May 9, 1950 A. W. BAILEY 2,507,329

HINGE

Filed Jan. 17, 1945

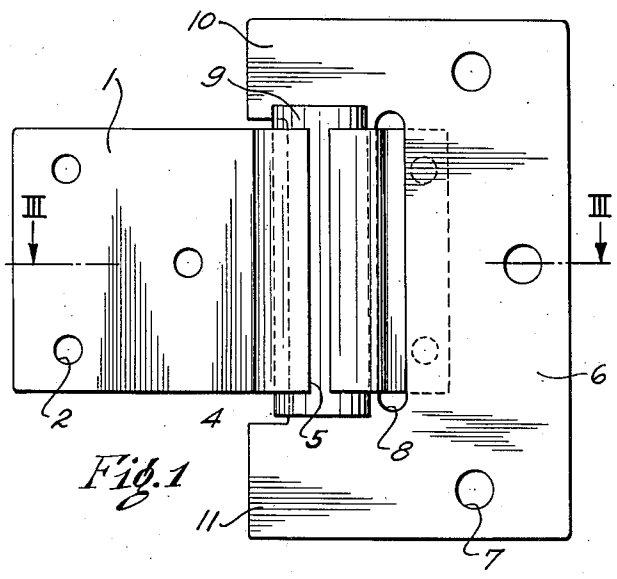


Fig. 1

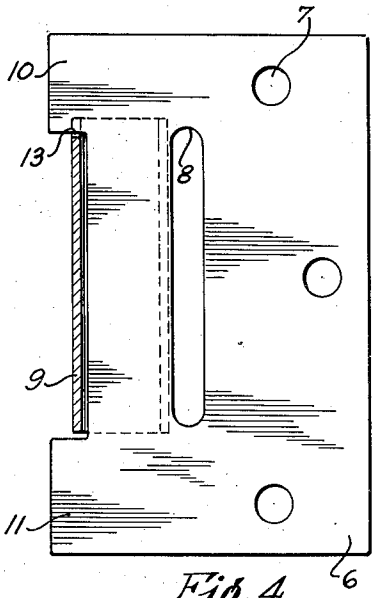


Fig. 4

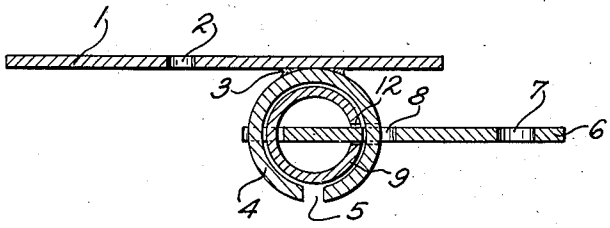


Fig. 3

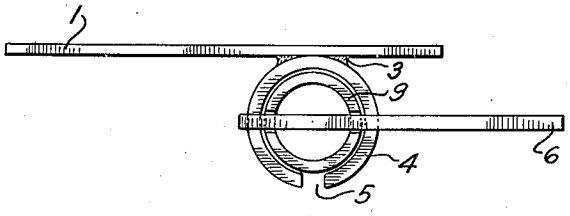


Fig. 2

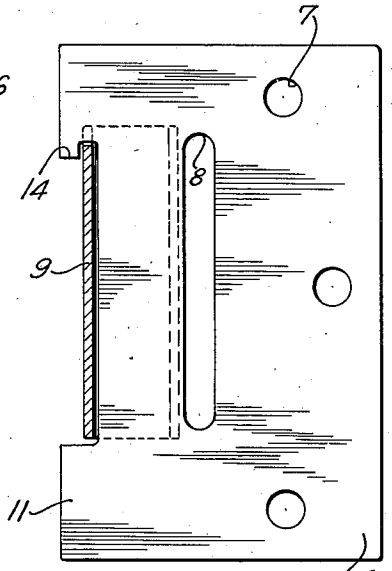


Fig. 5

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2,507,329

HINGE

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Application January 17, 1945, Serial No. 573,169

2 Claims. (Cl. 16—171)

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This invention relates to a hinge and is particularly adapted to hinges which must be subjected to very severe weathering and the like.

An object of the invention is to provide an improved hinge which will operate easily and effectively in adverse environments.

Another object is to provide an improved hinge which will avoid clogging with dirt, snow, ice and similar materials.

Another object is to provide an improved hinge which will not require lubrication.

Another object is to provide an improved hinge which may be easily and economically manufactured.

Another object is to provide an improved hinge in which wear will be reduced to a minimum.

Another object is to provide an improved hinge which may be quickly and easily assembled and disassembled.

Another object is to provide an improved hinge which may be produced without deforming any parts.

Other objects will hereinafter appear.

The invention will be better understood from the description of two practical embodiments thereof, illustrated in the accompanying drawings, in which;

Figure 1 is a side elevational view of one form of hinge embodying my invention;

Figure 2 is a top plan view of the hinge of Figure 1;

Figure 3 is a cross-sectional view taken on the line III—III of Figure 1;

Figure 4 is a partially elevational and partially sectional view of two of the parts shown in the preceding figures; and

Figure 5 is a view similar to Figure 4, but showing a modified form of construction.

The hinge shown is intended primarily for use on flaps of ventilators, one type of such ventilator being shown in the application of James B. Shaver, Serial Number 500,392, filed August 28, 1943, now Patent No. 2,492,242, dated December 27, 1949, although it will be understood that there are many other situations where hinges of this type would be particularly advantageous.

Such ventilators are mounted on the roofs of buildings, frequently in positions which are relatively inaccessible, and are left to operate for long periods of time with a minimum of attention or servicing.

During the winter months of the year, they are exposed to snow, sleet and rain which may freeze into ice in the parts of the mechanism, while at

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all times they are exposed to dust and dirt of various kinds which seriously clog and abrade such devices, not to mention the effects of corrosion, particularly where exposed to fumes which contain or may form acids, and the like.

For these reasons, the ordinary butt type of hinge is found unsatisfactory, requiring frequent lubrication, repair and replacement.

The hinge illustrated consists of relatively loosely associated parts, which present large bearing surfaces with consequent low unit pressures, and with ample clearance to permit the blowing away of large particles of solid or liquid material.

As shown in Figures 1 to 3, one part of the hinge consists of a flat base or plate 1 perforated at 2 to receive screws, bolts, rivets or the like, by which it may be secured to one of the elements which it is desired to pivot together, this plate having permanently fixed to it, as by welding 3, a piece of tubing 4 formed with a lengthwise slot 5.

Fixed to the other element which is to be pivoted is a flat plate 6 of generally rectangular shape, also provided with perforations 7 for the reception of bolts, screws or rivets by which it may be held to its associated parts, and having adjacent its exposed edge an elongated slot 8 slightly longer than the piece of tubing above mentioned, and wide enough that the tubing may slide in this slot.

Another slotted piece of tubing 9 having an external diameter slightly less than the internal diameter of the first mentioned piece of tubing and of substantially the same length serves as a connector or pintle upon which the plate may rotate with regard to the first mentioned fitting.

It will be noted that the edge of the plate is recessed centrally so that it projects as two lugs 10 and 11 at its sides to locate this plate against axial movement relative to either or both tubes.

The smaller tube 9 has a lengthwise slot 12 and, at one end, a notch 13 diametrically opposite this slot.

The parts are assembled as shown by first placing the smaller diameter 9 tube within the larger 4, alining the slots of the two tubes, and then slipping the edge of the plate 6 into both slots and into the notch of the inner tube.

When the plate is now rotated about the common axis of the tubes, it will be apparent that the smaller tube 9 rotates with it, while the margin of the larger tube 4 projects through the slot 8 in the plate, preventing the disengagement of

these parts in any position other than where the slots of both tubes are in alinement.

To maintain the plate 6 correctly on the diameter of the smaller tube, the notch 13 is formed in one end of the latter diametrically opposite its slot, and arranged to be engaged by the projecting end of one of the lugs 10 of the plate.

In use on a ventilator such as illustrated in the above mentioned patent application, it will be apparent that with the plate 1 clamped to the side of the ventilator and the plate 6 fastened to the movable flap or damper thereof, the two plates are never brought into right angle relationship with each other, and if, therefore, the slot 5 in the larger tube is that determined by a diametrical plane through this tube perpendicular to its base plate 1, the parts of the hinge can be assembled when one of the plates (1 or 6) is disconnected from its associated parts, and that, after both plates have been screwed into place, it will be impossible for the parts of the hinge to become separated until the bolts, rivets or screws are loosened again to let the two plates move into perpendicular relationship.

Due to the large diameter of the tubes, their bearing surface is relatively wide, and on a relatively flat cylindrical surface, which reduces the unit pressure between them, so that one merely lightly rubs across the other, sweeping solid particles from the space between them.

In Figure 5, lug 10 has been extended into a hook 14 which engages the exterior of the tube 9 below its notch, so that the plate can be removed only by rotating in a counterclockwise direction, as seen in this figure. This makes it impossible for the plate to accidentally slide out of both tubes, even when their slots are brought into alinement, and while unnecessary in most instances where the hinge axis is horizontal, finds utility in other positions, particularly at or near the vertical.

While I have described the illustrated embodiments of my invention in some particularity, obviously many others will readily occur to those skilled in this art, and I do not therefore limit myself to the precise details shown and described herein, but claim as my invention all embodiments, modifications and variations coming within the scope of the appended claims.

I claim:

1. A hinge comprising two telescopically arranged tubular parts each having a lengthwise extending slot, a plate having a slot parallel to one edge thereof, the distance between the slot and edge being substantially equal to the internal diameter of the internally telescoped tubular part plus the wall thickness of said tube, the above mentioned edge of the plate being received within the internal tube and the slot embracing the external tube, the slot being of substantially the same length as the external telescoped tube, the internally telescoped tube having a notch at one end, lugs projecting at the ends of the plate, one of which is received into said notch, and the other bearing upon the end of the internally telescoped tube remote from said notch, and a hinged part fixed to the external tube at a point remote from the slot therein.

2. A hinge comprising two telescopically arranged tubular parts each having a lengthwise extending slot, a plate having a slot parallel to one edge thereof, the distance between the slot and edge being substantially equal to the internal diameter of the internally telescoped tubular part plus the wall thickness of said tube, the slot being of substantially the same length as the external telescoped tube, the above mentioned edge of the plate being received within the internal tube and the slot embracing the external tube, the internally telescoped tube having a notch at one end substantially diametrically opposite the slot therein, lugs projecting at the ends of the plate, one of which is received into said notch, and the other bearing upon the end of the internally telescoped tube remote from said notch, and a hinged part fixed to the external tube at a point remote from the slot therein.

ALONZO W. BAILEY.

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