Aug. 19, 1941. H. J. SIESS 2,252,737

HINGE CONSTRUCTION FOR UPWARD ACTING DOORS

Filed Sept. 9, 1940

FIG. 1

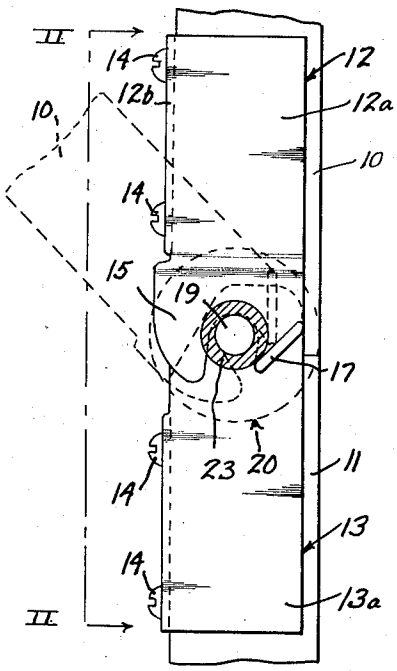


FIG. 2

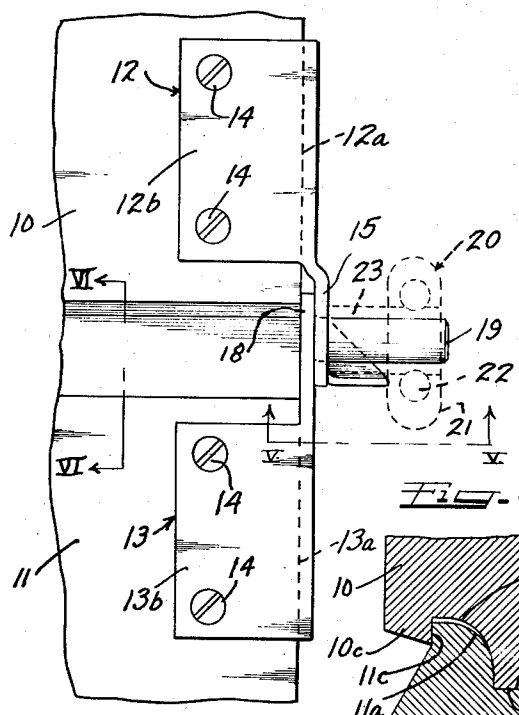


FIG. 6.

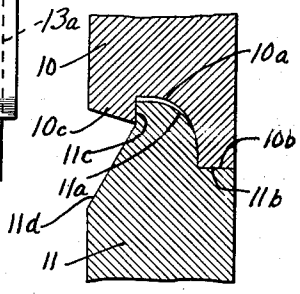


FIG. 3

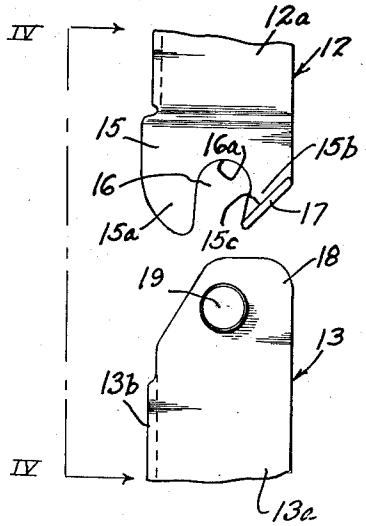


FIG. 4

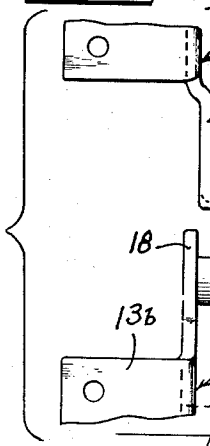
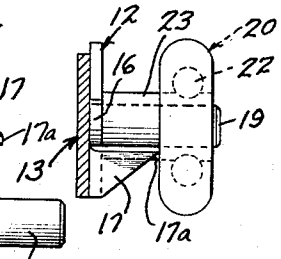


FIG. 5



Inventor

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by Charles O. Wills Attys

Patented Aug. 19, 1941 2,252,737

UNITED STATES PATENT OFFICE

2,252,737

HINGE CONSTRUCTION FOR UPWARD ACTING DOORS

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Application September 9, 1940, Serial No. 355,892

7 Claims. (Cl. 16—171)

This invention relates to a hinge construction especially adapted for connecting the sections or panels of a sectional type upward acting door.

More specifically the invention relates to a hinge construction having separable mating parts which can be mounted on the door panels or sections at the factory and interlocked "on the job" by means of a door roller to provide an articulated door.

This application is a continuation in part of my copending application, U. S. Serial No. 334,720, entitled: "Door construction," filed May 13, 1940.

While the invention will be hereinafter specifically described in connection with an upward acting garage door of the sectional type, it should be understood that the hinges of this invention are adapted for general usage in connecting pairs of movable members in articulate relation.

According to the present invention there is provided a hinge construction having separate mating parts held in articulate relation by abutment between a flange on one of the parts and a hub of a roller disposed over a pin carried by another of the parts. The mating parts are quickly separated by removal of the roller from the pin. However, when the roller is on the pin, the parts cannot be separated, but will be hingedly interlocked.

Each hinge part is composed of an angle plate or bracket having one leg thereof adapted to project over the side edge of a door panel or section and the other leg thereof projecting over the inner face of the door section or panel. This other leg is readily secured to the inner face of the door panel by means of screws or bolts and the hinge parts can be mounted on their respective door panels without ever assembling the panels in articulate relation. Then when the panels are being installed to build up a finished garage door unit, the mating hinge parts already mounted on the panels are quickly brought into interlocking articulate relation by means of the door rollers which serve to mount the door in a doorway.

It is, then, an object of this invention to provide a hinge construction including separable mating parts held together in articulate relation by means of a sleeve disposed over one of the parts.

A further object of the invention is to provide a door hinge having readily disengageable interlocking parts held together by cooperation between a flange on one of the parts and a detachable sleeve on another of the parts.

A specific object of this invention is to provide a hinge construction for upward acting garge doors of the sectional type which makes use of a door roller to hold the hinge parts in articulate relation.

A further specific object of this invention is to provide a hinge construction for sectional type upward acting doors which construction includes disengageable hinge parts secured to the inner faces of adjoining door sections and extending over the edges of said section with one of the parts projecting through the other of the parts and forming a support for a door roller which locks against a flange carried by said other part.

Other and further objects of the invention will be apparent to those skilled in the art from the following detailed description of the annexed sheet of drawings which discloses a preferred embodiment of the invention.

On the drawing:

Figure 1 is a side elevational view of a pair of door sections or panels held together in articulate relation by a hinge construction according to this invention and illustrating in dotted lines the angular movements permitted between the door sections by the hinge construction.

Figure 2 is a fragmentary inside plan view taken along the line II—II of Figure 1.

Figure 3 is a fragmentary exploded side elevational view of the mating hinge parts.

Figure 4 is an exploded inside elevational view taken along the line IV—IV of Figure 3.

Figure 5 is a bottom plan view taken along the line V—V of Figure 2 with parts illustrated in horizontal cross section.

Figure 6 is a vertical cross-sectional view of the adjoining edges of the door panels taken along the line VI—VI of Figure 2.

As shown on the drawing:

In Figures 1, 2 and 6 the reference numerals 10 and 11 designate adjoining sections or panels of a sectional type upward acting garage door. As best shown in Figure 6, the panel 10 has a rounded groove or recess 10*a* in the bottom edge thereof bounded by a long leg or finger 10*b* at the front face of the door and a short leg or finger 10*c* at the rear face of the door. The top edge of the door section 11 has a bead 11*a* fitting into the groove 10*a* and bounded on the front side thereof by a horizontal shoulder 11*b* adapted to abut against the bottom of the leg 10*b* and a vertical shoulder 11*c* adapted to abut against

the inner face of the leg 10c. The inner face of the panel 11 is beveled inwardly as at 11d to the vertical shoulder 11c.

The door panels 10 and 11 are thus adapted to tilt relative to each other while being held throughout their length by the interfitting groove and bead construction.

According to this invention the door panels 10 and 11 are held in articulate relation by means of mating hinge parts 12 and 13 as shown in Figures 1 to 5.

The hinge part 12 comprises an angle plate or bracket having one leg or flange 12a extending over the side edge of the door section 10 and the other leg or flange 12b extending over the inner face of the door panel 10. The flange 12b is apertured to receive screws or bolts 14 therethrough for uniting the bracket integrally with the panel 10.

The flange 12a on the side edge of the panel has a dependent offset apertured portion 15 extending below the legs 12a and 12b in spaced lateral relation from the side edge of the panel 10. The bottom of the offset portion 15 overlaps the top of the panel portion 11.

The bottom end of the portion 15 is bifurcated providing an open bottomed recess 16 bounded by fingers or furcations 15a and 15b. The blind end of the recess 16 is semi-circular as at 16a (Figure 3) while the sides of the recesses defined by the inner edges of the fingers 15a and 15b slope along straight lines toward the inner face of the door. The free bottom end of the finger 15b is bent along a sloping line 15c extending diagonally across the full width of the finger to provide an outturned flange 17 of triangular shape with the apex 17a thereof aligned with the bottom of the recess 16. Thus the flange 17 extends from the mouth of the recess along a sloping line to the outer edge of the offset portion 15.

The hinge part 13 comprises an angle plate having one leg or flange 13a thereof extending over the side edge of the panel 11 and the other leg or flange 13b thereof extending over the inner face of the panel 11. The leg 13b is apertured and bolts or screws such as 14 extend through the apertures for uniting the plate to the inner face of the door panel 11.

The hinge part 13 has a free end portion 18 projecting upwardly from the leg 13a and flush with the leg. A cylindrical pin 19 projects laterally from one face of the free end portion 18 and is integrally united to the portion 18. The pin 19 is sized so that it can freely fit into the recess 16.

When it is desired to join the door panels 10 and 11 in articulate relation the same are mounted to move the bead 11a of the section 11 into the recess 10a of the section 10 and to move the offset portion 15 of the hinge part 12 into overlapping relation with the portion 18 of the hinge part 13 as shown in Figures 1 and 2. The portion 15 is offset from the door edges just sufficiently so that the portion 18 can extend into the space provided between the door edge and the portion 15.

The pin 19, as explained above, will fit freely through the open mouth of the recess 16 and, being cylindrical, will ride against the blind end 16a of the recess.

A door roller 20 is provided for mounting the door sections 10 and 11 in the usual track provided for upward acting doors. The roller 20 comprises a tread portion 21 rotatably mounted on ball bearings 22 around a hub 23. The hub 23 projects beyond the tread portion 21 and its projecting end is longer than the distance between the apex 17a of the flange 17 and the flat face of the offset portion 15.

The hub 23 is next slidably mounted on the pin 19 to mount the roller 20 on the door panels and to lock the hinge parts together.

The outside diameter of the hub 23 is greater than the diameter of the recess 16 or the space between the recess defining legs 15a and 15b. However, the hub 23 is adapted to fit between the flange 17 and the pin 19 as shown in Figure 1.

The flange therefore thrusts against the hub and prevents removal of the pin 19 out of the recess.

The flange 17 can ride over the hub as indicated in dotted lines in Figure 1 to permit articulate movement of the door sections. However, any movement of the door sections tending to separate the hinge parts is resisted by the flange.

The hub of the roller 20 therefore acts as a locking sleeve which connects the hinge parts 12 and 13 together for articulate movement.

Thus, according to this invention, door panels or door sections can be equipped with hinge hardware and shipped in separated condition with the hardware thereon. The panels are readily mounted into articulate relation for providing a sectional type door when the door rollers are slid in position on the pin mounting provided by the hinges.

The door rollers of course operate in the usual guiding tracks provided in upward acting door constructions.

It will, of course, be understood that various details of construction may be varied through a wide range without departing from the principles of this invention and it is, therefore, not the purpose to limit the patent granted hereon otherwise than necessitated by the scope of the appended claims.

I claim as my invention:

1. In an upward acting door construction including a plurality of door sections adapted to be mounted together in articulate relation, the improvements which comprise male and female hinge parts on the side edges of the door sections adjacent the adjoining ends thereof, a pin projecting laterally from said male hinge part, said female hinge part having a recess adapted to receive said pin, a flange projecting laterally from said female hinge part in spaced relation from said recess, and a sleeve member disposed over said pin between the flange and recess for coaction with the flange to hold the hinge parts in articulate relation.

2. In an upward acting door construction including a pair of door sections and hinge parts on the side edges of the door sections, the improvements which comprise a laterally projecting pin on one of said hinge parts and an outwardly projecting flange in spaced relation from said pin on the other of said hinge parts, said other of said hinge parts having a recess receiving said pin, and a removable sleeve member disposed on said pin and thrusting against said flange to hold the hinge parts in articulate relation.

3. A hinge adapted for uniting door sections of upward acting doors comprising a pair of angle plates each having legs adapted to be disposed over the inner face of the door sections

for uniting thereto and other legs adapted to be disposed over the side edges of said door sections, said other legs having overlapping free end portions, the outermost of said free end portions having an open ended recess therein, a pin carried by the innermost of said free end portions projecting through said recess, a sleeve mounted on said pin, and a flange on said recessed free end portion adapted to abut said sleeve for retaining the hinge parts in articulate relation, said sleeve adapted for ready removal from said pin and said pin being retractable out of the open end of said recess to separate the hinge parts only after said sleeve is moved on said pin to clear the outer edge of said flange.

4. A hinge construction comprising a metal plate, a pin projecting normally from said metal plate, a second metal plate having a bifurcated portion adapted to straddle said pin, an outturned flange on one of the furcations in spaced relation from said pin, and a sleeve disposed over said pin and having an outer face adapted to abut said flange for uniting the plates in articulate relation.

5. A hinge construction comprising an angle plate having a dependent free end portion on one leg thereof, a pin projecting laterally from said free end portion, a second angle plate having an offset bifurcated portion depending from one leg thereof adapted to overlap the free end portion of the other plate with the furcations thereof straddling said pin, a flange projecting normally from one of said furcations in spaced relation from said pin, and a sleeve member disposed over said pin into abutting relation with said flange for holding said plates in articulate relation.

6. In an upward acting door construction including a plurality of door sections adapted to be mounted together in articulate relation the improvements which comprise male and female hinge parts on the side edges of the door sections adjacent the adjoining ends thereof, a pin projecting laterally from said male part, said female part having a bifurcated offset end portion overlapping the pin-carrying portion of the male hinge part and having the furcations thereof straddling said pin, an outturned flange on one of said furcations in spaced relation from said pin, and a hubbed door roller having the hub thereof slidably mounted over said pin into thrusting engagement with said flange for mounting the door sections and for locking the male and female hinge parts together.

7. A hinge comprising a male part having a pintle, a female part having an open ended recess receiving said pintle and furcations straddling the pintle, an abutment projecting from one of the furcations, and a removable sleeve on said pintle having an outer face engageable with the abutment upon movement of the pintle toward the open end of the recess, said male and female parts adapted for disengagement by sliding said sleeve on the pin away from the furcations and beyond the terminus of the abutment.

HENRY J. SIESS.