(Model.)

2 Sheets—Sheet 1.

G. W. HEY.

DOOR HANGER.

No. 314,177. Patented Mar. 17, 1885.

Fig 1.

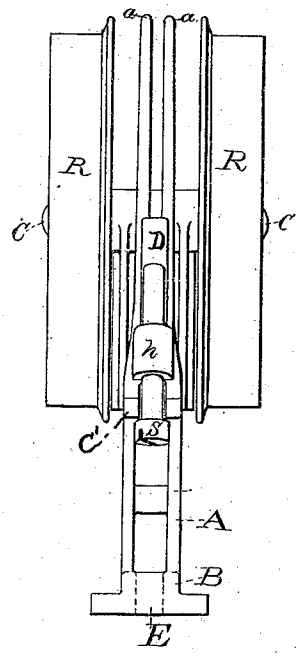
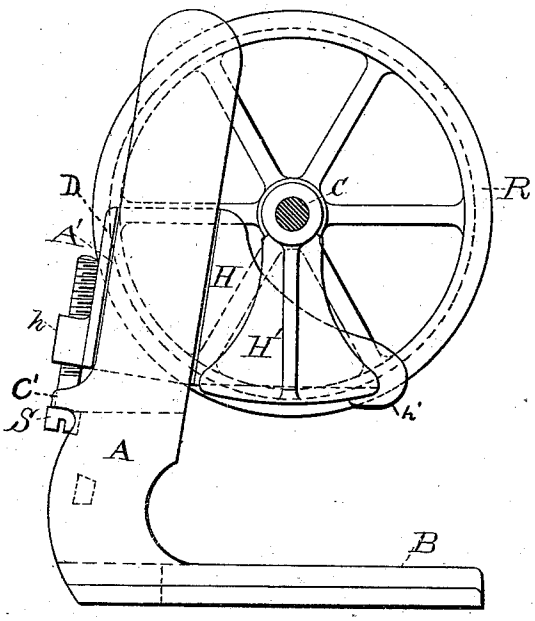


Fig 2



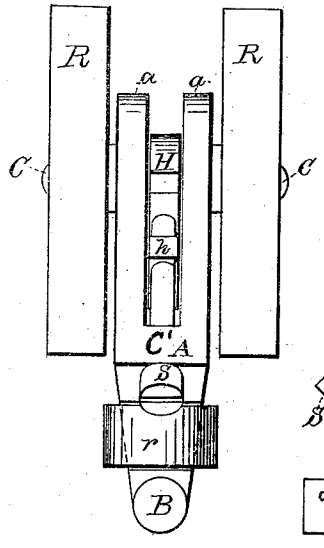


Fig 3.

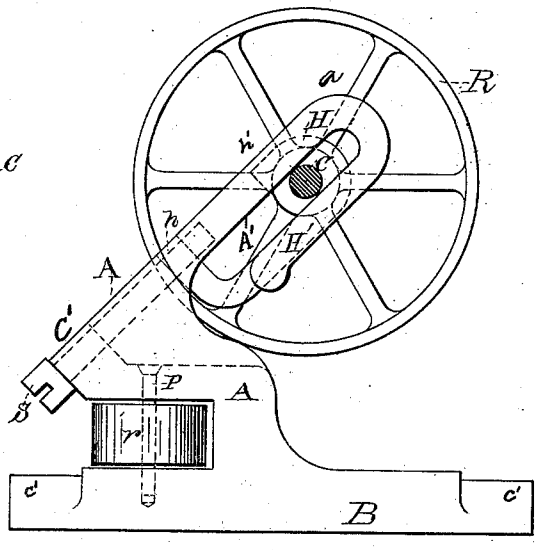


Fig 4.

WITNESS:

J. H. Gibbs

C. Bendixon

INVENTOR

George W. Hey.

(Model.)

2 Sheets—Sheet 2.

G. W. HEY.

DOOR HANGER.

No. 314,177. Patented Mar. 17, 1885.

Fig 5.

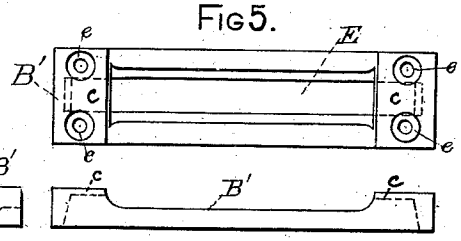


Fig 6.

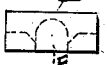


Fig 7.

Fig 8.

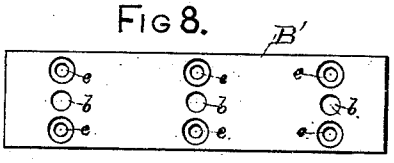


Fig 9.

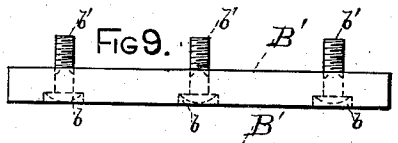


Fig 10.

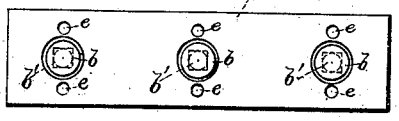


Fig 11.

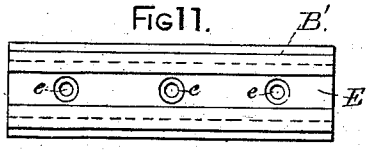


Fig 12.

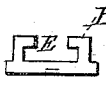


Fig 13.

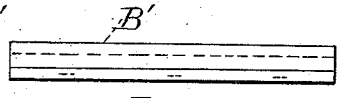


Fig 14.

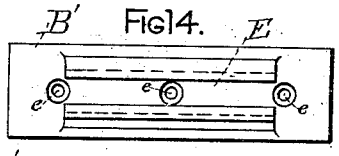


Fig 15.

Fig 16.

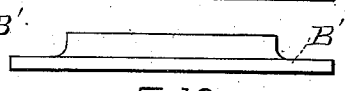


Fig 17.

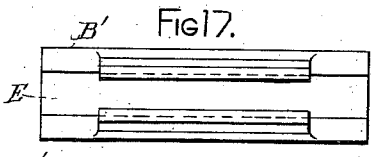


Fig 18.

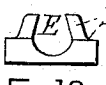
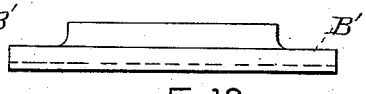


Fig 19.



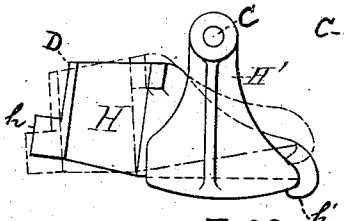


Fig 22.

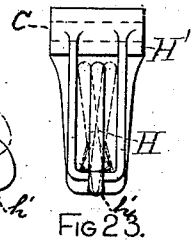


Fig 23.

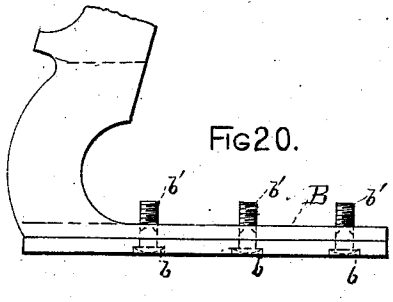


Fig 20.

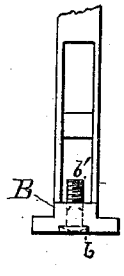


Fig 21.

WITNESS:

J. H. Gibbs

C. Bendixon

INVENTOR

George W. Hey

UNITED STATES PATENT OFFICE.

GEORGE W. HEY, OF SYRACUSE, NEW YORK, ASSIGNOR OF ONE-HALF TO CHARLES H. DUELL, OF SAME PLACE.

DOOR-HANGER.

SPECIFICATION forming part of Letters Patent No. 314,177, dated March 17, 1885.

Application filed June 18, 1884. (Model.)

To all whom it may concern:

Be it known that I, GEORGE W. HEY, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Door-Hangers, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to improvements in door-hangers of the class generally termed "adjustable sliding" door-hangers; and it consists in novel means for connecting the hanger-carrying attachment to the door, and in so constructing the hanger-frame and adjusting devices as to secure a freely-working vertical adjustment of the door without causing undue strain on the adjusting-screw or other working parts, as hereinafter fully described.

It consists, also, in constructing the roller-journal carrier and suspending-yoke, and in so arranging them that the journal is loosely mounted on the carrier, permitting free lateral deflection of the journal and its rollers, and at the same time preventing longitudinal deviation, which tends to throw the rollers out of line, causing binding and undue friction, all as hereinafter fully described, and pointed out in the claims.

In specifying my invention, reference is had to the accompanying drawings, like letters indicating corresponding parts in all the figures, in which—

Figure 1 is a front elevation showing all the parts from the attaching-base upward in their operative position. Fig. 2 shows a side elevation of the hanger, one roller being removed and the journal in section to show the journal-carrier and the suspending yoke in operative position. Fig. 3 shows a front elevation of a modification in the construction of the frame and attaching-base. Fig. 4 is a side elevation of the modification shown in Fig. 3. Fig. 5 is a top plan of the door-attaching plate. Fig. 6 is a front edge view of said plate. Fig. 7 is a side elevation of the same. Fig. 8 shows a modification in the construction of the door-attaching plate. Fig. 9 is a side elevation of Fig. 8. Fig. 10 is an inverted plan of the same. Fig. 11 shows a modified construction of the attaching-plate. Fig. 12 is a front edge view, and Fig. 13 a side elevation, of the same. Fig. 14 shows also a modification in the construction of the attaching-plate. Fig. 15 is a front edge view, and Fig. 16 a side elevation, of the same. Fig. 17 shows a further modification in the construction of the attaching-plate. Figs. 18 and 19 are respectively a front edge view and side elevation of the same. Fig. 20 shows a modification in the construction of the base of the hanger-carrying attachment, adapting the same to the modified forms of the door-attaching plate illustrated in Figs. 11, 14, and 17. Fig. 21 is a front edge view of the attaching-base illustrated in Fig. 20. Fig. 22 is a detached view of the journal-carrier and suspending-yoke, showing by full lines the yoke in position on the carrier, and by the dotted lines the manner of placing the yoke on the carrier; and Fig. 23 is a rear end view of the yoke and journal-carrier, showing the transverse form of the yoke, the dotted lines indicating the lateral deflection, hereinbefore referred to.

The hanger supporting-frame is composed of the vertical section A, provided with the attaching-base B and upwardly-projecting extensions *a a*. (See Figs. 1 and 3.) The extensions *a a* of the frame A are preferably made as in Fig. 1—*i. e.*, by slotting the frame A vertically down to the shoulder *c'*, so the extensions *a a* form, respectively, the side walls of the slot. In this form the outer or front faces of the extensions *a a* are formed on an incline of about ten degrees from a line drawn vertically at right angles to the base B. This inclined face is indicated by the letter A', and it forms an inclined raceway in connection with the slot between the extensions *a a*, upon which the journal-carriers H, the construction of which will be presently described, is moved up or down by a screw, S, to adjust the door vertically.

While the construction shown in Figs. 1 and 2, just described, is preferred, that shown in Figs. 3 and 4 answers equally well, but is more expensive to make in practice. This form differs simply in having the inclined raceway A' come in the frame instead of on the outer face, as shown in Fig. 2. This construction is made by cutting through trans-

versely in the extensions *a a*, making parallel slots at right angles to the vertical slots through said extensions *a a*. In this case the journal-carrier H is moved in the transverse slot on the inclined raceway A′ by a screw, S, as in the other form.

The journal-carrier H is constructed to fit in the slot between the extensions *a a*, and is provided with a threaded socket, *h*, through which the adjusting-screw S passes. The other extremity of the carrier H terminates in a hook, *h′*, which secures the journal of the carrying-rollers securely to the frame.

When the construction shown in Figs. 1 and 2 is employed, the carrier H is provided with flanges D, which bear against the inclined raceway A′, and which in connection with said raceway serve to relieve the adjusting-screw S and its head from undue vertical strain. It will be observed that the journal-carrier H is disposed horizontally between the extensions *a a* in this construction, and in order to attach the rollers R in proper relative position they are journaled in a yoke, H′, as shown in Fig. 2, said yoke being suspended on the carrier and securely retained by the hook *h′*, formed thereon, as previously described.

In the construction illustrated in Figs. 3 and 4 the journal-carrier H and yoke H′ are made in one piece. The hook *h′*, passing over the journal, securely attaches the latter and its rollers R to the frame and in its inclined raceway A′ when said carrier is connected to the adjusting-screw S.

The adjusting-screw S consists of an ordinary machine-screw having a slight enlargement to bear against the shoulders *c′*, formed on the frame, as shown in the drawings, the upper end of said screw passing into the threaded socket *h* of the journal-carrier H.

The rollers R R are constructed in the usual way, and may be plain-faced or flanged. When plain-faced, it is desirable to employ a friction-roller, *r*, Figs. 3 and 4, to prevent the frame A binding on the rails, which is liable to occur from the tendency of the flat-faced rollers to move in or out as the track becomes deflected by shrinkage or warping of the track or door or settling of the building. It is also desirable to so connect the roller-journal to the frame as to permit a lateral deflection of the roller to counteract the deflections of the track, caused as above, and I obtain this desirable feature by loosely mounting the roller-journal on the carrier in the manner described. However, while a free lateral deflection is requisite, there must be no longitudinal deviation, for the reason that in order to insure ease in rolling within the narrow space in which the moving parts are inclosed a very slight longitudinal deviation throws the rollers or their carrying devices against the studding forming the inclosure, causing the hanger to bind and "stick." It is essential, therefore, that the journal and its rollers be held rigid longitudinally, and great difficulty has heretofore been experienced in providing an effective and simple construction of parts which combined the necessary rigidity in the one direction and requisite freedom of movement in the other. I secure this desideratum in the construction illustrated herein by extending the journal-carrier H within the slot between the side walls thereof, which hold it rigidly horizontally, while the journal has a free tendency laterally from the fact that it is loosely held against the curved surface of the carrier. This feature is clearly illustrated in the detail views, Figs. 22 and 23. It will be seen that the carrier H in this case is passed endwise through the slot in the yoke H′, the slot being elongated sufficiently to give the requisite side bearing to support the yoke horizontally on the carrier, while the yoke is free to rock sidewise on the curved lower edge of the carrier, the hook *h′* preventing the yoke from slipping off.

It is obvious that the slotted extensions *a a* of the frame hold the carrier rigidly horizontally, and that the same result accrues from the construction illustrated in Figs. 3 and 4, with the exception, however, that the center of movement of the lateral deflection in the one form, Fig. 4, is on the journal, while in the other, Fig. 2, it is on the periphery of the tread of the carrying-rollers, which is more desirable, as thereby a more even bearing of the rollers upon the track-rails is secured under all conditions of variation caused by deflection of the rails.

The means for attaching the hanger-arm or base B to the door consists, broadly, in a compound or two-part plate, one part, as B′, Fig. 5, being provided with a longitudinal slot, E, and screw-holes *e*, through which securing-screws pass for attaching or fixing said plate B′ on top of the door, and the other part, as B, adapted to slide endwise into the slot E, where it is securely fastened by any suitable means, such as the screws *b′*, with nuts and washers, which are not shown in the drawings, the object being to provide attaching means whereby all cutting and fitting of the door to the hanger is avoided, and whereby the hanger can be put upon the track complete, and readily connected to the door without difficulty. If the plate B′ is made as shown in Fig. 5, a bridge, *c*, being formed by continuing the slot or mortise a short distance on the under side of the plate at each end thereof, and extending the ends *c′ c′* of the base B, Fig. 4, so they will extend into the bridged slots when slid home in place, no fastening-screws *b′* will be required, as the upward tendency of the strain on the two parts will hold the plates securely together; but I prefer to employ the screw *b′*, in combination with the plates, as described. It will be observed that the salient feature of this fastening means consists in the employment of two plates, one affixed to the top of the door and one to the hanger-

carrying frame, one part having a longitudinal slot or way, E, and the other fitted to slide endwise in or on the other, the two parts being secured together by the screws *b'*, as described. Figs. 8, 9, and 10 show the fixed plate on the door carrying the screws *b'*, which are inserted in a recess, *b*, on the under side of the plate. When this construction is used, the longitudinal slot E is formed in the base-plate B, as shown in Fig. 1. When either of the other forms of the plate B', as shown in Figs. 11, 14, and 17, are used, the base B carries the screws *b'*, which are inserted from the under side thereof, as shown in Figs. 20 and 21.

Various modifications in the form and construction of the plates B B' can be utilized without departing from the principle of my invention, and I have illustrated several modifications, which are readily understood upon referring to the drawings.

To apply the hanger to the door, it is simply necessary to connect the parts to the frame A, then fasten the plate B' to the top edge of the door with ordinary screws, then place the hanger with its rollers in position on the track-rails, lift up the door and slide the attaching-base B home endwise on the plate B', screw on the nuts, and set up the adjusting-screw S, so the lower edge of the door clears the floor or carpet, and the door hangs plumb.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A compound attaching-plate for door-hangers, composed of two parts, respectively, constructed and arranged to be interlocked or connected by sliding one part endwise on the other, one of said parts being secured on the door and the other carrying the hanger attachments, substantially as described.

2. A door-hanger attachment comprising a fixed plate on the door provided with a longitudinal way, and a hanger-arm adapted to slide in said way, and clamping devices for confining the said plate and arm in their relative position, substantially as described.

3. In a door-hanger attachment, the combination of the hanger-carrying arm or plate B with the fixed plate B', one of said plates having slot E, and the other screw-bolts *b'*, adapted to enter said slot and secure the plates in their operative position, substantially as described.

4. In an adjustable door-hanger or supporting-frame having projections *a a* extending upward from the attaching-plate, between which the journal-carrier is supported and guided in its vertical adjustment by a screw or equivalent device, substantially as described.

5. In an adjustable door-hanger, the combination of a slotted supporting-frame extending upward from the attaching-base, and having an inclined raceway, a journal-carrier riding in the slotted frame, and having an inclined flange bearing on the raceway, and an adjusting-screw, substantially as and for the purpose specified.

6. In a sliding-door hanger, a frame having an inclined raceway, and a journal-carrier adapted to move thereon by suitable means to adjust the door vertically, a roller-journal loosely mounted in said carrier to allow the carrying-rollers to deflect laterally, substantially as and for the purpose specified.

7. In a sliding-door hanger, a frame having a slotted raceway, and a journal-carrier adapted to move therein by suitable means to adjust the door vertically, a roller journaled in a yoke, said yoke being suspended horizontally on the carrier, whereby longitudinal deflection of the roller is prevented, while it is free to swing laterally, as specified.

8. In combination with an adjustable journal-carrier, the yoke H', loosely mounted therein to allow a lateral deflection of the roller, substantially as described.

9. A roller-journal supporting and carrying device composed of a yoke or stirrup having the journal-bearing in its upper end, and its lower or slotted portion loosely mounted on a carrier, as H, whereby said yoke is permitted to rock freely sidewise on said carrier, and the center of movement of the lateral deflection of the roller-journal is at or in proximity of the periphery of the tread of the roller, substantially as described.

In testimony whereof I have hereunto signed my name, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 12th day of June, 1884.

GEORGE W. HEY. [L. S.]

Witnesses:
FREDERICK H. GIBES,
WM. C. RAYMOND.