Sept. 13, 1955 J. G. SQUIRES 2,717,709

DISPENSER FOR PLASTIC MULLION STRIPPING

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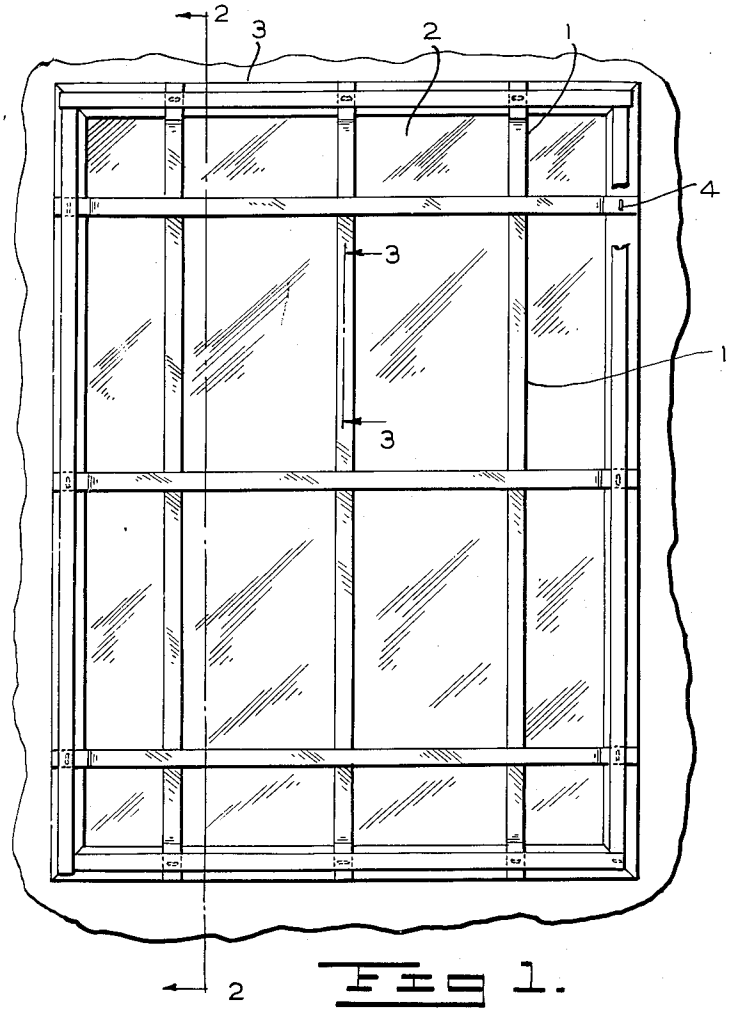


Fig 1.

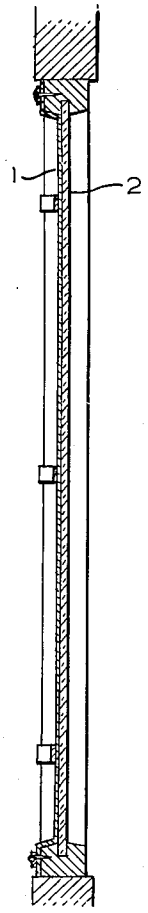


Fig 2.

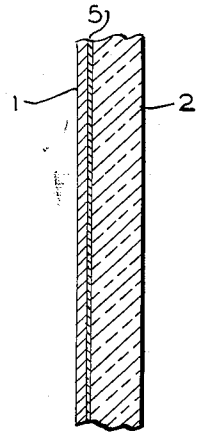


Fig 3.

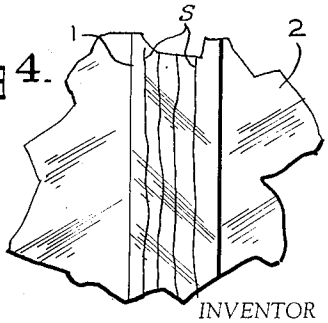


Fig 4.

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Fig 5.

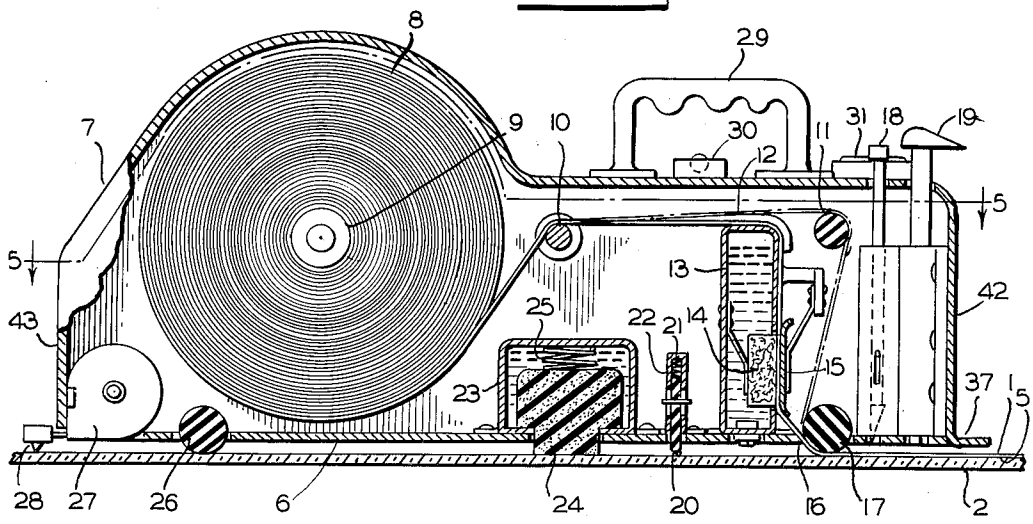


Fig 6.

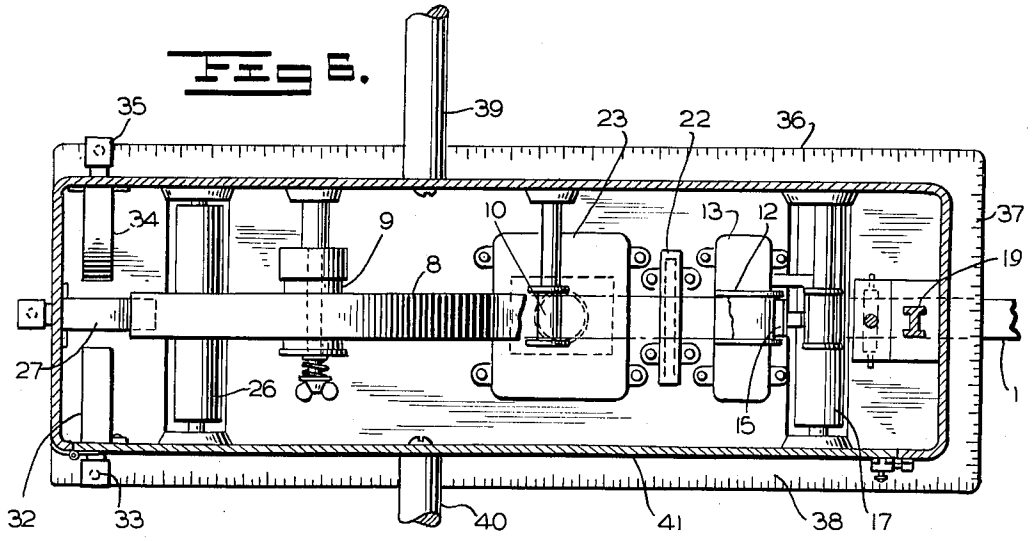
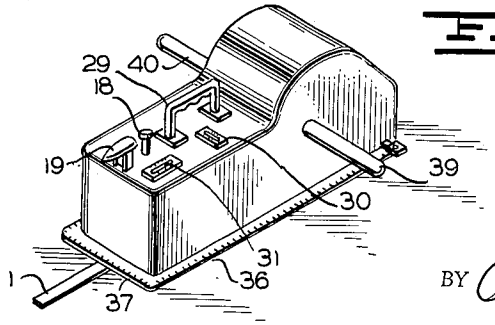


Fig 7.



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DISPENSER FOR PLASTIC MULLION STRIPPING

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5 Claims. (Cl. 216—1)

My invention relates to a dispenser for the application of plastic mullions in the form of reinforced stripping or tape. The invention can be used for the application of this plastic mullioning tape to glass surfaces for the purpose of reducing fragmentation and flying glass particles caused by the exposure of such glass surfaces to great pressures, explosions, and blasts.

In considering what could be done to safeguard our people against atomic bombing attacks, my attention has centered on the great danger inherent in the millions of acres of window glass used in this country. The danger is due to the brittle nature of glass and resulting injuries will occur to persons struck by flying fragments of windows blasted out of their frames by bomb explosions and similar causes. In considering what could be done about this problem, I have noted that leaded glass windows and doors as well as those with wood mullions are not shattered by shocks such as would shatter ordinary full sheet panes.

Therefore, it is one object of the invention to provide a dispenser for the application of a reinforced plastic mullioning tape of all colors in opaque, translucent or transparent material.

Other objects and advantages of this invention will become apparent from the following description taken in conjunction with the drawings in which:

Figure 1 is a front elevation of a window pane having a tape applied thereto by the dispenser;

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

Figure 3 is an enlarged fragmentary detailed sectional view on the line 3—3 of Figure 1;

Figure 4 is an enlarged fragmentary sectional view showing the tape on the window pane;

Figure 5 is a side elevation of the tape dispenser with the side plate broken away;

Figure 6 is a sectional view of the dispenser taken substantially along line 5—5 of Figure 4; and

Figure 7 is a perspective view of the dispenser.

Considering now the drawings in more detail, in Figure 1 tape 1 is shown affixed to a pane of glass 2 and the frame 3 of a window by means of staples 4 and transparent adhesive 5. Figure 2 shows staples 4 embedded in frame 3, and tape 1 affixed to frame 3 and glass 2. Figure 3 shows tape 1 bonded by adhesive 5 to the glass pane 2. Figure 4 shows glass fiber strands S embedded in tape 1 which is bonded to window pane 2.

Tape 1 to be applied by the dispenser of my invention will be formed of a plastic material which may be opaque, translucent, or it may be transparent so as to have the same light transmitting characteristics as the window pane to which it is to be applied. For most applications, the tape will be reinforced by provision of glass fiber strands S extending parallel to the length of the tape as indicated in Figure 4. If desired, the tape may be colored for decorative purposes. In any event, the tape must be of sufficient strength to markedly resist tearing and rupture and, when provided with strands S, will have even

further and very marked resistance to rupturing forces. The tape also will be of such material that adhesives of the type described will permanently adhere thereto. It also will be observed that the adhesives described will permanently adhere to glass.

The tape may be in suitable widths and thicknesses, which will, of course, vary so as to be applicable to all types and sizes of glass. For example, dimensions of the following order are suitable: The width varying from about ½ to about 3 inches and the thicknesses varying from about 1/32 to about ⅛ inch.

Although the drawings illustrate the strands S extending parallel to the length of the tape, nevertheless, if desired, the strands may be woven together so as to include short cross strands, or the strands may be positioned upon the bias. Also, it will be understood that fine wire reinforcements or other fiber reinforcement can be used instead of glass fiber strands.

As appears in Figures 5, 6 and 7, the tape dispenser includes a flat base plate 6 which, during the use of the dispenser will lie flat against the pane of the window 2. A box-like casing 7 extends from the base plate 2, one wall of the base plate comprising a pivoted door 41 which may be opened to permit access to the various elements within the casing 7.

Adjacent one end of the casing 7, the rigid wall of the casing has a stud projecting therefrom to support a drum 9 on which a roll of tape 8 may be mounted. As appears in Figure 5, tape 1 being dispensed from the roll 8 will move over a roll 10 toward an adhesive containing tank 13 secured to the base plate 6. The tank 13 will be positioned adjacent the end 42 of the casing 7 distant from the roll supporting drum 9. Adjacent end 42, the casing 7 has a stapler 19 mounted therein, the base plate 6 being apertured to permit movement of the stapling tool 19 therethrough. Immediately inwardly of the stapling tool 19, the casing 7 carries a reciprocable cutting device 18 also operable through an aperture in the base plate 6. Immediately inwardly of cutting element 18, the base plate is provided with an aperture 16 in which a tape bonding pressure roll 17 is mounted. It will be observed that the tape bonding pressure roll 17 is positioned between the end 42 and the adhesive tank 13.

Beyond adhesive tank 13 the base plate 6 carries a spring-pressed squeegee 20 and a spring 21 both secured by support 22. Beyond squeegee 20, the base plate 6 has a cleaning fluid tank 23 secured thereto with a sponge rubber block 24 projecting from tank 23 through an aperture in the base plate. A spring 25 within the tank is adapted to urge the block 25 into contact outwardly.

Adjacent the opposite end 43 of casing 7, base plate 6 has a second roll 26 mounted therein and extending outwardly from base 6 through an aperture for this purpose. It will be observed that the rolls 17 and 26 permit the casing to be rolled along a window pane 2. Immediately adjacent the end 43, casing 7 has a roll of metal measuring tape 27 mounted therein which may be extended from the casing 7. Rolls 32 and 34 of measuring tape also are provided on the opposite side edges of the casing. The three measuring tapes permit the casing 7 to be properly positioned at any desired point with respect to the surface of the window pane 2. At their outer ends, the measuring tapes 27, 32 and 34 may be provided with slidable chalk holders 28, 33 and 35 respectively to permit the pane 2 to be marked preliminarily to the application of tape 1 thereto.

The casing 7 is provided with laterally projecting handles 39 and 40 which may be engaged by the operator to move the casing along the window pane 2. A carrying handle 29 is provided on the outer wall of the casing. The outer wall of the casing also may be fitted with spirit levels 30 and 31 to enable the operator to properly lo-

cate the dispenser with respect to the window frame 3.

If the tape 1 to be dispensed is of a type which is not provided with adhesive S, the tape will move from the roll 10 along the surface of the adhesive tank 13 and under tape guides 12 and 15 to bear against an adhesive applying pad 14. Then the tape 1 moves beneath the tape bonding pressure roll 17. If the tape is of the type already provided with adhesive, the tape will move as indicated in dotted lines, that is, from roll 10 about a roll 11 and thence downwardly to the pressure applying roll 17.

The flange of the casing 7 may be provided with calibrated straight edges 36, 37 and 38 to assist in location of the casing 7 on a window pane 2.

In the use of the dispenser, after the lines along which the tape is to be applied have been determined by use of the measuring tapes 27, 32 and 34 and calibrated straight edges 36, 37 and 38, the end of the casing 7 will be so positioned with respect to the window frame 3 that the stapler 19 will bear upon the frame. With the tape 1 already drawn from the dispenser so that it will be positioned between the stapler 19 and the frame 3, stapler 19 may be operated to secure the tape 1 to the frame 3. Then the operator may move the dispenser across the window pane 2. During this motion, the dispenser will roll on the roll 26 as well as upon the pressure roll 17, the tape being drawn from the roll 8 and beneath roll 17 by the movement of the dispenser. During travel of the dispenser along the window pane 2, the cleaning pad 24 will so clean the pane that the adhesive 5 will adhere thereto and any surplus moisture will be removed by the squeegee 20. Thus, the tape 1 dispensed by roll 17 will be securely and permanently attached to the window pane 2.

When the dispenser has been moved entirely across a pane of glass 2 so that the end 42 is opposite the frame 3 at that end of the pane 2, the stapler 19 will be operated to staple the tape 1 to the frame 3, and the cutter 18 will be operated to cut the tape 1 in readiness for use of the dispenser to apply another line of tape.

An example of a suitable bonding agent is one of the polymers of acrylates and methacrylates, distinguishable from other resins by their colorless transparency, high elasticity, resistance to many reagents, and adhesive qualities. This resin is manufactured in the United States under the trade name of "Plexite." Another example of a suitable adhesive is an alkyd resin which also adheres well to glass, quartz and metals and may be made by heating together equimolar quantities of phthalic anhydride and ethylene glycol for twenty-four hours at 200 degrees centigrade.

The terminology used in the specification is for the purpose of description and not of limitation, the scope of the invention being defined in the claims.

What I claim as my invention is:

1. A dispenser for applying a relatively narrow adhesive-coated tape to glass window panes with strips of the tape extending generally between opposite sides of the window frame to reinforce the glass panes comprising a housing, a removable base plate secured to said housing having a tape dispensing aperture near one end thereof, a stub shaft secured at one side to said housing, and being disposed substantially parallel to said base plate, a tape drum carried by said stub shaft, access means in an opposite side of said housing through which the tape drum may be removed, means to guide tape from said drum to said aperture, a tape bonding roll mounted adjacent to said aperture about which tape may be passed, said bonding roll having a portion thereof projecting through said aperture to bear against the dispensed adhesive-coated tape and window pane, a stapling device mounted on said base plate within the housing, between the aperture and said end of the base plate, behind the tape-bonding roll, and being operable through an opening in said base plate, said opening being disposed directly above and in line with the tape which has been applied to the surface, a tape cutting knife mounted on said base plate between the aperture and the stapling device, also being operable through an opening in said base, tape measures supported on said base plate within said housing in perpendicular relationship with each other, and being extendable through openings in said housing, calibrated straight edges formed about the periphery of said base plate in perpendicular relationship with each other, spirit levels supported on said base plate in perpendicularly spaced relationship with each other, and means mounted on said casing for gripping said dispenser.

2. A tape dispenser comprising a housing having a base plate adapted to be positioned against a flat surface to which an adhesive-coated tape is to be applied, a tape drum roll journalled in said housing, said base plate being apertured, means to guide said tape from said drum to said aperture, a tape-bonding roll mounted within said aperture and about which the tape is dispensed, said tape-bonding roll having its periphery projecting outwardly beyond said plate to press the dispensed tape against the surface, a supporting roll in spaced parallel relationship with said tape-bonding roll, said supporting roll having its periphery projecting outwardly beyond said plate to permit said roll to bear on said surface, a tape cutting means mounted within said housing with the cutting means being operable through an opening in said base plate, and spirit levels supported on said base in perpendicular spaced relationship with each other to facilitate the application of the tape to the surface in the desired direction.

3. A tape dispenser of the character described in claim 1 including means supported on said base in the path of movement of the tape from the drum to the base plate aperture to apply adhesive to the tape.

4. A tape dispenser of the character described in claim 1 including means supported on the base plate and positioned to contact the window pane in the path of the tape being dispensed to clean and squeegee said window pane.

5. A tape dispenser of the character described in claim 1 including a supporting roll in spaced parallel relationship with said tape bonding roll, said supporting roll having its periphery projecting outwardly beyond said plate to bear and roll on said window glass surface.

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