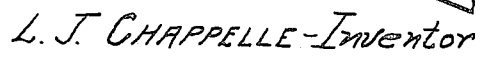


DOOR LOCK.

Patented Feb, 18, 1919.

1,294,399.

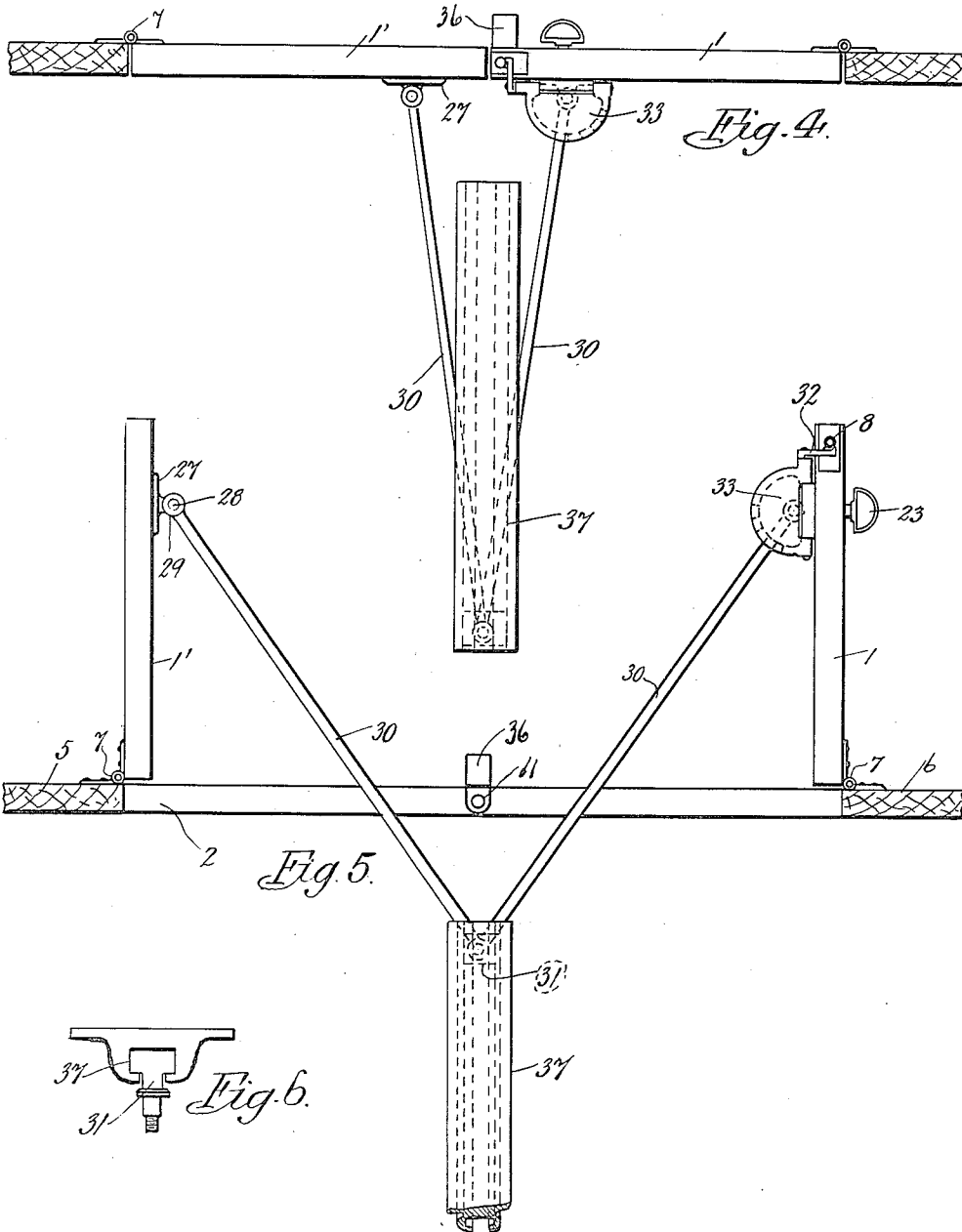


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APPLICATION FILED APR. 2, 1918.

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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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DOOR-LOCK.

1,294,399.

Specification of Letters Patent.

Patented Feb. 18, 1919.

Application filed April 2, 1918. Serial No. 226,188.

To all whom it may concern:

Be it known that I, LOUIS J. CHAPPELLE, a citizen of the United States of America, residing at Green Bay, in the county of Brown and State of Wisconsin, have invented certain new and useful Improvements in Door-Locks, of which the following is a specification, reference being had therein to the accompanying drawing.

The invention relates to improvements in doors, and particularly in double doors, such as are employed for garages, warehouses, and similar buildings.

It is an object of the invention to provide double doors, hingedly arranged and adapted to be opened or closed upon the corresponding movement of one of said doors.

Another object of the invention embraces the provision of means for securing the doors in any position, so that accidental closing of the doors when ajar is effectively prevented.

It is a further object of the invention to provide means for securing the doors in any position, which means are controlled by the lock of the doors.

Still another object embraces the provision of means for preventing engagement between the locking rods of the door and the door frame.

It is also an object of the invention to provide certain details of construction and arrangement tending to increase the usefulness and general desirability of doors of the character described.

To the accomplishment of the objects stated and others that will become apparent upon perusal of the following specification, the invention then is predicated on the means described hereinafter and specifically pointed out in the appended claims.

The annexed drawings and the following description set forth in detail certain mechanisms embodying the invention which, however, constitute but one of the various ways in which the principle of the invention may be utilized.

In said drawings

Figure 1 is a side view with parts in action, disclosing the door in closed position and its associated and cooperating parts.

Fig. 2 is a front elevation of the lock in open position.

Fig. 3 is a view similar to that of Fig. 2, with the lock in closed position.

Fig. 4 is a top plan view showing the doors in closed position.

Fig. 5 is a view similar to Fig. 4, with the doors in open position.

Fig. 6 is an end view of a guide secured to the ceiling and receiving a lock connected to the double doors.

Referring to the drawings and particularly to Fig. 1, 1 and 1' designate the double doors which are adapted to close the opening 2, through which entrance may be had to the interior of the building, which is equipped with the floor 3 and with the ceiling 4. The doors 1 and 1' are secured to the jambs or frame members 5 and 6 respectively, by means of hinges 7 of known construction, and are capable of being swung from the closed position, as shown in Fig. 4, to the open position, as indicated in Fig. 5. At the front edge of the door 1 locking rods 8 and 9 are arranged in vertical alinement and extend through a vertical bore in the door 1. The rods have a limited vertical travel for the purpose of entering sockets 10 and 11, respectively arranged in the upper transverse beam of the door opening and in the floor 3. The locking rods 8 and 9 may be shifted from the socket engaging position into the retracted or releasing position to permit swinging of the door from open into locked position and vice versa. An opening 12 is arranged in the door 1, into which the locking rods extend and terminate in heads 13, 14, respectively. Levers 15, 16 are respectively connected to said heads and are pivotally supported as at 17 and 18. The free ends of the levers 15, 16 bear against a cam 19, arranged on a shaft 20, which projects through side plates 21, 22, closing the opening 12 of the door. The shaft 20 terminates at both ends in knobs 23, whereby the cam 19 may be rotated to occupy a vertical or an intermediate position. A spring 24 engages the levers 15, 16 adjacent to the pivot 17, 18 in order to normally hold the free ends together. Within the opening 12 a block 25 is slidably arranged and controlled by a key inserted through the key-hole 26. The operation of the lock can be easily recognized from the arrangement of the parts shown in Figs. 2 and 3.

When the block 25 is in the position shown in Fig. 3, the cam 19 forms an acute angle with the horizontal plane, and consequently the free ends of the levers 15, 16 are under

the action of the spring 24 forced together until they are arrested in their approaching movement by the hub of the cam 19. The heads 13, 14 consequently are separated from one another, whereby the rods 8 and 9 are placed in the socket engaging position and thus the doors are locked. In order to permit withdrawal of the locking rods 8 and 9, the sliding block 25 is shifted to the right hand side, as viewed in Fig. 3, until it occupies the position shown in Fig. 2, which movement is accomplished with the insertion of a key in the hole 26 and appropriate turning of the key. In this position the shaft 20 may be rotated by actuating the knobs 23 to effect a spreading of the free ends of the levers 15, 16, whereby the locking rods 8 and 9 are withdrawn from the appertaining sockets, so that the door 1 may be swung from the closing into the open or an intermediate position. The doors 1, 1' are each equipped at the upper end and adjacent to the free edge thereof with a bracket 27, equipped with an upstanding pintle 28, which is adapted to receive the head 29 of a link 30. The links 30 of the doors are connected at the outer ends to a block 31, formed to slidably fit in a guide 37 of appropriate length to incase the block 31 throughout its movement. The guide 37 is secured to the ceiling 4 and insures a simultaneous opening of the doors 1, 1' when either one of them is moved. Secured to the bracket 27 of the door 1 is an arm 32, which terminates in a semi-circular member 33, provided with a plurality of spaced teeth 34, adapted to receive in the grooves formed between the teeth the rod 30 so as to lock the same and thereby prevent movement of the doors in either direction. The arm 32 at its other end has a pin and slot connection, as at 35, with the locking rod 8, so that the engagement or disengagement of the member 33 with the rod 30 can be controlled by the rod 8. The actuation of the doors and their locking in the closed, open, or intermediate position is thought to be understood from the preceding description.

The doors 1, 1' in the closed position shown in Fig. 4 have the locking rods 8, 9 arranged in recess engaging position, whereby rotation of the shaft 20 by manipulation of the knobs 23 is impossible. To open the door the key is inserted through the hole 26 and the sliding block 25 is shifted into the position shown in Fig. 2, whereupon the knob 23 is turned to bring the cam member into vertical position, whereby the free ends of the levers 15, 16 are spread. This results in bringing the heads 13, 14 of the locking bars 8, 9 in proximate position and releasing the rods 8, 9 from their sockets, so that the door 1 may be moved into the open or into an intermediate position. Actuation of the door 1 is transmitted by the links 30 to the

door 1'. When the doors occupy the desired position, the knob 23 is again turned to permit the spring 24 to spread the heads 13, 14 of the locking rods, whereby the arm 32 is actuated to bring the cam 33 from the normal disengaging position shown in dotted lines in Fig. 1 to the position shown in solid lines in said figure. This causes the rod to be received within a groove formed by two adjacent teeth. As is indicated in Fig. 1, the recesses 10 and 11 are formed with extensions 36, whereby engagement between the rods 8, 9 with the frame of the door is prevented.

The drawings show the preferred embodiment of the invention which, of course, is merely indicative of the principle underlying the invention. A considerable number of changes and alterations will readily suggest themselves to those versed in the art, and I therefore do not confine myself to the details shown in the drawing, but wish to avail myself of any departures which fairly fall within the scope of the invention as indicated in the appended claims.

I claim:

1. In combination with a door frame defining an opening and double doors hingedly connected thereto, and constituting a closure for said opening, a lock for one of said doors, means controlled by said lock for securing the doors in desired positions, and means for transmitting movement of one of said doors to the other.
2. In combination with a door frame and double doors hingedly connected thereto, a lock for one of said doors, said last named door being provided with a vertical bore, a pair of locking rods reciprocating in opposite directions in said bore and adapted to secure the doors in closing position, said lock controlling the movement of said rods, and means actuated by said rods for securing the doors in desired positions.
3. In combination with a door frame and double doors hingedly connected thereto, a lock for one of said doors, including a sliding block, said last named door being provided with a vertical bore, a pair of locking rods reciprocating in opposite directions in said bore and adapted to secure the doors in closing position, said sliding block controlling the movement of said rods, and means actuated by said rods for securing the doors in desired positions.
4. In combination with a door frame and double doors hingedly connected thereto, a lock for one of said doors, links connected to each of said doors, a block pivotally connected to the free ends of said links, a stationary guide, said block being reciprocally mounted in said guide, and means controlled by said lock for securing the links in desired positions.
5. In combination with a door frame and

double doors hingedly connected thereto, a lock for one of said doors, links pivotally connected to each of said doors, a block pivotally connected to the free ends of said links, a stationary guide, said block being reciprocatingly mounted in said guide, said lock containing door being provided with a vertical bore, a pair of locking rods reciprocating in opposite directions in said bore and adapted to secure the doors in closing position, said lock controlling the movements of said rods, and means actuated by said rods for engaging one of said links and thereby securing the doors in desired positions.

6. In combination with a door frame and double doors hingedly connected thereto, a lock for one of said doors, links pivotally connected to each of said doors, a block pivotally connected to the free ends of said links, a stationary guide, said block being reciprocatingly mounted in said guide, said lock containing door being provided with a vertical bore, a pair of locking rods reciprocating in opposite directions in said bore and adapted to secure the doors in closing position, said lock controlling the movements of said rods, and a gear segment actuated by one of said rods and adapted to be placed in engagement with one of said links to thereby secure the doors in desired positions.

7. In combination with a door frame and double doors hingedly connected thereto, a lock for one of said doors, links connected to each of said doors, a stationary guide, the free ends of said links being interconnected and reciprocatingly fitted in said guide, said lock containing door being provided with a vertical bore, sockets arranged in upper and lower transverse members of said door frame, a pair of locking rods reciprocatingly mounted in said bore, a cam controlled by said lock for placing said rods in socket engaging position, means for normally maintaining said rods in inoperative position, and means actuated by said rods for engaging one of said links and thereby securing the doors in desired positions.

8. In combination with a door frame and double doors hingedly connected thereto, a lock for one of said doors, sockets arranged in the upper and lower transverse members of said door frame, said last named door being provided with a vertical bore,

a pair of locking rods reciprocatingly fitted in said bore, lock controlled means for placing said rods in socket engaging position, and means integral with said sockets for preventing engagement of said rods with said door frame.

9. In combination with a door frame and double doors hingedly connected thereto, a lock for one of said doors, including a sliding block, links connected to each of said doors, a stationary guide, the free ends of said links being interconnected and reciprocatingly fitted within said guide, said lock containing door being provided with a vertical bore, sockets arranged in the upper and lower transverse members of the door frame, a pair of locking rods reciprocatingly mounted in said bore, levers secured to the inner ends of said rods, said levers being controlled by said sliding block, a cam adapted to actuate said levers and to eject said rods in socket engaging position, means for normally maintaining said rods in operative position, and means actuated by said rods for locking one of said links in desired positions.

10. In combination with a door frame and double doors hingedly connected thereto, a lock for one of said doors, including a sliding block, links connected to each of said doors, a stationary guide, the free ends of said links being interconnected and reciprocatingly fitted within said guide, said lock containing door being provided with a vertical bore, sockets arranged in the upper and lower transverse members of said door frame, a pair of locking rods reciprocatingly fitted within said bore, levers secured to the inner ends of said rods, said levers being pivotally secured intermediate their ends and controlled by said sliding block, a cam arranged intermediate the free ends of said levers and adapted to actuate said levers and to eject said rods into socket engaging position, a spring engaging said levers to normally maintain said rods in socket engaging position, means for actuating said cam, and a gear segment pivotally secured to the lock containing door and having a pin and slot connection with one of said locking rods adapted to engage one of said door links in order to lock the doors in desired positions.

In testimony whereof I hereunto affix my signature.

LOUIS J. CHAPPELLE.