J. E. RABER.

HINGE.

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1,195,085. Patented Aug. 15, 1916.

Fig. 2.

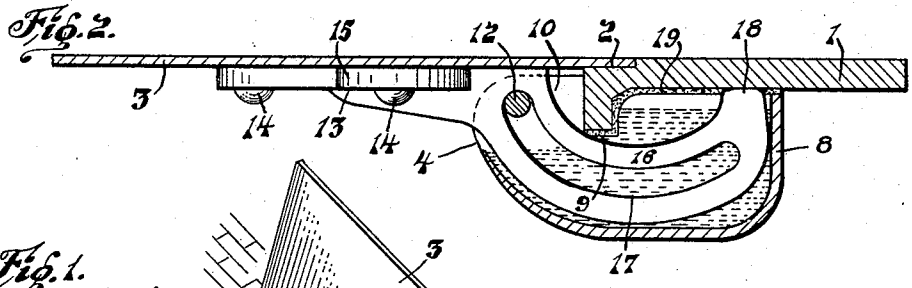


Fig. 1.

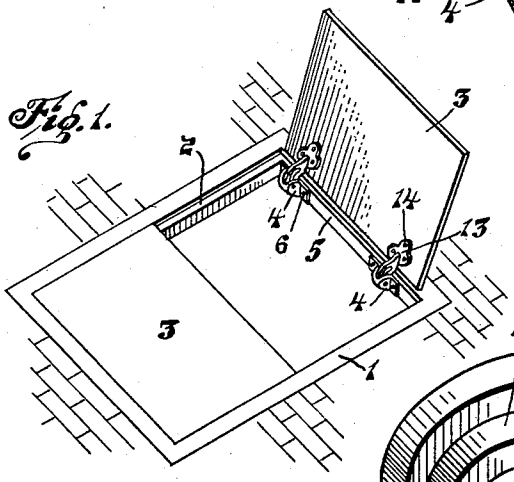
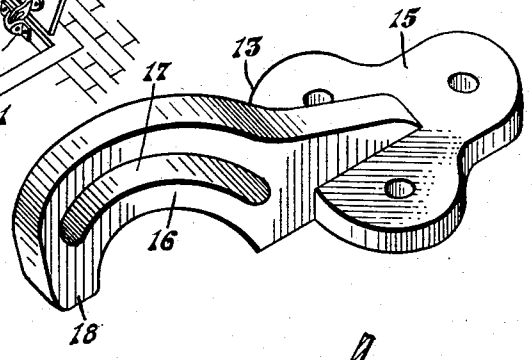


Fig. 4.



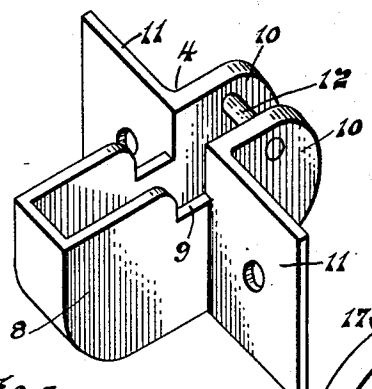
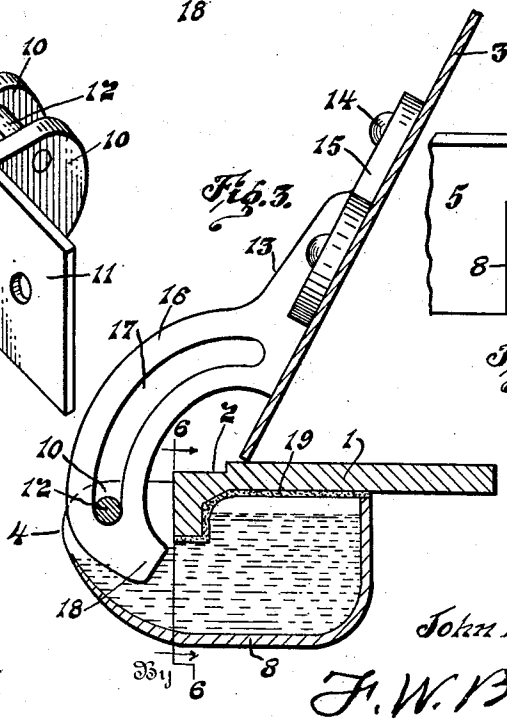


Fig. 5.

Fig. 3.



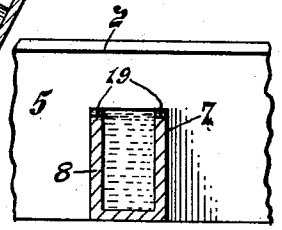


Fig. 6.

Witness

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UNITED STATES PATENT OFFICE.

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HINGE.

1,195,085. Specification of Letters Patent. Patented Aug. 15, 1916.

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To all whom it may concern:

Be it known that I, JOHN E. RABER, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented a new and useful Hinge, of which the following is a specification.

My invention relates to hinges and has more especial reference to hinges designed for use in connection with what is commonly known as trap doors, such as are used for the entrances to cellars upon streets and like places.

The object of this invention is to provide a flush top door with hinges which are invisible when the door is closed.

A further object is to provide a door of this character in which it is not necessary to cut through the door or frame to secure the hinges thereto.

A further object is to provide a door of this character in which the hinge does not pivot upon a pin as in the usual form of hinge.

A further object is to provide a door with a slotted hinge adapted to coöperate with a pin to hold the door tightly against the frame when shut.

A further object of my invention is to provide a hinge whereby the door normally lies in substantially a horizontal plane or in the same plane as the street or floor within which said door is provided.

A further object is to provide means limiting the backward movement of the door when the same is in the opened or elevated position, at the same time holding the door in said opened position.

A still further object is the provision of a hinge of the character referred to which will be kept properly lubricated at all times.

With these objects in view the invention consists in the novel construction and arrangement of parts, hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size and minor details of construction may be made within the scope of the appended claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings: Figure 1 is a perspective view showing my improved hinge applied to a trap door located in a pavement, one of the doors being shown in the opened position. Fig. 2 is a sectional view of a portion of a door and door frame in the closed position showing my hinge applied thereto. Fig. 3 is a similar view showing the door in the opened position. Fig. 4 is a detail perspective view of one of the hinge members carried by the door. Fig. 5 is a similar view of one of the hinge members carried by the door frame. Fig. 6 is a section on the line 6—6, Fig. 3.

Similar numerals of reference indicate corresponding parts throughout all the figures of the drawing.

In the accompanying drawings, the numeral 1 represents the door frame which is preferably angular in cross section and provided with the rectangular recesses 2 adapted to receive the hinged doors 3 when said doors are in the closed position. The doors 3 may be of any usual and well known construction, being preferably rectangular in form as shown and constructed of sheets or plates of metal.

The hinge members 4 are attached to the downwardly depending flanges 5, at opposite extremities of the frame 1, by means of rivets or screws 6 or their equivalents, notches 7 being formed in the flanges 5 to accommodate the lubricator containing receptacle 8 of the hinge members 4, said receptacle portions being cut away at 9 in order to fit snugly against the frame 1. Spaced ears 10 are provided upon the attaching plate 11 of each of the hinge members 4, a pin 12 connecting said spaced ears.

Hinge members 13 are attached to the doors 3 by means of bolts, rivets or their equivalents 14, said members comprising the attaching plates 15 and the curved slotted portions 16, each of said last named portions being provided with the curved slot 17, a projection 18 being formed at the free extremity of each of said curved portions. The pin 12 which is carried between the spaced ears 10 upon the frame hinge member is located within the curved slot 17 in the adjacent door hinge member and the curved slotted portion 16 of each of the hinge members 13 is normally located within the lubricator containing receptacle 8 when the door is in the closed position as shown in Fig. 2, suitable cement 19 being provided between the edges of the receptacle 8 and the adjacent surface of the frame 1 in order to form a liquid tight joint.

When the door is in the opened or elevated

position as best illustrated in Fig. 3 of the drawings the pins 12 engage the lower extremities of the slots 17, thereby limiting the backward movement of the door, the rear edge of the door resting upon the top of the frame 1 at a point beyond the recess 2 in said frame, thus leaving the recesses exposed in order that a suitable instrument may be used to clean any accumulation of dirt or dust out of said recess when the door is opened in order to guarantee a tight fit of the doors within the frame when they are moved to the closed position. When the doors are in the closed position the projections 18 upon the curved portions of the door hinge members 13 will engage the undersurface of the frame 1 in order to take a portion of the weight of the doors and prevent them from sagging.

By the construction above described the hinge members are located entirely beneath the door and below the door frame, thereby presenting a smooth and even surface when the door is closed, thus removing from sight the hinge members and presenting a pleasing appearance. At the same time the hinges are kept clean and free from dirt and properly lubricated, as they are located within the lubricating oil or grease contained within the receptacles 8 during the time that the doors are closed.

From an inspection of Fig. 2 of the drawings it will be seen that the slot 17 is so located with relation to the pin 12 that the door will be held tightly down upon the frame by reason of its own weight and at the same time the hinge edge of the door will be held tightly against the shoulder formed in the frame, thus preventing water from leaking through the joint between the door and the frame and coming into contact with the hinges.

Owing to the laws in a number of States requiring that doors, such as the present hinge is adapted to be used upon, must be flush with the pavement it has been found necessary to provide some form of hinge which may be connected upon the under face of the door in order that the hinge will form no obstruction upon the upper surface of the door, but in the hinges at present in use for this purpose it has been found necessary to cut out a portion of the door and casing in order to attach the hinge thereto. With the present construction the hinge is located entirely beneath the door, it not being necessary to cut away any portion of the door to attach the hinge thus not only producing a door having no obstruction upon its upper face but also making a more finished construction and pleasing appearance.

Although the drawings and above specification disclose the best mode in which I have contemplated embodying my invention I desire to be not limited to the details of such disclosure, for, in the further practical application of my invention, many changes in form and construction may be made, as circumstances require or experience suggests, without departing from the spirit of the invention, within the scope of the appended claims.

I claim:

1. A hinge adapted to be used upon a door, comprising spaced ears attached to the door frame, and disposed outwardly therefrom a pin connecting said spaced ears, a curved member connected to the door, said curved member provided with a curved slot, said pin being located through the slot in said curved member and a projection formed upon said curved member and adapted to contact with the under surface of the door frame when the door is in the closed position.

2. A hinge adapted to be used upon a door, comprising spaced ears attached to the door frame, a pin connecting said spaced ears, a curved member connected to the door, said curved member provided with a curved slot, said pin being located through the slot in said curved member and a lubricator container connected to the frame and adapted to receive said curved member when the door is in the closed position.

3. A hinge adapted to be used upon a door, comprising attaching plates connected to the door frame, spaced ears provided upon each of said attaching plates, a pin connecting each pair of spaced ears and a lubricating receptacle provided upon each of said attaching plates, curved members connected to the door, said curved members provided with curved slots, said pins being located through the slots in said curved members, said curved members being arranged to be located within said lubricator receptacles when the door is in the closed position.

4. A hinge adapted to be used upon a door, comprising spaced ears attached to the door frame, a pin connecting said spaced ears and a curved member connected to the door, said curved member provided with a curved slot, said pin being located through the slot in said curved member, said curved slot being so shaped that when the door is closed the curved member will ride upon said pin bringing the hinge edge of the door into snug engagement with the door frame.

In testimony that I claim the above, I have hereunto subscribed my name.

JOHN E. RABER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."