Nov. 12, 1940. E. S. PERSSON 2,221,058

WINDOW

Filed March 31, 1939 3 Sheets-Sheet 1

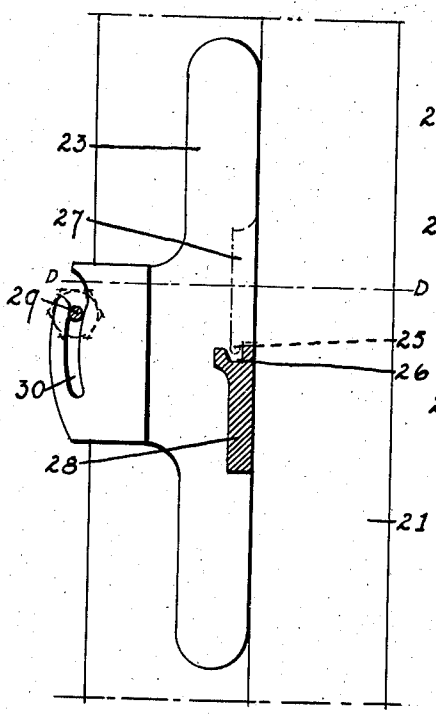


FIG. 1.

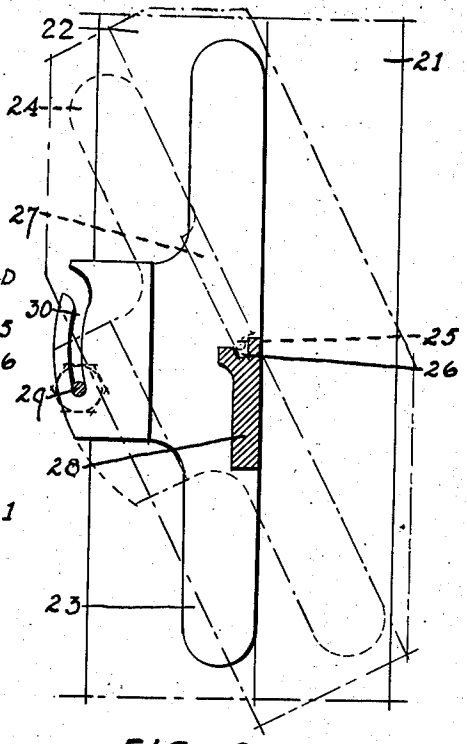


FIG. 2.

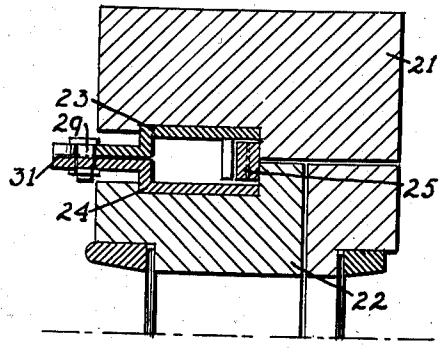


FIG. 4.

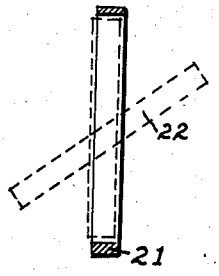


FIG. 5.

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Nov. 12, 1940. E. S. PERSSON 2,221,058

WINDOW

Filed March 31, 1939 3 Sheets-Sheet 2

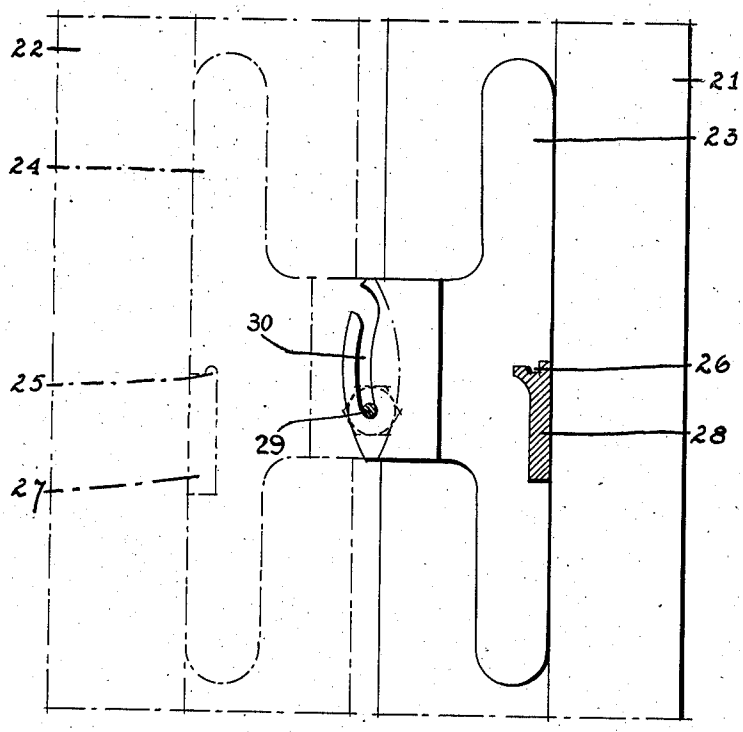


FIG. 3.

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Nov. 12, 1940. E. S. PERSSON 2,221,058

WINDOW

Filed March 31, 1939 3 Sheets-Sheet 3

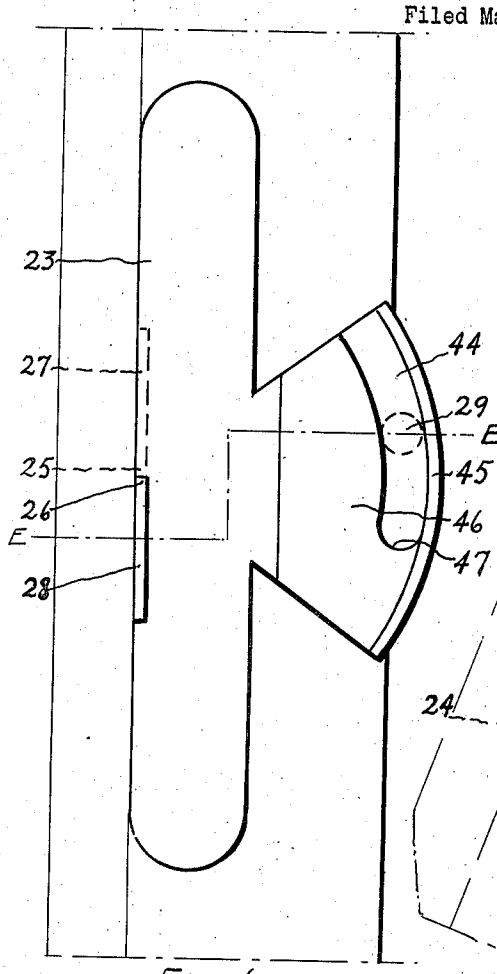


FIG. 6

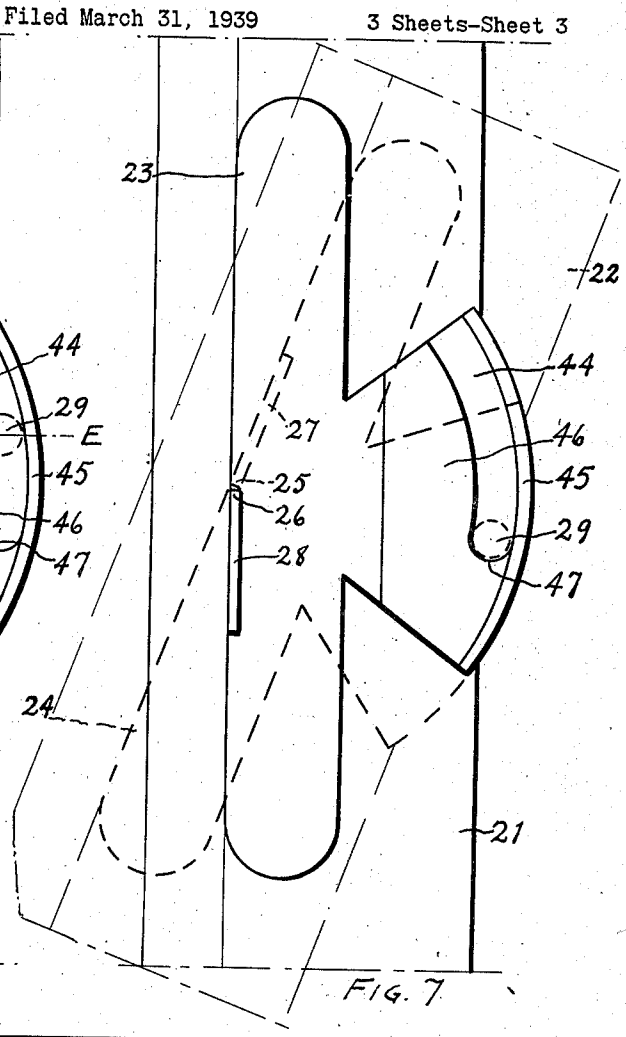


FIG. 7

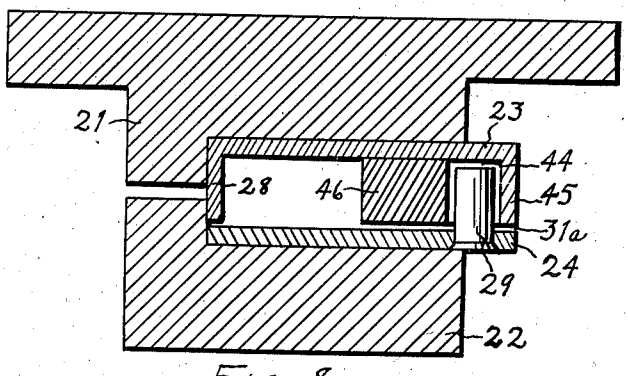


FIG. 8

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Patented Nov. 12, 1940 2,221,058

UNITED STATES PATENT OFFICE

2,221,058

WINDOW

Eric Sigfrid Persson, Malmo, Sweden

Application March 31, 1939, Serial No. 265,300
In Sweden April 13, 1938

5 Claims. (Cl. 16—166)

The present invention relates to hinge means particularly for windows mounted to pivot on a horizontal axis. The objects of the invention will be obvious from the following description.

Figures 1–3 show vertical sectional views of the hinge means of the invention in different positions.

Fig. 4 shows a sectional view on line D—D of Fig. 1.

Fig. 5 shows, on a decreased scale, a sectional view of a window provided with hinge means according to the invention.

Fig. 6 is a side elevational view of the grooved element of a hinge according to the invention, parts of the other hinge element being shown in broken lines and the window element being represented by thin solid lines.

Fig. 7 is a similar view, showing the window partly open.

Fig. 8 is a sectional view taken on line E—E of Fig. 6.

As shown in the drawings, **21** indicates a window frame, and **22** a window sash mounted to pivot therein. The hinge comprises a main part **23** secured to the frame and another main part **24** facing said part **23** and secured to the sash. In Figs. 1 to 3, the frame **21** and the first mentioned main part **23** are shown in full lines, while the sash **22** and the last mentioned main part **24** are shown in dotted lines. The part **24** is provided with a member **25** serving as a pivot means. In the closed position of the sash shown in Fig. 1 said member **25** rests on a bearing surface **26** of the part **23**.

The member **25** and its bearing surface **26** form parts of laterally projecting portions **27** and **28**, respectively, provided at the main parts **24** and **23** of the hinge and forming tightening abutments for corresponding abutment surfaces in the frame and the sash, respectively. This insures a tight joint between frame and sash at the hinge means. The space between the frame **21** and the sash **22** at the vertical edges of the window is filled by a wooden rib secured to the sash above the hinge and another wooden rib secured to the frame below the hinge. Said wooden ribs form a continuation of the tightening abutments between frame and sash formed by the laterally projecting parts **27** and **28**.

When the window is being opened for ventilation purposes, the sash pivots on the bearing surface **26** until a pin **29** serving as a pivot has described an arcuate path around the pivot axis passing through the member **25**, and when displaced from the position shown in Fig. 1 to that shown in Fig. 2 said pin **29** reaches the bottom of the guiding slot **30** of the other main part **23**. In the example illustrated said pin **29** is screwed into the main part **24** and provided with a lock nut. Preferably the window sashes with their panes and fittings are arranged in such a manner as to make the common centre of gravity of the turnable window parts lie somewhere between the vertical planes through the pivot axes at **25** and **29** when the window occupies the position shown in Fig. 2. The sashes are in stable equilibrium in this position (Fig. 2) which they always tend to occupy when the centre of gravity comes between said two vertical planes. In order to obtain a good ventilation effect said equilibrium position is chosen in such a way as to make the sash of a window of normal height form an angle of about 10° to 30° with the vertical plane, or so as to place the bottom edge of its inside about 4 to 8 inches from the outside of the window frame.

When the window is being opened, as for instance for the purpose of cleaning the outside of the outer pane, the sashes are turned still more pivoting on the pin **29**. The main parts of the hinge are shaped in such a way as to render the movement of the part **24** secured to the sash unobstructed by the other main part **23** when turning the sash. When the sashes are turned through an angle of 180°, the hinges occupy the position shown in Fig. 3. In this position it is also possible to separate the sashes from the frame by lifting the sashes so as to make the pin **29** pass out through the upper open end of the slot **30**. The mounting of the sashes is performed by moving them the other way, i. e. by passing the pins **29** into the slots **30**.

The window is closed by turning the sashes in a direction contrary to the opening direction.

By setting the screw **29**, the desired degree of friction can be obtained between the parts of the hinge thus causing a certain braking effect to the movable parts. In a modified embodiment of the invention as shown in Figs. 6, 7 and 8, the cover is made integral with the hinge means. Thus, the part **23**, instead of having a slot **30**, is provided with a groove **44** that does not penetrate the side wall of said part **23**. One wall of said groove **44** is formed by a flange **45** of the part **23** extending all the way from the top to the bottom of the portion of said hinge visible at the front of the window, as shown in Figs. 6 and 7. The other wall of said groove **44** is formed by a piece **46** which is preferably riveted

or welded to the part 23 and which also forms the bottom 47 of said groove.

The part 24 of the hinge extends straight out to the outside of the flange 45, thereby forming a slot 31a between the edge of said flange 45 and the inside edge portion of said part 24. Other reference letters correspond to those used in connection with Figs. 1 to 5 inclusive.

The invention is not limited to the embodiments shown and described. Among modifications with the scope of the invention, it may be mentioned that the whole hinge device in the described embodiments can be mounted upside down. Then the opening of the slot 30 or groove 44 will point downwards instead of upwards, and the part 23 will be secured to the sash while the part 24 is secured to the frame. The number of pivot axes can be more than two and, like the bearing surfaces, they can be shaped in different ways.

At the inside of the window the hinge is preferably provided with a cover which is suitably made concentric with the slot 30 and comprises two parts. One of said parts is connected with the frame 21 and the other with the sash 22. Each part of said cover conceals one of the main parts of the hinge and reaches to the joint 31 between said main parts.

I claim:

1. A hinge for a window having a frame and a sash adapted to pivot on a central horizontal axis in said frame, said hinge comprising a bearing member secured to the window frame, a pivot member secured to the window sash, two separate bearing surfaces on said bearing member, and two separate pivots on said pivot member each for coaction with one of said bearing surfaces, said pivots being so positioned as to make the window sash occupy a stable equilibrium positioned with both pivots resting on their bearing surfaces, the window sash being movable from said equilibrium position towards closed position on one of said pivots and from the same equilibrium position in the opposite direction on the other pivot.

2. A hinge for a window having a frame and a sash adapted to pivot on a central horizontal axis in said frame, said hinge comprising a bearing member secured to the window frame, a pivot member secured to the window sash, two separate bearing surfaces on said bearing member, one of said bearing surfaces forming the bottom of an arcuated open-ended slot having its center approximately in the other bearing surface, and two separate pivots on said pivot member each for coaction with one of said bearing surfaces, said pivots being so positioned as to make the window sash occupy a stable equilibrium position with both pivots resting on their bearing surfaces, the window sash being movable from said equilibrium position towards closed position on one of said pivots and from the same equilibrium position in the opposite direction on the other pivot.

3. An hinge for a window having a frame and a sash adapted to pivot on a central horizontal axis in said frame, said hinge comprising a bearing member secured to the window frame, a pivot member secured to the window sash, two separate bearing surfaces on said bearing member, and two separate pivots on said pivot member each for coaction with one of said bearing surfaces, one of said bearing surfaces and the pivot coacting therewith forming parts of a projection of the bearing member and the pivot member, respectively, said projections covering the joint between the window frame and the window sash, said pivots being so positioned as to make the window sash occupy a stable equilibrium position with both pivots resting on their bearing surfaces, the window sash being movable from said equilibrium position towards closed position on one of said pivots and from the same equilibrium position in the opposite direction on the other pivot.

4. A hinge for a window having a frame and a sash adapted to pivot on a central horizontal axis in said frame, said hinge comprising a bearing member secured to the window frame, a pivot member secured to the window sash, two separate bearing surfaces on said bearing member, one of said bearing surfaces forming the bottom of an arcuated open-ended slot having its center approximately in the other bearing surface, and two separate pivots on said pivot member each for coaction with one of said bearing surfaces, one of said bearing surfaces and the pivot coacting therewith forming parts of a projection of the bearing member and the pivot member, respectively, said projections covering the joint between the window frame and the window sash, said pivots being so positioned as to make the window sash occupy a stable equilibrium position with both pivots resting on their bearing surfaces, the window sash being movable from said equilibrium position towards closed position on one of said pivots and from the same equilibrium position in the opposite direction on the other pivot.

5. A hinge for a window having a frame and a sash adapted to pivot on a central horizontal axis in said frame, said hinge comprising a bearing member secured to the window frame, a pivot member secured to the window sash, two separate bearing surfaces on said bearing member, one of said bearing surfaces forming the bottom of an arcuated open-ended groove having its center approximately in the other bearing surface, and two separate pivots on said pivot member each for coaction with one of said bearing surfaces, said arcuated open-ended groove and the pivot coacting therewith forming parts of a projection of the bearing member and the pivot member, respectively, said projections covering and concealing the arcuated open-ended groove and the pivot pin, said pivots being so positioned as to make the window sash occupy a stable equilibrium position with both pivots resting on their bearing surfaces, the window sash being movable towards closed position on one of said pivots and in the opposite direction on the other pivot.

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