P. S. PIANS.

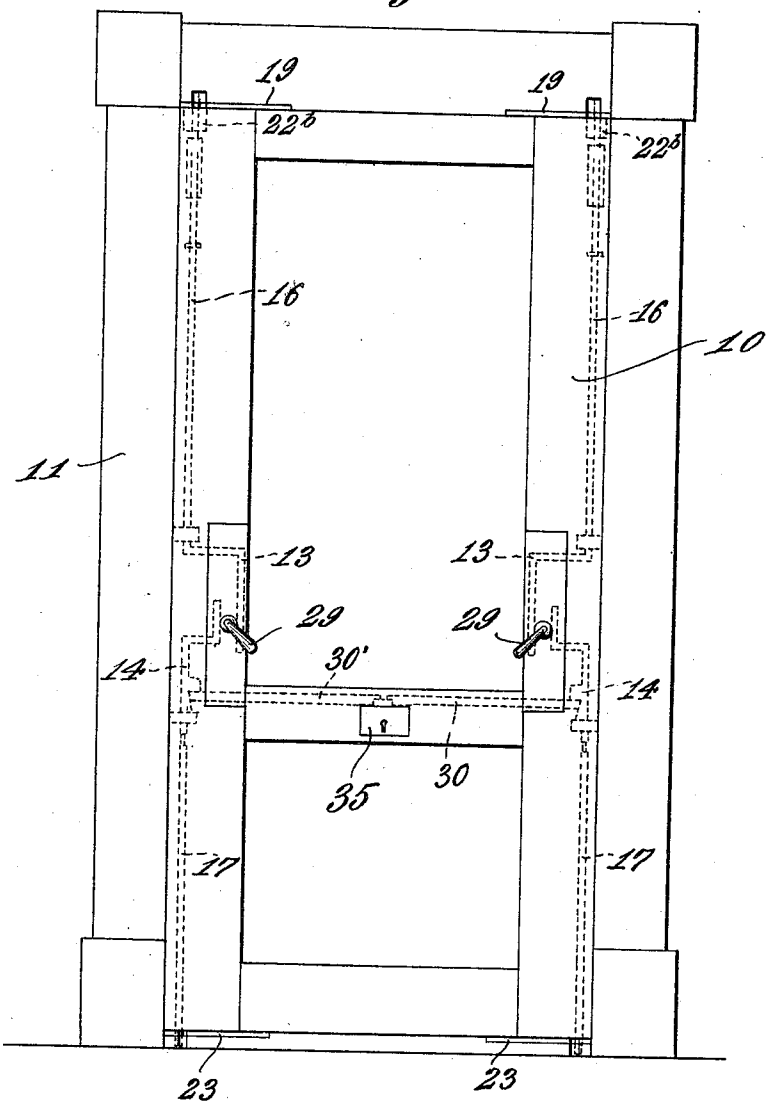
AUTOMATIC DOOR.

APPLICATION FILED FEB. 23, 1910.

972,639. **Patented Oct. 11, 1910.**

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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3 SHEETS—SHEET 2.

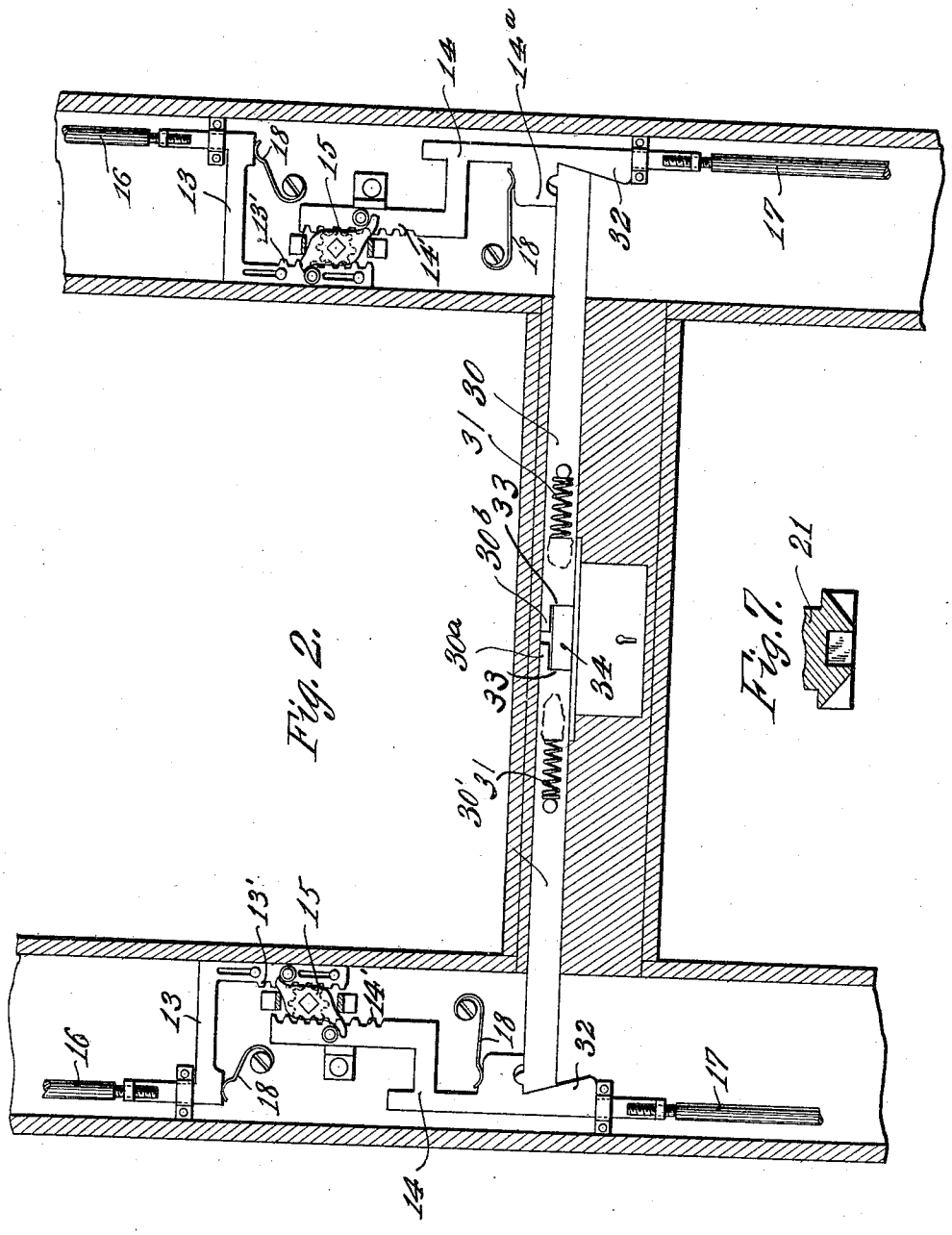

Fig. 2.

Fig. 1.

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3 SHEETS—SHEET 3.

Fig. 3.

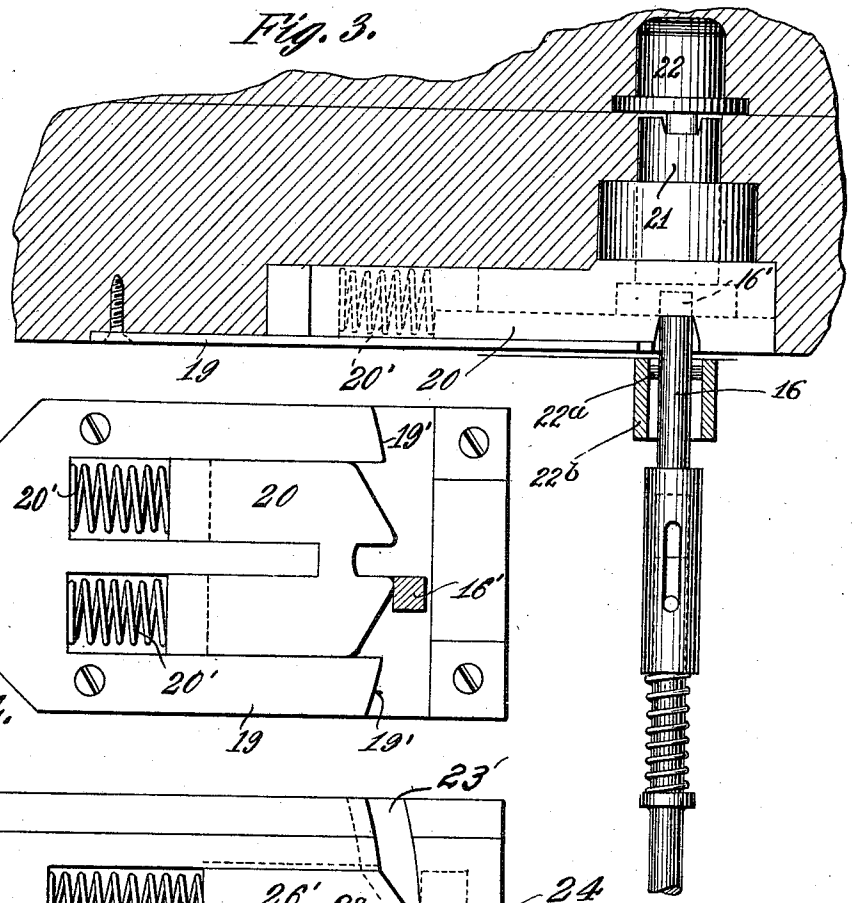


Fig. 4.

Fig. 6.

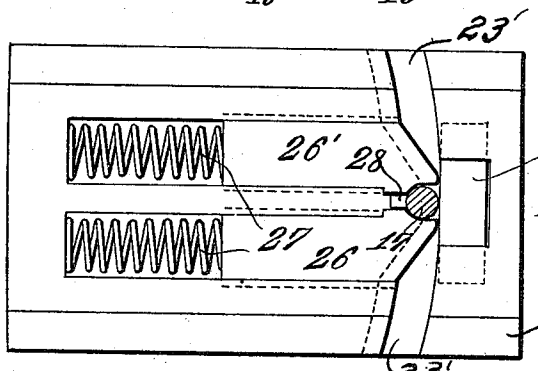
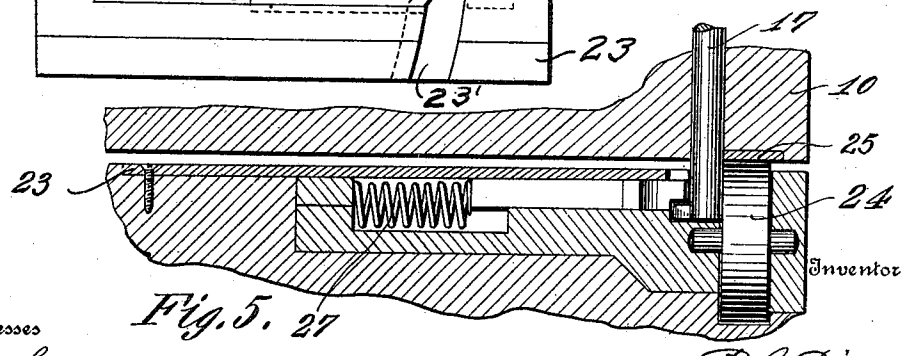


Fig. 5.



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UNITED STATES PATENT OFFICE.

PIETRO S. PIANS, OF NEW ROCHELLE, NEW YORK.

AUTOMATIC DOOR.

972,639. Specification of Letters Patent. Patented Oct. 11, 1910.

Application filed February 23, 1910. Serial No. 545,349.

To all whom it may concern:

Be it known that I, PIETRO S. PIANS, a subject of the King of Italy, residing at No. 205 Fourth street, city of New Rochelle, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Automatic Doors, of which the following is a specification.

This invention relates to means for hanging and locking doors and has particular reference to devices of this kind which are intended to so support a vertical door as to provide that the same may swing from either of its two lateral edges and in either direction, all of which will be fully described hereinafter and illustrated in the accompanying drawings, in which—

Figure 1 is a diagrammatic view of the door equipped with the invention; Fig. 2 is a view of a fragment of the door, showing the latch mechanisms and lock in elevation; Fig. 3 is a detail of the mechanism at the top of the door frame and one of the bolts in cooperation therewith; Fig. 4 is a bottom plan of part of the devices shown in Fig. 3, but in a different position; Fig. 5 is a detail view of the devices at the bottom of the frame, showing the lower bolt in coöperation therewith, and Fig. 6 is a plan view of the devices shown in Fig. 5.

Throughout the following detail description, and on the several figures of the drawings similar parts are referred to by like reference characters.

Referring particularly to the drawings the numeral 10 indicates a vertical door mounted for coöperation with a frame or wall 11, and so disposed with relation to the frame that it may be locked closed or may be opened from either side so as to swing in any one of four directions. Near each lateral edge of the door 10 is a latch. Since the latch mechanisms are substantially duplicates, a specific description of one will be understood as being applicable to both in the following description. The latch embodies a pair of brackets 13 and 14, having oppositely disposed rack teeth 13′ and 14′, respectively, for operation by a pinion 15. The pinion may be operated by an ordinary handle or door knob, in a manner very similar to the door knobs ordinarily in use. Connected adjustably as by screw threads to the brackets 13 and 14 are a pair of bolts 16 and 17, projecting respectively above the upper edge and below the lower edge of the door. The normal position of these parts is as has just been stated and they are maintained therein by virtue of springs 18, shown as being located within the latch mechanism.

Located above the door is a metal plate 19, and associated therewith is a catch 20 adapted to coöperate with the bolt 16 and normally held in such position by springs 20′. The extreme upper end of the bolt 16 is squared as indicated at 16′, whereby it is adapted to seat in a similarly formed socket in a spring casing 21. By this means and by virtue of a strong spring 22, located above the door, the door is adapted to automatically close after being opened. In order to insure that the spring 22 will swing the door, the bolt 16 is provided with fins 22^a which operate in grooves in a casing 22^b connected rigidly to the door. The plate 19 is formed with opposite outwardly flared bolt entrance spaces at 19′ in order to facilitate the closing of the door.

Below the door is a plate 23 into or beyond which the bolt projects, the lower end of the bolt 17 coöperating with the antifriction roller 24 and upon which the lower edge of the door is adapted to rest as indicated at 25. The plate 23 is formed with opposite outwardly flared bolt entrance spaces at 23′ in order to facilitate the passage of the lower end of the bolt 17. A pair of catches 26 and 26′ coöperate with the lower end of the bolt 17 and are normally held in such position by springs 27. A lug 28 carried by the lower end of the bolt 17 coöperates with the outer and lower edges of the catches 26 and 26′.

So far as now described the operation is substantially as follows: A person approaching the door at either edge may turn the knob 29 causing the bolts at that edge of the door to approach each other and be withdrawn from the plates 19 and 23. The door will then be free to swing on the opposite pair of bolts as an axis, and may swing thereon in either direction. The door having been released by the operator will be restored to its normal position by virtue of the spring 22 associated with the pair of bolts which served at that time as an axis or hinge. In order to prevent two persons from attempting to open the door at the same time from opposite edges, mechanism connecting the two sets of latches is employed. Furthermore, the same mechanism may be utilized to lock the door, as by

a key, to prevent the opening thereof in the ordinary manner. Such safety mechanism comprises a pair of horizontal plungers 30 and 30′ which coöperate with the latch members 14 at their outer ends and having their inner ends 30^a and 30^b opposed to each other but slightly spaced when in normal position. The normal position of the plungers 30 and 30′ is that indicated in Fig. 2 with their outer ends against the brackets 14 and with the lugs 14^a of the brackets lying against the upper edge of said outer ends, such position being maintained by springs 31. The member 14 is beveled at 32 where it cooperates with the outer end of the plunger, and whereby when the member 14 is raised the plunger adjacent thereto is caused to approach the opposite plunger. The effective depth of the cam 32, determined by the distance the member 14 and bolt 17 must be lifted to unlatch the door, is substantially the same as the distance between the plunger ends 30^a and 30^b. For this reason the plungers cannot both be moved at the same time sufficiently far to withdraw all of the bolts 16 and 17 from their normal position. The plungers are provided with notches 33 into which the bolt 34 of a lock 35 may be received, as by the use of an ordinary key. When the bolt 34 is thus projected into said notches neither plunger may be moved and hence neither handle 29 may be turned.

Having thus described the invention, what is claimed as new is:

1. In door locking means, the combination with a door and its frame, of corresponding latch mechanisms at opposite edges of the door, means for independent operation of said latch mechanisms, a pair of plungers movable at right angles with respect to the latch mechanisms and operable thereby, and means movable between adjacent ends of said plungers to lock the latch mechanisms in a predetermined position.

2. In door locking means, the combination with a door and its frame, of corresponding latch mechanisms at opposite edges of the door, means for independent operation of said latch mechanisms, a pair of plungers movable at right angles with respect to the latch mechanisms and operable thereby, and locking mechanisms including a bolt mounted adjacent to the adjacent ends of the plungers, said plungers having notches in said ends to receive the bolt to thereby prevent operation of the latch mechanisms.

3. In combination with a door and its frame, latch mechanisms mounted upon opposite edge portions of the door and including locking bolts arranged to be projected into engagement with the frame, means for actuating the latch mechanisms independently, a pair of sliding plungers disposed between the latch mechanisms, said latch mechanisms having cams arranged to engage the outer ends of said plungers to force the same together, and locking means for preventing movement of said plungers toward one another to thereby lock the latch mechanisms from operation.

4. In combination with a door and its frame, latch mechanisms mounted upon opposite edge portions of the door and including locking bolts arranged to be projected into engagement with the frame, means for actuating the latch mechanisms independently, a pair of sliding plungers disposed between the latch mechanisms, said latch mechanisms having cams arranged to engage the outer ends of said plungers to force the same together, the sliding plungers having their adjacent ends so spaced as to abut with one another and prevent the means for independent operation of the latch mechanisms from simultaneously operating said latch mechanisms to their full extent.

5. In combination with a door and its frame, separate latch mechanisms mounted at opposite portions of the door, a pair of sliding plungers between the latch mechanisms, each latch mechanism including a bracket having a cam movable therewith and engaging the adjacent plunger to force the latter toward the other plunger when said latch mechanism is operated, the plungers being so spaced at their adjacent ends that they will abut and prevent simultaneous disengagement of the bolts of the latch mechanisms, should the latter be simultaneously operated.

In testimony whereof I affix my signature in presence of two witnesses.

PIETRO S. PIANS.

Witnesses:

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FRANCIS X. FALLON.