

No. 860,408.

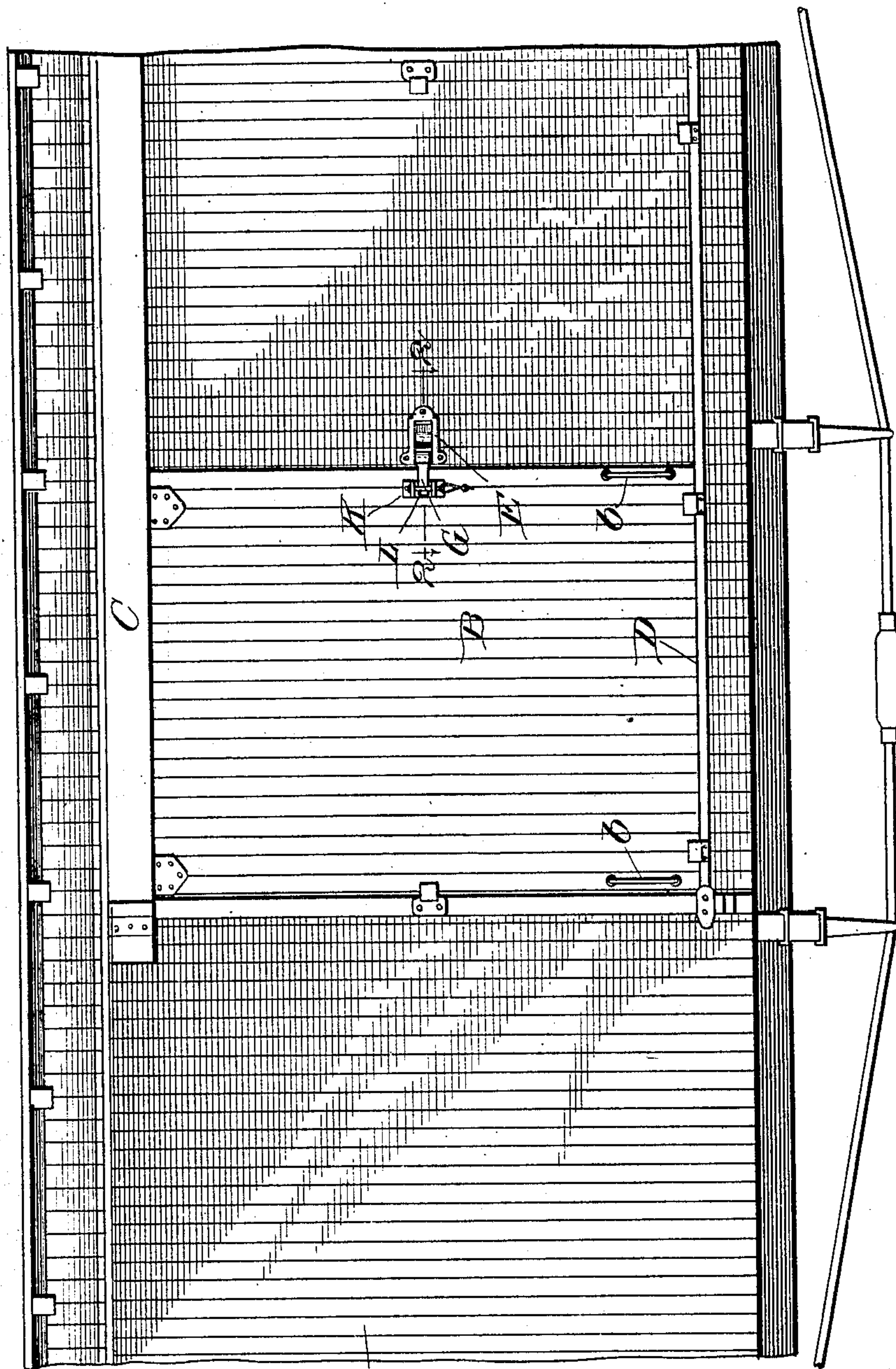
PATENTED JULY 16, 1907.

H. D. NICHOLS.

FASTENING DEVICE FOR SLIDING DOORS.

APPLICATION FILED JAN. 24, 1907.

2 SHEETS—SHEET 1.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 2.

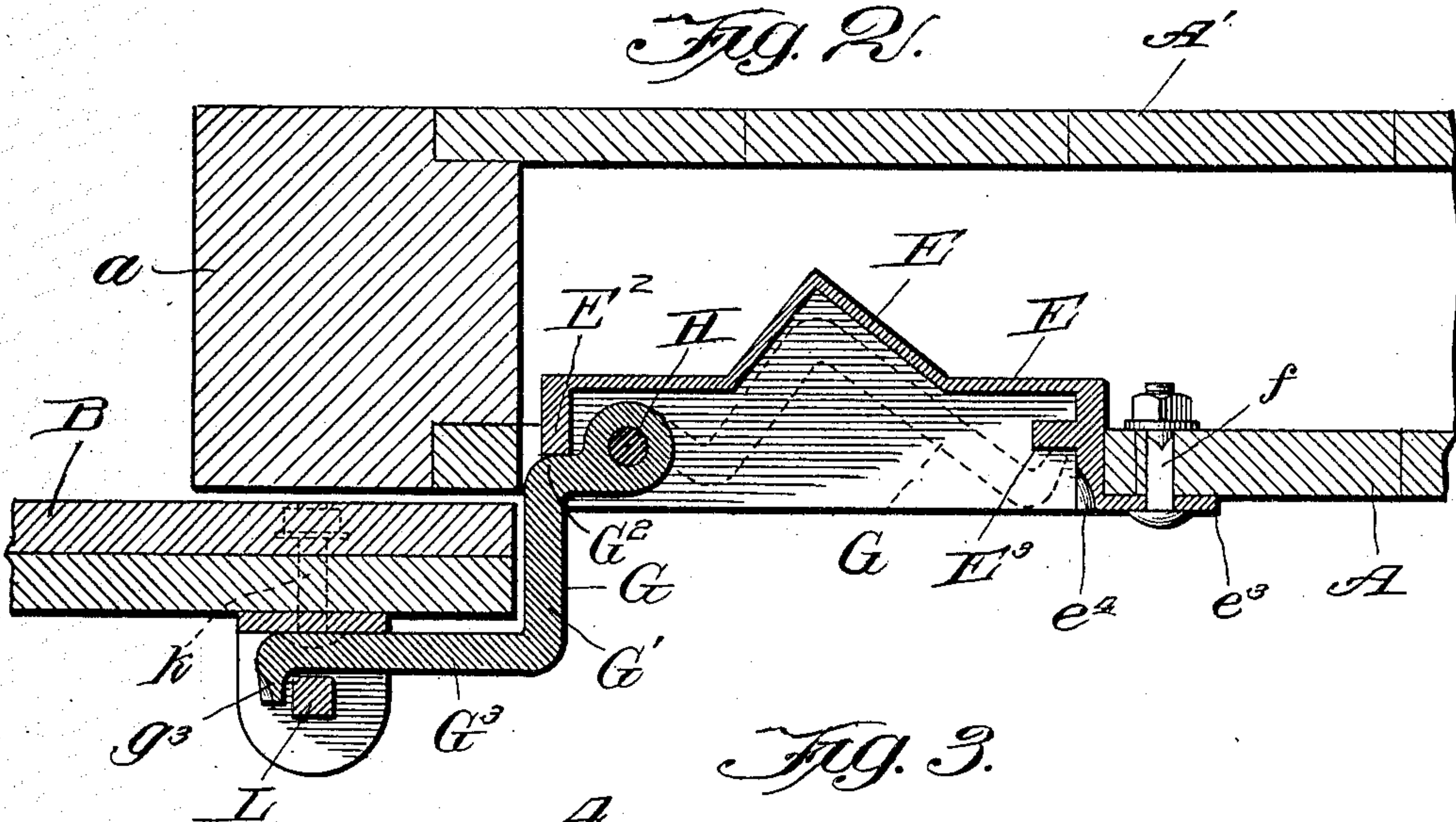


Fig. 3.

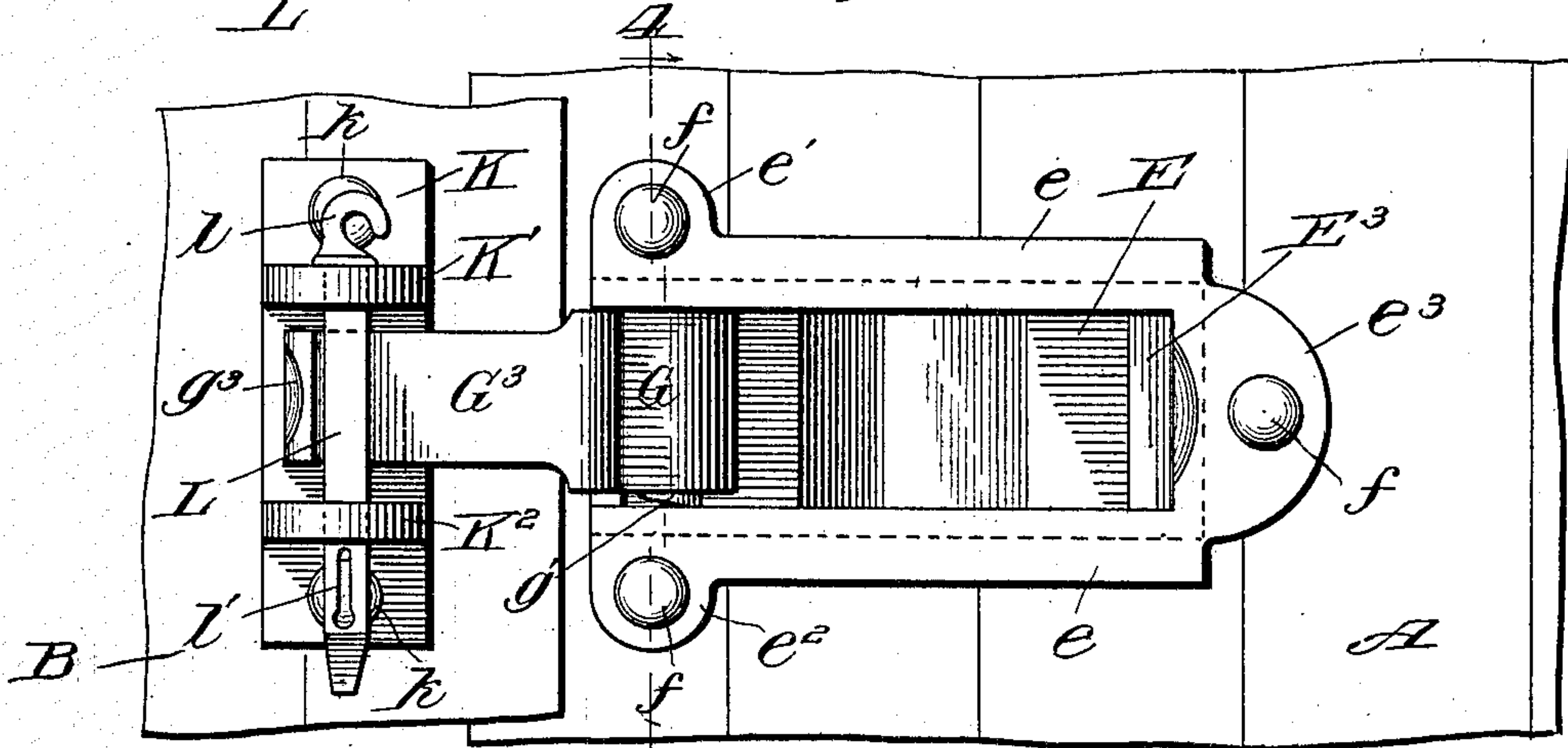


Fig. 4.

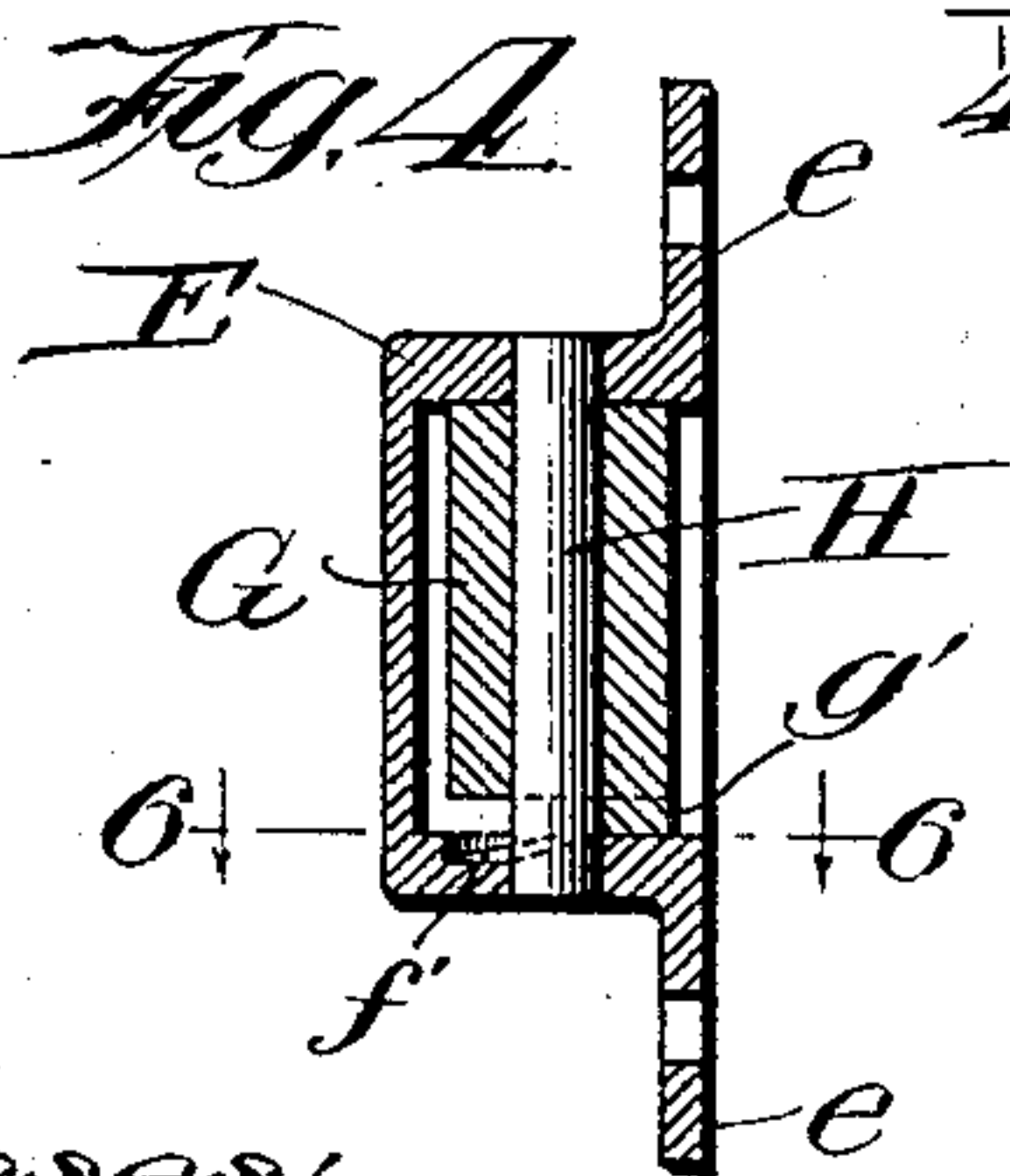


Fig. 5.

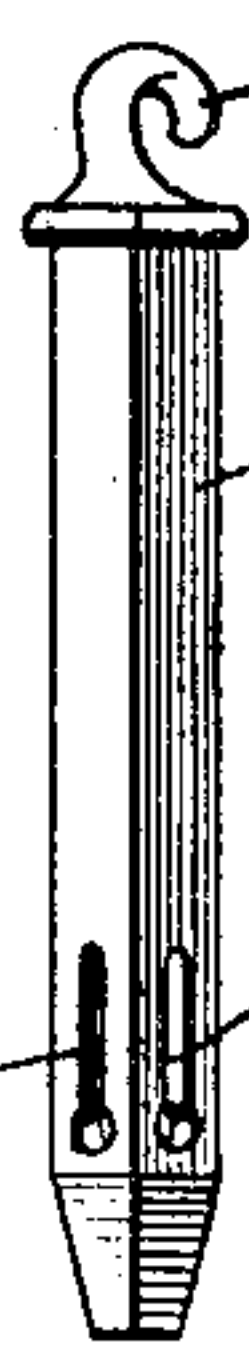
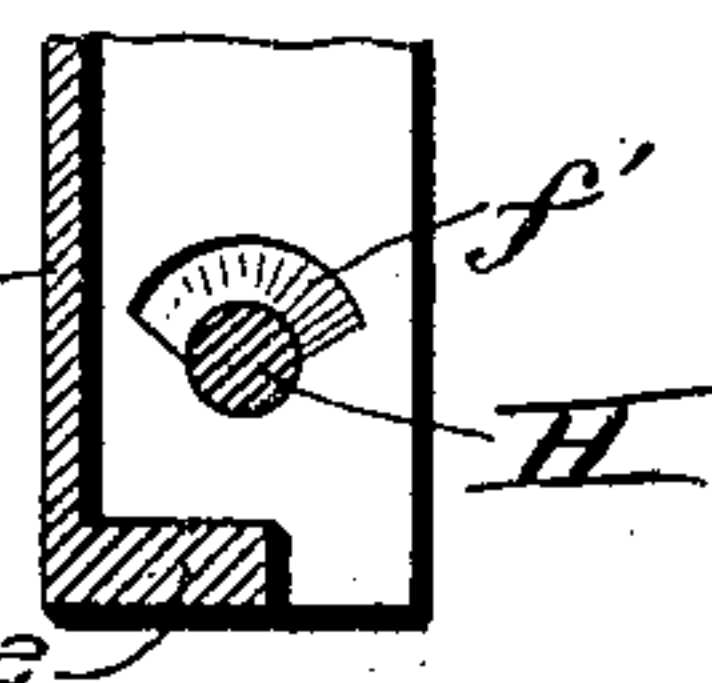


Fig. 6.



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UNITED STATES PATENT OFFICE.

HENRY D. NICHOLS, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-FOURTH TO JOHN D. KNEEDLER, OF SIOUX CITY, IOWA, ONE-FOURTH TO JOHN M. TAYLOR, AND ONE-FOURTH TO FRANK B. HARRIMAN, OF CHICAGO, ILLINOIS.

FASTENING DEVICE FOR SLIDING DOORS.

No. 860,408.

Specification of Letters Patent.

Patented July 16, 1907.

Application filed January 24, 1907. Serial No. 353,786.

To all whom it may concern:

Be it known that HENRY D. NICHOLS, a citizen of the United States, residing at Chicago, county of Cook, State of Illinois, have invented a certain new and useful

Improvement in Fastening Devices for Sliding Doors; 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 in general to door fasteners, and more particularly to a device for fastening sliding doors.

The force of the impact in switching, and in starting and stopping railroad cars is so great that the ordinary fastening devices now in use are insufficient to resist the strain and are frequently broken, permitting the doors to slide open, breaking the seals and exposing the contents of the cars. In order to avoid the danger of car doors sliding open by the breaking of the fastening devices, it is customary to nail cleats to the sides of the cars behind the closed doors, thereby preventing the doors from sliding open when the fastening devices break. This practice is expensive and unsatisfactory.

The primary object of my invention is to provide a fastening device for sliding doors which will securely retain the doors in closed position and will prevent them from sliding in either direction.

A further object of my invention is to provide a fastening device especially adapted to freight car doors, which will engage the rear edge of the doors and prevent them sliding open, but which may be readily swung out of the path of movement of the doors to permit them to be opened.

A further object of my invention is to provide an improved fastening device for sliding doors which will be simple in construction, inexpensive in manufacture, and durable and efficient in use.

My invention may be generally described as comprising a base plate having an open chamber therein adapted to be secured to a wall and at the side of a door opening towards which a sliding door moves when opened, an angular latch pivoted about a vertical axis upon said plate and adapted to normally swing within the chamber in said plate, a keeper adapted to be fixed to the outer surface of the sliding door adjacent its rear edge into engagement with which said latch is adapted to swing, a removable locking pin engaging said keeper to retain the latch secured thereto, said latch having a shoulder adapted to engage a shoulder on said plate to limit its opening movement, and having a shoulder adapted to lie across the rear edge of the door to prevent the door sliding open.

My invention will be more fully described hereinafter with reference to the accompanying drawings in which the same is illustrated as embodied in a convenient and practical form, and in which

Figure 1 is a side elevational view of the central portion of a freight car showing my improved fastening device applied thereto; Fig. 2 a sectional view on an enlarged scale taken on line 2—2 Fig. 1; Fig. 3 an enlarged elevational view of my improved fastening device showing the surrounding portions of the car to which it is applied; Fig. 4 a sectional view on line 4—4 Fig. 3, the device being shown as removed from the car; Fig. 5 a perspective view of the locking pin; Fig. 6 a sectional view on line 6—6 Fig. 4 showing the bottom of the supporting plate below the axis of the latch.

The same reference characters are used to designate the same parts in the several figures of the drawings.

Reference character A indicates one side of a freight car of any usual or suitable construction.

B designates the car door which is mounted to slide into position to close or uncover the door opening.

b indicates a handle by means of which the door may be more readily moved into its closed or open position.

C designates the strip secured to the side wall of the car within which is the usual track from which the door is suspended.

D indicates a guide rod secured to the side of the car near the bottom thereof and extending the length of the path of movement of the door to support the door at its bottom.

The structure above described does not in itself constitute my invention, but is merely illustrated in order that the operation of my improved fastening device may be clearly disclosed. It will, of course, be understood that my invention may be applied to other forms of sliding car doors and in fact to any structure comprising a door or panel which slides relatively to an adjacent surface.

Reference character E indicates a base-plate having an open chamber therein and provided with a flange *e* and ears *e'*, *e*², and *e*³, projecting around the wall thereof. The plate is adapted to extend through an opening in the sheathing or exterior side wall of the car, the flange and ears overlying the outer surface of the side wall and secured thereto in any suitable manner, as by means of bolts *f* extending through holes in the ears and through alining holes in the side wall of the car. The portion of the plate which projects through the opening in the side wall of the car lies within the space formed between the inner surface of the side wall and the usual inner lining A' of the car.

a indicates the usual post at each side of the door

opening to which the car sheathing and inner lining are secured and over which the door is adapted to extend.

G designates an angular latch pivoted to swing about a vertical axis within the end of the chamber in the base plate adjacent the door opening. The latch may be conveniently supported upon a vertical pin H supported at its upper and lower ends in holes in the upper and lower walls of the chamber of the base plate. The latch is provided with a portion G' adapted when the latch is in the position shown in full lines in Fig. 2 to extend across the path of movement of the rear vertical edge of the door. A shoulder G² is provided on the latch intermediate of the portion G' and its axis which is adapted to engage a stop flange E² on the base plate thereby limiting the outward movement of the latch. The latch is provided with a portion G³ extending at approximately right angle to the portion G' which is adapted to overlie the rear of the car door and to swing into engagement with a keeper secured to the outer surface of the door near the rear edge thereof.

I have shown at K a convenient form of keeper which is secured to the door by any suitable fastening devices, as for instance bolts k extending through holes in the keeper and registering holes in the underlying door. Horizontally projecting parallel ears K' and K² are provided upon the keeper between which the outer edge of the latch is adapted to swing. The ears K' and K² are provided with vertically aligned openings through which a locking pin L is adapted to extend to overlie the latch to retain the same in position to obstruct the path of movement of the door. The outer end of the latch is provided with a flange g³ which extends around the pin and prevents the latch from passing between the pin and the supporting plate of the keeper.

The locking pin L is provided with a hook l at its upper end by means of which it may be secured to the car door by a suitable connection. The locking pin is preferably square in cross-section and tapered at its lower end to facilitate its being inserted through the openings in the ears on the keeper plate, such openings being preferably square to conform to the cross-section of the pin. The lower end of the pin which projects below the ear K² is provided with slots extending through the same at right angles through which the usual car seal is adapted to be inserted. By providing the slots extending in both directions through the pin it is immaterial in what position the pin is inserted through the ears as one of the intersecting slots will always be in position to permit the car seal to be affixed to the pin.

In order that the latch may be retained within the chamber in the base plate when the car door is open the under surface of the hub of the latch surrounding its axis is provided with an inclined cam surface g' while a corresponding recess f' having an inclined lower wall is provided in the portion of the base plate surrounding the axis of the latch. The cam g' and the cooperating recess f' are so relatively located that when the latch is swung into the position shown in Figs. 2, 3, and 4 the latch is elevated and is supported by the lower point of the cam resting upon the highest point of the recess so that immediately upon the pin L being disengaged from the keeper the weight of

the latch applied through the inclined surfaces of the cam and cooperating recess, will automatically swing the latch within the chamber in the base plate so that it lies entirely out of the path of movement of the door when it slides into its open or closed position. A stop rib E³ is provided within the chamber of the base plate against which the flange g³ on the end of the latch rests when the latch has swung within the chamber in the base plate, as shown in dotted lines in Fig. 2.

The operation of my improvement is as follows: The car door B is adapted to slide towards the right in Fig. 1 in order to open the car. The base plate E is secured to the wall of the car immediately to the rear of the car door. When the car door has been closed the latch G is swung from the position shown in dotted lines to that shown in full lines in Fig. 2, such movement of the latch being readily effected owing to the end of the latch being retained by the stop rib E³ in position for the fingers to engage the same, the end of the latch being rendered more easily accessible by reason of the recess e⁴ in the adjacent wall of the base plate. After the latch has been swung into the position shown in Figs. 2 and 3 the locking pin L is inserted through the registering holes in the ears on the keeper and a seal secured to the lower end of the pin. The space between the ears on the keeper is greater than the width of the latch, as clearly shown in Fig. 3, thereby insuring the latch readily passing between the ears even though the car door may through usage or shrinkage have slightly varied its relation to the wall of the car. When the latch has been fastened as described it is evident that the door is positively prevented from sliding open by reason of the portion G' of the latch extending across the path of movement of the door. It is also evident that the flange g³ on the end of the latch serves to prevent the door sliding in an opposite direction should the jamb D' become broken as is sometimes the case. When it is desired to open the car door the pin L is elevated out of engagement with the ears upon the keeper whereupon the latch is swung within the chamber in the base plate thereby removing the same from the path of movement of the door which may be then readily moved towards the right in Fig. 1. The cam surfaces on the hub of the latch and under supporting wall of the chamber serve to retain the latch within the chamber so that the door may be freely moved open and closed without danger of the latch swinging outwardly and engaging the cleats on the inner surface of the door and thereby interfering with the free opening and closing of the door.

From the foregoing description it will be observed that I have invented an improved fastening device for sliding doors which is adapted to obstruct the path of movement of the door and thereby positively lock the same closed. It is further evident that my improved fastening device may be readily secured in position to lock the door closed and will, when it is desired to open a door, automatically swing out of the path of the door, thereby permitting the door to move freely and into its open or closed position.

While I have described more or less precisely the details of construction, I do not wish to be understood as limiting myself thereto, as I contemplate changes in form, the proportion of parts, and the substitution

of equivalents, as circumstances may suggest or render expedient without departing from the spirit of my invention.

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

1. In a fastening device for sliding doors, the combination with a base plate adapted to be secured to a surface over which the door slides, said plate having a chamber extending inwardly from said surface, of a latch movably supported upon said base plate and adapted to be received within said chamber and to be moved out of said chamber into the path of movement of the door, means for retaining said latch in position to obstruct the opening movement of the door, and means for automatically moving said latch into said chamber upon the disengagement of said retaining means.

2. In a fastening device for sliding doors, the combination with a base plate adapted to be secured to a surface over which the door slides, said base plate having a chamber extending inwardly from said surface, of a latch pivoted upon a vertical axis within said chamber adjacent the door opening, said latch adapted to normally lie within said chamber out of the path of movement of the door, said latch and an adjacent wall of said chamber comprising means for automatically swinging said latch into said chamber, a keeper adapted to be fixed to the door adjacent the rear edge thereof into engagement with which said latch is adapted to swing, and means for locking said latch to said keeper and thereby retaining said latch across the path of movement of the door.

3. In a fastening device for sliding doors, the combination with a base plate adapted to be secured to a surface over which a door is adapted to slide, of a latch movably supported upon said base plate and adapted to be adjusted into and out of the path of the door, means for retaining said latch in position to obstruct the opening movement of the door, and means tending normally to swing the latch out of the path of the door.

4. In a fastening device for doors, the combination with a base plate member adapted to be secured to a surface over which a door is adapted to slide, of a latch member movably supported upon said base plate member and adapted to be adjusted into and out of the path of movement of the door, and means for retaining said latch member in position to obstruct the opening movement of

the door, one of said members having a downwardly inclined surface and the other having a cooperating portion to engage said surface and cause the center of gravity of the latch to be raised slightly when the latch is moved into the locking position.

5. In a fastening device for sliding doors, a recessed base plate arranged adjacent the rear edge of the door opening, a latch mounted on a vertical pivot in said recess, said base plate having a portion of the bottom wall adjacent the recess inclined transversely to the plane of movement of the door and said latch having a shoulder which rides upon said inclined surface.

6. In a fastening device for sliding doors, a base-plate adapted to be arranged adjacent the rear edge of the door opening and having a recess therein, an L-shaped latch pivoted at the outer end of one of its arms to said base-plate on an axis parallel with the rear edge of the door and arranged to be swung either into the recess in the base plate or about the outer rear corner of the door, the axis about which the latch swings being near the plane of the surface of the latch engaged by the rear edge of the door, and means for locking the other arm of the latch to the door, the recess in the base-plate being unobstructed in rear of the latch so that upon disengagement of the locking means from the latch the door may be opened and swing the latch into the recess.

7. In a fastening device for sliding doors, a base-plate adapted to be secured to a surface over which a door is adapted to slide and adjacent the rear edge of the door opening, said base-plate having a recess therein, a latch pivotally supported in said recess in position to be swung into the recess out of the path of movement of the door or into a position to engage the rear edge of the door, the pivotal axis of the latch lying close to the plane of the rear edge of the door when the door is closed, and the recess in the base-plate being unobstructed in rear of the latch so as to permit the latch to move from the locking position to the inoperative position by a simple swinging movement, and retaining means for securing the latch to the door when the latch is in the obstructing position.

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

HENRY D. NICHOLS.

Witnesses:

GEO. C. WILKINSON,
HARRY S. GAITHER.