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SASH WINDOW

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Fig.1

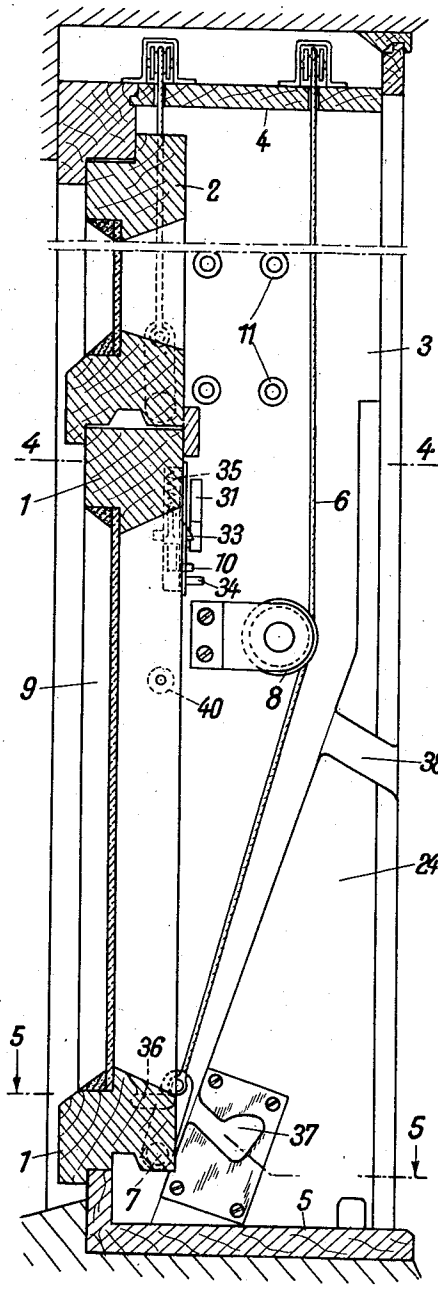



Fig.4

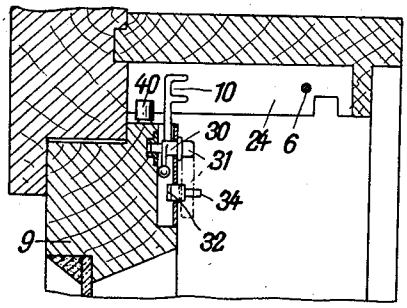



Fig.6

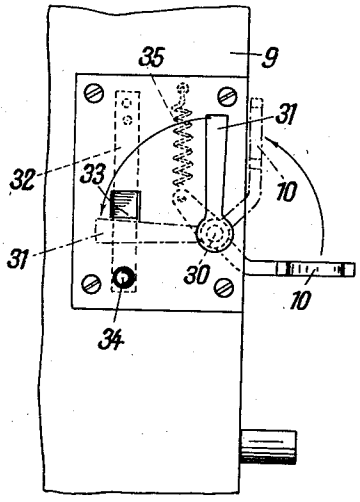
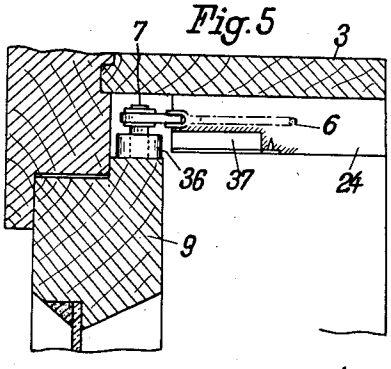



Fig.5




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Fig.2

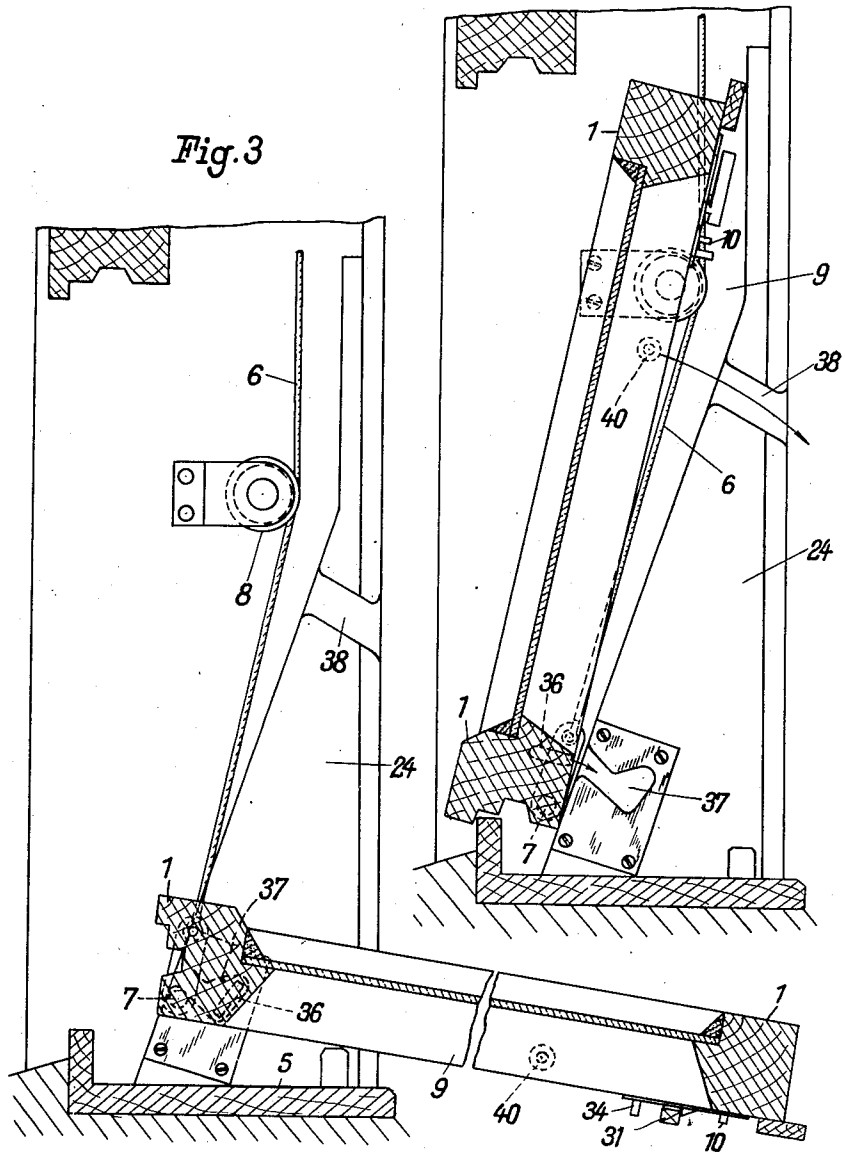



Fig.3




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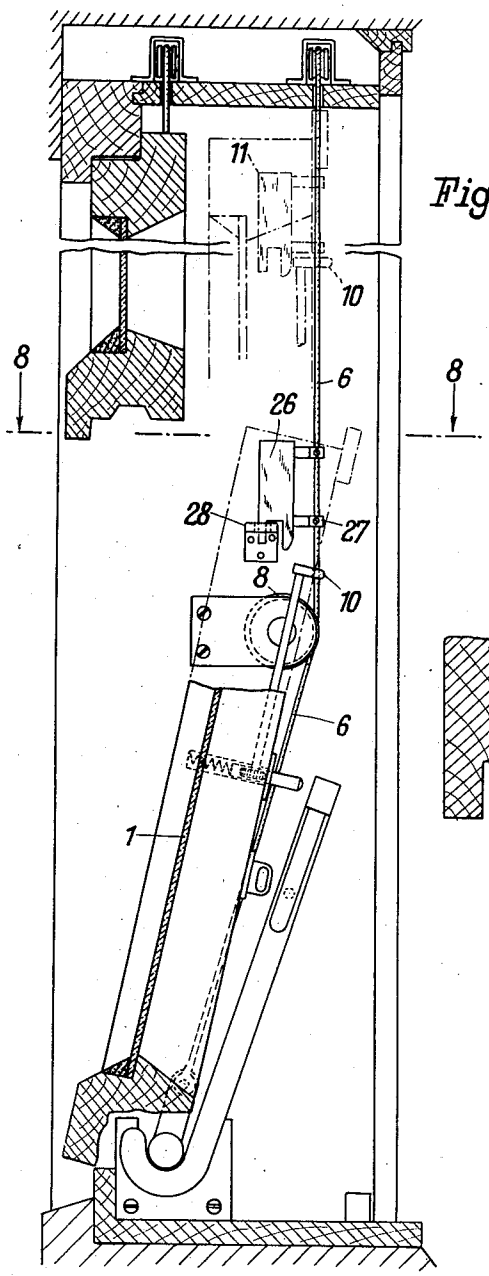
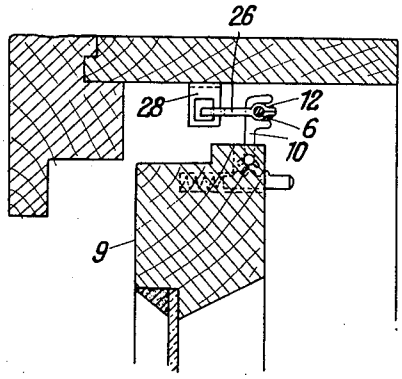



Fig. 7

Fig. 8




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# UNITED STATES PATENT OFFICE

2,084,639

## SASH WINDOW

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Application June 5, 1936, Serial No. 83,771. In Germany June 19, 1935

4 Claims. (Cl. 20—42)

This invention relates to sash windows and more particularly to the construction of the window sashes which in a known manner are not only pushed up, but are pivoted inwards into the room for cleaning purposes and other reasons. When such a window sash is large and heavy, difficulties are presented in releasing and pushing it upwards and also in swinging it inwards, which have hitherto necessitated the provision of lateral grooved guides. Through the unavoidable scraping by the fairly loosely guided window sash the lateral guides, especially after being in use for some time, seriously affect the appearance of the whole window, and the manipulation of the latching means requires great attention, in order to avoid a premature and unintentional falling over or sudden upward motion of the window sash.

These difficulties are overcome through the window sash, when being swung over prior to being pushed up, catching with two hooks provided at its sides the two sash cords, so that the window sash is held between the sash cords and the guide pulleys which are known per se and can be pushed up without much friction.

In order to enable the window sash to be laid over inwards for cleaning, the hooks provided on it must be turned aside for allowing them to move past the sash cords. At the same time the window sash must be secured against suddenly running upwards.

According to the invention, for swinging the window sash inwards the hooks which are adapted to bear against the sash cords are laid over by hand by means of a lever which is secured by a snap latch. For securing the laid-over window sash from going up suddenly, there is provided at the bottom of the window sash at either side a broad pin which, on the window sash being laid over, enters a recess in the window frame and thereby prevents an undesired upward motion of the laid-over window sash.

For preventing the window sash, when it is being pushed up, from swinging away from the sash cords, against which the hooks bear only from one side, according to the invention the hooks are pressed during the pushing-up motion against the sash cords and firmly connected to them in a special way, so that the known guide pulleys may be omitted.

The accompanying drawings illustrate the invention by way of example.

Fig. 1 shows a sash window according to the invention in vertical section,

Fig. 2 the lower window sash tilted over inwards for sliding it up,

Fig. 3 the lower window sash laid right over inwards,

Fig. 4 is a section on line 4—4 of Fig. 1,

Fig. 5 is a section on line 5—5 of Fig. 1,

Fig. 6 shows in front elevation a hook with accessory parts to a somewhat larger scale,

Fig. 7 shows in vertical section a modification of the sash window shown in Figs. 1 to 6,

Fig. 8 is a section on line 8—8 of Fig. 7.

In the figures, 1 is the lower and 2 is the upper window sash, both of which are disposed in a known manner in the casing consisting of the side parts and the upper and lower parts, 3, 4, and 5. The sash cords, of which only one can be seen, engage the window sash 1 at the bottom at the pins 7 which also carry the rollers which coact with the guide rails on the casing. This manner of guiding is known and is therefore not shown in detail. The sash cord runs upwards over the guide pulley 8 fixed to the casing and is connected in a known manner to the sash weight, also not shown.

On the lateral frame part 9 of the window sash 1, on either side, is rotatably mounted a catch hook 10, the position of rest of which is shown in Figs. 1, 2, 4, and 6, from which it will be seen that the hook 10 lies in line with the sash cord 6, so that, when the sash is tilted over inwards for raising it, the hook 10 catches against the sash cord 6, as shown in Fig. 2. The window sash, on being raised, is then held on one side by the taut sash cord 6 and is guided on the other side against the known rollers 11, so that the upward sliding motion of the window sash 1 takes place easily and without chattering. The otherwise usual guiding grooves are therefore not required.

From Figs. 1, 4, and 6 it will be seen, that each hook 10 is supported by a horizontal shaft 30 mounted in the sash frame 9, on which is journalled at the inside of the window sash a lever 31. By laying over this lever 31 in the direction of the arrow (Fig. 6), the hook 10 is swung from the side upwards against the frame 9, so that, on the window sash tilting, the hook 10 will go past the sash cord 6 without catching it. For securing the hook 10 in this position a spring-loaded snap latch 32 is provided on the frame 9, which is pressed back slightly by the lever 31 during the tilting motion, whereupon it will snap with its tooth-like projection 33 behind the horizontally disposed lever 31 and secure the latter. By depressing the knob 34 of this latch 32 the lever 31 will be released and will thereupon be returned

by its tension spring 35 into its initial position and bring the hook 10 back into the operative position.

In order to secure the window sash when it is being cleaned, that is when it is laid over completely inwards into the room, against moving up suddenly through the pull exerted by the sash weights, there is provided at the bottom of the window sash frame at either side a broad pin 36 which, as shown in Fig. 5, projects somewhat less than the pins 7 carrying the sash cords 6. The guide plate 24 which is fixed to the side wall 3 of the window frame has a recess 37 which is widened inwards and at some distance above the recess a groove 38 extending right across it. At a similar height there is mounted on the sash frame 9 a roller 40 which, as will be seen from Fig. 4, extends laterally only to such a distance that it cannot come into contact with the sash cord 6 and its guiding pulley 8.

From Fig. 2 it will be seen, that the upward sliding motion of the window sash which tilts over easily inwards is in no way hindered by these parts. This figure also shows, that a roller 40 on the frame 9 of the window sash is mounted in such a manner that, when the window sash is laid over inwards for cleaning purposes after the hook 10 has been turned over, the roller 40 will pass through the groove 38 in the plate 24. During this further tilting motion the broad pin 36 will, as shown in Fig. 3, enter the recess 37 in the plate 24 and will turn in the recess into the position shown, so that, owing to the shape of this recess 37, the window sash is not only completely secured against flying upwards, but also against sliding off the window head, as in this position the pin 36 cannot be withdrawn from the recess. This securing of the window sash can only be gradually released again by swinging the window sash upwards.

The roller 40 and the groove 38 of the guide plate 24 prevent the window sash from tilting over inwards always when the sash is slightly raised, so that the sash can only be laid over inwards when the pin 36 is opposite the recess 37, that is immediately enters this recess when the sash is being laid over. The upper window sash 2 can of course be fitted in the same way.

Since, according to the above illustration, the hooks 10 can only lay themselves against the sash cord 6 from the outside, the window sash, when being raised, retains a certain mobility with respect to the sash cords 6, against which it is capable of swinging to and fro. In order to prevent this and to enable the hooks 10 to be securely connected to the sash cords 6 when the sash is being raised, a block 26 (see Figs. 7 and 8) is slidably guided on each sash cord by means of two eyes 27 fixed to it, the arrangement being such that the distance between the edge of the block 26 and the sash cord amounts to about the thickness of the hook 10. The block 26 is bevelled off slightly at its lower end, as shown in Fig. 7. In its inoperative position it rests on a stop 28 fixed to the casing wall.

On the inwardly tilted window sash being moved upwards out of the position shown in Fig. 7, the hook 10 engages in the space between the block 26 and the sash cord 6, as shown in broken lines at the top of Fig. 7. Owing to the shape of the block 26 the hook 10 is pressed against the sash cord. It is then impossible for the hook to swing backwards from the sash cord, so that the window sash is in this way securely connected to the sash cord 6. It is no longer possible for the window sash to move away from the sash cord and the window sash no longer requires the usual guiding rollers provided on the casing, the friction being thus still further reduced.

On the window sash being slid downwards again, the block 26 strikes the stop 28 in the manner shown, and is thereby uncoupled from the hook 10 and the sash cord 6, so that the window can be swung outwards again out of the position shown into the closed position.

What I claim is:

1. In a sash window in combination a slidable window sash, sash cords attached at the bottom edge of the window sash, catch hooks pivoted to the sides of the window sash and adapted to bear against the sash cords, levers pivoted to the sides of the window sash and capable of being moved by hand for moving the catch hooks out of their operative position and spring snap catches for releasably securing the levers.

2. In a sash window as claimed in claim 1, with a slidable window sash which is capable of being tilted inwards, a window casing, means for preventing the inwardly tilted window sash from flying upwards, the said means comprising on either side a guide-plate fixed to the window casing, having an inwardly widening shouldered recess, and fixed on either side of the window sash a broad pin capable of engaging in and turning in the said recess on the window sash swinging inwards.

3. In a sash window as claimed in claim 1, with a slidable window sash which is capable of being tilted and laid over inwards, a window casing, means for preventing the inwardly tilted window sash from flying upwards, the said means comprising on either side a guide-plate fixed to the window casing, having an inwardly widening shouldered recess, and fixed on either side of the window sash a broad pin capable of engaging in and turning in the said recess on the window sash swinging inwards and further comprising on either side of the window sash below the catch hook a roller and in each guide plate a groove extending through it for the passage of the roller on the window sash being laid over inwards.

4. In a sash window as claimed in claim 1, with a slidable window sash, a window casing, slidable blocks, eyes on the said blocks with which the blocks are capable of sliding on the sash cords at a distance from the sash cords corresponding to the thickness of the catch hooks and of being carried along during the upward motion of the sash by the catch hooks engaging between the said blocks and the sash cords, said blocks pressing the catch hooks firmly against the sash cords, and stops on the window casing adapted to catch the slidable blocks during the downward motion of the windows and to release them from the hooks.

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