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SLIDING SASH WITH LUBRICATED BEARINGS

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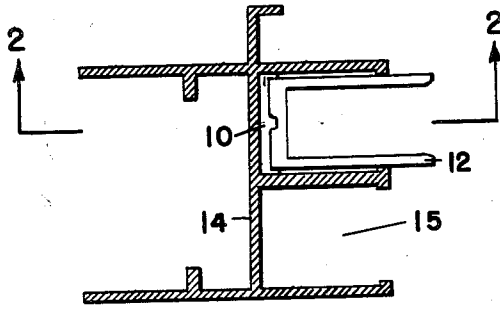


FIG. 1.

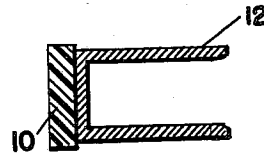


FIG. 4.

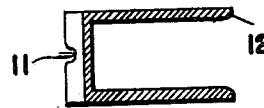


FIG. 5.

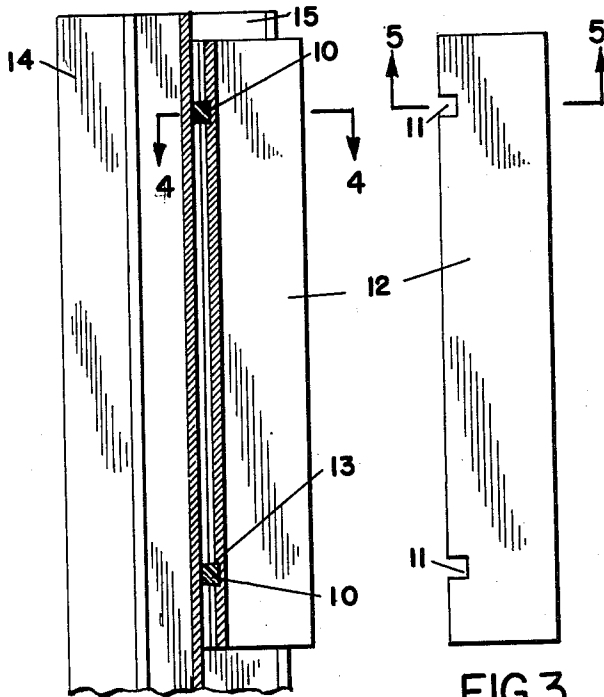


FIG. 2.

FIG. 3.

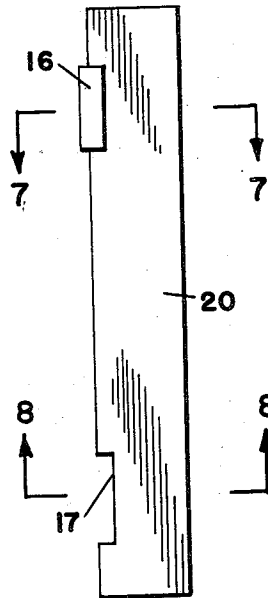


FIG. 6.

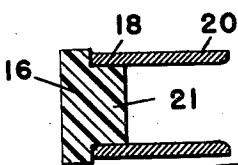


FIG. 7.

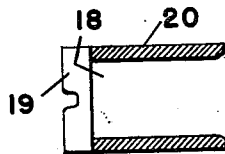


FIG. 8.

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## SLIDING SASH WITH LUBRICATED BEARINGS

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6 Claims. (Cl. 189—72)

This invention relates to window and screen structures of the vertical reciprocating type where the sashes are interchangeable and is an improvement over the devices outlined in the following applications filed by this applicant in the United States Patent Office, Ser. No. 361,140, filed July 12, 1953; Ser. No. 370,840, filed July 28, 1953, and which is now abandoned, and Ser. No. 376,621, filed August 26, 1953, and which is now abandoned, to which reference is made for general details.

The conventional types of metal window frames and window and screen sashes now known to the art, have certain limitations in their design which render them more or less objectionable. In certain designs the window frame channels and sashes are formed of extruded aluminum and the use of aluminum against aluminum causes scoring and serious damage to the sliding parts and impairs their easy operation. To overcome the scoring and excessive wear in the window frame through movements of the sash therein, inserts have been made of stainless steel to tightly fit the contour of the extruded window frame. This insert has protected the window frame against excessive wear but offers little protection to the sliding sash used therein.

It is therefore an object of this invention to eliminate the costly operation of applying the steel inserts in the window frame to prevent excessive wear caused by the movement of the sash in the window frame.

It is an additional object of this invention to provide a new and improved bearing surface for metal windows, storm sash and screens comprising a bearing block of plastic of the polythene chemical family having great tenacity and lubricating characteristics to prevent excessive wear scoring or galling of the window frame and sash caused by the movement of the sash therein. One type of plastic found acceptable is called "nylon."

Another object of this invention is to provide a non-galling or scoring bearing surface for vertically reciprocating metallic window frames and sashes that will not need oiling or greasing.

Another object of this invention is to provide a new and improved semi-resilient material for use between the sash and window frame that will have natural lubricating characteristics to prevent guiding or scoring of the window frame and sash during the movement thereof.

Various forms of semi-resilient materials of the polythene chemical family having lubricating characteristics have been extruded for use by this applicant as outlined in his other applications, but it has been found that variations in the extruding dies have caused variations in the size of the finished form and it is therefore an additional object of this invention to provide a bearing that can be varied in length to suit the width of the slot in the window frame the bearing block is to be used with.

Other objects will become apparent as the invention is more fully set forth.

For a better understanding of the invention, and its principles and operation, reference is made to the ac-

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companying drawings which disclose several methods of attaching the self lubricating bearing material to the sliding units outlined herein as well as mentioned in the patent applications mentioned above. These drawings are explained in the following description while the claims indicate the scope of the invention.

Referring to the drawings:

Figure 1 is a plan view in section, showing the window frame and sash unit equipped with a self lubricating bearing unit attached thereto and embodying this invention;

Figure 2 is a longitudinal sectional view taken along line 2—2 of Figure 1;

Figure 3 is a longitudinal side elevation of a sash member showing its slots before receiving the self lubricating bearing material and before peening to hold the lubricating bearing material in place in the sash;

Figure 4 is a sectional view taken along line 4—4 of Figure 2;

Figure 5 is a sectional view taken along line 5—5 of Figure 3;

Figure 6 is a longitudinal side elevation of a sash member showing a modified form of slot and bearing;

Figure 7 is a sectional view taken along line 7—7 of Figure 6; and

Figure 8 is a sectional view taken along line 8—8 of Figure 6.

Similar reference characters refer to similar parts throughout the drawings.

In the construction shown in the drawings and more particularly to Figures 1, 2, 3, 4 and 5, the self lubricating bearing block 10 is mounted in a slot 11 in the sash 12 which is then swaged at 13 to hold the lubricating blocks against movement in the sash 12. The sash 12 is shown slidably mounted in an extruded window frame 14 of conventional design which may have one, two or three channels 15 depending on the number of sash and screens to be used in the frame.

In Figures 6, 7 and 8 is shown a modified form of bearing block 16 mounted in a transverse slot 17 with its lower end 21 projecting through slot 18 in the web 19 of sash 20. The sash 20 will work in the window frame 14 in a manner similar to that described for sash 12.

As previously pointed out, the bearing block 10 is formed of plastic of the polythene chemical family. "Polythene" is a polymerized ethylene, in the form of a white wax. It is tougher than paraffin, and it is used in radar and radio on account of its electrical properties. This material is inert chemically. (See "A Dictionary of Chemistry" by Stephen Miall and L. MacKenzie Miall, published in 1949 by Longmans, Green and Company, London, New York and Toronto). "Nylon" is one type of plastic which has been found as acceptable. A plastic block formed as described above has great tenacity and lubricating characteristics.

While but two general forms of the invention are shown in the drawings and described in the specifications, it is not desired to limit this application for patent to these particular forms as it is appreciated that other forms could be made that would use the same principles and come within the scope of the appended claims.

Having thus described the invention, what is claimed is:

1. A window structure comprising a window frame having opposite guide channels therein, at least one sash positioned in said frame with its opposite edges projecting into said channels, and at least one self-lubricating bearing insert secured to said opposite edges of said sash and extending outwardly therefrom, said bearing inserts being positioned transversely to the plane of said sash and being of greater width than said sash so that the ends thereof extend past the opposite faces of said sash,

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whereby the outer and end surfaces of each bearing insert provide three points of contact with the surfaces of said window frame that each bearing insert comes into engagement with.

2. An arrangement as set forth in claim 1, wherein said bearing insert consists of nylon.

3. An arrangement as set forth in claim 1, wherein each bearing insert consists of polythene.

4. In combination, a sash for use in a window structure having a frame with opposite guide channels therein, said sash being arranged to have its opposite edges project into said channels, and at least one self-lubricating bearing insert secured to at least one of the opposite edges of said sash and extending outwardly therefrom, said bearing insert being positioned transversely to the plane of said sash and being of greater width than said sash so that the ends thereof extend past the opposite faces of said sash, whereby the outer and end surfaces of said bearing insert provides three points of contact with the surfaces of said window frame that said bearing insert comes into engagement with.

5. A window structure comprising a window frame having opposite guide channels therein, at least one sash positioned in said frame with its opposite edges projecting into said channels, and at least one self-lubricating insert secured in one edge of said sash and extending outwardly therefrom, said bearing insert being of greater width than said sash so that the ends thereof extend past the opposite faces of said sash, whereby the outer and end surfaces of said bearing insert provide three points

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of contact with the surfaces of said window frame that said bearing insert comes into engagement with.

6. A structure comprising a frame having at least one guide channel therein, at least one other structure positioned in said first structure with one of its edges projecting into said guide channel, and at least one self-lubricating insert secured in said projecting edge of said other structure and extending outwardly therefrom, said bearing insert being of greater width than said other structure so that the ends thereof extend past the opposite faces of said other structure, whereby the outer and end surfaces of said bearing insert provide three points of contact with the surfaces of said window frame that said bearing insert comes into engagement with.

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