L. A. BITTORF.

DOOR HANGER.

APPLICATION FILED NOV. 9, 1911.

1,039,246.

Patented Sept. 24, 1912.

2 SHEETS—SHEET 1.

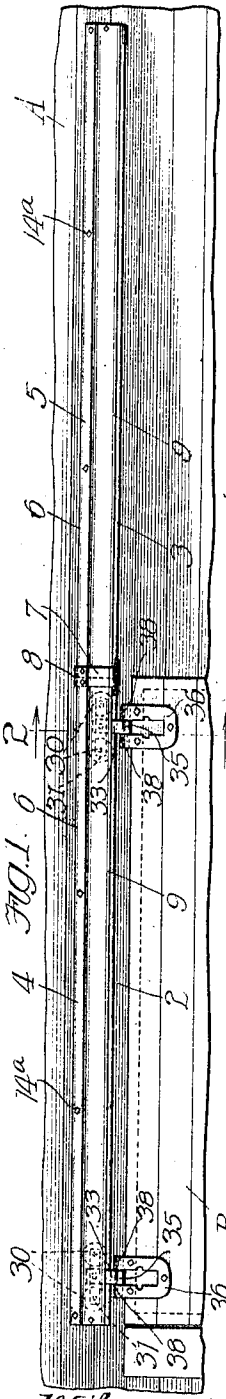

Fig. 1.

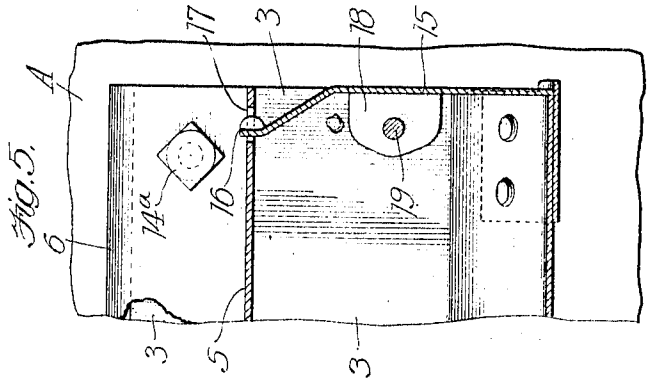

Fig. 5.

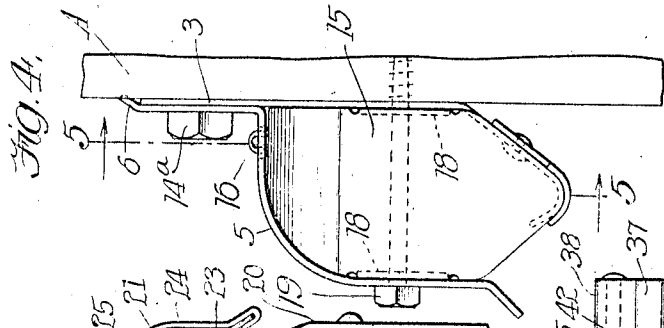

Fig. 4.

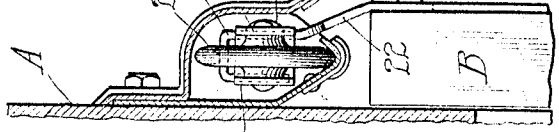

Fig. 2.

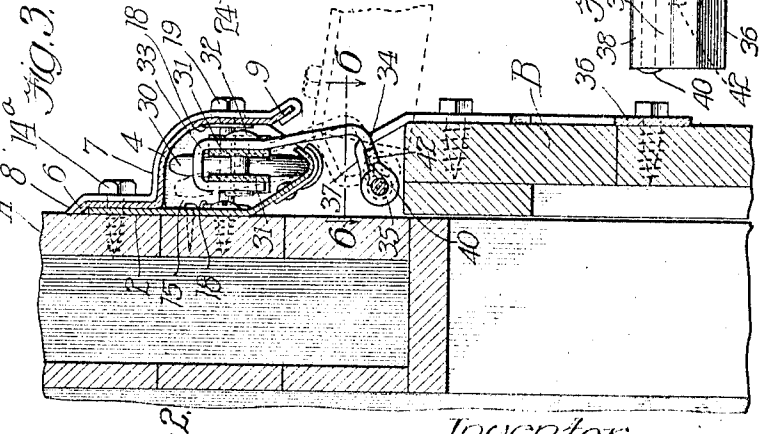

Fig. 3.

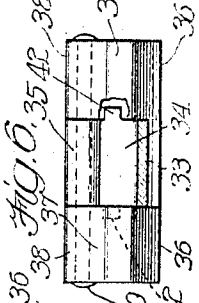

Fig. 6.

Witnesses

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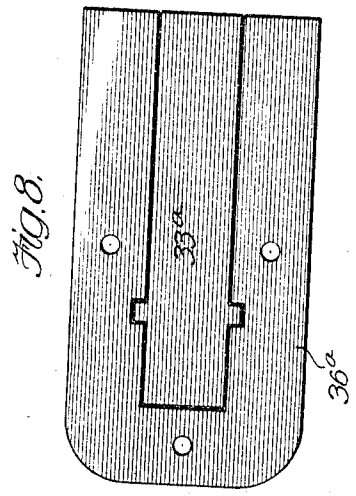

Fig. 8.

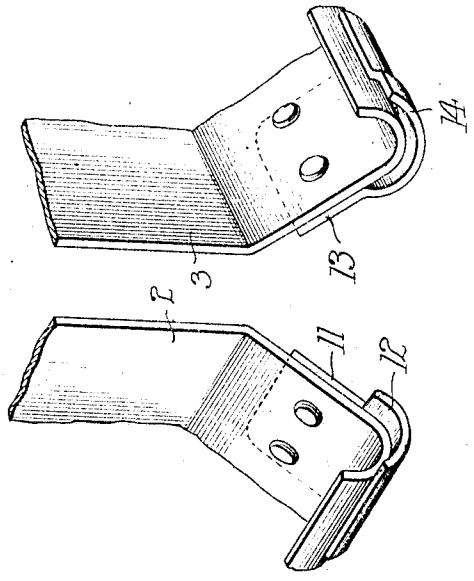

Fig. 10.

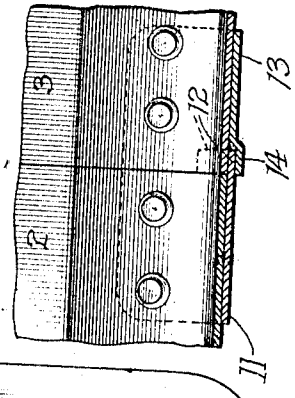

Fig. 9.

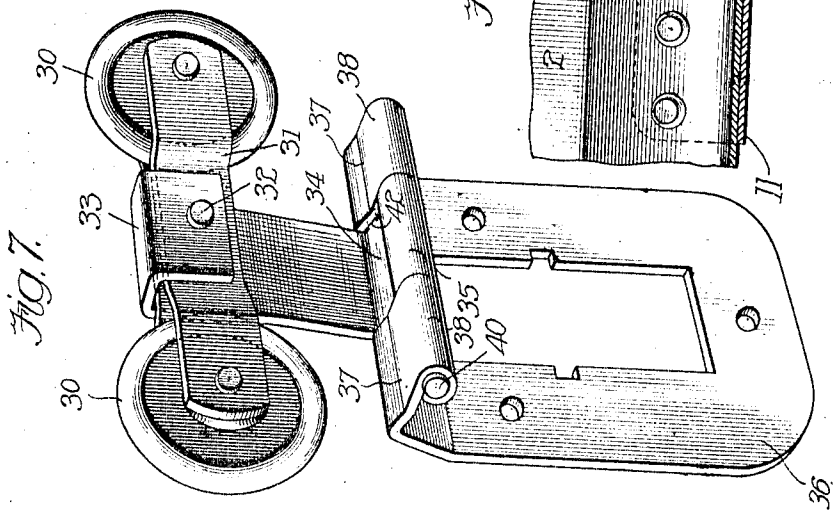

Fig. 7.

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UNITED STATES PATENT OFFICE.

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DOOR-HANGER.

1,039,246. Specification of Letters Patent. Patented Sept. 24, 1912.

Application filed November 9, 1911. Serial No. 659,436.

To all whom it may concern:

Be it known that I, LOUIS A. BITTORF, a citizen of the United States, residing at Sterling, in the county of Whiteside and State of Illinois, have invented certain new and useful Improvements in Door-Hangers, of which the following is a specification.

In the prior patent to William P. Benson No. 818,603 issued April 24, 1906, is disclosed a door hanger wherein through offset hinging and suitable stop devices the advantages of a solid or one-piece hanger are had with the added advantages of a hinged hanger. The particular hanger illustrated and described in said Benson patent is of the type wherein a grooved wheel runs upon a track rail, the wheel frame or carrier being in the form of a hood which covers the wheel. With this particular type of hanger the specific location of the hinge vertically is not so important, the essential thing being to have the axis of the hinge inwardly beyond the tread of the wheel or a central plane of the wheel.

The chief object of my present invention is to carry out the Benson principle in a door hanger structure of the storm-proof variety wherein the wheel or wheels of the hanger run inside of a casing which it is desirable to have as far closed as possible both in the interests of rendering the structure storm proof and also to prevent the entrance of birds apt to litter up the track and clog the wheels. This type of door hanger calls for a different way of carrying out the Benson principle than that specified in the aforesaid patent for the character of cover or casing which is necessary in order to accomplish the desired end prohibits a hinge location such as that shown in the Benson patent accompanied by the full advantages of the hinge feature. It will be understood that the purpose of employing a hinge is to permit the door to be swung outwardly to a considerable extent, both for the purpose of protecting the hanger in case force is applied to the door as by the running of a wheel hub against it and for the purpose of permitting the door to be raised and propped up to serve as an awning. If the cover or casing is constructed and applied to the best advantage in the matter of rendering the structure storm proof and bird proof, then it would seriously interfere with the swinging outward of the door if the hinge should be located above the track. I propose therefore to locate the offset hinge below the track and spaced therefrom sufficiently to permit the full outward and upward swing of the door. I aim also to provide as compact and serviceable a construction in general as possible having various advantages in the matter of facility of manufacture of parts, economy of production and ease of application, it being understood in the latter connection that devices of this character are ordinarily erected by persons unskilled as mechanics.

In the drawings which accompany and form a part of this specification, Figure 1 represents in front elevation a complete door-hanger structure applied to a building, a portion of the outer wall of which is indicated together with a top portion of a door; Fig. 2 is a vertical section on an enlarged scale taken on the line 2—2 of Fig. 1; Fig. 3 is a similar sectional view showing a different character of door bracket; Fig. 4 is an end elevation of the casing and track structure which is fastened to the building; Fig. 5 is a section on the line 5—5 of Fig. 4; Fig. 6 is a section on the line 6—6 of Fig. 2; Fig. 7 shows the hinged door hanger in perspective; Fig. 8 shows two parts thereof in the flat as blanks produced by punch-press process; Fig. 9 is a sectional detail of the track and Fig. 10 represents corresponding portions of the track plates in perspective.

Referring first to Fig. 1, reference letter A designates the outer wall of a building such as a barn and B a door. The track for the latter to travel upon is made up of sections in the form of elongated plates 2 and 3, each having an upper portion arranged to be placed flat against the side of the building and a lower portion adapted to extend downwardly at an acute angle to the wall of the building as clearly illustrated in Figs. 2, 3 and 4. This lower portion is curved and turned upwardly at its terminal portion so as to form a grooved track. The cover is likewise made in sections in the form of plates 4 and 5, each comprising an upper portion adapted to lie flat against the rail plate and a curving portion which extends outwardly from the rail plate and downwardly somewhat beyond the terminal edge of the rail plate to a point in proximity

thereto. For the purpose of guarding against the lodgment of water next the wall of the building where it might work down into the interior of the structure, the cover plates have short extensions 6 at their upper ends bent so as to cause their edges to closely engage the building, these extensions being thus of a character to shed water as will be obvious. The two sections of cover plates meet at a middle point as indicated by dotted lines in Fig. 1 and a metal band 7 is employed to bind them together and effect what is termed a splice. This band conforms in contour with the transverse section of the cover plates as clearly illustrated in Fig. 2, so that it closely engages over the same, including the extensions 6 which are covered here where they meet by the similar portion 8 of the splice band 7. It will be obvious that the latter completely covers the joint between the cover plates and makes the structure water proof at this point. The said plates have outwardly inclined lower portions 9 for the purpose of deflecting water clear of the door and particularly those portions of the door to which metal hanger pieces are applied. The band 7 is similarly formed at its lower end and further extended to constitute a binding for the bottom edges of the plates. It will be seen by reference to Fig. 2 that the band is bent around the edges of the plate and up behind the latter. The two track sections are specially equipped in order to insure evenness of the grooved track at the point of union of the two sections which correspond with the point of union of the two cover sections. Thus one track section has riveted to it a metal piece 11 which conforms to its contour at the track portion and is provided with a projecting curved part 12. The other track plate has a metal piece 13 riveted to it and underlying its track portion. This piece 13 is expanded in its curved portion at the part corresponding with the end portion of the plate as well illustrated in Fig. 10, thus making the plate rabbeted so as to provide a socket for the projection or tongue 12 to enter as shown in Fig. 9. It will be obvious that this special equipment provides for interlocking the two track plates so as to insure an absolutely even track surface at the joint. The channel or socket formed by the expanded portion 14 of the piece 13 is open at one end and the channel extends somewhat farther around on the track plate 3 than the tongue 12 does on the track plate 2. This allows for some play which facilitates the fitting together of the parts when applying them to the building.

The preferred method of applying the above described parts is to first nail one track section in place (the door with hangers upon it having been blocked up so that the proper position of the track section can be determined) then to put up the other track section and nail it in position properly interlocked with the first section and horizontally alined therewith and then to put on the cover pieces using lag screws or bolts to secure them and the rail plates to the building. It will be understood that the rail plates and cover plates are made with bolt holes adapted to aline and that the splice band 7 is similarly provided with bolt holes. Lag screws or bolts 14^a are here shown engaging such holes in the plates and band and entering the woodwork of the building.

The housing which is provided by the above construction for the wheel carriers and wheels of the hangers is closed at the ends by a special construction illustrated in Figs. 4 and 5. This comprises a plate 15 having an outline corresponding to the cross section of the housing except as to the over hang 9, said plate having its substantially V-shaped lower part fitted against the end of the rail plate. The upper part of this plate 15 slants inwardly and is formed with a lug 16 to engage a hole 17 in the top part of the cover plate. Ears 18 are bent back from the central portion of this end plate 15 to lie respectively against the vertical portion of the cover plate and the vertical portion of the rail plate. A bolt or lag screw 19 is run through holes in said plates and said ears and enters the woodwork of the building securing the end plate or cap in position and holding the whole structure rigid against the building.

Solid or one-piece hangers may be used on the door with the above described construction of housing and in Fig. 3 such a hanger is illustrated, the same comprising a bracket 20 bolted to the door, a wheel carrier or frame piece 21 in the form of an inverted U the outer leg of which is united by an inclined portion 22 to the bracket 20. On a rivet 23 run through the U-shaped carrier piece 21 are pivotally mounted plates 24 which are connected at their ends by journal members carrying wheels 25 adapted to run in the grooved track.

The hinged form of hanger shown in Figs. 2, 6 and 7 comprises wheels 30 similar to those above mentioned and similar wheel carrying plates 31, journaled on a rivet 32 which is run through a U-shaped frame piece 33. The latter however is not integral with the door bracket, as in the case of the solid or one-piece hanger, but its outer leg is extended downward a considerable distance at a slight inclination to the upper portion and then is bent back so as to form an inwardly projecting extension 34 terminating in a hinged bearing 35. The door bracket 36 is U-shaped and its legs incline inwardly just above the door after the manner of the connecting portion 22 of

the solid or one-piece hanger. Beyond these inclined portions of the legs the latter have inward extensions 37 taking the same general direction as the extension 34 of the wheel frame piece 33. The legs of the door bracket straddle the said extension 34 and the extensions 37 of said legs terminate in hinged members 38 which aline with the hinge member 35. A hinge pintle 40 is run through these alining hinge bearings. The extension 34 has laterally projecting lugs 42 which underlie the extensions 37 respectively of the bracket legs.

It will be obvious that the last described construction of door hanger provides for outward swinging of the door as indicated by dotted lines in Fig. 2 and it will be noted that the hinge is so far below the track that the door may be swung nearly to the horizontal or as far as it will ever be desired to swing it. Even then the door does not strike the lower edge of the housing cover notwithstanding the same is brought down so near to the outer edge of the track as to exclude birds. It is further to be noted that the hinge of the above described hanger is carried inwardly beyond the central vertical plane of the hanger wheels. Thus the principle of the Benson patented hanger is present, it being understood that the tendency is to tilt the wheels inwardly on the fulcrum supplied by the track. This is due to the fact that the weight of the door is pulling downwardly at a point inward of this fulcrum. However, this tendency is counteracted when the door is in its normal or pendant position by the contact of the lugs 34 against the extensions 37 of the door bracket legs so that under such a condition the door bracket and wheel frame piece 33 become as one and there is no tilting of the wheels by reason of these parts being hinged together but the wheels behave just exactly in such a hanger as in the solid or one-piece hanger such as illustrated in Fig. 3. When the door is swung or forced outward the effect on the hanger is still the same as it would be on a solid or one-piece hanger, for a short distance, and then, when some part of the upper section of the hanger comes against some part of the track or the housing, the door turns on the hinge, the bracket extensions 37 moving away from the lugs 34. The wheels and wheel frame remain tilted as shown by dotted lines in Fig. 2, until in the lowering of the door the bracket extensions 37 strike the lugs 34 whereupon the wheels are righted.

In manufacture the wheel carrier 33 is produced from the same metal sheet as the door bracket 36. Thus through the use of suitable punch-press dies the U-shaped door bracket blank 36^a (Fig. 8) it cut from a sheet of steel, and the interior metal that is removed supplies the blank 33^a for the wheel carrier, the lugs 34 being formed in the same operation. The end portion of blank 33^a which comes from the base of the door-bracket-U is subsequently bent into a hinge bearing, and the end portions of the legs of said U are similarly bent to form hinge bearings, the blanks being also bent to produce the angular formations hereinbefore specified.

I claim:

1. A door hanger comprising a track-wheel, a wheel-supporting member extending downward considerably beyond the wheel at one side thereof and thence transversely of the wheel to the other side thereof where said member forms a hinge bearing; a door bracket having legs extending past opposite side edges of the said wheel-supporting member at the lower part thereof and bent to extend transversely of the wheel in the same general direction as the transversely extending portion of the wheel-supporting member, said legs terminating in hinge bearings alined with that of the latter; and a hinge pintle extending through said alined bearings and forming therewith a hinge offset from a central vertical plane of the wheel; there being left an unobstructed space between the wheel tread and the transversely extending portions of the door bracket and wheel-supporting member to accommodate the track and provide for outward and upward swinging of the door bracket, and the said transversely extending portions having overlapping parts adapted to contact when the door bracket is pendent, substantially as and for the purpose described.

2. A door hanger comprising a track-wheel, a wheel-supporting member extending downward considerably beyond the wheel at one side thereof and thence transversely of the wheel to the other side thereof where said member forms a hinge bearing; a door bracket having legs extending past opposite side edges of the said wheel-supporting member at the lower part thereof and bent to extend transversely of the wheel in the same general direction as the transversely extending portion of the wheel-supporting member, said legs terminating in hinge bearings alined with that of the latter; and a hinge pintle extending through said alined bearings and forming therewith a hinge offset from a central vertical plane of the wheel; there being left an unobstructed space between the wheel tread and the transversely extending portions of the door bracket and wheel-supporting member to accommodate the track and provide for outward and upward swinging of the door bracket, and the transversely-extending portion of the wheel-supporting member having laterally projecting lugs on its side edges underlying the transversely-extending por-

tions of the wheel bracket legs respectively; substantially as and for the purpose described.

3. A door hanger comprising a track wheel; a substantially U-shaped sheet-metal door bracket, a wheel supporting member consisting of the metal piece removed to form the U-shaped door bracket and so produced with laterally projecting lugs; the legs of the U-shaped bracket and the lug bearing portion of the wheel-supporting member being bent to extend transversely of the wheel and terminating in alined hinge bearings, and the lugs underlying the transversely extending portions of the bracket-legs; and a hinge pintle engaging said bearings and forming therewith a hinge offset from a central vertical plane of the wheel.

4. A door hanger structure comprising a track plate adapted to be secured against the building and having an angular portion to project therefrom terminating in an upturned portion for forming a grooved track; a cover plate adapted to be secured at its upper portion against the building and having an overhanging portion extending outwardly beyond the track plate and downwardly into proximity thereto; a wheel adapted to run in the grooved track and under the cover-plate; a wheel supporting member having a wheel bearing portion under said cover plate and above the track, an outer portion depending angularly through the space between the latter and the cover plate, and a lower inwardly turned portion extending under the track and spaced therefrom and terminating in a hinge bearing; a door bracket having an inturned portion terminating in a hinge bearing alined with that of the wheel-supporting member; and a hinge pintle; the hinge axis being inwardly beyond the vertical plane of the wheel tread, and the door bracket and wheel-supporting member having stop-portions adapted to contact when the door bracket is pendent.

5. A door hanger structure comprising a track plate adapted to be secured against the building and having an angular portion to project therefrom terminating in an upturned portion for forming a grooved track; a cover plate adapted to be secured at its upper portion against the building and having an overhanging portion extending outwardly beyond the track plate and downwardly into proximity thereto and terminating in an outwardly inclined or flaring portion; a wheel adapted to run in the grooved track and under the cover plate; a wheel carrier or frame comprising portions lying on opposite sides of the wheel, the portion on the outside having a downward extension directed outwardly at an angle approximating that of the flaring portion of the cover plate; and a door bracket bent inwardly at its upper portion to join the wheel carrier in a plane inward of the aforesaid portion of cover plate which extends downwardly into proximity to the track.

6. In a door hanger structure, a track hood or cover made in section, and a splice band overlying meeting end portions of the cover sections and bent under the bottom edges thereof and up behind the same and against their inner sides.

7. In a door hanger structure, track plates adapted to be secured against the building in sections and having upcurved terminal portions forming track grooves, one such plate having a rabbeted piece at the end of its curved track portion forming a curved socket and the other plate having a piece at the meeting end of its curved track portion with a projecting curved tongue to engage said socket.

8. A door hanger structure comprising a track plate adapted to be secured against the building and having an angular portion to project therefrom terminating in an upturned portion for forming a grooved track; a cover plate adapted to be secured at its upper portion against the building and having an overhanging portion extending outwardly beyond the track plate and downwardly into proximity thereto and being perforated and end-pieces closing the areas between cover plate and track at the ends thereof and having ears overlapping the cover plate and track plate and secured thereto and having projections engaging the perforations of the cover plate.

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