June 1, 1937. R. A. LACKEY 2,082,066

CASEMENT ADJUSTER

Filed Oct. 13, 1934

Fig. 1.

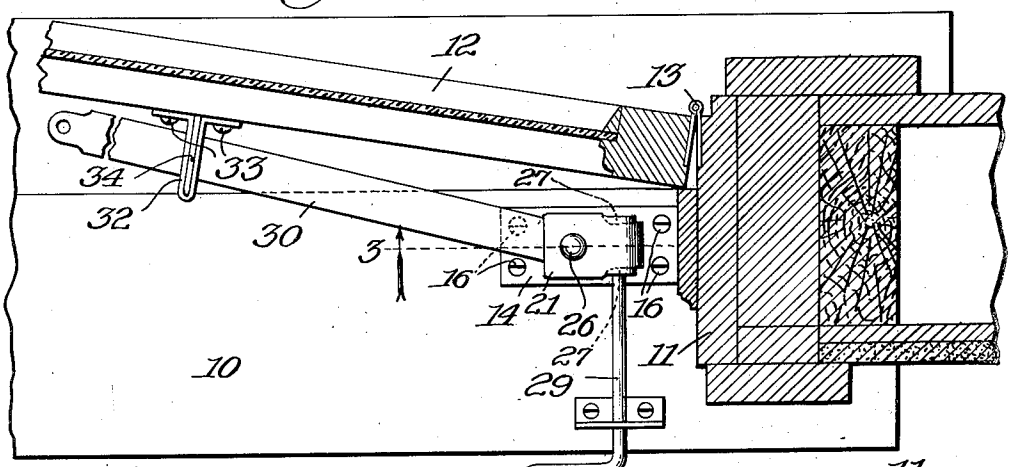


Fig. 2.

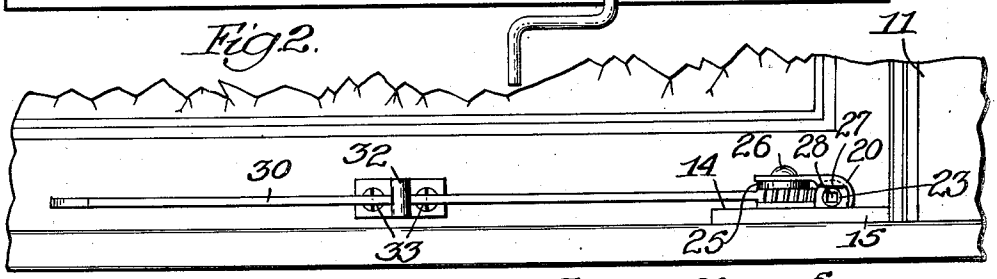


Fig. 5.

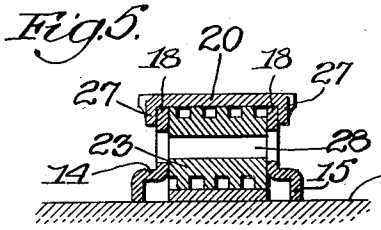


Fig. 3.

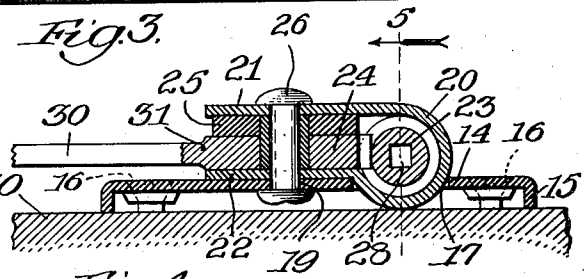


Fig. 6.

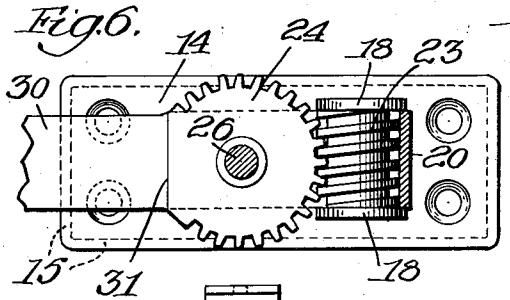


Fig. 4.

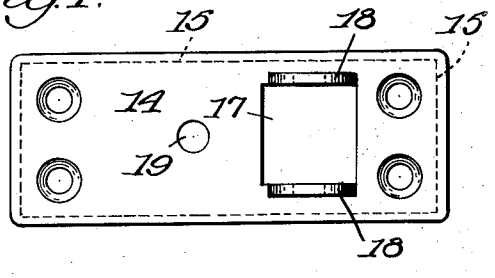
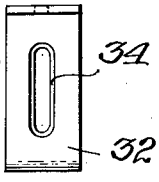


Fig. 7.



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CASEMENT ADJUSTER

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Application October 13, 1934, Serial No. 748,231

8 Claims. (Cl. 74—90)

My invention relates to improvements in casement adjusters.

Such devices usually comprise a housing secured to the window sill, with an arm pivoted thereto to swing outwardly in a horizontal plane and open the window, the outer end of said arm sliding through an apertured fixture on the sash. In most instances the arm is swung outwardly and inwardly by means of a worm and gear actuated by a crank. The worm is mounted in suitable bearings and both the worm and the gear are carefully made and assembled so that they may rotate without binding.

The object of the present invention is to provide a casement adjuster of the worm and gear type in which the parts are so designed and so assembled in the housing, as to provide a very inexpensive construction but one which, nevertheless, shall render satisfactory service.

As contributory to this end, other objects are: to provide a device of this character in which the worm fits in and rotates in a cylindrical holder, thus eliminating end bearings or journals; to provide a device in which the housing consists essentially of two parts held together by a single rivet; to provide a construction in which the base plate of the housing is apertured to receive the cylindrical part of the cap and hold the latter against side play, thus making possible the use of the single rivet referred to; to provide a construction having these various advantages but nevertheless being reversible, i. e. adapted for right hand or left hand mounting and operation, and to provide a construction wherein rattling is eliminated.

In the accompanying drawing I have illustrated a commercial embodiment of the invention, in which:

Fig. 1 is a top plan view of the device applied to a casement window;

Fig. 2 is an elevation thereof;

Fig. 3 is an enlarged sectional view on the line 3—3 of Fig. 1;

Fig. 4 is a top view of the base of the housing with the upper part removed;

Fig. 5 is a section on the line 5—5 of Fig. 3;

Fig. 6 is a plan view of the device with the upper part removed; and

Fig. 7 is an elevation of one of the parts.

Figs. 1 and 2 show part of a casement window with the device applied thereto, 10 being the window sill and 11 being part of the window frame shown in section. The casement window 12 is hinged at 13. The casement adjuster is assembled with a housing, which, for practical purposes, may be considered as a two-part structure held together by a single fastening device, such as a rivet. The lower part or base plate 14 is stamped from sheet metal with a depending flange 15 and with openings therein to accommodate screws 16 which fasten it to the window sill in the position shown in Fig. 1. Said base, in the form shown in Fig. 4, has an opening 17 therein with ears or abutments 18 struck up therefrom. An opening 19 is also punched in the base to receive the fastening means.

The upper part of the structure consists essentially of a rectangular strip of metal bent around to substantially U shape, the bend providing an offset cylindrical housing 20 with parallel arms 21 and 22 projecting therefrom. The arm 21 constitutes the top or cover of the housing. The lower arm 22 rests on the base plate with the cylindrical portion 20 received within the opening 17 and confined by the walls thereof and also confined between the parallel upright abutments 18. Said cylindrical portion is offset downwardly, as shown in Fig. 3.

The casement is swung outwardly and inwardly by a worm and gear in the usual manner, the worm 23 in this instance fitting within the cylindrical housing 20 and confined thereby and by the end uprights 18, 18, as shown more particularly in Figs. 3 and 5.

The worm meshes with the gear 24, of the usual configuration, the said gear being confined between the horizontal plate 22 and the washer 25, the parts being held together by a suitable rivet 26, surrounded by a brass or other non-corrosive sleeve, shown in Fig. 3. In view of the fact that the cylindrical part of the upper member fits into the opening in the lower member and is thus confined against movement longitudinally or transversely and is additionally confined between the upright abutments 18, a single rivet suffices to complete the assembly of the entire housing and the parts contained therein.

The parts are further locked together by bending over the margins 27 of the upper metal arm 21 so that these bent-over parts overlie the upright abutments 18 as shown in Fig. 2 and on a larger scale in Fig. 5. In this way a very simple but strong mounting is provided for the worm 23 without employing the usual journals at the ends, thus avoiding the necessity of machining the parts, and otherwise reducing the cost of manufacture and providing a device in which the worm and gear are held in definite fixed relation, insuring smooth operation.

The worm 23 has a square opening 28 through

the same to receive the square end of the small crank **29**, which may be fitted into either end of said worm. Thus the housing may be mounted either at the right or left hand side of the window frame and be operated by the crank in either position. In other words, the device is reversible.

The gear **25** has a flat metal arm **30** projecting therefrom, in the usual manner, being secured thereto at **31**, preferably by butt welding. This arm, which is a strip of flat steel, has a certain resiliency which enables it to accommodate itself to slight irregularities in the movement of the casement window. Said arm passes through a guide or bracket **32** secured to the casement window. This guide is formed from a strip of metal bent over at the middle, as shown, with the two ends bent outwardly and perforated to receive screws **33**. A strip of fiber **34** is clamped between the arms of the U shaped fitting thus formed and has an opening **35** through it. The metal fitting itself is also stamped with somewhat larger openings **36**, the purpose of the arrangement being to permit the flat arm **30** to slide through an opening in a sheet of sound deadening material. In other words, there is no contact between the metal arm **30** and the metal bracket **32**, and the noise, due to rattling, which may occur after long continued use, is largely eliminated.

The device described herein is of such construction as to be made largely by stamping operations, and requires very little machining. The worm, instead of being supported by trunnions or bearings at its ends, is supported by the cylindrical housing which surrounds it. The rivet constitutes the shaft about which the gear turns and the arms of the U shaped member in which the rivet is mounted are each reinforced. The upper arm is reinforced by the washer **25** and the lower arm by the base plate **14**, thus providing a double thickness of metal on each side of said gear.

The terms "upper", "lower", "horizontal", etc., are used herein in a descriptive sense and not in a limiting sense, as will be apparent. Various changes may be made in the preferred form of the invention described in detail herein without departing from the scope of said invention.

I claim:

1. In a casement adjuster, a housing comprising a base having abutments thereon, an upper structure on said base confined between said abutments, a rivet holding said upper structure to said base, an apertured gear through which said rivet passes and a worm engaging said gear and held against the same by said upper structure.

2. In a casement adjuster, a housing comprising an apertured base, a U shaped part with its curved end received in said aperture, a worm located in said curved end and a gear positioned within said U shaped part and engaged by said worm.

3. A casement adjuster mechanism, comprising a base with an aperture therein, a structure on said base comprising spaced parallel members connected at one end by a circular portion which projects below the lower of said spaced members and fits within said aperture, a worm in said circular portion and supported thereby, and a gear between said spaced members engaging said worm.

4. A casement adjuster having a housing comprising a base plate with struck-up spaced flanges, leaving an opening, a cylindrical member fitting in said opening between said flanges, parallel extensions on said cylindrical member, a gear between said parallel extensions, a worm supported in said cylindrical member and engaging said gear and a rivet passing through said parallel extensions, said gear, and said base plate and constituting the sole fastening means for the parts of said housing.

5. A casement adjuster comprising a housing having a sheet metal base plate with a supporting flange thereon, upright abutments with an opening therebetween, a formed strip of metal on said base plate having two horizontal parallel arms and an offset circular portion at one end, said offset portion being received in said opening, a gear between said arms, a washer between said gear and the upper arm, a rivet passing vertically through said arms, washer, gear and base plate and holding all of said parts in assembled relation, and a worm in said offset circular portion engaging said gear.

6. A casement adjuster comprising a housing having a sheet metal base plate with a supporting flange thereon, upright abutments with an opening therebetween, a formed strip of metal on said base plate having two horizontal parallel arms and an offset circular portion at one end, said offset portion being received in said opening, a gear between said arms, a washer between said gear and the upper arm, a rivet passing vertically through said arms, washer, gear and base plate and holding all of said parts in assembled relation, a worm in said offset circular portion engaging said gear, said worm having a non-circular opening therethrough to receive a crank at either end and an arm welded to said gear.

7. In a casement adjuster, a housing comprising a base having struck up parallel ears thereon, an upper structure on said base confined between said ears, a rivet holding said upper structure to said base, an apertured gear through which said rivet passes and a worm engaging said gear and held against the same by said upper structure, said ears serving to confine said worm against axial movement when it is rotated, and said gear being parallel to said base.

8. In a casement adjuster, a housing comprising a base, an upper structure on said base, and a fastener holding said upper structure to said base, an apertured gear through which said fastener passes, and a worm engaging said gear and held against the same by said upper structure, said housing having abutments confining said worm at its ends.

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