Feb. 28, 1950 P. G. NESS 2,498,816

WINDOW OPENING DEVICE

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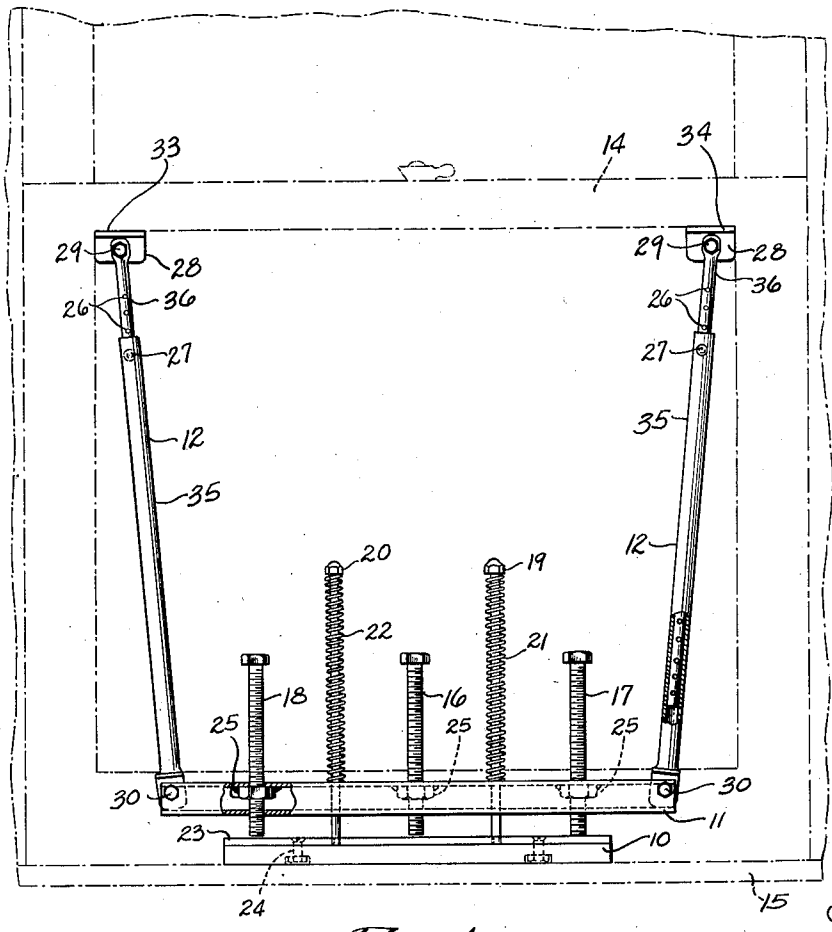


Fig. 1

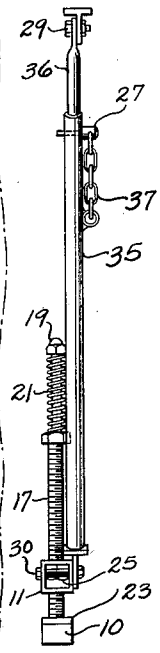


Fig 2

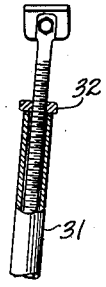


Fig. 3

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WINDOW OPENING DEVICE

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7 Claims. (Cl. 254—100)

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My invention relates to lifting means for tight-fitting and stuck windows.

It is an object of this invention to provide a device to open window frames which have become stuck to the casing by paint or otherwise.

Another object of this invention is to provide a device to open tight windows, which device will not mar the woodwork or other material of the frame and casing.

Another object of this invention is to provide a window opening device which is readily adjustable to fit various sizes of windows.

Another object of this invention is to provide a window opening device having a base capable of central location between the sides of the window casing, and means movable relative thereto to carry extension arms to contact the window frame in a self-adjusting manner to compensate for unevenness of the frame.

Other objects and a fuller understanding of my invention may be had by referring to the following description and claims, taken in conjunction with the accompanying drawing, in which:

Figure 1 is a front elevational view of my device illustrated diagrammatically in position to open a standard window;

Figure 2 is an end view of the device as it appears in Figure 1; and

Figure 3 is an alternative type extension arm for use with the device of Figure 1.

Windows employing sliding window frames operating slidably within a window casing may become inoperative because of paint or other foreign matter, or by swelling. In the past, when this condition was found to exist, the only remedy available was the use of a screw driver or like instrument to pry between the window casing and the frame, accompanied by pounding upon the sides of the frame and applying as much force to the handle of the window as the handle would take without pulling away from the casing. Often, after the use of such methods to open a window which has become stuck, the window casing and frame, as well as the hardware thereon, were found to be damaged beyond hope of repair.

My invention provides a means for opening a window of this type by use of carefully applied force.

Generally, my invention comprises a relatively short cross member with extension arms leading from the cross member to the corners of the window frame. Force means in the form of screws are used to apply force to raise the cross member and force the arms to press against the corners of the tight window and move the frame

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for a short distance to break the seal. My device is extremely simple to operate, and is substantially harmless to the materials of the window casing or frame, and is so highly efficient that even the most tightly sealed window can be opened in a relatively short time.

With reference to Figure 1 of the drawing, I illustrate the preferred embodiment of my window opening device. This is deemed to be the preferred embodiment because of its balance between practicability and reasonable cost. In the drawing, the reference character 10 illustrates a first base member which is used to contact a window casing 15. In order to provide a relatively soft material which will normally not harm the window casing, I prefer to make the first base member 10 from wood. In this application and throughout the claims, the first base 10 will be referred to as contacting the window casing rather than the window sill, because the device may be readily used on the upper window as well as the lower window. Therefore, when in position to open the upper window, the base 10 is of course not in contact with the window sill. It is understood, therefore, that reference to the window casing includes either the top casing or the bottom sill.

A second base member 11 is positioned directly above the base 10, and is adapted to move upwardly or downwardly in relation thereto as desired. As illustrated, I have provided two guide members 19 and 20 which are threadably engaged to the base member 10 and are slidably engaged with the base member 11. Thus, the base member 11 is limited to direct up and down motion in relation to the base 10. Further, for convenience, I have provided a spring member 21 and a spring member 22 as illustrated, about each of the guide members 19 and 20 for the purpose of urging the second base member 11 towards the first base member 10. As illustrated, the base member 11 is very conveniently constructed of a tubular member which is preferably square in cross-section.

For the purpose of moving the second base 11 away from the first base 10 against the action of the springs 21 and 22, I have provided three screw members 16, 17 and 18 to extend from the second base member 11 and contact base member 10. Therefore, in order to provide threaded engagement with the base member 11, threaded nuts 25 are secured to the inside of the base member 11 to engage the screw members 16, 17 and 18. However, the screw members are not threadably engaged with the base 10, but on the contrary, are adapted to press thereagainst, whereby turning of

the screws in a clockwise manner (in the case of right-hand threads) will cause the second base member 11 to move upward against the resilient action of the springs 21 and 22, and the turning of the screw in the opposite direction will allow the resilient spring members 21 and 22 to force the second base member 11 toward the first base member 10. Therefore, I have found it convenient to place a steel veneer plate 23 upon the base member 10 to form an engaging surface for the screw members 16, 17 and 18. The steel plate 23 may be held tightly in place upon the base member 10 by means of suitable screw members 24.

As illustrated in the Figure 1, I have provided extensible arm members 12 to extend from the second base member 11 and engage the window frame 14 at the convenient corners 33 and 34. These arms 12 are preferably made longitudinally extensible by providing a female member 35 and a male member 36 with a plurality of spacing holes 26 in the male member 36, and a holding pin 27 extending through the side walls of the female member 35 into one of the spacing holes 26. Thus, the pin 27 may be removed and the extensible arms 12 adjusted to approximately the required length. Thereafter, the pin 27 may then be inserted into the nearest convenient spacing hole 26 to hold the arm to its adjusted length. The pin 27 may be provided with a chain 37, or other suitable flexible means to prevent accidental dropping. The chain is secured to the arm 12 by any suitable means, such as by spot welding.

In Figure 3, it will be noted that I have provided for an alternative method of making the described extensible arm adjustment. This alternative method comprises the threading of the male member and the provision of a threaded nut 32 on the end of a female member 31. Thus, the male member may be rotated to adjustably extend in relation to the female member. Of course, if it is desired to use my improved window opener on only one standard size window, adjustments of this nature would not be required. However, for the vast majority of purposes, the described adjusting feature will be found to be quite desirable.

In order to further adapt my window opener to various sized windows, I have provided for pivotally mounting the extensible arms 12 by pivotally mounting the ends thereof to the second base member 11 by means of pivot pins 30. Thus, the extensible arms 12 may be swung throughout a wide arc to contact a large variety of different sized windows.

Further, I have provided for non-marring foot member 28 to be pivotally mounted by means of a pivot pin 29 to the end of the extensible arm 12, opposite from the end of the arm that is mounted to the second base member 11. These foot members 28, it will readily be understood, will pivot to fit squarely into the corner of the window frame regardless of the position of the extensible arm 12. Thus, a good solid seat is provided to contact the window frame 14 and will thus protect the frame 14 from being marred by sharp corners. Also, these foot members 28 distribute the force applied to the frame 14 in order to prevent extreme stress concentration.

In operation, my device may be placed with the first base member 10 against the window sill portion of the window casing 15, and with the extensible arms 12 extending upwardly toward the corners 33 and 34 of the window frame 14, or the reverse procedure of placing the base 10 against

the top part of the window casing with the extensible arms 12 extending downwardly to contact the frame of the upper window may be employed. Nevertheless, the procedure in either instance is the same. After placing the device upon the window casing with the base 10 in contact therewith, it is generally preferable to rotate the screw members 16, 17 and 18 counterclockwise, in order that the resilient spring members 21 and 22 might bring the base member 11 relatively close, if not in actual contact with, the base member 10. Then the length of the extensible arms 12 may be adjusted to bring the foot member 28 within reasonable distance of the corners 33 and 34 of the frame 14. Thereafter, one of two procedures might be followed. First, in residence windows of standard width, only the center screw 16 is necessary. In fact, it is quite desirable to use only the central screw 16 in windows of standard home width. The reason that it is desirable to use only this screw 16 is that the screw 16 may then act as a fulcrum point with the outer extremities of the second base member 11 free to teeter in either direction to compensate for any inequalities in the adjustment of the extensible arms 12. That is, if the base 10 is not placed precisely on dead center between the sides of the window casing, the second base member 11 will automatically adjust itself to apply even pressure to both of the extensible arms 12. After the extensible arms 12 have been adjusted as nearly as possible to the correct length, the screw or screws may be rotated to move the base 11 away from the base 10 and bring the foot members 28 into tight contact with the corners 33 and 34. Thereafter, continued turning of the screw 16 will apply a tremendous pressure through the extensible arms 12 to the corners of the window frame 33 and 34, and will usually move the frame 14 with very little effort. However, in some instances it may be found necessary to strike the sides and bottom of the casing 14 with the palms of the hands to break the seal, even after a large amount of pressure has been applied. This will readily be understood in the light of the effect of vibration upon physical objects.

In the case of windows of large width, such as large living room windows, picture windows, etc., I have found that it is more desirable to employ the outer screws 17 and 18 and allow the central screw 16 to remain idle. That is, with a window of this extreme width, the reaction forces through the second base member 11 are applied at such an angle that greater force is available by the use of screws placed nearer to the edge.

As before stated, the illustrated and described embodiment of my invention is the preferred embodiment because it is believed to be the most economical structure which will give the full benefit of my invention. However, I have found that the second base member 11 may be conveniently moved in its desired direction by means of a suitable hydraulic mechanism which will apply an even force to all portions of the member 11, regardless of the position of the extensible arms 12. Also, a convenient turning handle comprising a short lever pivotally mounted to the end of the screw members 16, 17 and 18 might be employed in place of the hex head screws as illustrated. These are all believed to be variations of the present invention, and clearly within the scope thereof.

Although I have described my invention with a certain degree of particularity in its preferred form, it is understood that the present disclosure

of the preferred form has been made only by way of example and that numerous changes in the details of construction and the combination and arrangement of parts may be resorted to without departing from the spirit and the scope of the invention as hereinafter claimed.

I claim:

1. An extensible mechanical device to extend and exert a force between members, at least one of which is movable relative to the other, comprising a first and a second base, said first base adapted to contact one of said members, a plurality of adjustable extension arms each including a male and female member and having a free and a pivoted end, pivotal connection means to connect each pivoted end of each arm to said second base, said male members being adjustable with respect to the female members to adjust the over-all length of the arms, a contact foot pivotally connected to the free end of each of the arms, said arms with the said feet thereon being adapted to contact the other of said members, and force means operable to move said second base and the arms relative to said first base to force said arms with equal force against said other member with which they are to contact, said force means providing tiltable connection means between said first and second base members.

2. An extensible mechanical device to extend and exert a force between members, at least one of which is movable relative to the other, comprising a first and a second base, said first base adapted to contact one of said members, a plurality of adjustable extension arms each including a male and female member and having a free and a pivoted end, pivotal connection means to connect each pivoted end of each arm to said second base, said male members being adjustable with respect to the female members to adjust the over-all length of the arms, a contact foot pivotally connected to the free end of each of the arms, said arms with the said feet thereon being adapted to contact the other of said members, and screw means having threaded connection with said second base and contacting said first base to move said second base relative to said first base and force said arms with equal force against said other member with which they are in contact, said screw means serving as a fulcrum for said second base.

3. An extensible mechanical window opening device to extend between a window casing and frame and exert a force therebetween to move the frame relative to the casing, comprising a first base to rest against the casing, a second base movable with respect to the first base, said second base having a plurality of screw members in threaded engagement therewith and extensible to the first base to contact the first base and exert a force to move the second base relative thereto, and two adjustable extensible arms each having a base end and a free end and being pivotally attached to the second base at the base end thereof and adapted to extend from the second base member to the window frame, foot members pivotally mounted on the free ends of the arms to contact the window frame, whereby the arms may be pivotally swung and the foot member thereon pivoted to contact the frame to be moved and exert a force thereagainst in response to the said movement of the second base relative to the first base.

4. A window opening device to extend between a window casing and frame and exert a force therebetween to move the frame relative to the casing, comprising first and second longitudinal

base members, said first base member adapted to contact the said casing, said second base member having two end portions and a central portion and being movable with respect to the first base, screw means in threaded engagement with said second base substantially centrally of the central portion, said screw means contacting said first base and forming a fulcrum to support the second base, and extension arms extending from the second base end portions to contact the window frame, whereby said screw means may be operated to move said second base relative to the first base and force the said arms to contact the window casing and thereafter automatically deliver even pressure to both extension arms.

5. An extensible mechanical device to extend and exert a force between members, comprising a first and a second base, said first base being adapted to contact one of said members, a plurality of arms extending from said second base and contacting the other of said members, and force means contacting said first and second base members and being operable to move said second base and the arms relative to the said first base and force said members relative to one another, said force means providing tiltable connection means between said first and second base members.

6. An extensible mechanical window opening device to extend between a window casing and frame and exert a force therebetween to move the frame relative to the casing, comprising a first base to rest against the casing, a second base movable with respect to the first base, said second base having a plurality of screw members in threaded engagement therewith and extensible to the first base to contact the first base and exert a force to move the second base relative thereto, a plurality of guide members to guide the movement of the second base, resilient means to urge the second base toward the first base, and two adjustable extensible arms each having a base end and a free end and being pivotally attached to the second base at the base end thereof and adapted to extend from the second base member to the window frame, foot members pivotally mounted on the free ends of the arms to contact the window frame, whereby the arms may be pivotally swung and the foot members thereon pivoted to contact the frame to be moved and exert a force thereagainst in response to the said movement of the second base relative to the first base.

7. A window opening device to extend between a window casing and frame and exert a force therebetween to move the frame relative to the casing, comprising contact means to contact the window casing, arm means to contact the frame, and tiltable force means between the said contact means and the said arm means, said tiltable means being operable to force the arm means away from the contact means and move the frame relative to the casing.

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The following references are of record in the file of this patent:

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