

April 16, 1940.

C. E. TRULOCK
SAFETY SCREEN GUARD

2,197,489

Filed Sept. 14, 1938

2 Sheets-Sheet 1

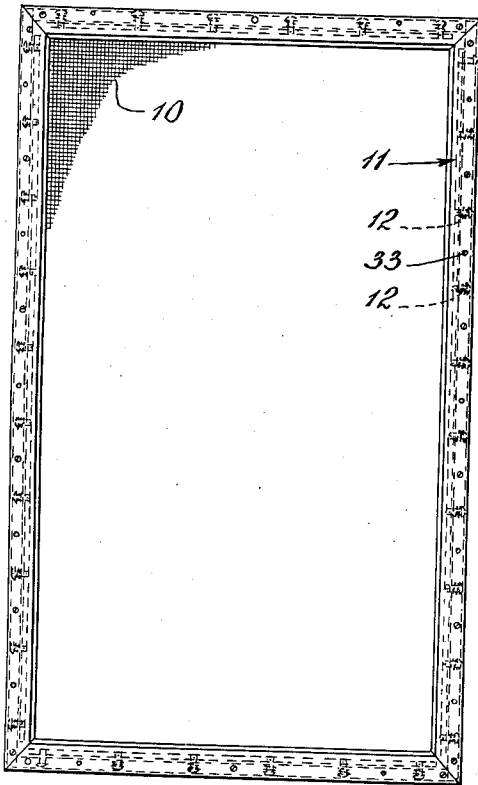


Fig. 1,

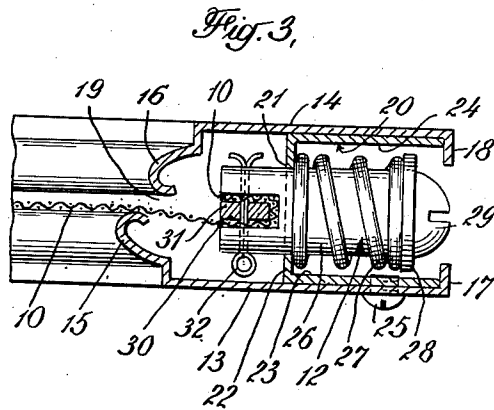


Fig. 3,

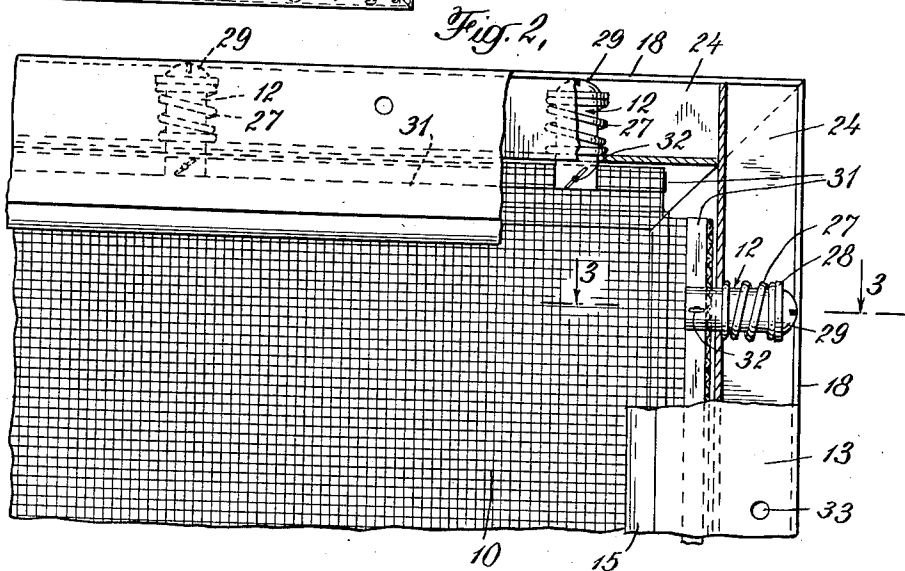


Fig. 2,

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Fig. 4,

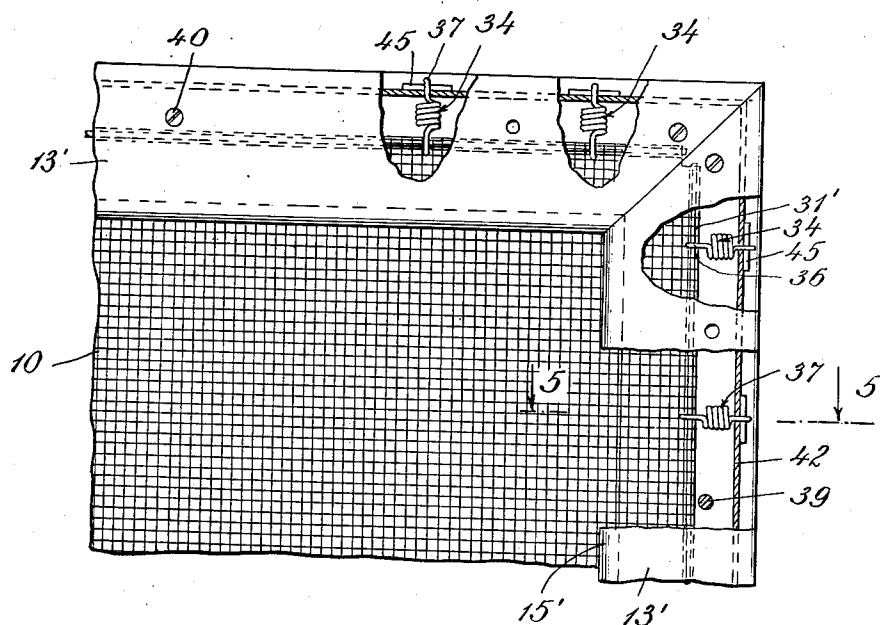


Fig. 5,

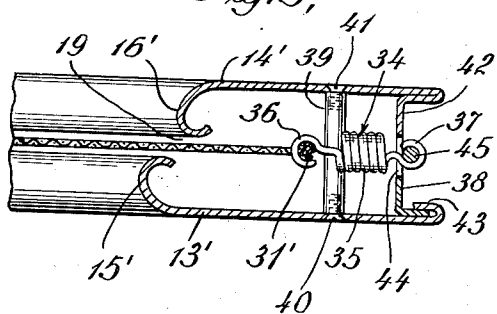
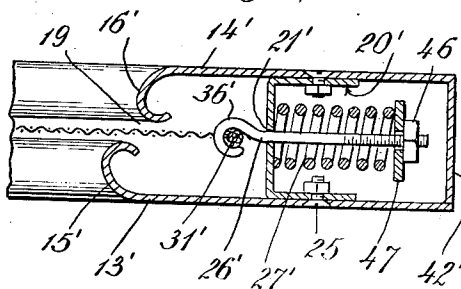


Fig. 6,



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SAFETY SCREEN GUARD

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Application September 14, 1938, Serial No. 229,845

12 Claims. (Cl. 156—14)

This invention relates to safety screen guards and has for its object certain improvements in the structure of screen guards that adapt them for use in asylums, hospitals, and the like.

It is now customary to use bars across windows, and even doors, of insane asylums, particularly in rooms set aside for violent inmates. Psychiatrists have determined that the placing of patients "behind bars" frequently has a bad psychological effect on them. In order to avoid this effect, it has recently been proposed to replace the bars with screens, because, when they come to such an institution, patients are already accustomed to rooms or houses screened to keep out flies and other insects.

An ordinary fly screen, however, is not sufficiently safe for this purpose. It may be broken by repeated pounding or pushing. It may also be burst open when patients hurl themselves against the screen. An ordinary screen, moreover, may be cut or broken by implements often available to patients, such as cutlery made of metal.

As a result of my investigations I have developed a screen guard that for the most part overcomes these and other difficulties. It is adapted to absorb impacts due to the type of pounding or pushing that a patient may resort to, and to minimize the danger of cutting.

My invention contemplates a screen provided with a plurality of spaced shock-absorbers around its outer edge portion. The shock-absorbers are advantageously secured to and concealed within a frame surrounding the outer edge portion of the screen proper. In a present preferred embodiment of the invention, the frame consists of two superposed and spaced face members. These members are advantageously of unequal width so as to minimize the danger of cutting the screen along the free frame edge.

These and other features of the invention will be better understood by referring to the attached drawings, taken in conjunction with the following description, in which

Fig. 1 is a front elevation of a screen guard illustrative of a practice of the invention;

Fig. 2 is an enlarged sectional view of a corner of the screen guard of Fig. 1, in which fragments are broken away to show a compression spring arrangement;

Fig. 3 is an enlarged sectional view on the line 3—3 of Fig. 2, showing the compression spring arrangement in detail;

Fig. 4 is a front elevation in part of a modified safety screen guard illustrative of a practice of the invention;

Fig. 5 is an enlarged sectional view on the line 5—5 of Fig. 4, showing a tension spring arrangement; and

Fig. 6 is an enlarged sectional view showing a compression spring arrangement that may be employed in another modification of the invention.

Referring first to Fig. 1, the guard shown comprises a screen 10 mounted within a frame 11. The screen guard shown is rectangular in shape, and is therefore adapted to fit within the frame of a conventional window, porch, or door. A plurality of shock absorbers 12, each fastened to the screen, are spaced within and around the frame. The screen is made of suitable material, preferably metal. Special metal alloys have been developed to make screens of unusually great strength and durability. The mesh of the screen is preferably fine enough to act as a fly or insect screen.

As shown more particularly by Fig. 3, the frame consists of an outer casing and an inner channel. The outer casing comprises an inside face member 13 and an outside face member 14 spaced from one another so as to provide an inside space or longitudinal recess for the mounting of the inner channel and the shock absorbers. The inside and outside face members are of unequal width, the inside face being wider than the outside face, and are provided with rounded shoulder portions 15 and 16, as shown, the free edges of which point inwardly within the frame, at one end, and with right angle lugs 17 and 18 at the other end respectively. The shoulders are spaced apart to provide a slot or free space 19 through which the screen extends. This space is sufficiently wide to permit free movement of the screen forwardly and laterally.

As noted above, the frame also includes an inner channel 20 provided with a plurality of spaced holes 21 in the web 22 of the channel through which the shock absorbers may operate. The flanges 23 and 24 of the inner channel fit against the inside and outside faces and against the lugs 17 and 18. The inner channel is secured to the face members by a suitable number of spaced screws 25.

Each shock absorber 12 consists of an anchoring member 26 that extends through hole 21 in the web of the inner channel, and is provided with a suitable compression spring 27 mounted around its exterior. The spring is held in place at the free end of the anchoring member by abutment against a protruding washer 28 fastened by means of a head screw 29. The spring

rests at its other end against the inside web of the inner channel, around hole 21. The shock absorbers are in this manner securely anchored within the frame.

5 Each anchoring member is provided with a transverse slot 30, which freely accommodates a screen-holding and shock-distributing bar 31, and two thicknesses of the screen, bent around the bar as shown. A cotter pin 32 extends
10 through the anchoring member, the bar, and the two thicknesses of screen. The screen is in this manner securely anchored to the shock-absorbers around the entire frame, and is thereby placed under tension.

15 The inner channel and the screen-holding and shock-distributing bar advantageously extend substantially the full length, or width, of the frame. A plurality of holes 33, preferably spaced between the shock absorbers, are provided around
20 the frame to receive screws with which to fasten the screen guard in a window, porch, or door frame. In case it is desired to have the screen guard swingable, the frame may be attached to a building by means of suitable hinges, and locks.

25 In the modified form of construction shown in Figs. 4 and 5, the screen 10 is provided with screen-holding and shock-distributing bars or beads 31' secured along its perimeter and a plurality of spaced tension springs 34 securely anchored thereto. Each spring is provided with a
30 coil 35, a hook-end 36 to anchor around or into the bar, and a free-end 37 to fit through the side of the frame. The outer casing of the frame consists of inside face member 13' secured to
35 outside face member 14' by means of bent-around side 38. The face members are provided with rounded shoulders 15' and 16' respectively. Instead of rounding the shoulders, they may be bent back V-shaped and still provide a space for
40 the screen and its free movement as the springs are operated.

The face members are kept in suitable spaced relationship by means of spacers 39 and retaining screws 40 and 41 which may be counter-
45 sunk flush with the outside faces of the frame. Other means may, of course, be employed to spread the face members. The springs may be spaced midway between the rivets.

In the structure illustrated, the outside face member 14' is provided with a bent-around side
50 42, the free edge of which fits tightly into bent-over portion 43 of the inside face member 13'. The bent-around side is provided with slots 44, smaller than the diameter of the coil springs, through which eye-end 37 of the springs may be
55 inserted. Pins 45 are adapted to be inserted into the eyes and thus lock the springs securely to the frame. Any suitable means, such as mentioned above, may be employed in conjunction
60 with the frame to attach the screen to a window, porch, or door frame.

Referring to the modification of Fig. 6, the frame likewise consists of an inside face 13' and an outside face 14' of unequal widths, the former
65 being the wider of the two. They are provided with round shoulders 15' and 16' respectively, and a space 19 between the shoulders to receive the screen. This space is sufficiently wide to permit free movement of the screen.

70 A compression spring 27' is mounted around a pin 26' fitting through a hole 21' in an inner channel 20' fitting snugly between the inside and outside faces of the frame. The pin is provided with a hook-end 36', the other end of the pin being
75 threaded to receive a nut 46. A washer 47

fits between the nut and spring. The channel functions as a spacer for the faces of the frame, and as a stop to lateral movement of the spring. It may be secured to the frame faces in any suitable manner, such as with counter-sunk screw
5 bolts, rivets, or by spot welding. Outside face 14' is provided with a bent-over end 42'. A sufficient amount of space between the end of the pin and the bent-over end permits tightening of nut 46 to take up slack in the screen. As in
10 the above-described modification, enough space is provided within the frame to prevent free movement of the hook-end when the springs are called upon to function.

In the present practice of the invention of the
15 safety screen guard of Figs. 1, 2, and 3, the inner channel of the frame is made of sheet metal of not less than No. 14 gauge, and the face members of the outside casing are made of sheet metal of not less than No. 16 gauge. The shock-ab-
20 sorbers have a minimum capacity of 175 pounds per inch of movement, and are mounted in the frame at approximately eight-inch centers. They are made of brass pistons. Brass cotter pins are employed. The springs, screws,
25 and washers are heavily cadmium plated to resist corrosion. The wire mesh employed for the screen is made of special stainless steel alloy compounded to produce high corrosion resistant wire of not less than 100,000 pounds tensile strength
30 per square inch. The wire is woven into a mesh screen having an open area of about 43%, with double crimped crossings and a tensile strength of not less than 700 pounds per linear inch.

It will be seen that a screen of the character
35 described is adapted to absorb impacts due to pounding and intermittent pushing, such as are to be expected from patients in an asylum. The numerous shock-absorbers tend effectively to take up the shock of such impacts, and little damage
40 can be done to the screen proper. The screen-holding and shock-distributing bar 31 tends to distribute the shock and impact forces widely over the screen, thus preventing their localization at a single point or area. At the same time,
45 the screen functions to keep out insects.

If a patient should attempt to cut the screen along the frame edge, he will find that the screen tends to give and does not afford a tight grip
50 conducive to cutting. In other words, the rounded shoulders 15 and 16, and the manner in which one is offset from the other, do not afford a sharp edge along which to cut, as would be the case if the screen were conventionally gripped between
55 two square-shouldered frame members.

Moreover, the edges of the screen guard are preferably secured within the recess between the inside and outside face members of the frame and sufficiently removed from the slot or free space
60 19 to enable the guard screen, when under pressure in either direction, to contact with a rounded shoulder at the edge of the slot without injury to the screen.

A building provided with screen guards of the invention does not have the appearance of the
65 conventional "jail-like" institution, but instead presents to patients and public alike a normal appearance of windows, porches, and doors. Screens are customary residential equipment, and the present screen guards therefore contribute
70 to the home-like atmosphere that hospitals strive to present. The screens appear as ordinary screens, but supply in an unobtrusive way the needed guard service. They can be applied to any window, wood or metal, either outside or
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inside. Those permanently attached are secured to the building by screws or the like inaccessible to the patient. Hinged screen guards may be employed, to open in or out, that are provided with suitable locks. The present screens have a beneficial psychological effect upon patients, give windows, doors or porches an atmosphere of home-like comfort, and remove all indication of enforced restraint.

While the screens of the invention are particularly adapted for use in insane asylums, especially for rooms for violent patients, they may, of course, be used in other places, such as prisons, reformatories, hospitals, hotels, apartment buildings, homes, etc. These screens are not only adapted to keep people from leaving a building through a window, porch or door, but they may, of course, also be used to prevent people from entering a building through a window, porch or door.

It will be clear to those skilled in this art that the specific embodiments of the invention above described are only illustrative of the invention and that variations in structure are possible without departing from the spirit of the invention.

This application is a continuation-in-part of my copending application Serial No. 92,537, filed July 25, 1936.

I claim:

1. A guard for windows and the like, comprising a rigid, substantially rectangular frame, a guard member of woven wire having a mesh comparable to that of fly screening stretched across said frame, said frame comprising top, bottom and side members substantially U-shaped in cross section, said U-shaped members having the legs thereof extending outwardly, anchoring members slidably extending through the bases of said U-shaped members, means for connecting the inner end of said anchoring members to the guard member, and compression springs positioned within said U-shaped members and interposed between the outer end of said anchoring members and the bases of said U-shaped members for urging said anchoring members outwardly to maintain the guard member under tension and to yieldingly resist distortion of the guard member from its normal plane.

2. A guard for windows and the like, comprising a rigid frame, said frame comprising spaced inside and outside members, with the inside member extending inwardly from the edge of the frame a greater distance than the outside member, a guard member of woven wire having a mesh comparable to that of fly screening stretched across said frame and having its edges received between said inside and outside members, and spring means located between said inside and outside members and yieldingly securing the guard member to the frame.

3. A guard for windows and the like, comprising a rigid frame, said frame comprising spaced inside and outside members, with the inside member extending inwardly from the edge of the frame a greater distance than the outside member, a guard member of woven wire having a mesh comparable to that of fly screening stretched across said frame and having its edges received between said inside and outside members, transverse members extending between said inside and outside frame members, spring means located between said spaced frame members and yieldingly securing the guard member to said transversely extending members.

4. A guard for windows and the like, comprising a rigid frame, said frame comprising spaced inside and outside members, with the inside member extending inwardly from the edge of the frame a greater distance than the outside member, a guard member of woven wire having a mesh comparable to that of fly screening stretched across said frame and having its edges received between said inside and outside members, transverse members extending between said inside and outside frame members, anchoring members slidably extending through said transversely extending members, means for connecting the inner ends of said anchoring members to the guard member, and compression springs positioned between said spaced inside and outside members and interposed between the outer ends of said anchoring members and the transversely extending members for urging said anchoring members outwardly to maintain the guard member under tension, and to yieldingly resist distortion of the guard member from its normal plane.

5. A guard for windows and the like, comprising a rigid frame having spaced inner and outer side members, transverse members extending between said inner and outer side members, a guard member of woven wire stretched across said frame and having its side edges received between the inner and outer side members of the frame, rigid members secured to the side edges of said guard member throughout the greater portion of the lengths of said edges, anchoring members slidably extending through said transverse members, means for connecting said anchoring members to said rigid members, and springs acting upon said anchoring means for maintaining said guard member under tension.

6. In a device of the character described, the improvement comprising a frame, a screen, and a plurality of shock absorbers connecting the perimeter of the screen with the frame, said frame consisting of an outer casing with an inside face and an outside face spaced apart by means of a spacing member attached to the outer casing, said shock absorbers being mounted within the outer casing between the inside and outside faces, the inner edge portions of the inside and outside faces being in the form of rounded shoulders, and the inside face being wider than the outside face.

7. In a detention guard of the character described, for the windows and doors of insane asylums and the like, the improvement comprising a rigid rectangular frame with an inner and outer wall spaced apart to provide a recess, a guard member of woven shock-absorbing and distributing wire having a mesh comparable to that of fly screen stretched across the frame, the perimeter of the screen being located within said recess, said frame being provided across its interior with spacing and supporting members, a plurality of spaced anchoring members slidably extending through said spacing and supporting members, means for connecting the inner end of each anchoring member to the guard screen, and a compression spring interposed between the outer end of each anchoring member and said spacing and supporting members for urging said anchoring members outwardly to maintain the guard screen under tension.

8. A detention guard for the windows and doors of insane asylums and the like, comprising a rigid frame, each side of which includes spaced inner and outer face members and a transverse spac-

ing and connecting member positioned between said inner and outer face members, a guard screen of woven wire stretched across said frame and having its side edges received between the inner and outer face members of the frame, rigid shock-distributing members secured to side edges of the guard screen, said shock-distributing members extending throughout the greater portion of the lengths of said side edges of the guard screen, and a plurality of spaced anchoring means connecting each rigid, shock-distributing member along the sides of the guard screen to the corresponding side of the frame, said anchoring means including spring means for maintaining said guard screen under tension, whereby an impact force at any place on the screen due to pounding, pushing, striking and the like, such as are expected from mentally deranged patients, is distributed widely over the entire screen to substantially all of said spring means, thereby preventing localization of the impact forces at a single point or area.

9. In a detention guard of the character described for the windows and doors of insane asylums and the like, the improvement comprising a screen, a frame, and a plurality of shock absorbers, the screen being provided along its perimeter with screen-holding and shock-distributing members, the frame comprising inner and outer casing members forming a slot and recess to receive and surround the perimeter of the screen and the shock-absorbers, the inner portion of the outer casing member forming a smooth bearing surface against which the screen is adapted to bear without injury to the screen, the shock absorbers being disposed in spaced relationship around and mounted between the perimeter of the screen and the frame, whereby impact forces due to pounding, pushing, striking and the like, such as are to be expected from mentally deranged patients, are distributed widely over the entire screen to substantially all of the shock absorbers, thus preventing localization of the impact forces at a single point or area.

10. In a detention guard of the character described, for the windows and doors of insane asylums and the like, the improvement comprising a frame, a shock-absorbing and distributing guard screen, the perimeter of said screen being mounted within the frame, said frame consisting of a body structure and means to retain the guard screen in place therein including a plurality of shock-absorbing and distributing spring means mounted for yielding movement in a direction generally parallel to the plane of the guard screen and cooperating with the screen to yieldingly maintain it in a taut condition, said guard screen being adapted to withstand impact forces due to pounding, pushing, striking and the like, such as are to be expected from mentally deranged patients, without injury to the guard screen by any portion of said frame.

11. A detention guard for the windows and doors of insane asylums and the like, comprising a substantially rectangular frame having inside

and outside members shaped to provide a recess longitudinally thereof, the inner edges of said members being disposed in spaced relation with respect to one another and forming a longitudinal slot opening into said recess, the inner edge of at least one of said members forming means having a rounded surface against which the guard screen is adapted to bear without injury thereto, a shock-absorbing and distributing guard screen stretched across said frame with the top, bottom and side edges thereof disposed within said slot and recess, rigid screen-holding and shock-distributing members secured to the top, bottom and side edges of said screen guard, and a plurality of shock-absorbing and distributing spring means cooperating with each of said rigid members and yieldably securing the edges of the guard screen in said frame at a point within said recess and sufficiently removed from the adjacent edge of said slot to enable the screen when under pressure, and if occasion requires, to contact said rounded surface at the edge of said slot without injury to the guard screen, whereby impact forces due to pounding, pushing, striking and the like, such as are to be expected from mentally deranged patients, are distributed widely over the entire screen to substantially all of said spring means thus preventing localization of the impact forces at a single point or area.

12. A detention guard for the windows and doors of insane asylums and the like, comprising a substantially rectangular frame having inside and outside members shaped to provide a recess longitudinally thereof, the inner edges of said members being disposed in spaced relation with respect to one another to form a longitudinal slot opening into said recess, the inner edges of each of said members forming means having a rounded surface against which the guard screen is adapted to bear without injury thereto, a shock-absorbing and distributing guard screen of woven wire having a mesh comparable to that of fly screen stretched across said frame with the top, bottom and side edges thereof disposed within said slot and recess, rigid screen-holding and shock-distributing members secured to and extending throughout substantially the length of the top, bottom and side edges of said screen guard, and a plurality of shock-absorbing and distributing spring means cooperating with said rigid members and yieldably securing the edges of the guard screen in said recess at a point sufficiently removed from said slot to enable the guard screen when under pressure, and if occasion requires, in either direction to contact with a rounded surface at the edge of said slot without injury to the same, whereby impact forces due to pounding, pushing, striking and the like, such as are to be expected from mentally deranged patients, are distributed widely over the entire screen to substantially all of said spring means thus preventing localization of the impact forces at a single point or area.

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