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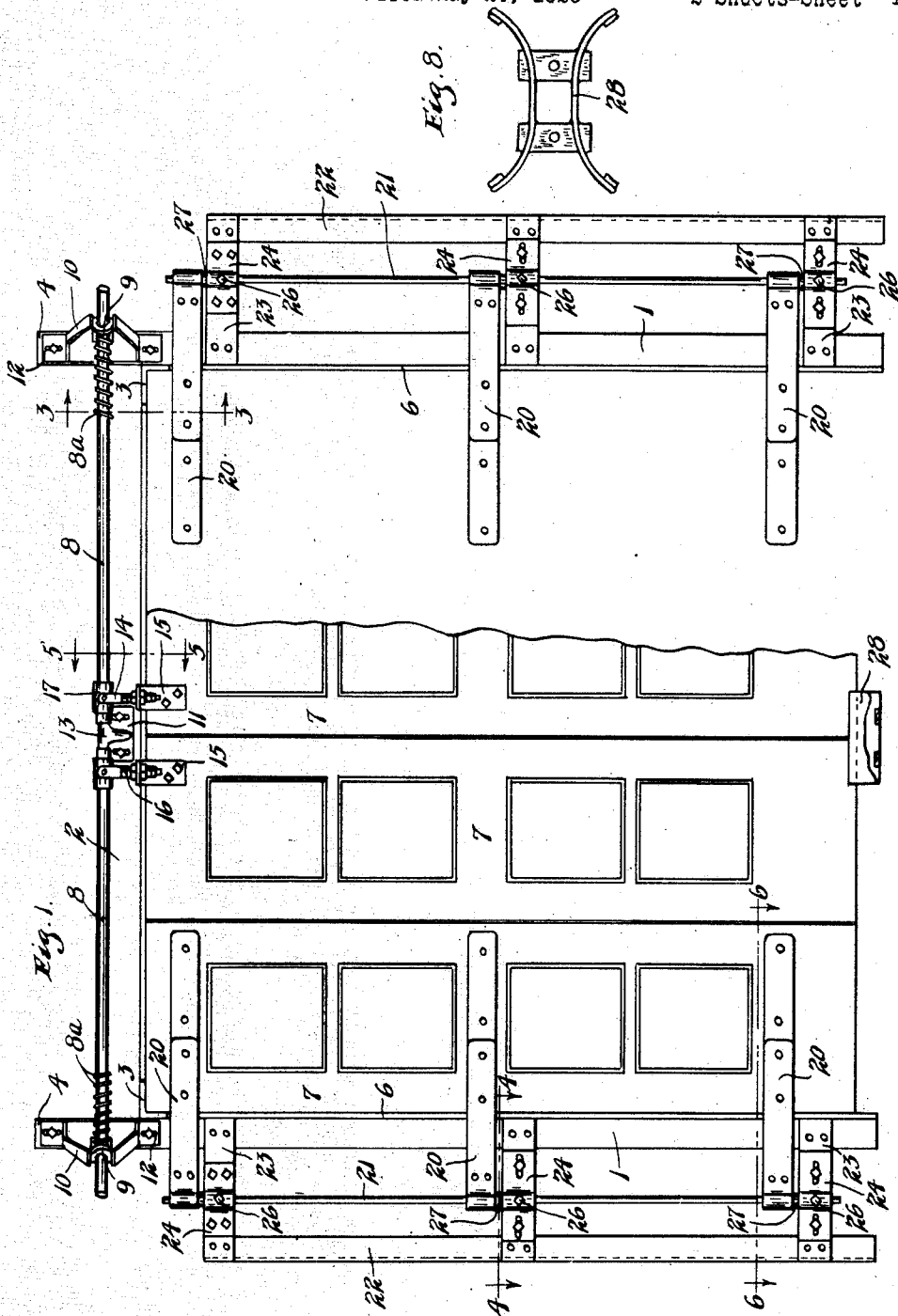
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DOOR MOUNTING STRUCTURE

Filed May 20, 1925

2 Sheets-Sheet 1



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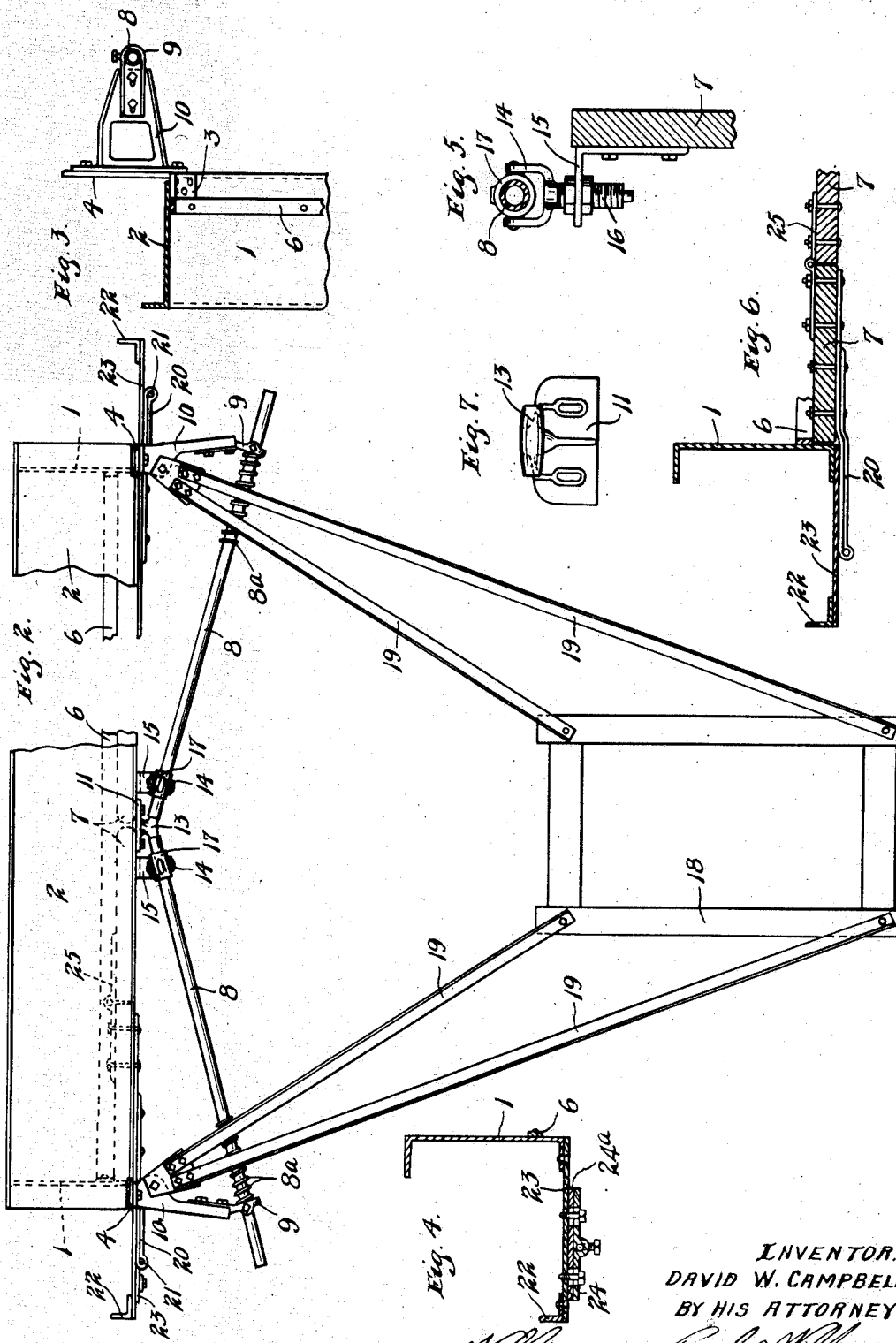
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2 Sheets-Sheet 2



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DOOR-MOUNTING STRUCTURE.

Application filed May 20, 1925. Serial No. 31,557.

This invention relates to a door mounting structure, and particularly to such a structure designed for heavy doors such as now commonly used in garages. The door mounting is designed to be used with the door operating motor and mechanism disclosed and claimed in my co-pending renewal application filed May 18, 1922, S. N. 562,041, and allowed May 29, 1922.

Such doors as mentioned are usually mounted on frames made of structural steel of angle or channel shape which is built into the masonry of the wall. It frequently happens that after the metal parts are mounted in the wall the door frame formed thereby is not exactly true and it is a very difficult task to properly and accurately mount the doors for successful and permanent operation.

It is an object of this invention, therefore, to provide a door mounting which will have flexibility to accommodate discrepancies in the building construction and in placing of the door frame members.

It is a further object of the invention to provide a mounting in which the doors can be hung in true and accurate position and maintained in such position for continuous operation.

It is more specifically an object of the invention to provide adjustable track supporting brackets on the door frame and to provide laterally adjustable out-board pintles on which the door hinges swing, as well as a novel track and door hanger.

It is also generally an object to provide a door mounting of simple and exceedingly rigid and stable construction.

These and other objects and advantages of the invention will be fully set forth in the following description made in connection with the accompanying drawings in which like reference characters refer to the same parts throughout the different views, and in which

Fig. 1 is a view in front elevation of the assembled door mounting, the door being partially indicated therein;

Fig. 2 is a view in plan of the door mounting;

Fig. 3 is a vertical section taken on the line 3—3 of Fig. 1;

Fig. 4 is a horizontal section taken on the line 4—4 of Fig. 1;

Fig. 5 is a vertical section taken on the line 5—5 of Fig. 1;

Fig. 6 is a horizontal section taken on the line 6—6 of Fig. 1;

Fig. 7 is a view in front elevation of a bracket used; and

Fig. 8 is a view in plan of a floor plate used.

Referring to the drawings a door frame is shown which comprises spaced members 1 of angular formation composed either of standard channels, as shown, or of single angles or double connected angles. A top cross member 2 connects the side members 1 and is connected thereto by angle members 3 to which both the top and side members are riveted. The side members 1 each have a portion 4 projecting upwardly above the top member 2, the top member being cut away to accommodate this projecting portion, as clearly shown at the right of Fig. 2. The members 1 and 2 are adapted to be set into the wall or the masonry of the building and to be firmly bonded therein. A strip 6 formed of a rectangular bar extends across beneath the top member 2 and along the inside of the vertical members 1 and is spaced from the front edges thereof a distance substantially equal to the width of the door for which said strip forms a sill or stop.

The doors are indicated at 7 and are supported partly from tracks 8, which latter are, in turn, supported in members 9. These members 9 are adjustably supported longitudinally by side brackets 10. The side brackets 10 are clearly shown in Figs. 1 and 3 and comprise an attaching flange having vertical slots 12 adjacent its top and bottom portions adapted to receive attaching bolts which will be screwed into the side members 1. It will be noted that each of said brackets is thus adjustably supported and the lower edge of this bracket, as clearly shown in Fig. 1, extends below the top cross member 2. The bracket is provided with a channel-like portion at its forwardly projecting end in which the end portion of member 9 is disposed, said latter member being provided with slots through which pass clamping bolts passing through holes in said brackets, to secure said member, in various positions inwardly or outwardly of the bracket. Said member 9 has an aperture at its outer end adapted to receive one end of the track 8, which track is formed of a smooth tube. A central bracket 11 is also provided and has vertical slots to receive its attaching bolts which are screwed into or pass through the top member 2 and the bracket is also provided with a T-shaped arm the cross member 13 of which has rounded ends adapted to be

received in and support the other ends of the tracks 8. The doors 7 have brackets 15 secured thereto in which screws 16 are threaded. The screws 16 are adjustably held in the bracket 15 by nuts placed thereon and clamped against both sides of said brackets. The said screws are also bored to receive the shanks of forked members 14, the enlarged forked portion of the upper end of said shank resting on the top of screw 16. The fork members 14 have set screws extending therethrough from opposite sides and pivotally supporting sleeves 17, which sleeves ride upon the tubular tracks 8. The tracks 8 are prevented from longitudinal movement by set screws extending through the members 9 and contacting therewith and comparatively light coiled compression springs 8^a are disposed on said tracks 8 adjacent the members 9. From the described structure it will be seen that both ends of tracks 8 are capable of independent vertical adjustment, as are also the doors 7.

The doors 7 are arranged to be operated by a horizontal moving member moving in a line substantially perpendicular to the front of the frame and a motor supporting frame 18 is provided secured in place by vertical members (not shown) depending from the ceiling, and also supported by horizontally extended members 19, the converging inner ends of which are bolted to plates which are, in turn, bolted to inwardly projecting flanges at the top of brackets 10.

The doors are adapted to swing on hinges 20 which are of heavy strap formation and are spaced vertically at the outer side of the door. The tops of these hinges swing on vertical pintles 21 disposed outwardly of the side members 1. Auxiliary vertical members 22 are provided which are rigidly secured in the wall, which members, as shown, extend upwardly to a short distance below the top of the members 1. Plates 23 are riveted to and rigidly tie the members 21 and 22 together, and plates 24 provided intermediate their ends with pintle receiving lugs are secured to the plates 23. The plates 24 have transversely extending slots therein adapted to receive the attaching bolts. With this structure, it will readily be seen that the plates 24 can be held in various positions transversely of the members 1. The upper plate 24 is not made adjustable but is bolted rigidly to its plate 23. The pintle members 21 are rigidly held in the lugs and plates 24 by set screws 26. Suitable bearing collars or washers 27 are disposed between the bottom of the hinges 20 and the pintle receiving lugs. As shown in Figs. 2 and 6, the hinge members 20 are provided with an offset adjacent the side members 1 so that the outer portions of the hinges are spaced from the front of said side members. This is an important feature in the construction to insure that the doors will be moved to closed posi-

tion without any binding at the corners of the frame.

The doors 7 are illustrated as each comprising two hinged sections and these doors are folded outwardly at their central portions and thus swing to open and folded positions, the operating mechanism being attached thereto, as shown in the patent above referred to. The hinges 20 are rigidly secured by bolts, or otherwise, to the outer sections and hinges 25 are bolted to the door sections at the other side thereof and hingedly connect said sections. A side of the hinge 25 on the outer door section is connected in rigid relation to the hinge 20 by bolts extending through both hinges, as shown in Fig. 6. With this construction and with the fixed upper plate 24, the axes of both hinges 20 and 25 are located in fixed relation to the sides of the door frame. A door plate 28 is used and set into the floor at the center of the frame. This plate is shown in detail in Fig. 8 and comprises vertically disposed oppositely curved flanges between which the edges of the doors pass and are guided into and held in closed position.

In setting the frame members 1, 2 and 22, into the wall or masonry of the building, it usually happens that the frame is not true or square when the time comes for hanging the doors. It is vital and essential that the doors must hang accurately and true to avoid strains on the operating mechanism and the supporting members of the door. With the described structure, the doors can be mounted to hang in true and accurate position, regardless of discrepancies in the frame. The brackets 10 and 11 can be vertically adjusted to bring the track and the operating frame members 19 into correct position, and the tracks 8 can be adjusted by the members 9 and the door by means of screws 16 carefully adjusted to the tracks. The pintle 21, by lateral adjustment of the lower plates 24, can be brought to accurate vertical position and rigidly secured in such position. This pintle can also be adjusted forwardly and rearwardly by shims 24^a placed under the plates 24 and bolted thereto by the attaching bolts for the plates 24. As stated, the pintles 21 are located a definite distance outward from the upper portion of the side members 1 of the door frame and these pintles will, as stated, be plumbed or brought to accurate vertical position by adjustment of the lower plates 24. The distance of the upper end of the pintle from the door frame can thus be determined for all installations and the distance between the axis of the pintle and the axis of the hinge for the door sections will also be determined. The doors will thus hang in accurate vertical position even through the frame is slightly out of true. The outer edges of the door sections will, of course, be finished to correspond to the door

frame and fit snugly against the strip 6. As the doors and the various parts of the mounting, as well as the frame members 1 and 2 are made at the factory, it is essential that the parts be so constructed that they can be shipped to the building for installation and be erected with a minimum of labor in accurately mounted position. As the doors are swung to open position by the operator, they fold upon each other and the sleeves 17 slide along the tracks 8 and the doors compress the springs 8^a as they come to open position. The motor is such that the doors are brought to folded position on one stroke and then later moved to closed position by the return stroke of a cylinder plunger. The springs 8^a thus act to cushion the doors as they come to rest in the open position and also tends to assist in the starting movement of the doors as they are started to closed position. The door thus being accurately mounted, the operating mechanism being carefully brought to horizontal position and the pintle 21 secured in exact vertical position, the doors will operate perfectly. The parts of the frame are so strong and rigid that there is no chance for the operating jars to dislocate or disarrange the parts thereof. Numerous installations of the doors and frame have been made and have operated for months without one particle of attention for maintenance or repair. The utility and efficiency of the invention have therefore been amply demonstrated in actual practice and the said invention constitutes a great advance in the art and is receiving widespread attention.

It will thus be seen that applicant has provided a simple and very efficient door mounting, most of the parts of which can be readily made from standard material and which has great utility for the purpose in view.

It will, of course, be understood that various changes may be made in the form, details and arrangement of the parts without departing from the scope of applicant's invention, which, generally stated, consists in a device capable of carrying out the objects set forth and such as shown and described and set forth in the appended claims.

What is claimed is:

1. A door mounting comprising spaced vertical members, a connecting top brace member, hinge pintles spaced outwardly of said vertical members and secured thereto which the doors are hinged, means rigid with said frame for receiving said pintles and locating the same, and means adapted to be secured in a plurality of positions receiving said pintles for plumbing the same.

2. A door mounting having in combination spaced vertical side members, a connecting top brace member, said side members having front portions extending above said top member, track supporting brackets secured to said

portions, and a door guiding and supporting track secured to said brackets.

3. A door mounting having in combination spaced vertical frame members, a connecting top brace member, means secured to said side and top members for supporting the doors, vertical pintles disposed outwardly of said vertical members, means secured to said vertical members carrying said pintles, and means for securing said last mentioned means in a plurality of positions.

4. In a door mounting structure, a door frame, an outwardly extending bracket disposed at one side thereof, means for securing said bracket rigidly to said frame and holding the same in different vertical positions, a track, a load supporting member extending longitudinally of said bracket carrying said track, means for connecting said load supporting member rigidly to said bracket and for positioning said member in various positions outward of said bracket.

5. A door mounting comprising a vertical angle member forming a side of the door frame, a top cross member rigidly secured thereto, said vertical member having a portion extending above said top member, and a door supporting bracket adjustably secured to said portion.

6. A door mounting having in combination vertically spaced side members, a top connecting member, door supporting brackets adjustably secured adjacent the top of said side members, and a horizontal motor frame also secured at one end to said brackets.

7. A door mounting having in combination spaced vertical side members, vertical auxiliary members spaced outwardly of said side members, means rigidly connecting said side and auxiliary members, a pintle supported between said side and auxiliary members, and adjustable laterally thereof and forwardly and rearwardly thereof.

8. A door mounting having in combination vertical side frame members, vertical pintles supported outwardly of said side members by means connected to the side members, doors having their outer faces substantially flush with the outer faces of the side members, and hinges secured to the doors having outwardly offset portions carrying lugs embracing said pintles.

9. A door mounting having in combination, a top cross member, vertical side members having portions extending above said top cross member, vertically adjustable brackets secured to said portions, a vertically adjustable bracket secured to said top cross member substantially at the center thereof, vertically adjustable tracks secured to said brackets, and vertically adjustable door supporting means embracing and slidable on said tracks.

10. A mounting for a door having folding

hinged sections, comprising, a rigid frame having spaced vertical side members and a connecting top member, a pintle supported outwardly of said frame at a fixed distance therefrom, a hinge pivoted on said pintle and secured to said door, a hinge connecting the sections of said door, and means rigidly connecting said hinges whereby the axes of said hinges are in fixed relation to the side members of said frame.

11. A door mounting comprising spaced vertical members, a cross top member rigidly connecting the same, vertically adjustable brackets supported by said vertical members, outwardly adjustable means in said brackets having circular openings therethrough, tubular tracks supported in said means, and a vertically adjustable bracket adjacent the center of said top cross member received in and supporting the inner ends of said tubular tracks, said vertical members having portions extending above said cross member to which said first mentioned brackets are secured.

12. A door mounting comprising spaced vertical side members and a top cross member rigidly connecting the same, pintle rods supported outwardly of said side members, folding doors supported on hinges swinging on said rods, tracks supported above said doors on said vertical and cross members, means for supporting both ends of said tracks for vertical adjustment, vertically adjustable means secured to said doors and supported on said tracks, and springs disposed on said tracks at the outer portions thereof.

13. A door mounting structure having in combination, a frame, a track cylindrical in cross section, supported by said frame, a sleeve embracing and slidable on said track, a load carrying means pivotally connected to said sleeve and depending therefrom, a bracket secured to a door, and vertically adjustable means securing said bracket to said load carrying means.

14. A door mounting structure comprising a rigid metal frame having spaced vertically extending side members and a horizontal top member rigidly secured to said side members, a vertical pintle member spaced outwardly of each of said side members, brackets carried by said side members in

which said pintles are respectively journaled, means disposed outwardly of said side members for supporting said brackets in various lateral positions and means positioning said brackets in various positions outwardly of said frame.

15. A frame comprising vertical side members and a top member extending therebetween, vertical pintle members, means secured to said side members carrying said pintle members, doors respectively carried by said pintles, and a door guiding plate disposed substantially centrally between said side members in a plane of said doors and having curved flanges at each side thereof with their convex sides facing each other and forming a guide for the doors in their opening and closing movements.

16. A door mounting comprising spaced vertical members each having laterally spaced portions, a top connecting member secured to and extending between the inner of said portions, one of said portions having a top portion extending above said cross member, and door supporting brackets adjustably secured to said top portion.

17. A door mounting having in combination, spaced vertical side members, vertical auxiliary members spaced outwardly of said side members, a top cross member rigidly secured to and extending between said vertical side members, vertically spaced plates rigidly connecting said vertical side members and said auxiliary members at each side of said frame, pintle carrying brackets secured to said plates, and a pintle carried by said brackets.

18. A door mounting comprising vertical side members, vertical auxiliary members spaced outwardly of said side members, a top cross member extending between said vertical side members, pintle rods supported outwardly of said side members, folding doors supported on hinges swinging on said rods, tracks supported above said doors, means for supporting both ends of said tracks for vertical adjustment, and vertically adjustable means secured to said bars and supported on said tracks.

In testimony whereof I affix my signature.
D. W. CAMPBELL.