

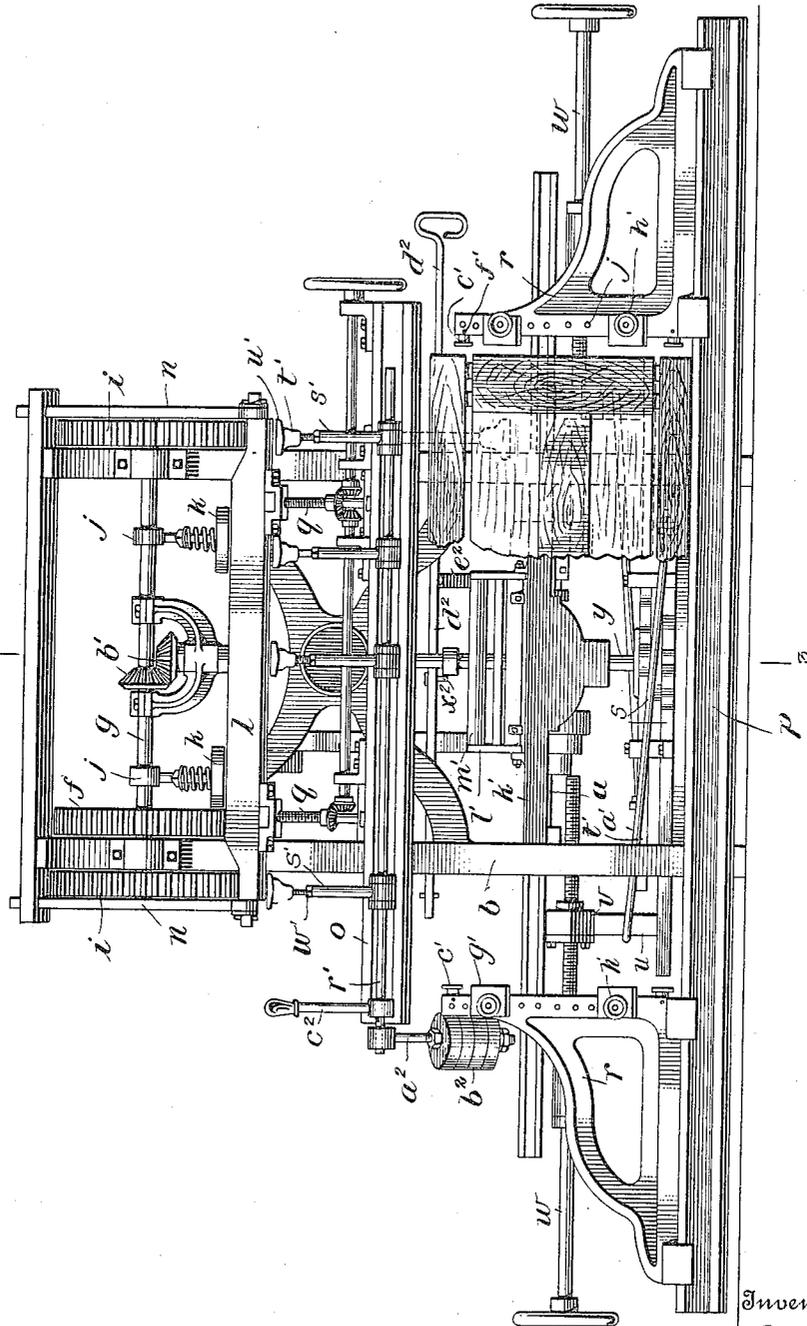
1,069,805.

W. F. OHLRAU.
DOOR ASSEMBLING MACHINE.
APPLICATION FILED AUG. 19, 1912.

Patented Aug. 12, 1913.

5 SHEETS—SHEET 1.

Fig. 1.



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5 SHEETS—SHEET 3.

Fig. 4.

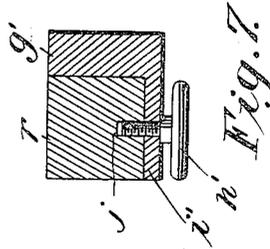
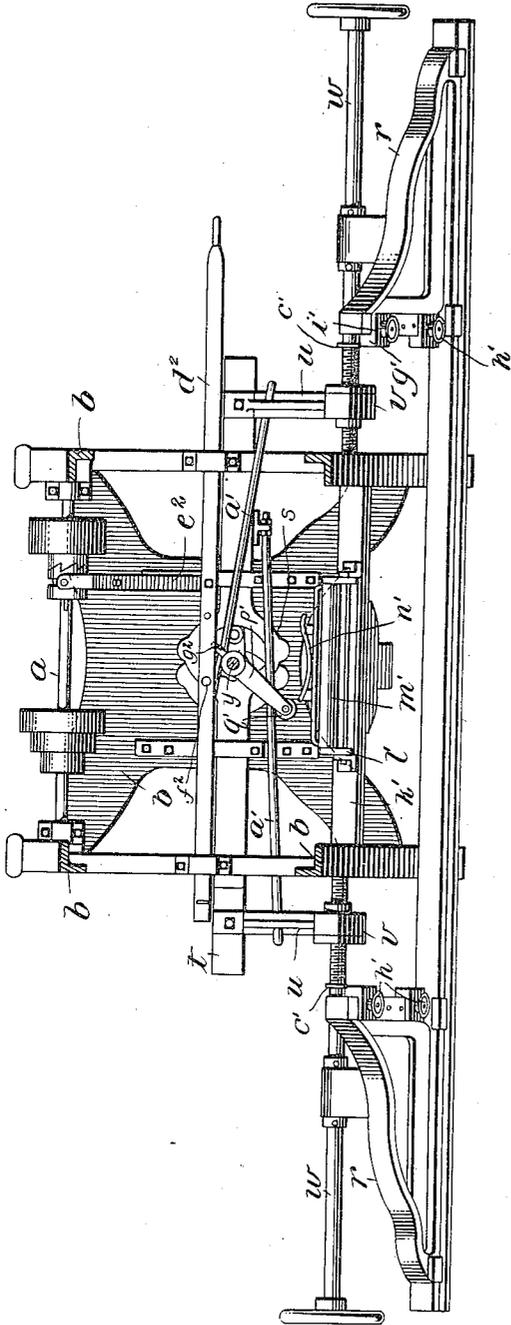


Fig. 7.

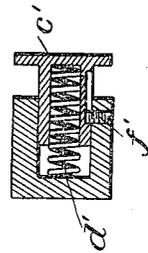


Fig. 6.

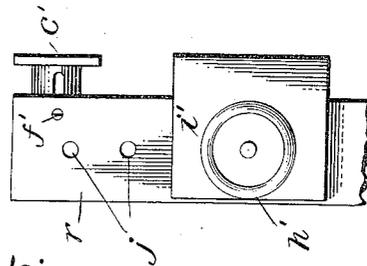


Fig. 5.

Witnesses

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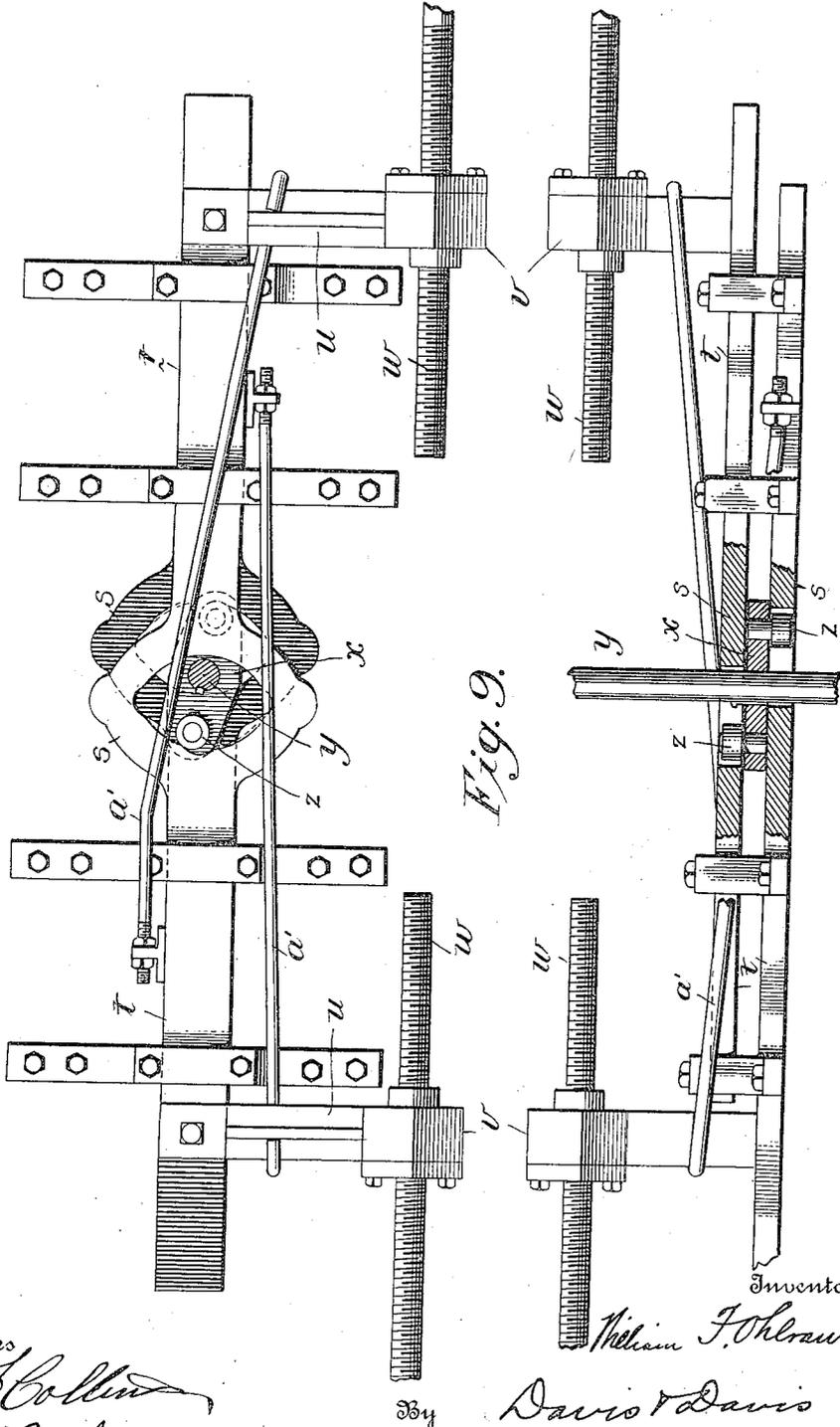


Fig. 8.

Fig. 9.

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5 SHEETS—SHEET 5.

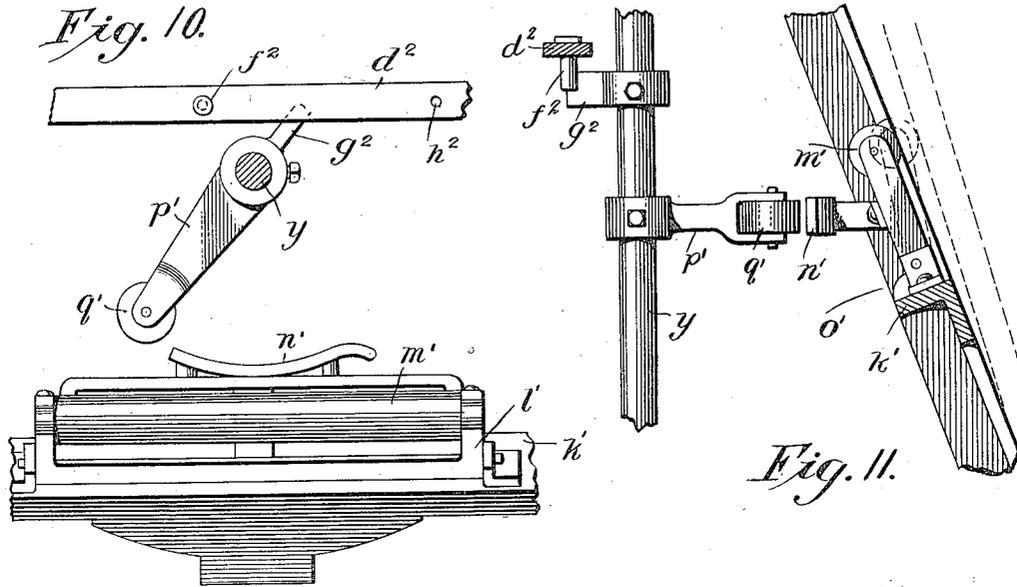


Fig. 10.

Fig. 11.

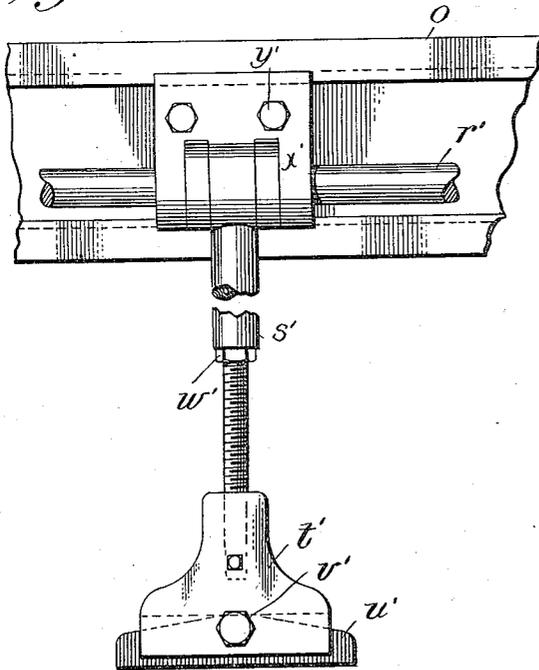
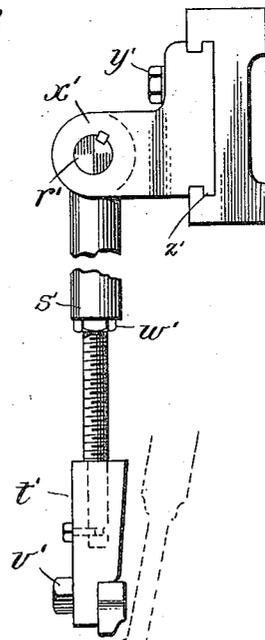


Fig. 13.



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UNITED STATES PATENT OFFICE.

WILLIAM F. OHLRAU, OF ALBUQUERQUE, NEW MEXICO.

DOOR-ASSEMBLING MACHINE.

1,069,805.

Specification of Letters Patent. Patented Aug. 12, 1913.

Application filed August 19, 1912. Serial No. 715,801.

To all whom it may concern:

Be it known that I, WILLIAM F. OHLRAU, a citizen of the United States, and a resident of Albuquerque, county of Bernalillo, New Mexico, have invented certain new and useful Improvements in Door-Assembling Machines, of which the following is a full and clear specification, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevation of the machine complete, a part of a door partly assembled being shown in position in the machine; Fig. 2 a view of one end of the machine; Fig. 3 a vertical sectional view; Fig. 4 is a horizontal sectional view looking downwardly, this section being taken approximately on the line 4—4 of Fig. 2; Fig. 5 a detail side elevation of the upper end of one of the end clamps or abutments; Fig. 6 a horizontal section through the same showing one of the stile buffers; Fig. 7 a horizontal sectional view of the end clamp or buffer showing one of the end-rail abutments; Fig. 8 a plan view in detail of the double cam arrangement for actuating the end clamps; Fig. 9 an edge elevation of the same partly in vertical section; Figs. 10 and 11 detail views showing the mechanism for tilting or ejecting the completely assembled door; and Figs. 12 and 13 detail views of one of the arms employed for automatically aligning the muntings.

This invention has relation to the type of machine covered by the co-pending application Serial Number 662,650, filed November 27, 1911, applied for in the name of myself and George K. Neher, the machine being adapted to receive a loosely assembled door and to perform certain operations thereon whereby the loosely assembled members are not only clamped and hammered tightly together but are also properly squared, the product of the machine being a completely manufactured door ready for the market.

The objects of the present improvements are to improve the mechanism for exerting endwise pressure on the door and also to provide simple means whereby the door is tilted forwardly or ejected from the machine after the door is completed thereby enabling the attendants to more quickly get the door out of the way of the door that is to be next inserted in the machine, as more fully hereinafter set forth.

A still further object of the invention is

to provide simple means whereby the operation of bracing and hammering the stiles of the door into position will at the same time align centrally of the door the munt- 60 ing rails, as more fully hereinafter set forth.

The machine illustrated in the annexed drawings is constructed and operated substantially in the same manner as the machine described and illustrated in the patent hereinbefore named and I therefore do not deem it necessary to describe the construction of the machine in detail.

The letter *a* designates the drive shaft journaled in the frame *b* of the machine, 70 which drive shaft is belted up to a counter shaft *c*, which shaft *c* in turn geared to a horizontal shaft *d* by means of a pinion *e* and a gear *f*. This shaft *f* drives the hammer shaft *g* through the medium of a pair of pinions *h* and a pair of gears *i*. The shaft *g* is provided with the hammer lifting tappets *j* which engage the hooked ends of the spring-actuated hammers *k*, which hammers are adapted to strike against the hammer 80 rail or bar *l* mounted slidably on the backwardly-inclining face of the frame of the machine. Suitable rest pins *m* rigidly attached to the gears *i* serve to reciprocate the cams *n* attached to the hammer rail, and 85 the hammer rail *l* is rigidly but adjustably connected to the bar or rail *o*, slidably mounted on the face of the machine and adapted to cooperate with the base rail *p* of the machine to exert the necessary clamp- 90 ing pressure on the edge rails or stiles of the door. The connections between the upper pressure rail *o* and the hammer rail *l* consist of threaded bars *q* and suitable gearing for rotating the same for the purpose of raising or lowering the pressure rail 95 *o* with reference to the hammer rail to accommodate doors of various widths.

Upon the base rail *p* is mounted the upright end clamps *r* but instead of having one 100 of these end clamps rigid and the other movable, as in the patented machine referred to, I, in the present machine, arrange to have both these end clamping members slidable 105 on the base bar and I provide suitable mechanism for simultaneously actuating these end clamps so that they simultaneously exert end pressure on the door, this having been found in practice to result in more quickly and more effectively exerting the necessary 110 end pressure on the door. I may employ any suitable mechanism for thus simultane-

ously actuating both end clamps but I prefer a mechanism which is a duplication of the mechanism shown in the prior patent mentioned. This mechanism consists essentially of a pair of cams *s* mounted one above the other at the center of the base of the machine, each cam being provided with a horizontal guiding bar *t* and being connected by an arm *u* and a nut *v* to an adjusting screw *w*, this adjusting screw being swivelly mounted in the adjacent one of the end clamp members *r* and serving to enable the end clamping members to be adjustable for doors of different lengths. Between the cams *s* is mounted a double armed lever *x* which is fixed rigidly to a vertical shaft *y*, said double armed lever *x* being provided with oppositely projecting roller-carrying wrist pins *z*, whereby when the shaft *y* is rotated the cams will be simultaneously reciprocated in opposite directions. Suitable rods *a'* connect the bracket arms *u* with the horizontal bars *t* for the purpose of bracing the same. The vertical shaft *y* is suitably journaled in the frame of the machine and is driven by bevel gears *b'* from the hammer shaft *g*.

At the upper end and at the lower end of each of the end clamps *r* is a spring actuated buffer *c'*, these buffers being so positioned that when the end clamps are brought forward into clamping action the buffers will strike against the ends of the respective stiles of the door and serve to properly position them with respect to the other constituent members of the door. These buffers may be constructed in any suitable manner; I have shown them as being each provided with a tubular stem which works in a recess formed in the face of the upright part of the clamping member, a coil spring *d'* being inclosed to normally project the buffer and a set screw *f'* being employed to prevent the spring ejecting the buffer from the clamping member. In addition to these buffers each clamping member is provided with a pair of pressure blocks *g'* mounted on the face of the upright part of the clamping member and positioned so as to bear against the end rails of the door when the clamping members are brought into action. These pressure blocks are vertically adjustable with respect to each other so that they may be arranged to operate upon doors having end-rails of different lengths; the adjusting means shown consists of a screw *h'* mounted on an ear or wing *i'* carried by the pressure block, said screw being adapted to enter any one of a vertical series of holes *j'* formed in the face of the end clamp.

As shown the most convenient position for operating upon the door is a position in which the door inclines upwardly and backwardly, but in this position the completed door is in an inconvenient position for ready

removal by the attendant and I have therefore provided means whereby when the door is completed it may be tilted forwardly at its upper edge far enough to either cause it to fall outwardly upon the floor in front of the machine or to a stand in a practical upright position where it will be convenient for removal by the attendant. For this purpose I pivotally mount upon a horizontal frame bar *k'*, in the center of the machine, an upright frame *l'* provided with a horizontal roller *m'* at its upper end and a curved cam bar *n'* on its rear side. In its normal position this frame tilts backwardly so as to be out of the way of the door when it is placed in the machine, this position of the frame being maintained by a suitable stop or other device *o'*. In horizontal alignment with the cam *n'* is a horizontal arm *p'* provided at its extreme end with a roller *q'* and rigidly mounted on the aforesaid vertical shaft *y*. These parts are so proportioned and timed that upon the completion of the clamping action on the door members the arm *p'* will sweep around back of the frame *l'* and strike against the cam *n'* forcing the frame *l'* forwardly far enough to tilt the upper edge of the door outwardly to the desired angle, where it will either fall forwardly out of the machine on the floor or will be in a position where the attendant may conveniently remove it from the machine.

The letter *r'* designates a rock shaft supported in suitable bearings on the face of the upper clamp rail *o* and having attached to it at suitable intervals a series of radial arms *s'* whose outer ends carry each a shoe *t'*, this shoe being swiveled to the extremity of the arm and being provided with a horizontal bar *u'* along its outer edge. When the shaft *r'* is rocked forwardly the shoes *t'* will be brought down so as to rest on the panels of the door, so that when the pressure rail *o* is forced downwardly the shoes will bear against the muntings and thus forcibly shove the muntings into central alinement when the clamp rail *o* is forced downwardly into action. In action the horizontal bars *u'* of the shoes bear against the longitudinal molded edges of the muntings, and it is preferable to provide four of these alining arms, two for each of the munting rails. The inner longitudinal corners of the bars *u'* are preferably rounded off to fit the molded corners of the muntings, and these bars *u'* are made removable by means of a bolt *b'* so that bars adapted to different moldings may be interchanged.

To enable the radial arms to be adapted to doors and muntings of different widths, each one of the arms is made extensible in any suitable manner, preferably as shown, namely, by making each arm of two rods and threading or tapping one axially into

the other, a nut w' being employed to lock the parts in their adjusted positions. To enable these munting alining arms to be longitudinally adjustable with respect to each other to thus provide for adapting them to doors and muntings of various lengths, the bearing block a' of each arm is slidably mounted on the face of the rail o and is locked in its adjustable position by a pair of bolts y' . Each of these bearing blocks is provided with tongues z' which work in undercut recesses or channels in the face of the bar o and thus hold the bearing blocks against the face of said bar o and yet permit the same to be slid along the bar.

At one end of the shaft r' is affixed a rearwardly extending arm a^2 to the end of which is fastened a weight b^2 , which serves to normally rock the shaft r' rearwardly and thus swing the alining arms upwardly out of the way, as shown in full lines in Fig. 1. When however the rock shaft r' is turned far enough to bring the alining arms down upon the face of the door, as shown in dotted lines at the right-hand end of Fig. 1, the weight b^2 will be brought to a position in front of a vertical plane drawn through the center of the rock shaft r' and the weight will thus serve to normally hold the alining arms against the face of the door. Any suitable means may be provided for swinging the arms into this operative position; I have shown a simple hand lever c^2 for this purpose. To swing the alining arms upwardly out of the way after the door is completed this lever c^2 may be employed or, which is preferable, the parts may be so proportioned that when the ejecting or tilting frame V is thrown forward to tilt or eject the door this action will be sufficient to throw the alining arms far enough forwardly to bring the elevating weight b^2 back of the center and thus enable the gravitation of the weight to automatically swing the alining arms up out of the way.

This machine may be stopped manually or automatically. For manually stopping it I provide a slidable rod d^2 which is connected by a lever e^2 to a suitable clutch on the drive shaft a . Should it be desired to stop the machine automatically, that is, after the completion of each cycle of operations, I provide this bar d^2 with a vertical pin f^2 which depends into the path of a radial finger g^2 carried by the vertical shaft y , so that after the ejecting arm p' has operated, the finger g^2 will strike against the pin f^2 and thus automatically cause the clutch to be disengaged. When it is not desired that the machine shall be thus stopped automatically the pin f^2 may be removed from its supporting rod d^2 , and for conveniently holding this pin when thus put out of use I provide a supplemental hole h^2 in the clutch shifting rod d^2 .

Having thus described my invention, what

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

1. In combination with a door assembling machine, in which the door is in an approximately upright position when completed, of means automatically actuated by the clamping and squaring actuating mechanism for tilting the upper edge of the door forwardly out from between the clamping and squaring devices. 70

2. In combination with a door assembling machine, in which the door is in an approximately upright position when completed, of means automatically actuated by the clamping and squaring actuating mechanism for tilting the upper edge of the door forwardly out from between the clamping and squaring devices, said means embodying a tiltable frame and a device for actuating the same. 75

3. In combination with a door assembling machine, in which the door is in an approximately upright position when completed, of means automatically actuated by the clamping and squaring actuating mechanism for tilting the upper edge of the door forwardly out from between the clamping and squaring devices, said means consisting of a tiltable frame carrying a roller for impinging against the door and a cam mechanism for actuating said tilting frame. 80

4. In a machine of the class set forth, clamping members and means for forcing them against the longitudinal edges of the door, and means operable simultaneously therewith for similarly engaging and centrally alining the munting rails of the door. 85

5. In a machine of the class set forth, clamping and squaring members engaging the edges of the door, means for operating said members, and means operated simultaneously therewith acting to centrally aline the munting rails of the door, said means consisting of a series of arms carried by one of the clamping members and extending over upon the face of the door. 90

6. In combination with a machine embodying means for clamping and squaring the members of the door, of means for simultaneously centrally alining the munting rails of the door, said means consisting of a series of arms carried by one of the clamping members of the machine, said arms being provided with pressure shoes and being extensible as to length. 95

7. In combination with a machine embodying means for clamping and squaring the members of the door, of means for simultaneously centrally alining the munting rails of the door, said means consisting of a series of arms carried by one of the clamping members of the machine, said arms being bodily adjustable with respect to each other for the purpose set forth. 100

8. In combination with a machine embodying means for clamping and squaring 105

the members of the door, of means for simultaneously centrally alining the munting rails of the door, said means consisting of a rock shaft journaled on one of the clamping members and a series of arms carried thereby.

9. In combination with a machine embodying means for clamping and squaring the members of the door, of means for simultaneously centrally alining the munting rails of the door, said means consisting of a rock shaft journaled on one of the clamping members and a series of arms carried thereby, said rock shaft being provided with a device tending normally to hold the arms out of action.

10. In combination with a machine for clamping and squaring doors, means being provided for holding the doors in an upwardly and backwardly inclined position while being clamped and means being also provided for automatically tilting the door forwardly when the clamping and squaring are completed, of a series of depending munting alining arms, means to normally hold the arms against the front face of the panels of the door, said arms being carried by a rock shaft, whereby when the completed door is tilted outwardly said arms will be swung upwardly out of the way.

11. In a machine for clamping and squar-

ing doors, the combination of a frame, a base rail mounted thereon and adapted to support the partly assembled door and to serve as one of the side edge clamping members, another side edge clamping member mounted on the frame and means for reciprocating this member toward and from the base or stationary member, a pair of end clamping members slidably mounted on said base rail, and means for simultaneously reciprocating these end members back and forth on said base rail.

12. In a machine of the class set forth, clamping members adapted to engage the top and bottom rails of the door, clamping members adapted to engage the side edges of the respective stiles of the door, a spring actuated buffer mounted on each end of the end clamping members in alinement with the door stile, whereby when the end clamping members are brought into action these buffers will engage the ends of the stiles and properly position them.

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

WILLIAM F. OHLRAU.

Witnesses:

JOSEPH HANSKY,
W. M. WILCOX.