

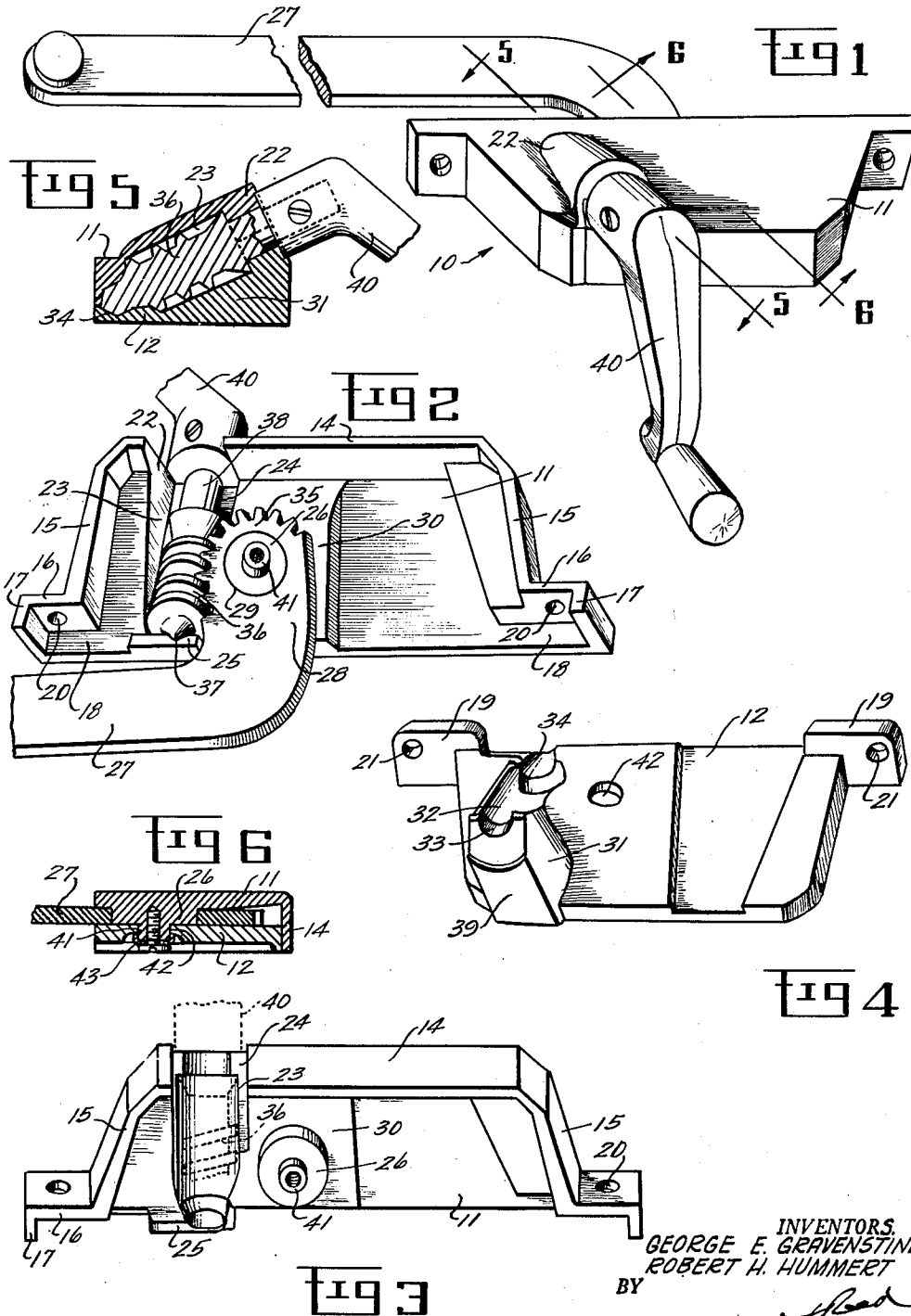
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WINDOW OPERATING DEVICE

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WINDOW OPERATING DEVICE

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This invention relates to a window operating device and is designed primarily for operating casement windows or the like.

Window operating devices of this general type are well known but heretofore they have been, for the most part at least, unsatisfactory in service or difficult and expensive to manufacture, and one object of the invention is to provide such an operating device which may be manufactured at a relatively low cost and which is satisfactory in service.

A further object of the invention is to provide such an operating device comprising a two part housing which can be produced by die casting and easily assembled with the operating elements.

A further object of the invention is to provide such an operating device in which the supports for the window actuating member and its operating element are integral parts of the housing walls.

Other objects of the invention may appear as the device is described in detail.

In the accompanying drawings Fig. 1 is a perspective view of the assembled operating device; Fig. 2 is a perspective view of one wall of the housing with the actuating member and operating element mounted thereon; Fig. 3 is also a perspective view of that part of the device shown in Fig. 2, viewing the same from a different angle; Fig. 4 is a perspective view of the other wall of the housing; Fig. 5 is a sectional view taken on the line 5—5 of Fig. 1; and Fig. 6 is a sectional view taken on the line 6—6 of Fig. 1.

In these drawings we have illustrated the preferred embodiment of the invention but it is to be understood that the device as a whole, as well as the several parts thereof, may take various forms and may be assembled in various ways without departing from the spirit of the invention.

In the form here shown the device comprises a housing 10 having separate side walls 11 and 12. The device is usually mounted in a substantially horizontal position on the frame of the window to be operated and the walls of the housing will be herein referred to as the upper wall 11 and lower wall 12, but it is to be understood that the device may be mounted in any suitable position. The outer surfaces of the upper and lower walls are flat and substantially parallel one with the other. The upper wall 11 is provided with an inwardly extending flange having a part 14 extending along one longitudinal edge of the wall and transverse parts 15 extending along the transverse edges of the wall. The transverse

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parts 15 of the flange are provided with longitudinal extensions 16 spaced a short distance from that edge of the upper wall which is opposite the part 14 of the flange. Preferably the extensions 16 have transverse end portions extending therefrom to the edge of the wall. Thus there is provided at each end of the upper wall a shallow recess 18. The lower wall 12 fits within the inner edge portion of the flange 14—15 with its outer surface substantially flush with the edge of the flange. It is provided at its ends with longitudinal extensions 19 which fit snugly within the respective recesses 18 in the upper wall, the depth of the recesses being such that the outer surfaces of the extensions 19 are substantially flush with the adjacent edge of the upper wall, thus providing the housing with smooth exterior surfaces. The flange extensions 16 and the extensions 19 of the lower wall, at the respective ends of the housing, are provided with aligned apertures 20 and 21 to receive attaching devices, such as bolts, by which the operating device is secured to the window frame. These attaching devices also serve to rigidly connect the two walls of the housing one to the other and the construction is such that the walls are maintained in narrowly spaced relation one to the other.

The upper wall 11 is provided with an upwardly extending part 22, preferably substantially U-shaped in cross section, which forms an inwardly facing recess 23 in the inner side of the wall, the base of the recess sloping from the flanged longitudinal edge of the wall toward the other edge of the wall. At the deeper end of the recess, adjacent the flange, the part 22 is provided with a semi-circular bearing surface 24 and at the shallow end of the recess a part 25 extends across the recess and constitutes a part of a foot bearing as will be hereinafter described. The upper wall is also provided at one side of the recess 23 with an inwardly extending cylindrical pivot member 26 which is formed integral therewith and has a circumferential bearing surface. A window actuating member, such as an arm, 27 extending lengthwise of and beyond one end of the housing, has an angular end portion 28 which extends between the two walls and is provided with a bearing opening 29 to receive a pivot member 26, which thus pivotally supports the actuating arm for movement about an axis transverse to the housing. The pivot member 26 is preferably of an axial length approximating the thickness of the actuating arm and inasmuch as it is desirable that the outer face of the pivot member should be close to or in engagement with the lower wall

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of the housing, the pivot member is supported on and is a part of a thickened portion 30 of the wall.

The lower wall has formed integral therewith an inwardly extending part 31 the inner portion of which extends into the adjacent portion of the recess 23 in the upper wall and is provided with a longitudinal recess 32 opposed to the recess 23, the two recesses thus forming between them a chamber. The part 31 is provided adjacent the outer end of the recess 32 with a semi-circular bearing surface 33 opposed to the bearing surface 24 in the upper wall, and it is also provided at its inner end with an inwardly extending part 34 opposed to the inwardly extending part 25 of the upper wall and cooperating therewith to form the foot bearing above mentioned.

A gear segment 35 is rigidly connected with, and in the present instance is formed integral with, the part 28 of the actuating member and this gear segment meshes with a worm 36 rotatably supported in the chamber formed by the recesses 23 and 32 with its pointed inner end 37 in contact with the foot bearing and with its shank 38 in the bearing formed by the bearing surfaces 24 and 33. The outer end portion 39 of the part 31 of the lower wall fits into the outer end of the recess 23 and has its outer surface substantially flush with the adjacent edge of the upper wall and with the flange thereon. The shank 38 of the worm extends outwardly beyond the bearing 24-33 and has secured thereto a handle, or other suitable device, 40 by which the worm may be rotated to move the actuating arm 27 in one direction or the other about its pivotal axis and thus move the window toward its open or closed position.

A stud 41 projects outwardly from the pivot member 26 and extends through an opening 42 in the lower wall 12 and serves to retain the walls in their assembled positions prior to the mounting of the device on the window frame. The stud may be connected with the lower wall by peening over the outer end thereof or by a screw threaded into the opening in the end of the stud and engaging a washer 43 interposed between the same and the lower wall, that wall being preferably provided with a recess to receive the washer.

It will be noted that the several parts of each wall of the housing are of such a character and are so arranged that the wall may be easily removed from a mold or casting die, thereby enabling the walls to be produced by casting, and when die cast the parts will require no machining or other finishing operations and the hous-

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ing may be immediately assembled with the actuating arm and operating worm.

While we have shown and described one embodiment of our invention we wish it to be understood that we do not desire to be limited to the details thereof as various modifications may occur to a person skilled in the art.

Having now fully described our invention what we claim as new and desire to secure by Letters Patent is:

In a window operating device, a relatively thin and substantially flat oblong housing comprising an upper wall having a flange extending downwardly from one longitudinal edge and two transverse edges thereof and also having a relatively narrow elongate part projecting upwardly therefrom and extending transversely thereto with one end thereof adjacent to and above the longitudinal portion of said flange and with its other end adjacent that edge of said wall which is opposite said longitudinal flange, said portion of said wall having an inwardly facing longitudinally inclined recess, a lower wall within said flange having an inwardly extending transverse part provided with a longitudinal recess opposed to the recess in said part of said upper wall and cooperating therewith to form a worm receiving chamber, said recessed parts having adjacent one end of said chamber bearing members to receive a cylindrical portion of said worm and having adjacent the other end of said chamber elements forming a foot bearing for said worm, said upper wall having on the inner side thereof a cylindrical bearing member adapted to enter a bearing opening in the toothed end portion of a window actuating member inserted between said walls and to support the same with the teeth thereof in mesh with a worm in said chamber, said walls having means whereby they may be connected one with the other and with a window frame.

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