarily, however, no attention need be given to the latching of the door since this will be effected automatically and positively upon the mere closing of the door; and, by slightly curving the free end of the book-like catch so as to cause it to slightly bind in the opening which receives it, a very secure lock is produced, rattling is prevented and there is no danger of unlatching due to jarring where the device is used upon an automobile which may travel at a high speed over rough roads.

I prefer to provide some means to prevent the latch F from swinging downwardly too far when the door is opened, since otherwise the latch might be found to be entirely below the projection I on the frame after the door is closed. This may be accomplished in any suitable manner, as, for example, by providing a lug *f* on the side of the latch in a position to rest upon the upper edge of the member C′ when the latch is in its lowermost position. Therefore if the latch on the door is not entirely raised before it is attempted to close the door all that can happen is that the catch will strike the end of the projection on the frame and prevent the closing of the door and the operator can readily turn one of the handles so as to bring the latch into the position indicated in Fig. 1.

It will now be seen that I have provided an extremely simple and effective latching device and one which can be readily placed in position because all of the parts are carried by two brackets one of which is secured to the door and one to the frame. It is only necessary therefore to properly aline the two brackets, no attention being required for procuring the proper adjustment of the various parts of each half of the device. If it is desired to cut entirely through the door as shown, a plate K may be fastened over the opening on the inner side of the door; but this plate need not perform any function as a support for the parts of the latch and the shaft and the sleeves mounted thereon preferably pass freely through this plate: therefore the plate does not interfere with the ready adjustment of the parts of the latch carried by the door.

Although I have described in detail only a single preferred embodiment of my invention I do not desire to be limited to this particular embodiment since, as I have already stated, my invention may take many other forms as will be evident from the terms of the definitions of my invention which constitute the appended claims.

Having now fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In combination, a pair of relatively-movable members, a catch on each member for engaging with the other member to lock said members together, one of said catches being arranged to be actuated by the other catch, and means for actuating the latter catch.

2. In combination, a pair of relatively-movable members, a catch on each member for engaging with the other member so as to lock said members together when they occupy a predetermined relative position, one of said catches being arranged to be actuated by the other catch, and means for automatically actuating the latter catch when said members approach said predetermined positions.

3. In combination, a pair of relatively-movable members, a spring-actuated catch on one member adapted to engage with the second member so as to lock said members together when they occupy predetermined relative positions, the parts being so arranged that the catch is retracted and its spring placed under tension as said members approach and before they reach said predetermined positions, a second catch on said second member adapted to engage with the other member to assist the spring-actuated catch in locking said members together, and a part secured to said second catch and lying in the path of the spring-actuated catch so as to be engaged thereby and actuated when said spring-actuated catch assumes its locking position.

4. In combination, a pair of relatively movable members, a spring-actuated catch on one member arranged to ride over a shoulder on the second member as said members approach a predetermined relative position and to drop behind said shoulder when said position is reached, a catch on said second member for engaging with the other member, and a dog secured to the latter catch and lying in the path of the spring-actuated catch when said members occupy said predetermined position, so as to be actuated thereby when the spring actuated catch drops behind said shoulder.

5. In combination, a door, a door frame, said door having a shoulder, a catch on the frame arranged to drop behind said shoulder to lock the door, a dog on said door for engaging with said catch to throw it out of engagement with said shoulder, and a handle for actuating said dog.

6. In combination, a door frame, a door, a catch on the door for engaging with the frame when the door is closed, a catch on the frame arranged to drop into locking en-

gagement with the door when it is closed, and means associated with said catches for causing the catch on the frame to actuate the catch on the door into locking position upon closing of the door.

7. In combination, a door, a door frame, shoulders on the door and frame, a spring-actuated catch on the frame arranged to drop behind the shoulder on the door when the door is closed, a catch on the door for engaging with the shoulder on the frame when the door is closed, and a dog associated with the latter catch and lying in the path of movement of the spring-actuated catch, the arrangement being such that when the door is closed the spring actuated catch assumes its locking position and actuates the dog so as to throw the other catch into locking position.

8. In combination, a door, a door frame, shoulders on the door and frame, a revoluble shaft projecting through the door and having handles on the ends thereof, a catch carried by said shaft and arranged to engage with the shoulder on the frame when the door is closed, a spring-actuated catch on said frame arranged to drop behind the shoulder on the door when the door is closed, and a dog associated with said shaft and lying in the path of the spring-actuated catch so as to be actuated thereby so as to rotate the shaft when the spring-actuated catch drops behind its coöperating shoulder.

9. In combination, a door frame, a door, a plate secured to the door and having a boss projecting inwardly into the door, a shaft journaled in and supported wholly by said boss, an actuating handle on each end of said shaft, a catch carried by said shaft, and a shoulder on the frame coöperating with said catch, a spring actuated catch on said frame for engaging with a shoulder on the door, and a lug on said shaft lying in the path of said spring-actuated catch and arranged to be actuated thereby to rotate the shaft.

In testimony whereof, I sign this specification in the presence of two witnesses.

THOMAS B. JEFFERY.

Witnesses:

WM. F. FREUDENREICH,

HARRY S. GAITHER.