This invention relates to glass holding devices and more particularly to a novel window glazing construction for firmly mounting and resiliently retainer a pane of glass within an opening.

Hereinafter, many glass holding devices have been developed to retain panes of glass in window openings and the like. Generally, these devices include a sash or frame portion surrounding a window opening and elaborate locking means for resiliently retaining the pane with respect to the frame.

Recently, "curtain-wall" type construction has been utilized for the exteriors of many large buildings. Such construction consists of non-load bearing, lightweight sheets of decorative material which are supported on a load-carrying framework. It has been found that present day sashes are not readily adapted to such construction in that they are often too costly, too time consuming to install or do not adequately support or seal a window pane with respect to the wall.

It is, therefore, a primary object of this invention to provide an improved window glazing construction, in which a pane of glass may be easily and readily installed and replaced with great accuracy, and which is especially suited for, but not limited to use in, "curtain-wall" type construction.

A further object of the present invention is to resiliently retain a pane of glass with respect to a window opening by applying a distributed pressure across the peripheral portions of the pane of glass without the aid of screws and other adjusting means.

A further object of the invention is to effect a considerable saving in the cost of material, time and labor in the installation of an improved weather-tight glazing construction having few parts of simple form.

A further object of the invention is to resiliently support a pane of glass in a frame portion of a window glazing construction suitable for "curtain-wall" window openings, and to maintain a weather-tight seal around its periphery.

A still further object of the invention is to provide an improved sturdy, durable window glazing construction which is quickly installed, economically in cost, and consists of a minimum number of lightweight parts.

Further objects, features and advantages of this invention will become apparent from a consideration of the following description, the appended claims and the accompanying drawings in which:

FIGURE 1 is a perspective view of a portion of a window glazing construction in accordance with the principles of the present invention; and

FIGURE 2 is an enlarged sectional view taken along the line 2-2 of FIGURE 1 looking in the direction of the arrows with a side portion of the window frame in elevation.

The novel window glazing construction in accordance with the principles of the present invention is directed toward an arrangement which is quickly installed and adjusted with respect to a window opening by merely sliding a single locking element with respect to a unique frame assembly to be described.

In the drawing the glazing construction includes an outer longitudinally extending frame portion 10 having a downwardly depending arm 12 and an inwardly extending flange 14 which is turned upwardly at its inner end to form a groove 16. The outer frame 10 carries a longitudinally extending weather strip 18 of resilient, yieldable rubber-like material such as sponge neoprene which fits over the outer wall of a sill portion 20. The strip 18, in accordance with one aspect of the present invention, is compressed between the outer longitudinally extending frame portion 10 and the sill 20 forming a rounded, longitudinally extending groove portion 22 in the strip 18 to prevent the entrance of wind, water and dirt.

An inner longitudinally extending frame portion 24 has an outwardly extending flange portion 26 whose outer end is turned upwardly to form a longitudinally extending groove 28 which locks against a tapered edge portion 30 on the bottom of the outer frame portion 10. A tab portion 32 extends out of the flange 26 and spaces the inner frame portion 24 away from the sill 20 and a longitudinally extending weather strip or gasket 34 extending between the inside of the sill 20 and a downwardly depending arm 35 of the inner frame portion 24 acts as a secondary seal across the glazing construction.

The interlocking, longitudinally extending inner and outer frame portions 24, 30 constitute a part of the bottom of a window frame which necessarily includes a bottom, top or head and side sections which completely frame a preselected window opening.

The upper face of the flange 24 carries a longitudinally extending channel-shaped cushion 36 of a natural or synthetic resilient material such as neoprene which seals the peripheral edge portion of a pane of glass 38 inserted therein. The outer side of the cushion 36 abuts against the inner side of the outside frame portion 10 and the inner side of the cushion 36 is enclosed by a longitudinally extending loading strip 40 which has a longitudinally extending groove 42. The downwardly depending arm 35 of the inner frame portion 24 has a similar longitudinally extending groove 44. The grooves 42, 44 receive a spring-biasing means for compressing the cushion 36 against the outer periphery of the pane 38 in a manner to be described.

The ends of the frame portions 10, 24, the strip 18, the cushion 36 and the loading strip 40 are mitered to form square corners as is the case in conventional window glazing constructions.

Once the pane 38 has been inserted in the cushion 36 and the longitudinally extending loading strip 40 has been placed along the inner side of the cushion 36, the pane 38 is locked into place by snapping a plurality of spaced lugs generally designated 46 against a plurality of bowed, longitudinally extending springs which are generally designated 48.

Each spring 48 has an outer bowed portion 50 and a pair of oppositely disposed end portions 52 which fit into the groove 42. Each lug assembly 46 has outwardly projecting upper and lower flanges 54, 56, respectively. Substantially midway between the flanges 54, 56, a leg 58 projects outwardly having a downwardly depending arm 60 which engages the outer frame groove 16. The lower flange 56 of the lug 46 engages the outer frame groove 44 and the upper flange over rides the outer bowed spring portion 50 to hold the spring 48 against the loading strip 40 to compress the cushion 36 tightly against the pane 38 to positively seal against the entrance of water, dirt and the like thereacross. The squeezing action of the cushion 36, furthermore, firmly holds the pane 38 in place.

Each spring 48 has a substantial longitudinal reach which causes the spring force to be evenly distributed over a substantial surface area on the inside of the cushion 36 to prevent stress concentrations in the periphery of the pane 38. This novel construction helps to avoid window breakage due to superimposed strains caused by wind, vi-
A window glazing construction comprising an outer frame portion, an inner frame portion adapted to engage said outer frame portion, said inner and outer frame portions including means for engaging a wall section, seal means on said outer frame portion adapted to be compressed between a portion of the outer frame portion and the wall section for weather-proofing the peripheral portion of a window opening in said wall section, outer cushion means engageable with said outer frame portion for sealing the outer peripheral portion of a window pane, inner cushion means for sealing the inner peripheral portion of a window pane, said loading strip, said loading strip engageable with said inner cushion means, separate lug means adapted to engage said inner and outer frame portions, and means including spring means adapted to engage said loading strip and said lug means to resiliently urge said loading strip and said outer frame portion toward each other for supporting a window pane therebetween.

What is claimed is:

1. A window glazing construction comprising an outer frame portion having an inwardly extending flange portion and a first downwardly depending arm, an inner frame portion having an outwardly extending flange portion and a second downwardly depending arm adapted to be inwardly spaced from said first downwardly depending arm, means including said first and second arms for clamping said frame portions on opposite sides of the periphery of a window opening formed in said wall section, outer cushion means engageable with said outer frame portion for sealing the outer peripheral portion of a window pane, inner cushion means for sealing the inner peripheral portion of a window pane, said loading strip engageable with said inner cushion means, separate lug means adapted to engage said inwardly extending flange portion, and means including spring means adapted to engage said loading strip and said lug means to resiliently urge said loading strip and said outer frame portion toward each other for supporting a window pane therebetween.

2. A window glazing construction comprising an outer frame portion having an inwardly extending flange portion and a first downwardly depending arm, an inner frame portion having an outwardly extending flange portion and a second downwardly depending arm adapted to be inwardly spaced from said first downwardly depending arm, means including said first and second arms for clamping said frame portions on opposite sides of the periphery of a window opening formed in said wall section, outer cushion means engageable with said outer frame portion for sealing the outer peripheral portion of a window pane, inner cushion means for sealing the inner peripheral portion of a window pane, said loading strip engageable with said inner cushion means, separate lug means adapted to engage said inwardly extending flange portion, and means including spring means adapted to engage said loading strip and said lug means to resiliently urge said loading strip and said outer frame portion toward each other for supporting a window pane therebetween.

3. A window glazing construction comprising an outer frame portion having an inwardly extending flange portion and a first downwardly depending arm, an inner frame portion having an outwardly extending flange portion and a second downwardly depending arm adapted to be inwardly spaced from said first downwardly depending arm, means including said first and second arms for clamping said frame portions on opposite sides of the periphery of a window opening formed in said wall section, outer cushion means engageable with said outer frame portion for sealing the outer peripheral portion of a window pane, inner cushion means for sealing the inner peripheral portion of a window pane, a loading strip engageable with said inner cushion means, a bracket having upper and lower outwardly projecting flanges and a leg portion between said upper and lower flanges, said leg portion being adapted to engage said inwardly extending flange portion and said lower flange portion being adapted to engage said second downwardly depending arm, and means including spring means adapted to engage said loading strip and said upper flange to resiliently urge said loading strip and said outer frame portion toward each other for supporting a window pane therebetween to and resiliently urge said bracket leg portion and said bracket lower flange portion against said inwardly extending flange portion and said second downwardly depending arm, respectively, for pressing said first and second downwardly depending arms against the wall section.

4. A window glazing construction comprising an outer frame portion having an inwardly extending flange portion and a first downwardly depending arm, an inner frame portion having an outwardly extending flange portion and a second downwardly depending arm adapted to be inwardly spaced from said first downwardly depending arm, a loading strip, said loading strip engageable with said inner cushion means, first seal means on the inner side of said first downwardly depending arm, second seal means on the outer side of said second downwardly depending arm,
means including said first and second downwardly depending arms clamping said frame portions on opposite sides of a wall section to compress said first and second seal means in weather-tight engagement with the periphery of a window opening formed therein, outer cushion means engageable with said outer frame portion for sealing the outer peripheral portion of a window pane, inner cushion means for sealingly engaging the inner peripheral portion of a window pane, a loading strip engageable with said inner cushion means, a bracket having upper and lower outwardly projecting flanges and a leg portion between said upper and lower flanges, said leg portion being adapted to engage said inwardly extending flange portion and said lower flange portion adapted to engage said second downwardly depending arm, and a spring having a bowed portion adapted to engage the upper bracket flange and end portions adapted to engage spaced points on said loading strip to resiliently urge said loading strip and said outer frame portion toward each other for supporting a window pane therebetween.

5. A window glazing construction comprising an outer frame portion having an inwardly extending flange portion and a first downwardly depending arm, an inner frame portion having an outwardly extending flange portion and a second downwardly depending arm adapted to be inwardly spaced from said first downwardly depending arm, means including said first and second arms for clamping said frame portions on opposite sides of a wall section around the periphery of a window opening formed therein, outer cushion means engageable with said outer frame portion for sealing the outer peripheral portion of a window pane, inner cushion means for sealingly engaging the inner peripheral portion of a window pane, a loading strip engageable with said inner cushion means, a bracket having upper and lower outwardly projecting flanges and a leg portion between said upper and lower flanges, said leg portion adapted to engage said inwardly extending flange portion, and a spring having a bowed portion adapted to engage spaced points on said loading strip to resiliently urge said loading strip and said outer frame portion toward each other for supporting a window pane therebetween.

6. A window glazing construction comprising an outer frame portion having an inwardly extending flange portion and a first downwardly depending arm, an inner frame portion having an outwardly extending flange portion and a second downwardly depending arm adapted to be inwardly spaced from said first downwardly depending arm, first seal means on the inner side of said first downwardly depending arm, second seal means on the outer side of said second downwardly depending arm, means including said first and second downwardly depending arms for clamping said frame portions on opposite sides of a wall section to compress said first and second seal means in weather-tight engagement with the periphery of a window opening formed therein, outer cushion means engageable with said outer frame portion for sealing the outer peripheral portion of a window pane, inner cushion means for sealingly engaging the inner peripheral portion of a window pane, a loading strip engageable with said inner cushion means, a bracket having upper and lower outwardly projecting flanges and a leg portion between said upper and lower flanges, said leg portion adapted to engage said inwardly extending flange portion and said lower flange portion adapted to engage said second downwardly depending arm, and a spring having a bowed portion adapted to engage the upper bracket flange and end portions adapted to engage spaced points on said loading strip to resiliently urge said loading strip and said outer frame portion toward each other for supporting a window pane therebetween.

References Cited by the Examiner

UNITED STATES PATENTS

2,114,722 4/58 Owen 20—56.4
2,169,865 8/59 Banta 189—75
2,275,359 3/62 Rosenblatt 20—56.4
2,791,007 5/57 Kobil et al. 20—56.4 X
2,865,063 12/58 Hartshorn 20—56.4
2,871,524 2/59 Wills et al. 20—56.4
2,996,767 8/61 Kobil 20—11 X

FOREIGN PATENTS

1,193,404 4/59 France.
662,674 12/51 Great Britain.

HARRISON R. MOSELEY, Primary Examiner.

GEORGE A. NINAS, Jr., Examiner.