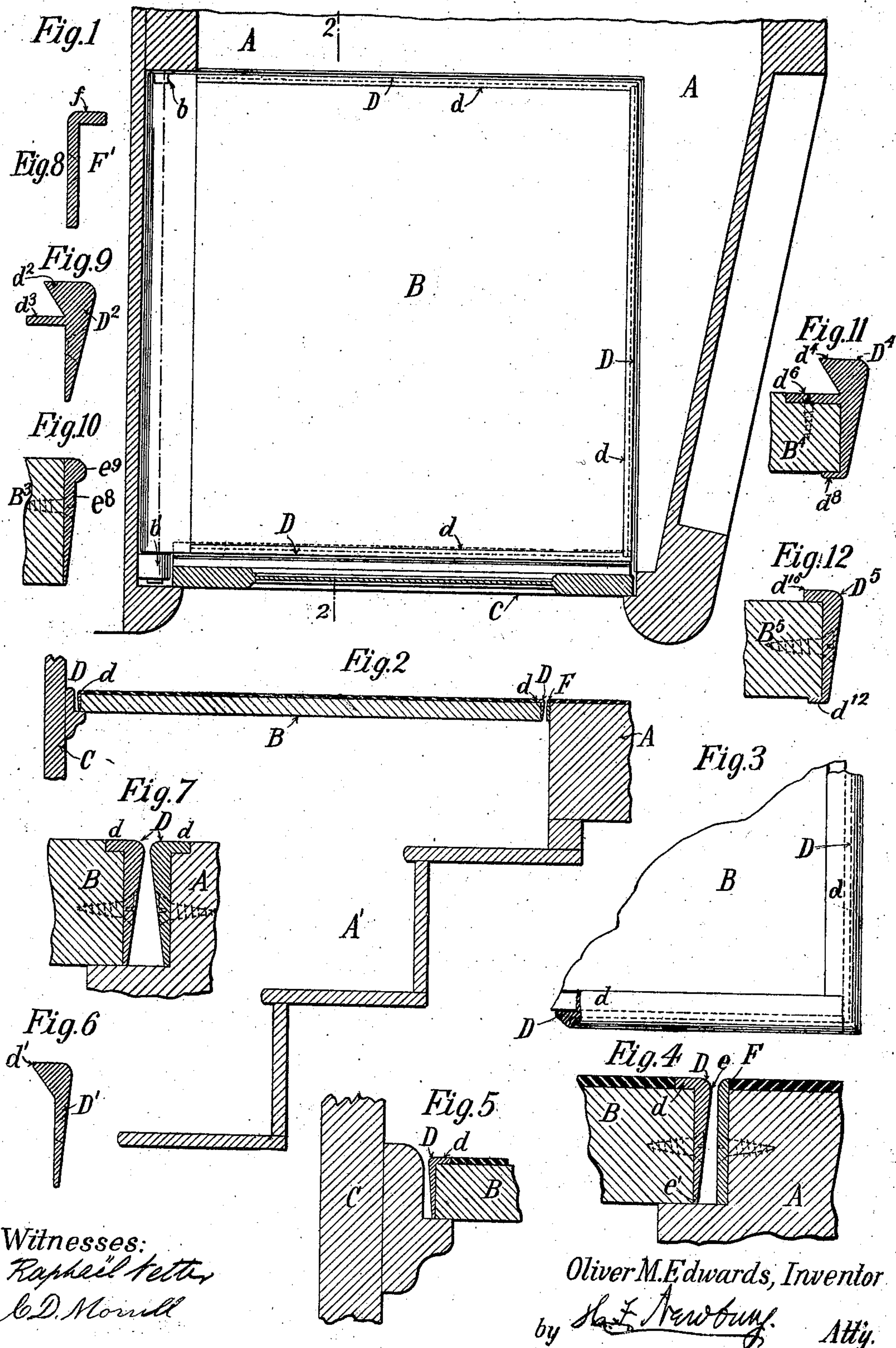


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PATENTED MAR. 19, 1907.

O. M. EDWARDS.
BINDING FOR CAR TRAP DOORS.

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UNITED STATES PATENT OFFICE.

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BINDING FOR CAR TRAP-DOORS.

No. 847,559.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, OLIVER M. EDWARDS, a citizen of the United States, residing at Syracuse, in the county of Onondaga, State of New York, have invented certain new and useful Improvements in Bindings for Car Trap-Doors, of which the following is a full, clear, and exact description, reference being had to the drawing accompanying and forming a part of the same.

My invention relates generally to bindings for what are known as "platform" trap-doors, which cover the steps of railway-cars by which ingress and egress thereto is had.

Heretofore in the manufacture and use of platform trap-doors serious trouble has been experienced in the doors becoming wedged or bound in the openings of the platforms within which they are mounted, and consequently not readily opened when desired, as when "stations" are reached. This wedging or binding of trap-doors in the openings in the platforms arises from the accumulation of snow, ice, &c., freezing and the changes in the relations of the edges of the doors to those of the adjacent portions of the platforms in which such doors are mounted. It is a well-known fact that by reason of the necessary differences in the level of the two rails of a railroad-track and adjacent portions of such track lengthwise thereof that car-bodies are constantly changing as the cars pass over different portions of the roadway, and as a result platform trap-doors which open easily when the car is upon one portion of the roadway, as at one station, open with difficulty when upon another portion of the roadway, as at another station. These changes are taking place all of the time the train is in motion and in time cause a change in the "camber" of the car itself. Again, the "drawing" and "buffer" actions and stresses to which the platform of cars are subjected, and especially in the starting and stopping of trains, tends to cause changes in the relations of the doors and adjacent portions of the platforms. Also there has been difficulty caused by the swelling of trap-doors composed of wood by the entrance of moisture at the edges and then the consequent shrinkage from the drying out of such moisture. This latter difficulty has been overcome in a measure by covering the edges of the platform and door with metal, thus tending to protect the wood from the entrance of moisture at such edges and the drying out of the

wood. This binding, as it were, of the door with metal in a measure strengthens the door and protects its edges more or less against injury. These platform trap-doors are largely used on cars provided with vestibules and that "vestibuled" trains are more or less open from the first to the last car of the train and permit the free passage from car to car, thus making the vestibules and their platforms portions of the cars to be protected from that which will annoy or produce discomfort to those within the cars themselves. At those places where persons are to get aboard of or depart from the train these trap-doors have to be quickly opened to uncover the steps by which ingress and egress to the cars is had and from the side of the train which is the least dangerous for passengers and others to enter or leave the train. Hence it is very desirable that these trap-doors should readily open and without the expenditure of an undue amount of force and also without causing unnecessary delay.

The object of my invention is to simplify the manufacture and improve platform trap-doors by providing means which can be readily applied and will aid in opening the same; and it consists, generally stated, first, in providing a binding therefor of varying thicknesses in cross-section in those portions between the door and the opening in the platform in which the door is mounted, and, second, in combining such a binding with the door and arranging it with the lessening thickness in cross-section extending toward the under side of the door or platform or those portions of the door which are the last to leave the opening in the platform, as the door is opened.

I have shown in the drawing and described in the specification different forms or embodiments of my invention; but it is to be understood that the invention may take on other forms than those specifically shown in the drawing.

Like letters of reference wherever they occur indicate corresponding parts in the several figures of the drawing.

Figure 1 is a plan view of a portion of a car-platform with the vestibule in cross-section, showing the manner generally of mounting a trap-door therein, the door being hinged to the platform at the left of Fig. 1 in a customary manner. Fig. 2 shows in vertical section, on line 2 2 of Fig. 1, the manner of supporting the door when closed and its relations to the

car-steps which the door covers and with my improved binding applied to the side edges of the door. Fig. 3 shows in plan view one corner of the door seen in Figs. 1 and 2, but on an enlarged scale. Fig. 4 shows in vertical section, but on an enlarged scale, that which is seen at the right of Fig. 2. Fig. 5 in like manner shows that which is seen at the left of Fig. 2, but not on as large a scale as in Figs. 3 and 4. Fig. 6 shows in cross-section a modified form of binding in which a flange or lip is seen. Fig. 7 shows in cross-section a binding similar to that seen applied to the door in Fig. 4 applied to the edges of the opening in the platform in which the door is mounted and also a similar binding applied to the door. Fig. 8 shows in cross-section a modified form of non-tapered binding for use on the platform, if desired. Fig. 9 shows in cross-section a modified form of binding where an additional lip or flange is employed to aid in holding the binding in place. Fig. 10 shows in cross-section a modified form of binding, and it also illustrates the stiffening of the binding by increasing its thickness. Fig. 11 shows in cross-section a modified form of binding and a way of securing it to the door. Fig. 12 shows in cross-section still another form of binding with a portion of a door to which it is applied.

In Figs. 1 to 5, inclusive, A is the platform of the car and forms the main portion of the floor of the vestibule employed to inclose the major portion of the platform in what is known as "wide" vestibuled trains. This platform is provided with an opening over the steps A', leading in and out of the car in which the trap-door B is mounted. This door is provided with any suitable or desired form of hinges at one edge thereof by which the door can be controlled in the opening and closing the space over the steps of the car. These hinges *b b'* are preferably in most cases arranged at the edge of the door next to the body of the car, as seen at the left of Fig. 1, so that when the door B is opened it opens against this portion of the car, as indicated in dotted lines at the left of Fig. 1. This permits the vestibule-door C to open inward after the trap-door is opened and fold back against the opened trap-door in a well-known manner. As thus arranged the trap-door when closed may be supported at the edge next to the vestibule-door C by such door in the manner indicated at the left of Fig. 2 and in Fig. 5.

As shown in Figs. 1 to 5, inclusive, the door B is provided with a binding D on three of its edges, preferably. The fourth edge, if desired, may also be similarly provided; but this edge is usually protected more or less by the form of hinge many times used on these trap-doors, which extend along the hinge edge of the door. This binding D is taper-

ing in thickness from one edge toward the other, and preferably it is of the taper somewhat like that seen in cross-section in these Figs. 1 to 5; but it may vary, if desired, from this form and yet accomplish the same result that is accomplished when in the specific form shown in these figures. As here shown, this binding D is provided with a lip, flange, or overhanging portion *d* of substantially uniform thickness, and this lip or flange is arranged to form a continuation of the top surface of the trap-door. The edges of the door to which this binding is to be applied are formed, preferably, at right angles to the top surface of such door and the binding is so shaped as to be applied thereto, and if such binding be supplied with a flange or overhanging portion in the manner shown in the foregoing figures, in Fig. 6, or otherwise that portion which forms a continuation of the upper surface of the door is preferably of such a shape as to conform to such surface of the door; but this portion may be of any desired shape so long as it is suitable for its intended purpose and does not interfere with the other portions of the binding. This binding D is to be applied to the door B with its thickest portion, as *e*, in cross-section (see Fig. 4) near the top surface of the door and the lessening thickness extending toward the under side of the door or platform—that is, extending downwardly. The lower or thinnest portion, as *e'*, is preferably arranged so as to extend down to or below the extreme lower or under surface of the door, and thereby cover over the entire edges of the door to which the binding is applied. This more or less excludes moisture from such edges and also retards the drying out of moisture already within the material composing such door, and thereby aids in keeping the body of the door of uniform dimensions and in a more desirable condition for use. As shown, the binding may be applied to the edges of the door and secured thereto by screws passing through the binding and into the material composing the door, or it may be applied in any desired manner or by any means which will securely fasten it in position on such edges. The edges of the opening in the platform A in which the door B is mounted may, if desired, be covered with a binding *F* of the form seen in these Figs. 1 to 5, or the same form of binding shown as applied to the door B may be applied, as indicated in Fig. 7, thus using the same binding for both the edges of the door and of the opening in the platform in which the door is mounted. It is desirable that the bindings for both of these edges shall have a more extended wearing-surface than the bare upper edges of such bindings alone afford. This increased wearing-surface is attained by the lip, flange, or overhanging portion *d* of the binding D in Figs. 1 to 5 and of the lip or overhanging portion *f* of

the binding F' in Fig. 8, or of portion d' of binding D' of Fig. 6, or of portion d^2 of binding D² of Fig. 9. Forming the binding D as shown in these Figs. 1 to 5 and applying it to the door B as there shown permits the door to fill the opening to the fullest extent, and yet when the door is to be opened it has to be moved but comparatively a small extent before it begins to be relieved from any binding or wedging effect of the opening on the edges of the door, owing to the beveled or receding form given by the taper of the binding to the exposed edges of such door. As the door continues to open it is still further relieved from this wedging action, and particularly at the side edge where the steps meet the platform, by this beveled or receding form given to the edge of the door by this form of binding. This form of binding also permits the edges of the door to which it is applied to be made substantially at right angles to the top surface of the door, and thus to be readily formed with substantial accuracy by the use of the ordinary wood or other edge dressing machinery by the employment of the ordinary or semiskilled workman of the present day. It also permits of a number of doors being dressed to a size at a time by machinery, and thus to be readily made of substantially uniform dimensions edgewise by the above means. This is an important advantage when employing the ordinary workmen of the present time. This form of binding is stiffer and more rigid lengthwise, as well as crosswise, by reason of its tapering shape with a given quantity of metal than when made in the form seen applied to the edges of the door-opening in the platform in Figs. 1 to 5 or in the form seen in Fig. 8, or leaving out of consideration the overhanging lip or flange d of binding D seen in Fig. 4, where it is applied to door B, and comparing the remaining portion with the binding F' seen in the same figure of the drawing, when the binding weighs the same per foot in length and is of the same width, this binding is stiffer, owing to its increased thickness at or near the upper surface of the door. This is illustrated in Fig. 10, where the upper central portion e^8 is of the same thickness as the binding F, seen in Fig. 4 applied to the edge of the opening of the platform and the extra material seen at e^9 of Fig. 10 is equal to that removed in forming that portion of the binding below the upper central portion e^8 of binding D³. This increased stiffening of the binding D adds increased stiffness to the door, and this is desirable, as these trap-doors are made as light in weight as possible to properly do the work they are intended to do. By adding a slightly-increased amount of metal and increasing the taper of the binding and of the bevel of the edge of the door this stiffening action is increased to the extent desired without a pro-

portional increase in the amount of metal employed in forming the binding.

The same relief from the wedging action of the platform, whether upon one edge or the other, is obtained in the form or embodiment of binding seen in Fig. 10 as is had in the form seen in Figs. 1 to 5 or in Figs. 6, 7, and 9 when the form of binding seen in Fig. 10 is of corresponding thicknesses at the point e^9 and the lower or under side of the door, and the corresponding bindings are of the same width. It is desirable that these vestibule-platforms, including the door or doors, be covered with material to give a good foothold to those using the cars—such, for instance, as india-rubber matting or tiling. Where simple matting is employed, it may be of the thickness of the lip or flange d and extend into contact therewith and be on substantially a level therewith. If it is desired to use a thicker matting or a tiling, the lip, flange, or overhanging portion of the binding may take on the form seen in Fig. 6, where the binding D' is provided with a lip or portion d' of a shape to engage with the edges of the matting or tiling, which is properly shaped for this purpose, and secure such edges to the door. If the same shape or form of binding be employed for the edges of the opening into which the door closes, then such lip or portion will overhang or overlap the edges of the matting or tiling placed on the platform in like manner as on the door. It is sometimes desirable to use additional means to secure the binding to the edge of the door, and, if desired, it may be provided with a flange, as d^3 , as seen in Fig. 9, where the binding D² is seen in cross-section having the lip or portion d^2 , and this additional flange d^3 may be provided with openings through which screws or other fastenings may be passed into the door to help secure the binding thereto. If it be desired, the binding may be made to wholly inclose the edges of the door to which it is applied, as shown in Figs. 11 and 12, where the door B⁴ in Fig. 11 has applied thereto a binding D⁴ having inclosing flanges d^6 d^8 in addition to the lip or flange d^4 and the door B⁵ in Fig. 12 has applied thereto a binding D⁵ having flanges d^{10} d^{12} . In this latter figure the flanges d^{10} and d^{12} are the only ones shown; but they receive a portion of the door and aid in holding the binding thereto in two directions, as in Fig. 11. These flanges, as d^6 and d^8 of Fig. 11, or any of the others shown may be made as is thought best to serve their intended purposes, the forms herein shown being illustrative of some of the preferred forms which may be used in connection with my improved binding, tapering in thickness from one edge toward the other.

Different extents of taper are shown as being given to the bindings in some of the different figures of the drawing, and it is to be

understood that the dimensions of the bindings and the extent of taper given to them may vary from what is here shown and yet the binding will do substantially the same work as is done by those herein shown and do this work in the same way.

When securing-flanges are employed, it is desirable that some fastening devices other than the flanges alone shall be employed—such, for instance, as screws or other holding means—and when screws are employed they may be applied as indicated in Fig. 11 or in Fig. 12 or otherwise, as is thought best.

What I claim as new is—

1. A binding for trap-doors tapering in thickness from one edge toward the other and adapted to be applied with the lessening thickness extending toward the under side of the platform.

2. A binding for trap-doors tapering in thickness from one edge toward the other and adapted to be applied to surfaces, which are at substantially right angles to the upper surface of the door, and with the lessening thickness extending toward the under side of the platform.

3. A binding for trap-doors tapering in thickness from one edge toward the other and provided with a flange to overhang a surface at an angle to the surface to which the binding is to be applied, with the lessening thickness extending toward the under side of the platform.

4. A binding for trap-doors tapering in thickness from one edge toward the other and provided with inclosing flanges adapted to receive the edge of the door and engage with portions adjacent to the upper and lower surfaces of the same, and with the lessening thickness extending toward the under side of the platform.

5. In a car-platform the combination, substantially as set forth, of a trap-door provided with edges substantially at right angles to its upper surface, and a binding therefor, tapering in thickness from one edge toward the other, whereby the exposed surface of the binding is at an angle to the surface to which the binding is applied, the apex of the angle being formed near to or below the under side of that portion of the platform in which the door is mounted.

6. In a car-platform the combination, substantially as set forth, of a trap-door mounted in the platform, a binding therefor, and a binding for the opening in which the door is mounted, one of which bindings taper in thickness from one edge toward the other, with the lessening thickness extending toward the under side of the platform.

7. In a car-platform the combination, substantially as set forth, of a trap-door mounted in the platform, a binding therefor, tapering in thickness from one edge toward the other,

and two securing-flanges formed integral with the binding, whereby a portion of the door is received between the flanges and the binding is applied with the lessening thickness extending toward the under side of the platform.

8. In a car-platform the combination, substantially as set forth, of a trap-door mounted in the platform, a binding therefor, tapering in thickness from one edge toward the other, and two securing-flanges formed integral with the binding, one of which flanges is adapted to receive fastening devices and the other flange is adapted to engage with the door, whereby a portion of the door is received between the flanges and the binding is applied with the lessening thickness extending toward the under side of the platform.

9. A binding for trap-doors tapering in thickness from one edge to the other and at its thickest edge provided with a rounded portion and adapted to be applied with the lessening thickness extending toward the under side of the platform.

10. A binding for trap-doors tapering in thickness from one edge to the other and at its thickest edge provided with a rounded portion and adapted to be applied to surfaces, which are at substantially right angles to the upper surface of the door with the rounded portion exposed and the lessening thickness extending toward the under side of the platform.

11. A binding for trap-doors tapering in thickness from one edge to the other and at its thickest portion provided with a rounded portion at one side and a flange at the other side and adapted to be applied with the lessening thickness extending toward the under side of the platform.

12. A binding for trap-doors tapering in thickness from one edge to the other and at its thickest portion provided with a flange at right angles to one side portion and a rounded corner portion at the opposite side portion and adapted to be applied with the lessening thickness extending toward the under side of the platform.

13. In a car-platform the combination, substantially as set forth, of a trap-door provided with edges substantially at right angles to its upper surface, and a binding therefor, tapering in thickness from one edge toward the other and having a rounded portion, in cross-section, whereby one of the exposed portions of the binding is at an angle to the surface to which it is applied and another portion forms an exposed rounded surface near the upper surface of the door with the lessening thickness of the binding extending toward the under side of the platform.

OLIVER M. EDWARDS.

Witnesses:

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