No. 847,145. PATENTED MAR. 12, 1907.

A. ABZUG.

COMBINED HINGE AND FASTENING FOR DOORS.

APPLICATION FILED NOV. 13, 1905.

4 SHEETS—SHEET 1.

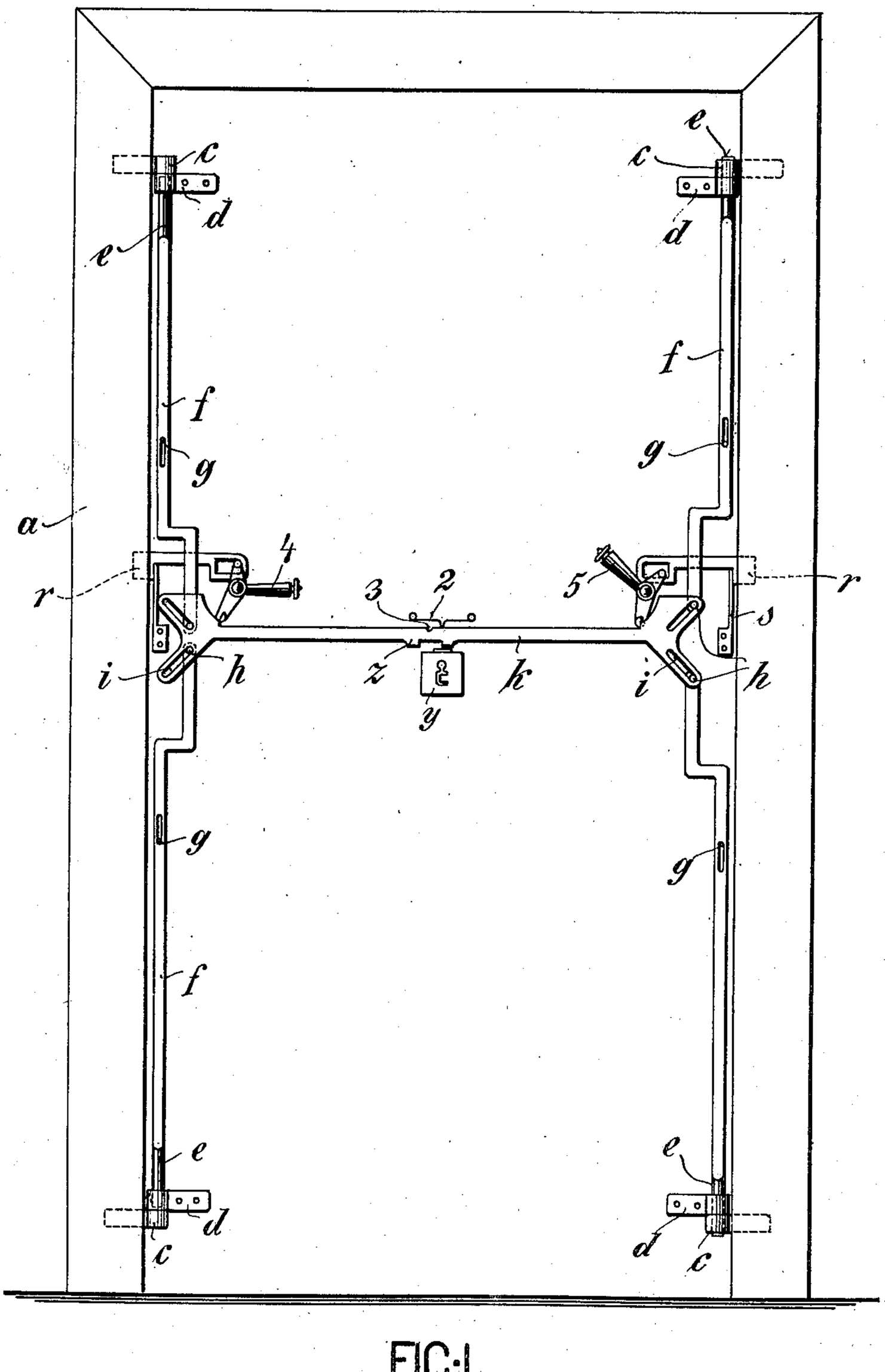


FIG. 1

Witnesses
Louis Tatz
Albert Schenk

Inventor
Alvin Abzug

No. 847,145. PATENTED MAR. 12, 1907.

A. ABZUG.

COMBINED HINGE AND FASTENING FOR DOORS.

APPLICATION FILED NOV. 13, 1905.

4 SHEETS—SHEET 2.

FIG. 2.

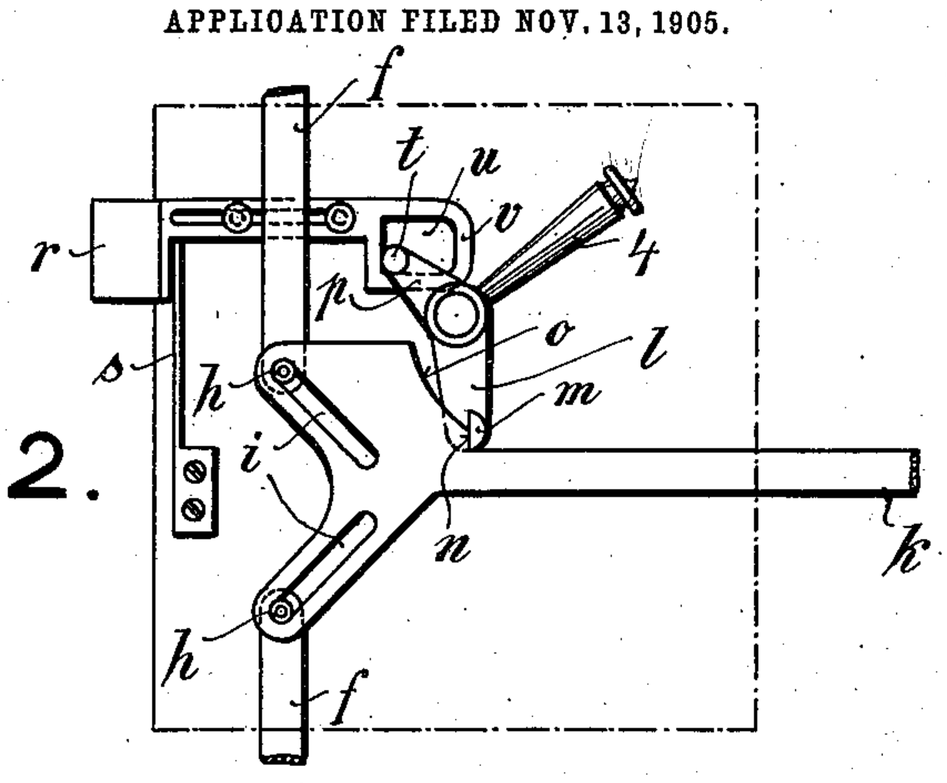


FIG. 3

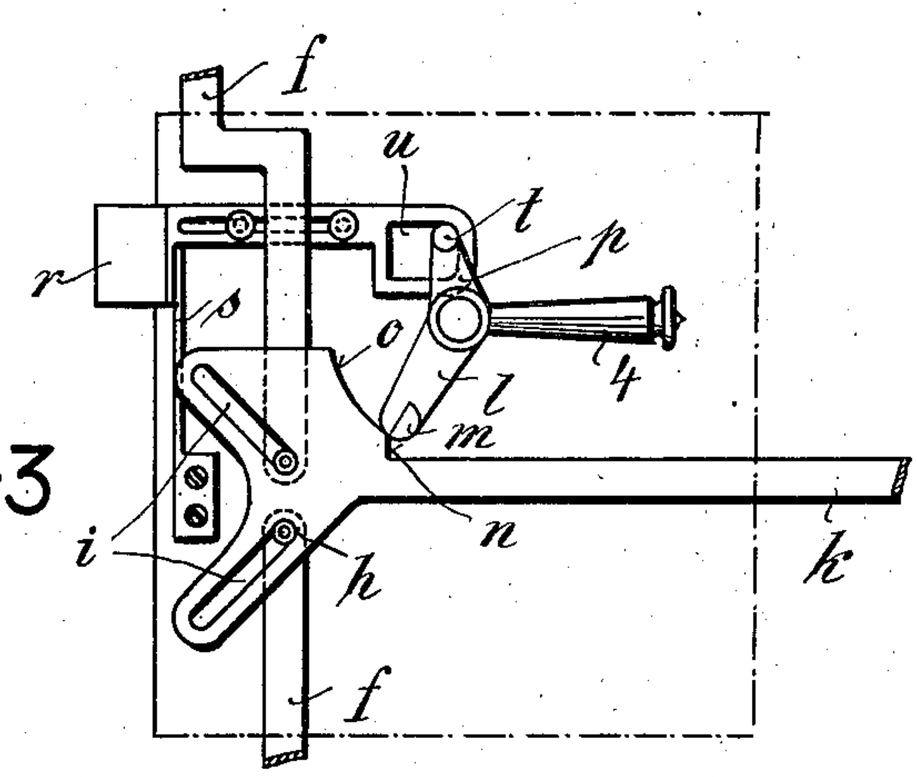
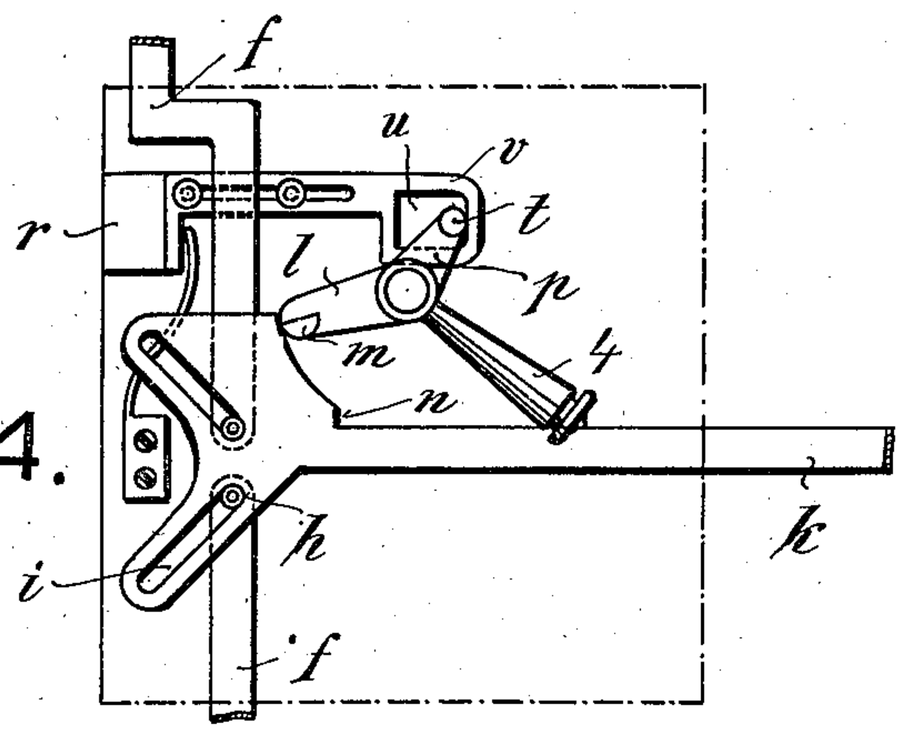


FIG. 4.



Witnesses.

Albert H. Schenk

Inventor.

Alois Abzug

No. 847,145. PATENTED MAR. 12, 1907.

A. ABZUG.

COMBINED HINGE AND FASTENING FOR DOORS.

APPLICATION FILED NOV. 13, 1905.

4 SHEETS—SHEET 3.

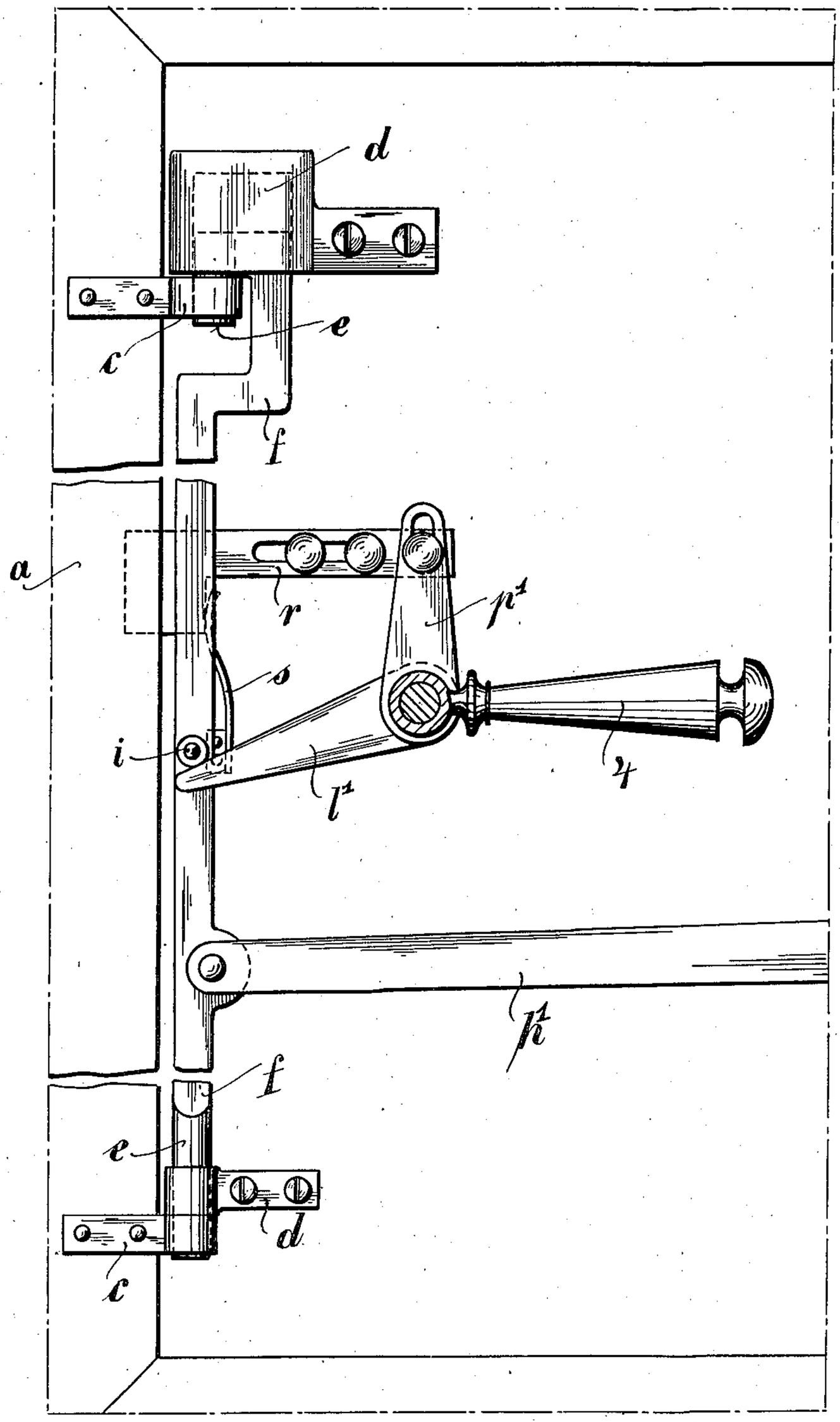


FIG-5.

Witnesses.

Frank Abzug

Bruno Abzug

Inventor:

Alois Abzug

No. 847,145. PATENTED MAR. 12, 1907.

A. ABZUG.

COMBINED HINGE AND FASTENING FOR DOORS.

APPLICATION FILED NOV. 13, 1905.

4 SHEETS—SHEET 4.

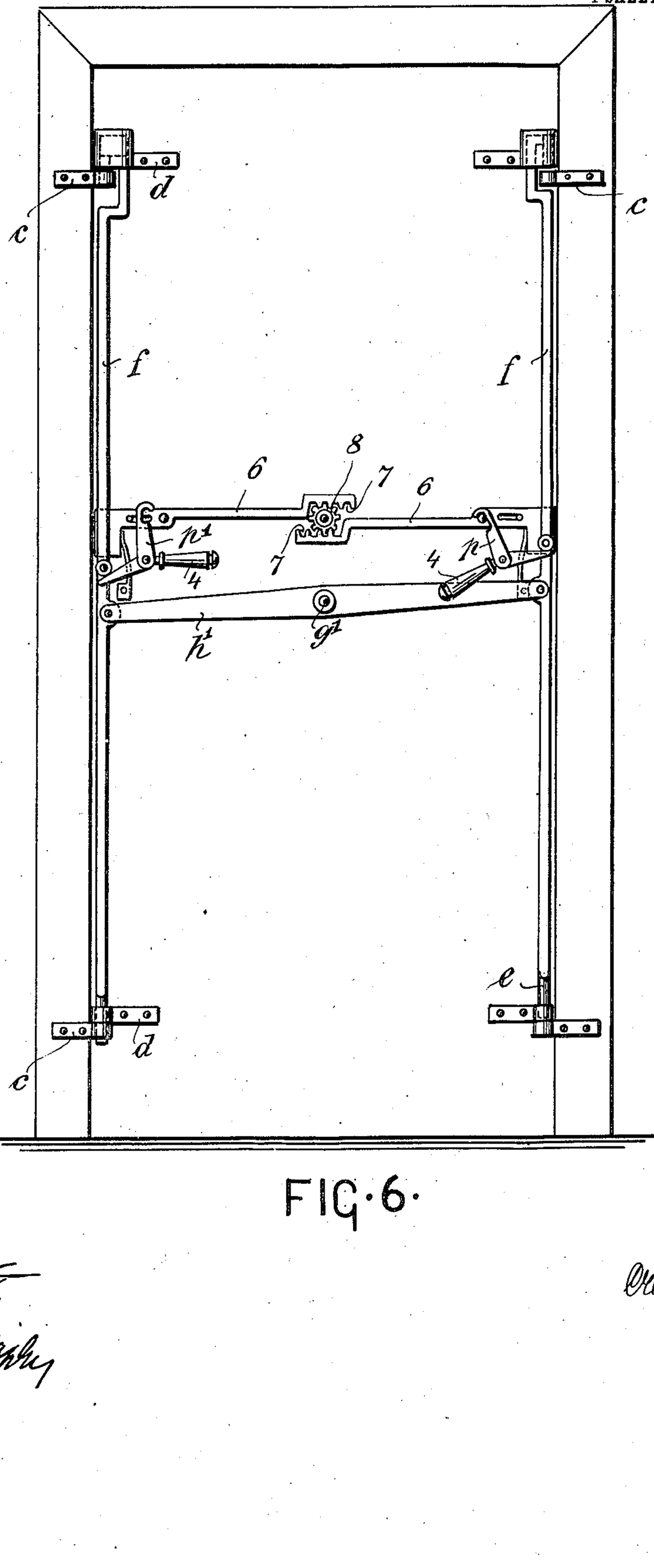


FIG. 6.

Witnesses.

Ernest Hopkins

Bruno Hopkins

Inventor:

Albert Abzug

UNITED STATES PATENT OFFICE.

ALOIS ABZUG, OF BRESLAU, GERMANY.

COMBINED HINGE AND FASTENING FOR DOORS.

No. 847,145. Specification of Letters Patent. Patented March 12, 1907.

Application filed November 13, 1905. Serial No. 287,145.

To all whom it may concern:

Be it known that I, ALOIS ABZUG, a subject of the Emperor of Germany, residing at 12 Oelsnerstrasse, Breslau, Germany, have invented certain new and useful Improvements in Combined Hinges and Fastenings for Doors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to doors which are hinged on both sides and are turned upon either set of hinges by withdrawing the hinge-pins of the other set, the hinge-pins being so connected by means of a cross-bar that only one set of pins, and therefore only one side of the door, can be freed at a time. Latch-bolts are also provided for further securing the door and arranged to be operated in connection with the hinge-pins.

The distinguishing feature of the invention is that the cross-bar is moved by levers which are so connected with the latch-bolts that after the hinge-pins have been withdrawn on the side on which the door is to be opened either pawl can move its latch without the cross-bar being further actuated.

The invention is illustrated in the accompanying drawing.

Figure 1 shows the position of the parts in a door opening as a left-hand door. Fig. 2 is a detail front view of one of the bolts on a larger scale. Fig. 3 is a similar view of the same in a different position. Fig. 4 is a like view of the same in a still further position. Fig. 5 is a side elevation of a special form of the lever connection by means of which when the lever is lowered the hinge-pin is withdrawn from the door-hinge and the latch-pin pulled back at the same time, while when the lever is released it is returned, with the latch-bolt, to its initial position; and Fig. 6 is a front elevation of a further modification, illustrating means which wher the door is open on the one side the latch-bolt can be simultaneously pulled back on the other side.

The eyes or sleeves *c* of the hinges are fixed to the door-posts *a* and *b*, while the corresponding similar parts *d* are fixed on the door. The hinge pins or pivots *e*, which connect the parts *c* and *d* of the hinge, are formed on the ends of side rods *f*, provided with slots and sliding vertically on guide-pins *g*, working in the slots. Rollers *h* are mounted to rotate on the adjoining ends of the rods *f* and take into slots *i* in the cross-bar *k*, which connects the right and left hand side rods *f* together.

The cross-bar *k* is moved by the lever-arms *l*, carrying projections *m*, which bear against shoulders *n* on the cross-bar. Each shoulder *n* terminates in a curve *o*, along which when the cross-bar *k* has been moved into one of its extreme positions the projections *m* can slide without actuating the bar. A lever *p*, fast with the lever *l*, acts on the latch-bolt *r* through the stud *t*. This latch is kept constantly pressed into the door-post by a spring *s* and can be pulled back by the lever *p*. The lever *p* slides, with its pin *t*, in an opening *u* of the latch of such dimensions that when the lever begins to turn the pin *t* at first runs idly in the part *u* and only strikes against the bow piece *v* and pulls back the latch *r* after the projection *m* on the lever *l* has begun to run over the curved part *o* of the cross-bar.

In order to keep the cross-bar firm in the central position, it is provided with a recess between the projections *z*. In this recess the bolt of a lock *y* can be caused to engage. For the purpose of indicating the central position a spring 2 is arranged, which slides on the bar *k* and when the bar *k* is in the middle position catches in a notch 3.

The action is as follows: If the door is to be opened on the left and the parts of the device are still in the position shown in Fig. 2, it is necessary that the operating-handle 4 should be moved into the position as in Fig. 1. In connection herewith the projection *m* of the lever *l* presses the cross-bar *k* to the left until it comes into the position shown in Figs. 1 and 3. In consequence of this the rollers *h* are caused to approach each other and the hinge pins *e* on the side rods *f* drawn out of the hinge parts *c* on the left door-post. On the right side when the cross-bar *k* was moved the rollers *h* of the side bars *f* were forced apart and in this manner the hinged connection on the right side of the door effected through the pins *e* on the side rods. The door is now only closed on the left side by the latch *r*, which is not affected by the initial movement of its operating-lever *p* and pin *t*—that is, while the lever is moving from the position shown in Fig. 2 to the position shown in Fig. 3. In order that the door may now be fully released, it is necessary that the lever *l* should be moved still farther to the position shown in Fig. 4. As the latch-

bolt is actuated by the final movement imparted to the lever *p*, the projection *m* on the lever *t* slides along the curved surface *o* and the lever *p* strikes, with its pin *t*, against the bow piece *v*, inclosing the space *u* and, overcoming the spring *s*, pulls the latch back. However often the door may be opened on the left it is not necessary that the side rods *f* and hinge connections should be moved, the closing being effected only by the left-hand latch *r*. If, on the other hand, the door is to be opened on the right, the handle 5 is pressed out of the position shown in Fig. 1 into the position shown in Fig. 3. The hinge connection on the left side of the door is thereby reëstablished and the connection on the right side of the door released by drawing the pin *e* out of the hinge-pieces *c*.

When the handle 5 is tunred farther down, right-hand latch *r* is drawn back. In this form of the invention during the early period of the lowering of the lever the hinge-pin is moved without the latch-bolt being influenced by the lever, and in the second period of the lowering the latch-bolt only is influenced, while there is no longer any movement of the cross-bar. The consequence of this arrangement is that except when the door is quite closed the levers assume different positions in relation to one another, as on the side of the door on which the hinge-pin is drawn out of the door-hinge the lever is already turned to a certain angle in relation to its initial position, while the lever on the other side of the door, where the hinge-pins are pushed into the door-hinges, still takes its highest position.

In the form of the invention shown in Figs. 1 to 4 the side rods *f* are divided in the middle. In this arrangement they consist of a single piece and are so constructed that the lower as well as the upper end *e* of each rod *f* when moved goes up out of its lug *c*. The right-hand-side rod is connected with the left-hand-side rod by means of a lever *h'*, which is pivoted at *g'* in the middle of the door in such a manner that when the one rod is raised the other is lowered.

As in the construction of the door it is desirable that both door-latches should be drawn out of the door-posts simultaneously when the door is opened, a connection is established between the latches, so that when one of the levers is lowered the movement is transmitted to the door-latch on the other. This is suitably effected by extending the guide-bars of the latch as far as the middle of the door and connecting their ends by means of a double-armed lever, so that when the one latch is moved toward the middle of the door the other door-latch is likewise pulled toward the middle of the door by means of the double lever. The function of the double lever is best performed in the present case by a toothed wheel in which teeth arranged on the door-latch guides engage from above and below. The guides 6 for the door-latches *r* are extended in the direction of the middle of the door and there furnished with toothing 7, in which a tooth-wheel 8, acting as a double lever, engages, and it will be seen that when the tooth-wheel is rotated the guides 6 6 are thereby moved in opposite directions. If the door be opened to the left, by lowering the right-hand door-lever, Fig. 6, the right-hand latch *r* is pushed back by the lever *p'* of the right-hand door-lever and the guide of this latch moves in the direction of the arrow 9. The guide rotates the toothed wheel in the direction of the arrow 10, and hereby the left-hand door-latch *r* is pushed in the direction of the arrow 11, so that when the door is opened both door-latches are drawn out of the door-posts.

What I claim, and desire to secure by Letters Patent, is—

1. A door opening to right or left, provided with right and left side rods or hinge-pins, a cross-bar operatively connecting the rods, levers arranged to move the cross-bar, and door-latches so connected with said levers that after a side rod has been sufficiently drawn back by a lever, a latch can be moved by the same lever without further movement of the side bar or cross-bar.

2. A door having side rods or hinge-pins, mounted for longitudinal movement, a cross-bar mounted for movement across the door, said cross-bar having outwardly-diverging slots at its ends and said rods having rollers operating in said slots, latch-bolts at opposite sides of the door, and levers, each having a pair of arms coöperating respectively with the latch-bolts and the cross-bar and adapted when turned on its fulcrum to first operate the cross-bar and the side rods and then operate the latch-bolt without further operating the cross-bar and side bars, substantially as described.

3. In a combined hinge and fastening for doors which are hinged on both sides, the combination with the side rods carrying the hinge pieces or pivots, and a cross-bar adapted to move the rods longitudinally, of latch-bolts mounted adjacent to the outer ends of the cross-bar, and actuating-lever handles each carrying a pair of lever-arms coöperating respectively with the latch-bolts and the cross-bars and adapted when turned about its fulcrum to first operate the cross-bar and its connections and then operate the latch-bolt without further operating the cross-bar.

4. In a combined hinge and fastening for doors which are hinged on both sides, the combination with the side rods carrying the hinge pieces or pivots, and a cross-bar provided with shoulders or projections, of latch-bolts mounted adjacent to the outer ends of the cross-bar and provided with slots or openings, hand-operating levers, and a pair of le-

ver-arms fixed to each operating-lever, one of said arms being adapted to coöperate with a projection on the cross-bar to actuate it, and the other being adapted to engage in the slot of the latch-bolt in such a manner that a free motion of the latch-bolt lever can take place while the cross-bar is being operated by its companion lever, and a subsequent free motion of the said companion lever while the latch is operated.

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

ALOIS ABZUG.

Witnesses:

LOUIS WEITLZ,

BRUNO HARDING.