

June 3, 1941.

O. D. ENGLEHART

2,244,491

MULTIPLE GLAZED UNIT

Filed June 23, 1939

*Fig. 1.*

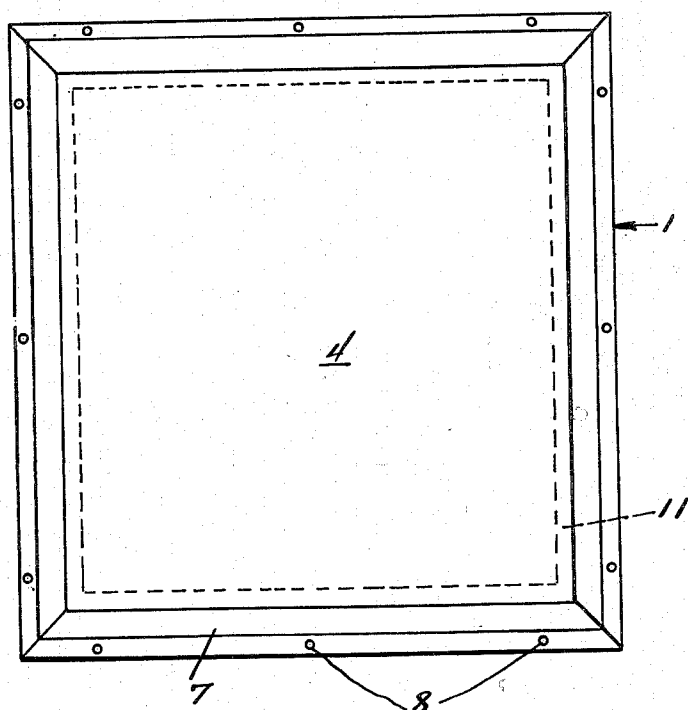
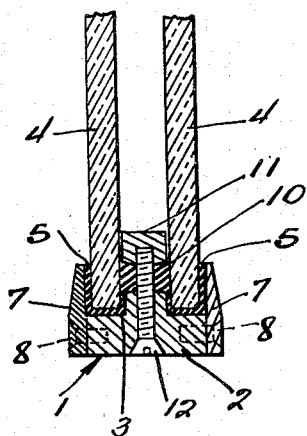


*Fig. 2.*



INVENTOR  
OSCAR D. ENGLEHART

BY *Olew E. Bee*  
ATTORNEY.

## UNITED STATES PATENT OFFICE

2,244,491

## MULTIPLE GLAZED UNIT

Oscar D. Englehart, Brackenridge, Pa., assignor to  
Pittsburgh Plate Glass Company, Allegheny  
County, Pa., a corporation of Pennsylvania

Application June 23, 1939, Serial No. 280,730

2 Claims. (Cl. 20—56.5)

The present invention relates to glazed structures and more particularly to multiple glazed units wherein spaced glass sheets are secured in a frame.

One object of the invention is the provision of an improved sealing means effectively reducing the entrance of moisture and foreign matter into the air space between the glass sheets while, at the same time, reducing the pressure ordinarily exerted upon the edges of the glass sheets.

Other objects and advantages of my invention will become more apparent from the following detailed description of a particular embodiment thereof.

Multiple glazing has recently developed into considerable commercial importance and it is the subject of much research. Although there are presently available insulating units of proven effectiveness certain disadvantages remain unremedied. One such problem is the difficulty of obtaining a satisfactory seal between the sheets of glass in order that communication of the air space therebetween with the atmosphere may be prevented. Many types of seals have been suggested and tested with varying degrees of success.

Generally, it is necessary that the sealing medium be partially resilient in order that the so-called "breathing" action, occurring under differences in pressure, temperature, etc. and flexing the glass sheets, will not rupture the seal. Rubber, synthetic resins and similar materials have been found most suitable as the sealing media. Strips of these materials are inserted between the glass sheets and placed under compression by a gripping action of the surrounding frame. These units can be assembled only at the factory and when placed in service, if they are damaged in any way, must be returned to the factory for repairs. The considerable force which must be exerted by the frame elements to obtain suitable compression is concentrated at the edges of the glass sheets and there have been observed numerous cases of breakage for this reason.

Briefly stated, the present invention contemplates the provision of a multiple glazed unit incorporating resilient sealing strips which are compressed centrally and expanded against the glass sheets, the compression strip also reducing the diffusion path for moisture vapor through the sealing medium.

One embodiment of my invention is shown in the accompanying drawing, wherein:

Figure 1 is a front elevational view of a multiple glazed unit constructed in accordance with the provisions of the invention; and

Figure 2 is a fragmentary vertical sectional view thereof.

In the drawing, a unit 1 comprises a frame 2 of metal, wood or other suitable material provided with rabbeted grooves 3 in which a plurality of sheets 4 of glass protected by cushioning members 5 substantially of U shape in cross section are seated. Retaining strips 7 fastened to the frame by means of screws 8 or other fastening devices secure the sheets of glass within the frame.

Strips 10, of rubber, synthetic resin or other resilient material lie between the sheets of glass, resting upon and extending continuously around the inner periphery of the frame 2. Strips 11 of metal or similar rigid material are superposed upon the strips 10 and are engaged by screws 12 at spaced intervals therealong, through the operation of which the strips 11 are drawn toward the frame 2. This action causes the strips 10 to be compressed and forced outwardly against the sheets of glass. It is preferred to form the strips 11 with a convex surface on that face contacting the strips 10 in order that the major part of the compression is exerted centrally of the strips 10. In this connection, also, the inner periphery of the frame may also have a convex surface.

The disclosed sealing means is applicable to substantially all types of multiple glazed units. The inclusion of desiccators or ventilators in the units will not detract from the efficacy of the seal in the first case or a reduction in edge stresses in the latter. Where the unit is to be completely sealed, it is possible, through the porosity of the sealing medium, that there will be a slight diffusion of water vapor into the enclosed air space. The diffusion path is reduced to a minimum in my device, since the sealing strip is substantially covered by a rigid non-porous backing member. Another advantage of my invention resides in the fact that the sealing medium automatically compensates for variations in thickness of the glass sheets.

It will at once be obvious that variation of the shape or arrangement of the component elements are possible without departing from the spirit of the invention or the scope of the appended claims.

What I claim is:

1. In combination in a multiple glazed unit, a frame, a plurality of glass sheets secured within the frame, rubber strips lying between the glass sheets adjacent the peripheries thereof, strips of rigid material superposed upon the rubber strips,

and means drawing the rigid strips down upon the rubber strips compressing the rubber centrally and forcing it outwardly against the glass sheets.

2. In combination in a multiple glazed unit, a frame, a plurality of glass sheets releasably secured within the frame, strips of resilient material lying between the glass sheets upon the

5 frame, strips of rigid material superposed upon the strips of resilient material, and screws projecting through the frame and resilient material into the strips of rigid material, drawing the rigid strips toward the frame to compress the resilient material centrally and force it outwardly against the glass sheets.

OSCAR D. ENGLEHART.