M. J. FLANNERY.

MEANS FOR OPERATING AND LOCKING SLIDING DOORS.

APPLICATION FILED MAR. 17, 1915.

1,151,260.

Patented Aug. 24, 1915.

2 SHEETS—SHEET 1.

Fig. 1.

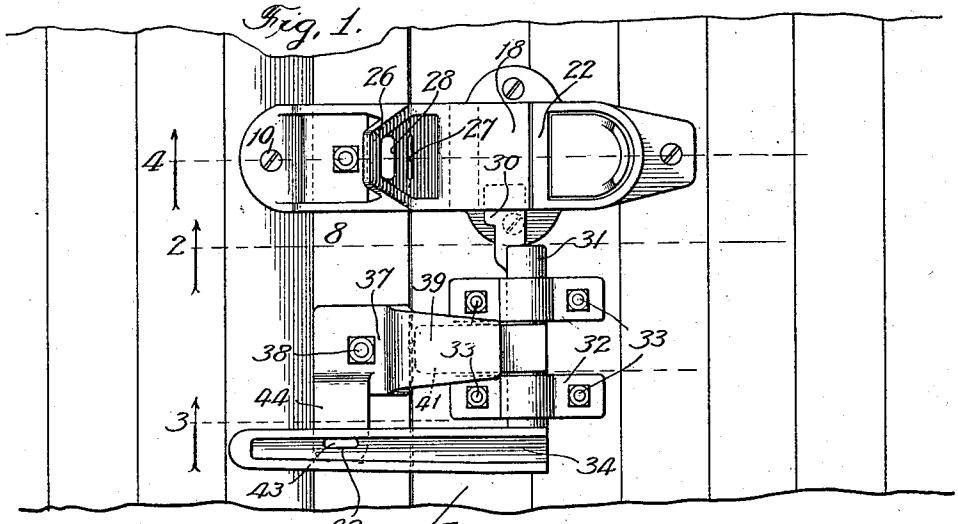


Fig. 2.

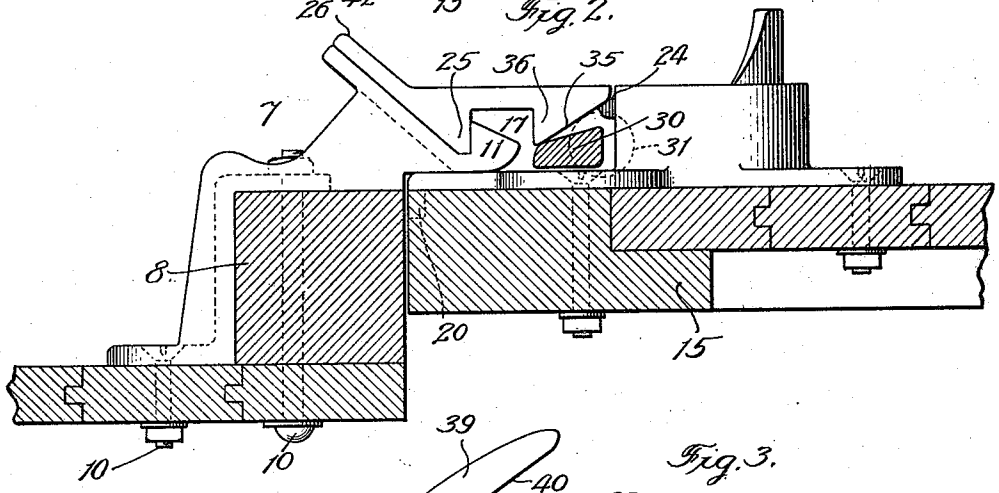
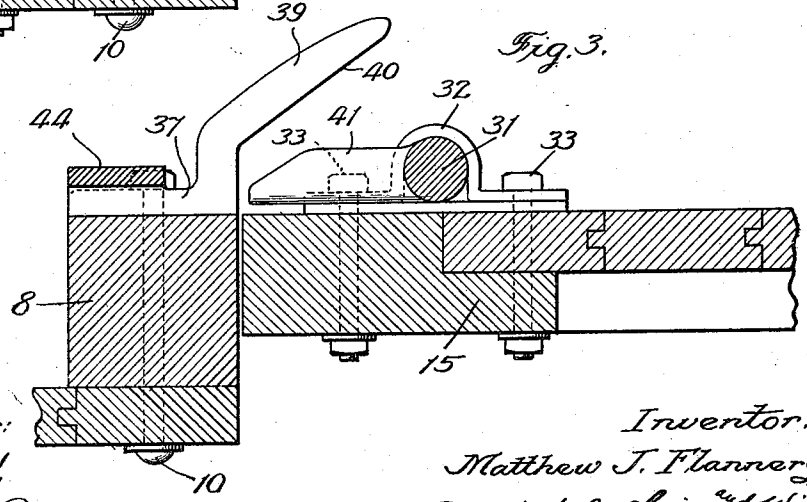


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 4.

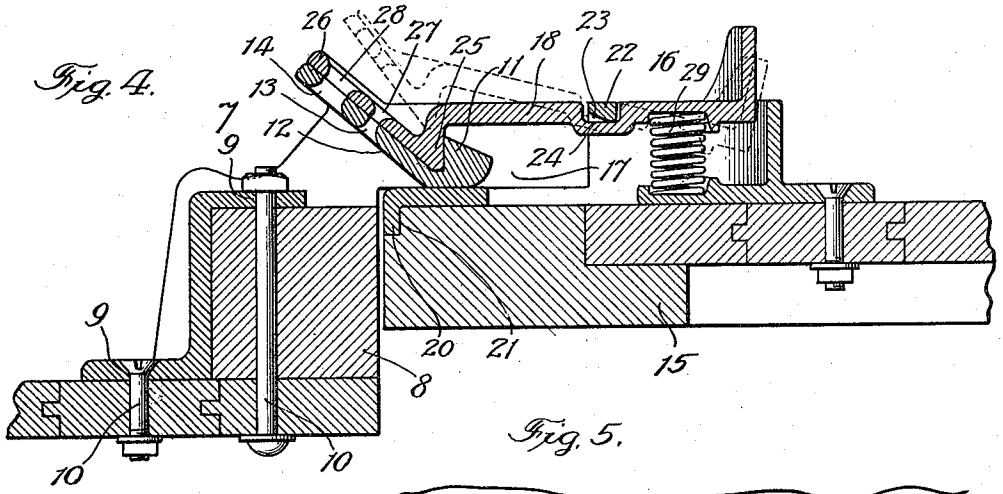


Fig. 5.

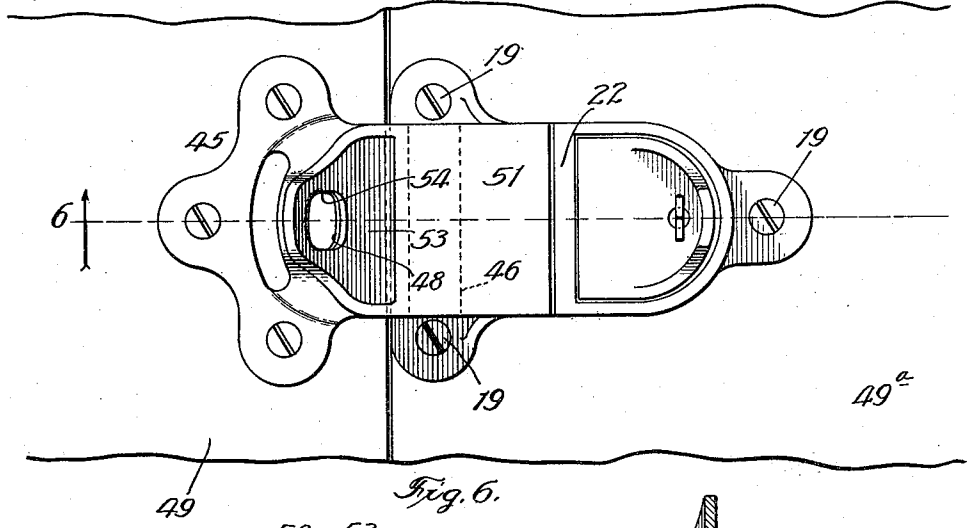
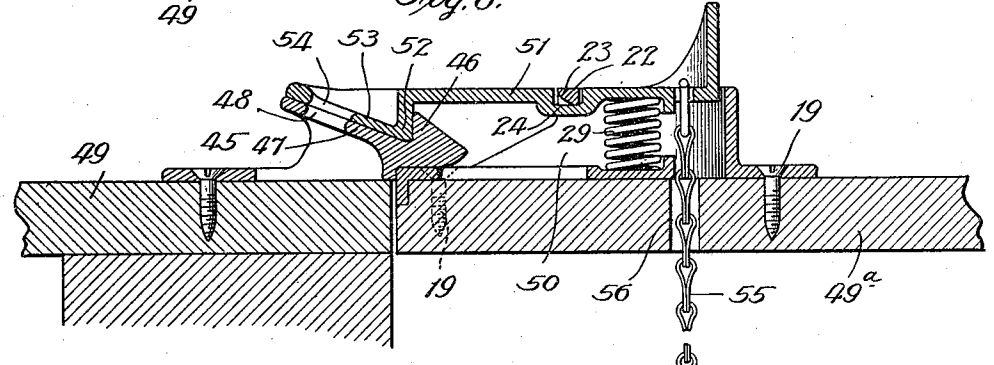


Fig. 6.



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UNITED STATES PATENT OFFICE.

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MEANS FOR OPERATING AND LOCKING SLIDING DOORS.

1,151,260. Specification of Letters Patent. Patented Aug. 24, 1915.

Application filed March 17, 1915. Serial No. 14,969.

To all whom it may concern:

Be it known that I, MATTHEW J. FLANNERY, a citizen of the United States, residing at Matteson, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Means for Operating and Locking Sliding Doors, of which the following is a specification.

I have devised my improvements for use more particularly in connection with sliding doors, though certain features thereof may be utilized in fastening means intended for use in other situations.

In freight cars, especially, the doors, when freely movable to closed position, are apt to shift back and forth in their guides and strike the door-jambs when not locked, as in the case of empty cars, with the result of impairing their parts. Furthermore when the doors are so constructed that they will jam tight and prevent shifting when the cars are jerked or suddenly stopped, they must be pried open and this often results in mutilating the edges of the doors or the door-jambs, and this necessity of prying open the doors often occurs even when they are fitted to the guides to be moved freely therein.

My objects, generally stated, are to provide an improved form of fastening means, of the automatically locking type, which shall be simple, durable and economical of construction; and to provide for use on freight cars or other structures wherein the movable parts are apt to require the application of relatively great force to initially separate them, means preferably coöperating with fastening means for the doors, for initially forcing open the closure, as for example, the doors of freight cars.

Referring to the accompanying drawings, Figure 1 is a broken face view of a freight car showing a part of the door-jamb and the door thereof equipped with my improved fastening and door shifting means, the door being shown in closed position and fastened in place by said means. Fig. 2 is an enlarged section taken at the line 2 on Fig. 1 and viewed in the direction of the arrow. Fig. 3 is a similar view taken at the line 3 on Fig. 1 and viewed in the direction of the arrow. Fig. 4 is a section taken at the line 4 on Fig. 1 and viewed in the direction of the arrow, the catch of the fastening means being shown by dotted lines in released position. Fig. 5 is a face view of a modification of the structure shown in the preceding figures, designed, more especially, for barn doors and the like; and Fig. 6 is a section taken at the line 6 on Fig. 5 and viewed in the direction of the arrow.

Referring more particularly to Figs. 1 to 4 inclusive, the keeper of the fastening means is represented at 7, this keeper being shaped as shown, to conform to with one of the side-rails 8 of the door-jamb of the car, and the adjacent body portion of the car, the keeper being provided with apertures 9, to receive bolts 10 for rigidly securing the keeper in position. The shouldered portion 11 of the keeper, which is adapted to coöperate with the catch device hereinafter referred to, extends inwardly beyond the side-rail 8, and is united with a plate section 12 which extends in an upwardly inclined direction rearwardly from the shoulder 11, this plate being provided with two apertures 13 and 14, for a purpose hereinafter explained.

The catch-portion of the device which is carried by the door 15, is represented at 16 and comprises a base member 17 and the catch proper 18. The member 17, which is in the form of a hollow frame, as shown, is adapted to be secured to the outer face of the door as by screws 19, passing through holes in this member, the forward edge of the member 17 being provided with a rearwardly extending lip 20 which sets into a recess 21 in the front side of the door 15 at the edge thereof adjacent to the rail 8. The member 17 is formed with a cross-piece 22 so disposed as to extend in spaced relation to the bottom portion of the member 17 as shown, and preferably beveled at its rear side, as indicated at 23, this cross-piece cooperating with the catch proper 18 as hereinafter described. The catch 18 is in the form of a plate provided in its outer face intermediate its ends with a groove 24 extending transversely thereof, the cross-piece 22 when the catch 18 is assembled with the member 17 extending into the groove 24, as represented in Fig. 4, and adapting the catch 18 to be rocked thereon. The end of the catch 18 adjacent to the keeper 7 is provided at its rear side with a shouldered portion 25 adapted to interlock with the shouldered portion 11 of the keeper, and extending rearwardly and upwardly in an inclined direction from the shoulder 25, is a plate section 26 provided with openings 27

and 28 adapted to register with the openings 13 and 14, respectively, in the plate section 12 when the catch 18 is interlocked with the keeper 7 (Fig. 4). The other end of the catch member 18 coöperates with a coiled spring 29 interposed between the base of the member 7 and the rear side of this end of the catch, this spring operating to turn the catch member 18 on the cross-piece 22, as a pivot, in a direction for forcing rearwardly the shouldered portion 25 of the catch, whereby when the door 15 is moved to closed position the shoulder 25 will ride over the shoulder portion 11 of the keeper and snap into interlocking engagement therewith as represented in Fig. 4.

In the construction now being described, the catch 18 is withdrawn from engagement with the keeper 7 to permit the door 15 to be opened, by means of a finger 30 projecting laterally from a shaft 31 journaled in bearings 32 secured to the outer face of the door as by bolts 33 and provided with an operating handle 34, the finger 30 coöperating with the inclined rear edge 35 of a rearwardly extending lug 36 provided on the catch 18, these parts being so constructed and arranged, as shown, as to cause the catch 18 to be raised to the position indicated in dotted lines in Fig. 4 for disengaging with the keeper 7, when the shaft 31 is rotated, through the medium of the handle 34, in a clockwise direction, in Fig. 2.

Coöperating with the fastening device and its operating means, just described, are means for initially forcing the door 15 to open position upon the act of disengaging the catch 18 from the keeper 7, these means comprising a member 37 bolted or otherwise secured to the face of the rail 8 as indicated at 38 and provided with a laterally extending section 39 which projects over the edge of the door 15 but in spaced relation thereto as shown in Fig. 3, the under side of the extension 39 being inclined as represented at 40; and a finger 41 secured to and extending laterally from the shaft 31, this finger cooperating with the extension 39 and operating against the surface 40 thereof in the further rotation of the shaft 31 in clockwise direction in Fig. 2, following the withdrawal of the catch 18 from the keeper 7, to force the door 15 to the right in Figs. 1 to 4 inclusive, it being readily understood from the foregoing that, assuming the parts to be in the position illustrated in Figs. 1 to 4 inclusive, the operator by grasping the handle 34 and swinging it outwardly, to rotate the shaft 31 in a clockwise direction in Fig. 2, first causes the catch 18 to disengage from the keeper 7 and then force the door 15 to the right in said figures, so that the door is unlocked and initially opened by practically one act on the part of the operator, namely the swinging of the handle 34 outwardly, this handle also serving as a means whereby the door may be pushed or pulled to fully open position.

The registering openings 12, 14, 27 and 28 permit of the application of a seal to the fastening device for the usual purpose; and if desired, the handle 34 may be sealed in position, as by providing it with a slot 42, which registers with a slot 43 on an extension 44 provided on the member 37 and offset relative to the door-jamb 8, in which registering slots a seal may be fastened.

It will furthermore be understood that when the shaft 31 is rotated back to the position represented in Fig. 1 after the door has been opened, the catch device 18 under the action of the spring 29 is tilted rearwardly at its shouldered end 25 and thus when the door 15 is again moved to closed position the catch will automatically interlock with the keeper 7.

The securing means illustrated in Figs. 5 and 6 are substantially of the same construction as those illustrated in the preceding figures. The keeper of this construction, represented at 45, is provided with a shouldered portion 46 and plate section 47 corresponding in general to the shouldered portion 11 and the plate section 12 of the preceding figures excepting that the plate 47 instead of containing two openings contains a single opening 48. In barn structures the door-jambs are not as a rule forwardly offset from the wall of the barn, and I have, therefore, shown the keeper 45 as having a base which is flat instead of angle-shaped as represented of the keeper 7, which adapts it to be secured in proper position against the wall 49 of a barn adjacent to the door opening thereof. The members of the catch portion of the fastening means represented at 50 and 51 and which are secured to the door 49^a, are of substantially the same construction as the member 17 and catch member 18 respectively of the preceding figures, the shouldered portion 52 of the member 51 and the plate section 53 thereof being similar to the shouldered portion 25 and the plate section 26 respectively of the catch member 18, excepting that a single opening 54 is provided in the plate member 53, which registers with the opening 48 when the fastening means are in securing position, and furnishes a means for attaching a padlock, or the like, thereto. In this construction means are employed for permitting the catch 51 to be withdrawn from engagement with the keeper 45, from the side of the door opposite that to which the fastening means are secured, these means in a desirable form comprising a chain 55 connected at one end with the end of the catch member 51 adjacent its actuating spring and extending through an opening 56 in the door to which the catch device is secured.

It will be readily understood from the foregoing that when the door is pushed to closed position, the catch will automatically interlock with the keeper, and may be released therefrom either by pressing on the rear end of the member 51 or by drawing on the chain 55.

What I claim as new and desire to secure by Letters Patent is:

1. An element of fastening mechanism for coöperation with a keeper, comprising a hollow member adapted to be secured in position on one of two parts to be fastened together, and having a cross-bar formed integral therewith, a catch device bearing intermediate its ends at its outer face against the inner side of said bar and adapted to rock on the latter, and a spring engaging one end of said catch.

2. An element of fastening mechanism for coöperation with a keeper comprising a hollow member adapted to be secured in position on one of two parts to be fastened together and having a cross-bar formed integral therewith, a catch device containing a groove in its outer face intermediate its ends into which said cross-bar extends adapting said catch to rock thereon, and a spring engaging one end of said catch.

3. The combination with members relatively movable toward and away from each other, of fastening means therefor comprising a keeper on one of said members, a catch on the other of said members interlocking with said keeper when said members are in a certain position, a rotatable shaft, means connected with said shaft, and separate from said catch for releasing the latter from said keeper upon actuating said shaft, means on said shaft for forcing said members apart following the disengagement of said catch from said keeper, and means for rotating said shaft.

4. The combination with members relatively movable toward and away from each other, of fastening means therefor comprising a keeper on one of said members, a catch on the other of said members constructed and arranged to automatically interlock with said keeper when said members are relatively moved toward each other into a certain position, a rotatable shaft, means separate from said catch, operated by said shaft when rotated for releasing said catch from said keeper, means operated by said shaft for forcing said members apart, and means for rotating said shaft.

5. The combination with a sliding door and its casing, of means for forcing said door to initially open condition comprising a cam on the casing, a shaft rotatably mounted on the door and having a laterally-extending handle section, and a finger on said shaft adapted to move against said cam when said shaft is rotated and force the door open, the parts being so arranged that the handle, by which the door is forced open as stated, affords a means for pulling the door to fully open position by continuing, in the same direction against the handle, the pressure applied against it to cause said cam and finger to coöperate as stated.

6. The combination with members relatively movable toward and away from each other, of fastening means therefor comprising a keeper on one of said members, a catch on the other of said members interlocking with said keeper when said members are in a certain position, a rotatable shaft having its axis substantially parallel with the plane occupied by the door and extending at right angles to the plane in which said catch operates, means connected with said shaft, and separate from said catch, for releasing the latter from said keeper upon actuating said shaft, means on said shaft for forcing said members apart following the disengagement of said catch from said keeper, and means for rotating said shaft.

MATTHEW J. FLANNERY.

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