Oct. 11, 1955 H. A. TOPP 2,720,008

ADJUSTABLE WINDOW CONSTRUCTIONS

Filed Feb. 9, 1953 2 Sheets-Sheet 1

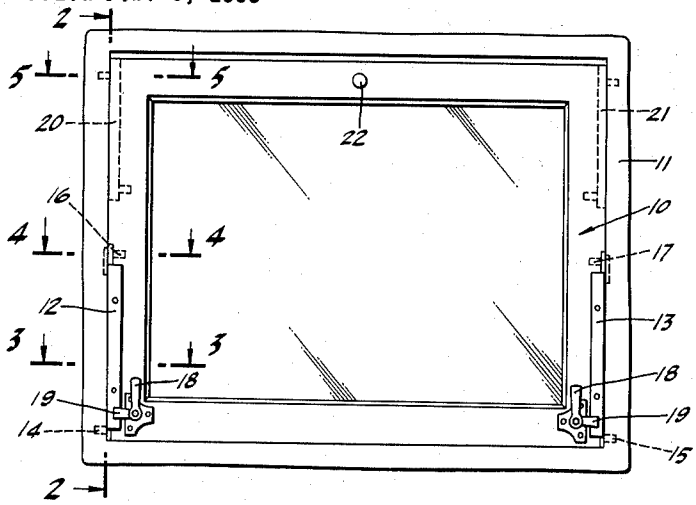

FIG. 1.

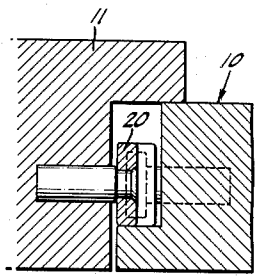

FIG. 5.

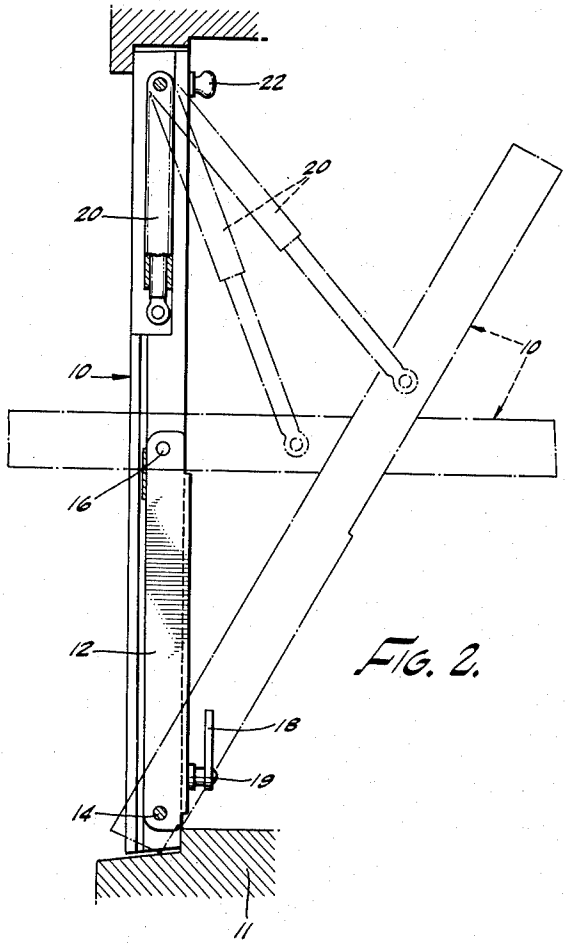

FIG. 2.

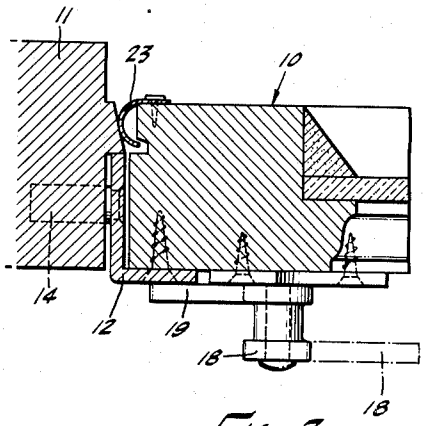

FIG. 3.

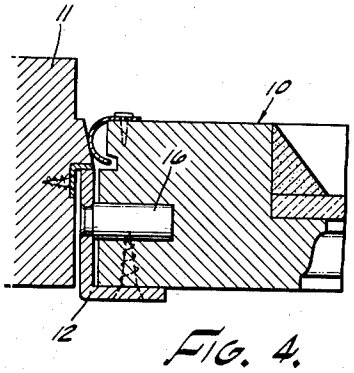

FIG. 4.

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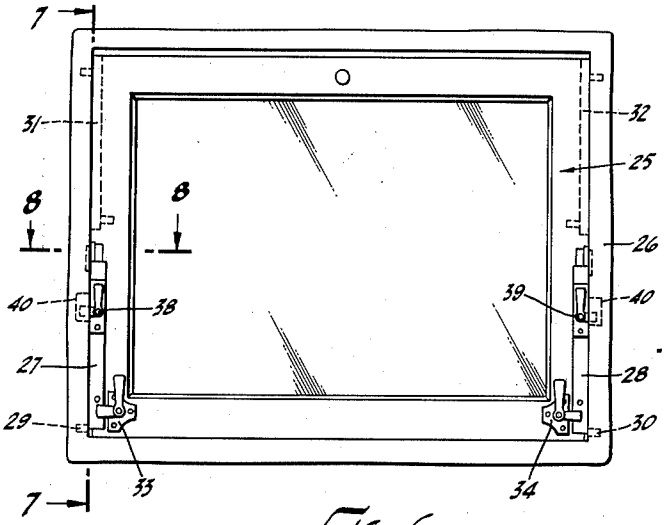

FIG. 6.

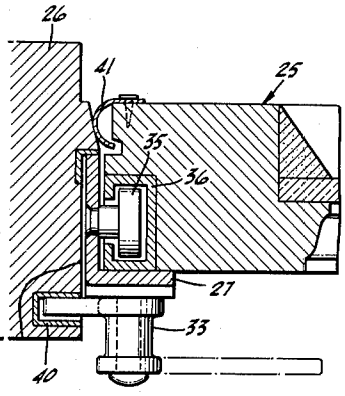

FIG. 8.

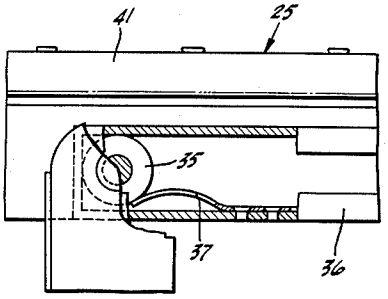

FIG. 9.

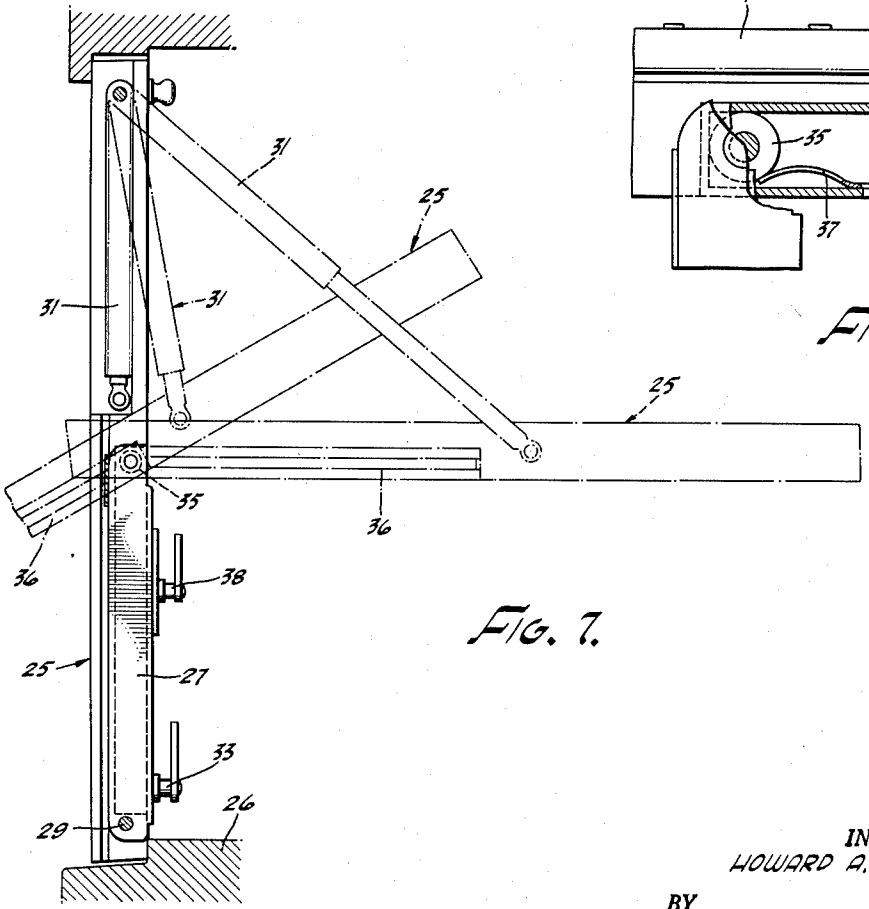

FIG. 7.

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ADJUSTABLE WINDOW CONSTRUCTIONS

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Application February 9, 1953, Serial No. 335,870

9 Claims. (Cl. 20—42)

This invention relates to improvements in windows.

Explanatory of the present invention, in such rooms as schoolrooms or classrooms it is desirable that the sash of the window, when open, assume an upwardly and inwardly inclined position during cold weather so that incoming cold air will be deflected upwardly by the sash toward the ceiling. In this manner incoming cold air will be distributed to a large extent beneath the ceiling and may slowly descend therefrom due to its greater density than warm air adjacent the ceiling. Students in such classrooms are consequently not subjected to cold drafts and even those sitting near the window are to a large extent protected by the sash against drafts of the incoming cold air.

During warm weather, on the other hand, it is desirable that air be permitted to enter with a minimum resistance and in a generally horizontal direction. It has been found that if the sash is disposed in a substantially horizontal position in its frame it not only offers a minimum resistance to incoming air but functions somewhat as a guide directing the incoming air in a horizontal manner so that the air flow may extend horizontally almost the entire distance across the room before rising.

It is a primary object of the present invention to provide an improved window construction suitable for use in schoolrooms and classrooms but which may be used wherever desired and which is so designed and constructed that the sash may occupy optionally either a closed position, an upwardly and inwardly inclined open position suitable for use in cold weather, or a substantially horizontal position suitable for use in warm weather.

Another object of the invention is to provide a window construction which is a relatively simple and economical construction and which can be easily adjusted to its variable positions to meet varying weather conditions.

With the foregoing andother objects in view, which will be made manifest in the following detailed description and specifically pointed out in the appended claims, reference is had to the accompanying drawings for an illustrative embodiment of the invention, wherein:

Figure 1 is a partial view in side elevation, showing one form of window embodying the present invention;

Fig. 2 is a sectional view taken substantially upon the line 2—2 upon Fig. 1 in the direction indicated and showing in dotted lines the various positions that may be assumed by the sash;

Fig. 3 is a horizontal section taken substantially upon the line 3—3 upon Fig. 1;

Fig. 4 is a partial view in horizontal section taken substantially upon the line 4—4 upon Fig. 1;

Fig. 5 is a partial view in horizontal section taken substantially upon the line 5—5 upon Fig. 1;

Fig. 6 is a view similar to Fig. 1 but illustrating an alternative form of construction embodying the invention;

Fig. 7 is a sectional view taken substantially upon the line 7—7 upon Fig. 6 in the direction indicated and illustrating in dotted lines various positions that may be assumed by the sash;

Fig. 8 is a horizontal section taken substantially upon the line 8—8 upon Fig. 6; and

Fig. 9 is a partial view in vertical section illustrating a detail of construction.

Referring to the accompanying drawings wherein similar reference characters designate similar parts throughout, the improved window comprises a sash generally indicated at 10 which is receivable within a suitable frame generally indicated at 11. The details of construction of the sash and of the frame may vary considerably, it being merely essential that the sash be capable of closely fitting within the frame when the sash is in fully closed position. In the form of construction illustrated in Figs. 1 to 5, two arms 12 and 13, which are preferably but not necessarily in the form of angle irons, are pivotally mounted by means of pivot pins 14 and 15 to the frame 11 adjacent the bottom of the sash. These arms are pivotally connected, such as by pivot pins 16 and 17, to the sash intermediate the top and bottom thereof. Preferably the pivot pins 16 and 17 are located close to the center of the distance from the top to the bottom of the sash. A means is provided for releasably locking the arms 12 and 13 to the sash. Such a means is indicated by means of latches that are mounted on the sash and which have handles 18 which turn lugs 19 into overlapping relationship with respect to the arms when the arms are locked to the sash and which can be turned into a releasing or non-overlapping position when it is desired to release the sash for pivotal movement relatively to the arms.

Extensible adjusters 20 and 21 are pivotally connected at their upper ends to the frame 11 and to the sash. These friction adjusters are preferably in the form of telescopic elements which are slidable relatively to each other and when adjusted to any required length frictionally tend to remain in such adjusted positions. Details of construction of the friction adjusters form no part of the present invention and consequently have not been illustrated. Any conventional form of extensible frictional adjuster may be used. Preferably the sash is equipped with a handle 22 by which it may be manually manipulated and it is also equipped with spring weather stripping, indicated at 23, engageagle with the frame 11 to prevent leakage around the sash.

The operation of the above described construction is substantially as follows: During cold weather the latches may be left in the position depicted in Fig. 1 locking the arms 12 and 13 to the sash 10. Under such circumstances the sash may be pulled inwardly to assume the inclined dotted-line position illustrated in Fig. 2. In moving into this position from the fully closed position the arms 12 and 13 move with the sash so that the arms and sash together pivot about the pivot pins 14 and 15 as centers. The friction adjusters 20 and 21 extend to accommodate themselves or adjust themselves to this position. Air entering the room through the window when the sash is in this position is deflected by the sash upwardly toward the ceiling so that persons near the window are effectively protected against cold drafts by the sash. During warm weather, on the other hand, the latches may be caused to release the sash from the arms 12 and 13 in which case the arms 12 and 13 may remain in the plane of the window frame and the sash can be allowed to pivot on the pivot pins 16 and 17 as centers and assume a substantially horizontal position, as indicated in dotted lines on Fig. 2. In such position the sash offers a minimum resistance to ingress of air into the room through the window frame. Furthermore, it has been found that the sash functions somewhat as a guide, directing the incoming air in the course of its flow into the room so that it is spread across the room at a relatively low level. In either position assumed by the sash the frictional adjusters accommodate themselves to the required positions and

serve to hold the sash in its adjusted position until such time as the sash is forceably moved therefrom. When the sash is swung into fully closed position the weather stripping **23** engages the frame **11** and serves to effectively form a tight seal about the sash.

In the construction illustrated in Figs. 6, 7, 8 and 9, the sash is indicated at **25** fitting within a window frame **26**. In this form of construction the arms **27** and **28** are pivotally connected to the window frame by means of the pivot pins **29** and **30**, respectively. These pivot pins are located near the bottom of the sash. Frictional adjusters **31** and **32** are pivotally connected to the frame adjacent the top thereof and to the sash. In this form of construction, latches **33** and **34** may be used to optionally lock the arms **27** and **28** to the sash so that the sash may be caused to assume an upwardly and inwardly inclined position when the sash and arms swing together about the pivot pins **29** and **30** as centers. In this form of construction, headed pins **35** are mounted on the upper ends of the arms **27** and **28** which may pivot and slide in channels **36** mounted on the sides of the sash. At one extremity of each channel there may be a spring retainer **37** which serves to releasably hold the pins **35** at the mentioned ends of the channels. Latches **38** and **39** are pivotally mounted on the arms, the lugs of which can be swung into keepers **40** in the window frame **26** to lock the arms **27** and **28** against swinging relatively to the window frame **26** on their pivot pins **29** and **30**.

In this form of construction when the latches **33** and **34** are in positions locking the arms against movement relatively to the sash, the latches **38** and **39** can be swung into releasing position and the sash, together with the arms, may be swung inwardly about the pivot pins **29** and **30** to assume an upwardly and inwardly inclined position in very much the same manner as heretofore explained in conjunction with Figs. 1 to 5. In the alternative the latches **33** and **34** may be turned into releasing position and the latches **38** and **39** turned into locking position so that the arms **27** and **28** are held against swinging movement relative to the frame **26**. Under these conditions the sash may be swung about the pivot pins **35** as centers to occupy a horizontal position somewhat in the same manner as described in conjunction with Figs. 1 to 5. After having been swung into horizontal position the sash **25** can be caused to bodily slide on the pivot pins **35** so that these pivot pins move from one end of their respective channels **36** to the other, thus positioning the sash in a manner illustrated in dotted lines in Fig. 7. In this position the sash extends almost its entire length into the room from the window frame. The adjusters **31** and **32**, which are extensible in length, accommodate themselves to this movement. When the pivot pins **35** approach the ends of the channels **36** they depress the spring retainers **37** and pass thereover so that the spring retainers tend to retain the pivot pins at the ends of the channel. The angular relationship between the adjusters and the sash in the position shown in Fig. 7 is such that the friction of the adjusters is adequate to retain the sash in adjusted position even though the sash may be subjected to small gusts or breezes. This form of construction has the advantage that in warm weather conditions the sash extends a substantial distance into the room and tends to guide to a greater extent air that is entering the room.

When it is desired to close the window from the horizontal position shown in Fig. 7, the sash is merely forced in an outward direction causing the pivot pins **35** to depress the spring retainers **37** thus enabling the pivot pins to pass to the other ends of the channels where the sash may be pivoted on the pivot pins and caused to assume an upright or closed position. In this form of construction the sash may be equipped with the spring weather stripping indicated at **41** which is engageable with the window frame to form an effective seal around the sash when the window is closed.

From the above described constructions it will be appreciated that the improved window is a relatively simple construction and may be economically produced. It is highly advantageous in that the sash may optionally be caused to assume an inwardly and upwardly inclined position to direct incoming air upwardly against the ceiling in times of cold weather, or assume a substantially horizontal position offering a minimum resistance to the entry of air and tending to guide the incoming air in a horizontal direction in times of warm weather. Adjustment of the sash into any desired position is easily and readily accomplished.

Various changes may be made in the details of the construction without departing from the spirit and scope of the invention as defined by the appended claims.

I claim:

1. A window construction comprising a sash, means providing a frame for the sash in which the sash is receivable, arms pivotally connected to the frame adjacent their lower ends and pivotally connected to the sash adjacent their upper ends, means for releasably locking the arms to the frame, means for releasably locking the arms to the sash whereby when the arms and sash are locked together the arms and sash may swing unitarily about the pivots between the arms and the frame and upon release of the arms the sash may pivot relatively to the arms, and means for holding the sash in any adjusted position.

2. A window construction comprising a sash, means providing a frame for the sash in which the sash is receivable, arms pivotally connected to the frame adjacent their lower ends and pivotally connected to the sash adjacent their upper ends, means for releasably locking the arms to the frame, means for releasably locking the arms to the sash whereby when the arms and sash are locked together the arms and sash may swing unitarily about the pivots between the arms and the frame and upon release of the arms the sash may pivot relatively to the arms, and extensible means connecting the sash to the frame for holding the sash in adjusted positions.

3. A window construction comprising a sash, means providing a frame for the sash in which the sash is receivable, arms pivotally mounted on the frame adjacent the lower end of the sash and pivotally connected to the sash intermediate the top and bottom thereof whereby the sash may optionally pivot with the arms relatively to the frame or pivot relatively to the arms, means for releasably locking the arms to the frame, and a friction adjuster for holding the sash in adjusted position.

4. A window construction comprising a sash, means providing a frame in which the sash is receivable, arms pivotally mounted on the frame adjacent the bottom of the sash, means providing a pivotal and slidable connection between the sash and the arms whereby the sash may optionally pivot with the arms relatively to the frame, pivot relatively to the arms, or slide relatively to the arms, and means for releasably locking the arms to the frame.

5. A window construction comprising a sash, means providing a frame in which the sash is receivable, arms pivotally mounted on the frame adjacent the bottom of the sash, means providing a pivotal and slidable connection between the sash and the arms whereby the sash may optionally pivot with the arms relatively to the frame, pivot relatively to the arms, or slide relatively to the arms, means for releasably locking the arms to the frame and a frictional adjuster connecting the sash and frame for holding the sash in adjusted position.

6. A window construction comprising a sash, means providing a frame in which the sash is receivable, arms pivotally mounted on the frame adjacent the bottom of the sash, means prvoiding a pivotal and slidable connection between the sash and the arms whereby the sash may optionally pivot with the arms relatively to the frame, pivot relatively to the arms, or slide relatively to the arms, means for releasably locking the arms to the frame and means for releasably retaining the sash at

one extremity of its sliding movement relative to the arms.

7. A window construction comprising a sash, means providing a frame in which the sash is receivable, arms pivotally mounted on the frame adjacent the bottom of the sash, means providing a pivotal and slidable connection between the sash and the arms whereby the sash may optionally pivot with the arms relatively to the frame, pivot relatively to the arms, or slide relatively to the arms, means for releasably holding the arms and sash against relative pivotal movement, and means for releasably holding the arms against pivotal movement relative to the frame.

8. A window construction comprising a sash, means providing a frame in which the sash is receivable, and means connecting the sash to the frame enabling the sash to optionally pivot relative to the frame about an axis adjacent the bottom of the sash into an upwardly and inwardly inclined position or to optionally pivot relatively to the frame about an axis located approximately midway between the top and bottom of the sash to occupy a substantially horizontal position, means for releasably holding the arms against pivotal movement relative to

the frame, and an extensible frictional adjuster connecting the upper portion of the frame with the sash.

9. A window construction comprising a sash, means providing a frame in which the sash is receivable, and means connecting the sash to the frame enabling the sash to optionally pivot relative to the frame about an axis adjacent the bottom of the sash into an upwardly and inwardly inclined position or to optionally pivot relatively to the frame about an axis located approximately midway between the top and bottom of the sash to occupy a substantially horizontal position, means for releasably holding the arms against pivotal movement relative to the frame, and an extensible frictional adjuster connecting the upper portion of the frame with the sash above the last-mentioned axis.

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