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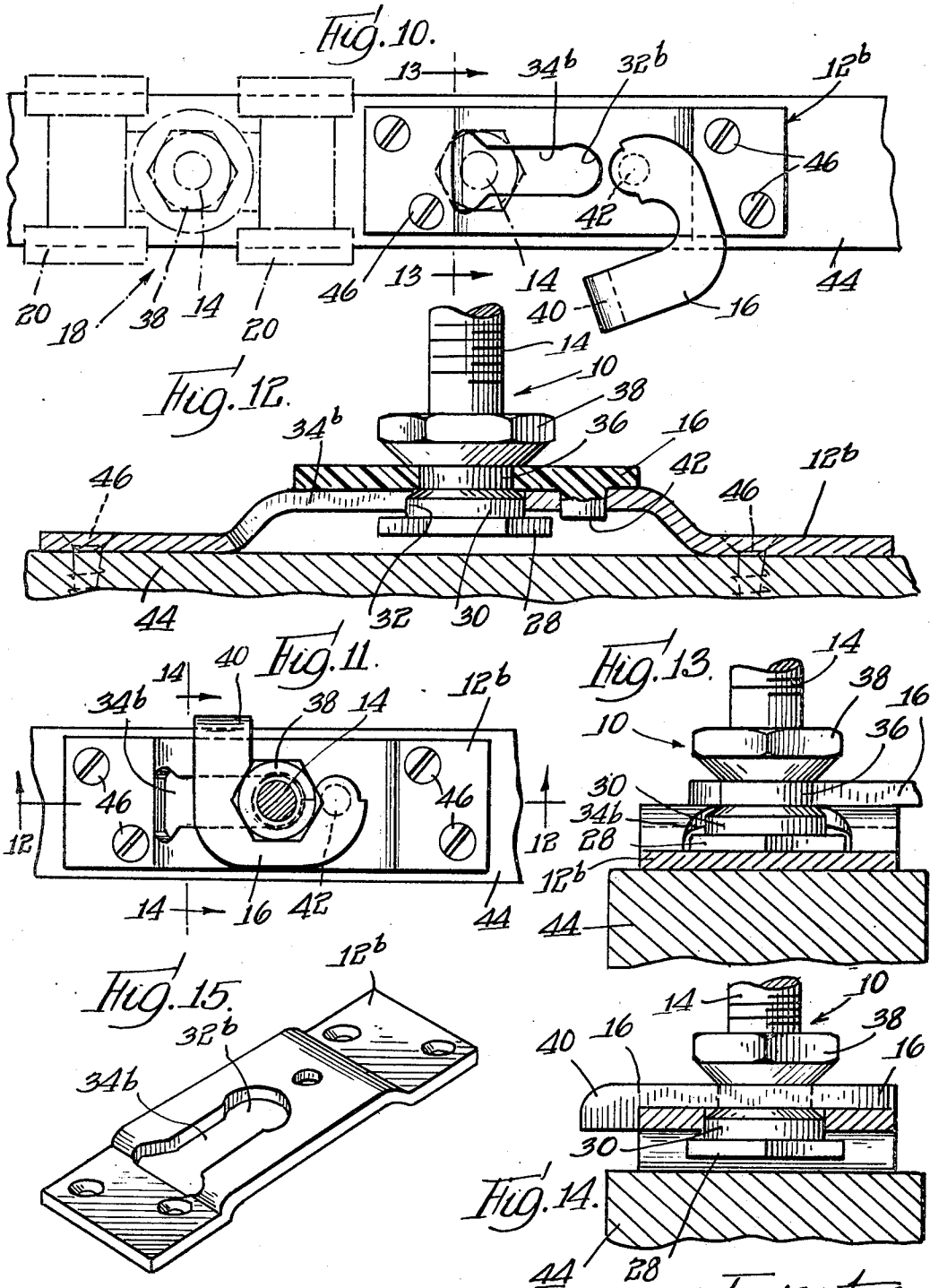
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HANGER DEVICE

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2 Sheets-Sheet 2



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**HANGER DEVICE**

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**ABSTRACT OF THE DISCLOSURE**

This invention relates generally to hanger devices for top-hung doors, and more particularly to a novel hanger structure for suspending slidable doors from a guide way or track along the overhead section of a door frame. The present invention is concerned primarily with improvements in that portion of a door hanger which is attachable to the upper margin or edge of the door panel. One embodiment of the invention disclosed in the present application includes a shank or bolt member adapted at its upper extremity for connection with a hanger carriage, as for example, a carriage of the type incorporating rollers designed to be shifted along a horizontal overhead track. The opposite, or lower, extremity of the shank is adapted for detachable coupling with a plate or bracket secured to the upper margin of a door panel. This plate is provided with an open-ended slot having an entry portion terminating in an enlarged portion for accommodating the shank, and the shank is provided with a first shoulder in the vicinity of the lower extremity thereof for engaging the under side of the plate, and a second shoulder spaced upwardly from the first shoulder. A shank section of reduced diameter is disposed between said shoulders to permit relative lateral insertion of the shank within the entry portion of the slot. A shank section of increased diameter approximates the diameter of said enlarged slot portion. When axially aligned, this slot portion and shank section may be relatively shifted into telescopic association. A latch member is shiftably supported on the upper side of the plate member. When occupying a latched position, said latch member projects into the annular area beneath the second shoulder and maintains the telescoped association of the enlarged slot portion and complementary shank section.

**DISCLOSURE OF INVENTION**

Hanger devices have heretofore been available in which a latch member is supposed to secure an upright shank member against lateral and longitudinal displacement with respect to a supporting plate. Devices of this type with which applicant is familiar have not functioned satisfactorily in that detachment of the door member from a suspending bolt has resulted from forces of vibration to which the door is normally subjected.

It is the primary object of the present invention to provide an improved, novel hanger device which is structurally arranged to meet the difficulties and disadvantages heretofore experienced.

More specifically, the present invention contemplates the provision of a door hanger device of the type referred to above, in which the upright member or shank is connectable with a conventional slide carriage and the lower extremity is detachably connectable with a door supporting plate by means of a unique latching structure. This novel arrangement precludes unauthorized or accidental relative lateral shifting of the shank and supporting plate, after the parts have been latched together.

Still more specifically, the invention contemplates an improved latching arrangement for the purpose set forth

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above in which a door suspending shank and a slotted supporting plate may be relatively shifted axially of the shank to secure these parts against lateral and longitudinal separation.

The foregoing, and other objects and advantages, will be more apparent from the following detailed disclosure wherein:

FIG. 1 is a plan view of hingedly-connected, slidable door panels of the accordion folding type adapted to accommodate a door hanger structure of the type contemplated hereby;

FIG. 2 is a perspective view illustrating one embodiment of the present invention secured to the upper edge of a door panel and suspended from a shiftable carriage;

FIG. 3 is a vertical sectional view taken substantially along the line 3-3 of FIG. 2;

FIG. 4 is an enlarged plan sectional view taken substantially along the line 4-4 of FIG. 2, with the shiftable or pivoted latch member disclosed in its latched position;

FIG. 5 is a sectional view similar to FIG. 4, disclosing the latch member or arm moved to its unlatched position with supporting plate and shank shifted laterally with respect to each other from the position shown in FIG. 4;

FIG. 6 is an enlarged transverse sectional view taken substantially along the line 6-6 of FIG. 4;

FIG. 7 is a sectional view taken substantially along the line 7-7 of FIG. 4;

FIG. 8 is a fragmentary sectional view taken substantially along the line 8-8 of FIG. 5 to disclose more clearly the manner in which the suspension bolt or shank automatically shifts downwardly to an unlocked relation with respect to the plate when the latch arm is shifted to its unlatched position, shown in FIG. 5;

FIG. 9 is a fragmentary perspective view of the hanger device contemplated hereby shown in association with a door attaching plate of modified form;

FIG. 10 is a plan view of a hanger plate of modified form, having an open-ended slot extending longitudinally of the plate, a hanger carriage being shown by dot-and-dash lines;

FIG. 11 is a plan view similar to FIG. 10, with the shank and plate assembled and secured in position by the latch arm;

FIG. 12 is an enlarged vertical sectional view taken substantially along the line 12-12 of FIG. 11;

FIG. 13 is a transverse sectional view taken substantially along the line 13-13 of FIG. 10; showing the position of the shank with respect to the plate, before the latch arm is moved into latched position;

FIG. 14 is a transverse sectional view taken substantially along the line 14-14 of FIG. 11; disclosing the latched position of the shank and plate; and

FIG. 15 is a perspective view of the plate shown in FIGS. 10 to 14, inclusive.

Referring now to the drawings more in detail, wherein like numerals have been employed to designate similar parts throughout the various figures, it will be seen that one embodiment of a door hanger device contemplated by the present invention is designated generally by the numeral 10. The device 10 comprises three discrete parts or elements; a plate 12 for attachment to the upper margin of a door member or panel, a door suspension bolt or shank 14 adapted to interlock with the plate 12, and a latch member 16 pivotally supported on the upper side of the plate 12 and adapted to be shifted between latched and unlatched position. The upper extremity of the bolt 14 is threaded for coupling with complementary threads in a carriage device designated generally by the numeral 18. The carriage device 18 may be of any desired form and, as shown in FIG. 2, it may incorporate rollers 20

adapted to be shifted along a guide track 22, FIG. 3, secured along the horizontal section of a door frame 24. Section 26 of the carriage 18, positioned between the pairs of rollers 20, serves to accommodate the upper extremity of the shank member 14.

The lower extremity of the shank member 14 is provided with a flange 28 adapted to engage the underside of the plate 12 when the shank and plate occupy the assembled relation shown in FIGS. 6 and 7. It will be noted that when the shank 14 is thus positioned with respect to the plate 12 a peripheral shank section 30 is snugly accommodated by an enlarged opening 32 which forms the inner terminal of an entry slot portion 34. The aperture or slot portion 32 has a diameter substantially equal to the external diameter of the shank section 30, while the width of the entry slot portion 34 is smaller than the diameter of the shank section 30. A cylindrical shank section 36 of reduced diameter accommodates the entry slot portion 34.

Assume, for example, that the plate 12 and shank member 14 are to be brought into coupling association by moving the plate from the position shown in FIG. 5 to the interlocked position shown in FIGS. 4, 6 and 7. This is accomplished by moving the entry slot portion 34 into telescopic association with the cylindrical shank section 36, thus locating the cylindrical section 30 and the enlarged slot portion 32 in axial alignment. The plate may now be shifted vertically, through the agency of the latch member 16, so as to bring the section 30 into snug telescopic association with the slot portion 32 as shown in FIGS. 6 and 7. With the parts in this position of association, the plate 12 and shank 14 are interlocked against lateral separation. In this position the inner margin of the latch member 16 engages and supports the underside of a shank flange 38 (see particularly FIGS. 6 and 7). To prevent unauthorized shifting of the latch member 16 from its latched position shown in FIGS. 4 and 6, a depending lip 40 at the free extremity of the latch arm 16 is designed to overlie the adjacent edge of the plate 12. The opposite or pivoted extremity of the latch member 16 has a depending pivot member 42, FIG. 7, which extends within a complementary aperture of the plate member 12. The latch member 16 may be constructed of material such as a suitable plastic which will permit sufficient lateral springing of the free latch extremity.

Opposite extremities of the plate member 12 are secured to the edge of a door panel in any suitable manner as by means of wood screws 46. The intermediate portion of the plate 12 lies in a plane spaced upwardly from the plane of the extremities of the plate 12, whereby to provide space for accommodation of the lower extremity of the bolt or shank member 14.

From the foregoing, it will be apparent that a door panel 44, equipped with the slotted plate 12 may be attached to the lower extremity of the shank or bolt 14 by bringing the entry slot portion 34 into registration with the cylindrical section 36 of the shank, and then shifting the door panel laterally. The latch member 16 may now be pivoted from the position shown in FIG. 5 to the latching position shown in FIG. 4 thereby resulting in telescopic association of the shank section 30 and the enlarged slot portion 32. It is preferable to have the underside of the flange member 38 and the upper side of the shank section 30 chamfered as shown to facilitate initial latching engagement of the member 16 with the underside of the flange 38. In some instances it may be desirable to also chamfer the entering edge of the latch member.

In FIG. 9 the shank member 14 is shown in association with a modified plate member 12a. The plate 12a is of the type designed to be attached to the side of the upper door margin as distinguished from the plate 12, previously described, which is designed for attachment to the upper edge of the door panel. In both instances the structure and function of the latching device are the same.

In FIGS. 10-15, inclusive, a modified form of plate is disclosed, this plate being designated generally by the numeral 12b. The only structural difference between the plate 12b and the plate 12 previously described is in the disposition of the open-ended slot for accommodating the shank member 14. The entering portion of the slot 34 of the plate 12 is open-ended and extends transversely of the plate. The corresponding slot 34b in plate 12b is also open-ended but extends longitudinally of the plate 12b. The slot in plate 12b has an enlarged portion 32b which communicates with the entry portion 34b. The open-ended slot portion 34b permits assembly of the shank 14 and the plate 12b by association of the slot portion 34b with the section 36 which has a diameter substantially equal to or slightly less than the width of the slot portion 34b. With the shank axis positioned coaxially with the enlarged, substantially circular slot portion 32b, the shank section 30 may be moved into registration with the slot portion 32b through the action of the latch arm 16 in exactly the same manner as previously described. As in the case of the previously described plates 12 and 12a, the intermediate portion of the plate 12b is raised sufficiently to permit accommodation of the flange 28 and shank section 30 as clearly illustrated in FIGS. 12-14, inclusive.

One of the important distinguishing structural and functional features of applicant's latching device over commercially available latching devices with which applicant is familiar is in the novel arrangement of the latching member or arm 16. In applicant's device the latch member 16 does not merely traverse the slot in the plate and as such provide a lateral abutment for the suspension shank, but rather serves as means for maintaining a peripheral surface section 30 of the shank in telescopic interlocked association with an enlarged complementary recess 32 in the plate. When applicant's latch arm 16 has been shifted to its position underlying the flange 38, all lateral forces to which the shank 14 may be subjected are resisted by the engagement with the margin or edge of the plate which defines the enlarged slot portion 32. In other words, the latch arm is not required to resist any substantial lateral force which might tend to accidentally unlatch the arm. The depending portion 40 of the arm 16 engaging the edge of the supporting plate, plus the weight of the door, additionally cooperate in securing the arm against unauthorized or accidental unlatching.

While for purposes of illustration certain structural embodiments have been disclosed herein, it should be understood that other modifications and changes are contemplated.

The invention is claimed as follows:

1. A hanger device for top-hung sliding doors and the like including upright shank means, the upper extremity thereof having means for attachment to a hanger carriage, shank accommodating plate means for attachment to the upper margin of a door member, said plate means having an open-ended shank accommodating slot including an entry portion terminating in an enlarged portion, first shoulder means at the lower extremity of said shank means for underlying said plate means in the vicinity of said enlarged slot portion, a first circumferential, peripheral shank section disposed above said first shoulder means having a transverse dimension approximating that of said enlarged slot portion, a second adjacent circumferential, peripheral shank section of smaller diameter to permit lateral association with the entry portion of the slot, second shank shoulder means positioned above said first and second peripheral shank sections, said shank and plate means being relatively axially shiftable within predetermined limits when said enlarged slot portion and said first peripheral shank section are in axial alignment, and a latch member on the upper side of said plate means shiftable between latched and unlatched positions, and when in latched position projecting into the area im-

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mediately beneath said second shoulder means to maintain telescopic association of said first peripheral shank section and said enlarged slot portion whereby to prevent accidental disengagement of said shank and plate means.

2. A hanger device for top-hung sliding doors and the like as set forth in claim 1, wherein the entry of the open-ended shank accommodating slot is positioned along one edge of the plate means.

3. A hanger device for top-hung sliding doors and the like as set forth in claim 1, wherein the entry of the open-ended shank accommodating slot is spaced inwardly from the peripheral margin of the plate means.

4. A hanger device for top-hung sliding doors and the like as set forth in claim 1, wherein an intermediate portion of the plate means lies in a plane spaced above the remaining portion thereof for accommodating the lower extremity of the shank means.

5. A hanger device for top-hung sliding doors and the like as set forth in claim 1, wherein the latch member is pivotally mounted on the upper side of the plate means and presents a margin adapted to project into the area immediately beneath said second shoulder means.

6. A hanger device for top-hung sliding doors and the like as set forth in claim 1, wherein the margin of the latch member adapted to project into the area immediately beneath the second shoulder means has a thickness substantially equal to the axial extent of the second circumferential peripheral shank section.

7. A hanger device for top-hung sliding doors and the like as set forth in claim 1 wherein the upper side of the second circumferential peripheral shank section and the opposing surface of the second shoulder present an-

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nular surface areas flaring radially outwardly to facilitate initial association of the latch member with the under side of said second shoulder means.

8. A hanger device for top-hung sliding doors and the like as set forth in claim 1 wherein the axial dimension of the first circumferential peripheral shank section is substantially equal to the thickness of the adjacent portion of the plate means.

9. A hanger device for top-hung sliding doors and the like as set forth in claim 1, wherein a free extremity of the latch member is provided with depending shoulder means adapted to interlock with a margin of the plate means when the latch member is in latched position to secure said latch member against unauthorized unlatching.

10. A hanger device for top-hung sliding doors and the like as set forth in claim 1 wherein the latching member comprises an element having sufficient resiliency to permit lateral springing thereof to facilitate latching and unlatching of said member.

#### References Cited

##### UNITED STATES PATENTS

768,137	8/1904	McCabe	-----	16-94
2,670,496	3/1954	Knight	-----	16-97
2,982,988	5/1961	Blackmer	-----	16-97
3,193,870	7/1965	McNinch	-----	16-97

##### FOREIGN PATENTS

462,871	1/1950	Canada
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