July 11, 1933. H. E. WILLIAMS ET AL 1,918,073

WINDOW SCREEN

Filed Jan. 30, 1932 2 Sheets-Sheet 1

Fig 1

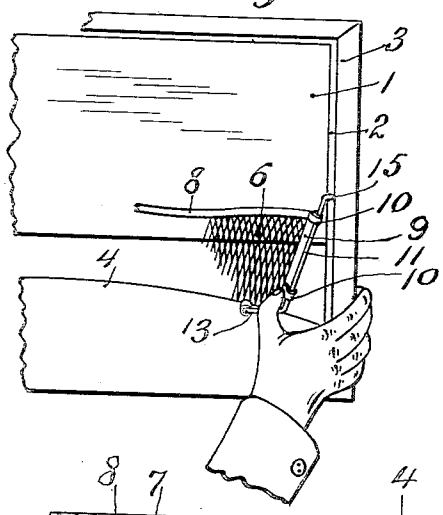


Fig 2

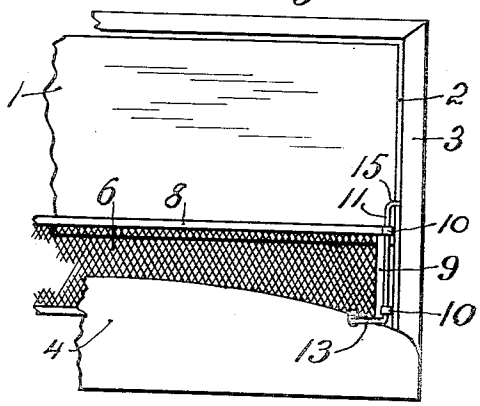


Fig 3

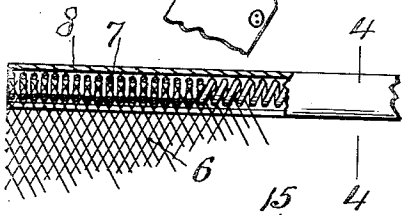


Fig 4



Fig 5

Fig 6

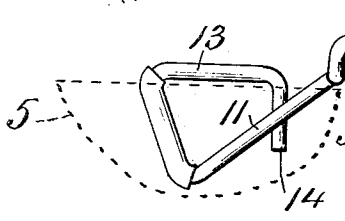
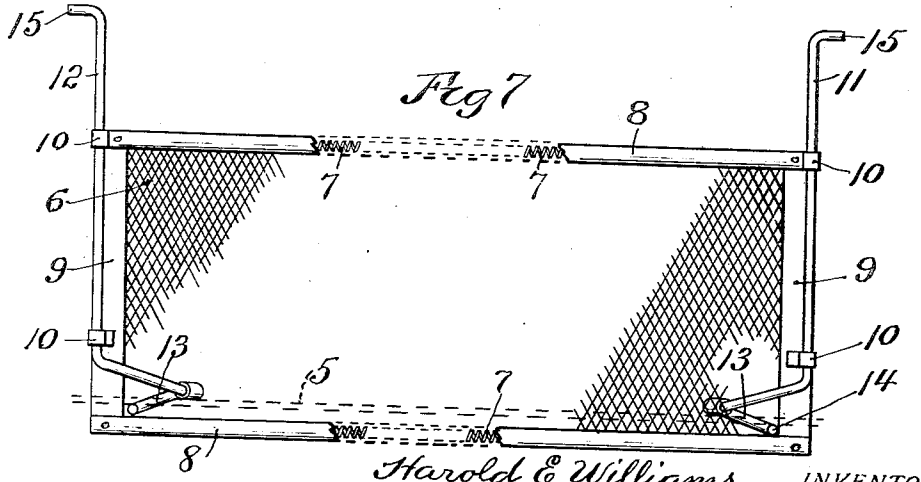


Fig 7



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WINDOW SCREEN

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Fig 8

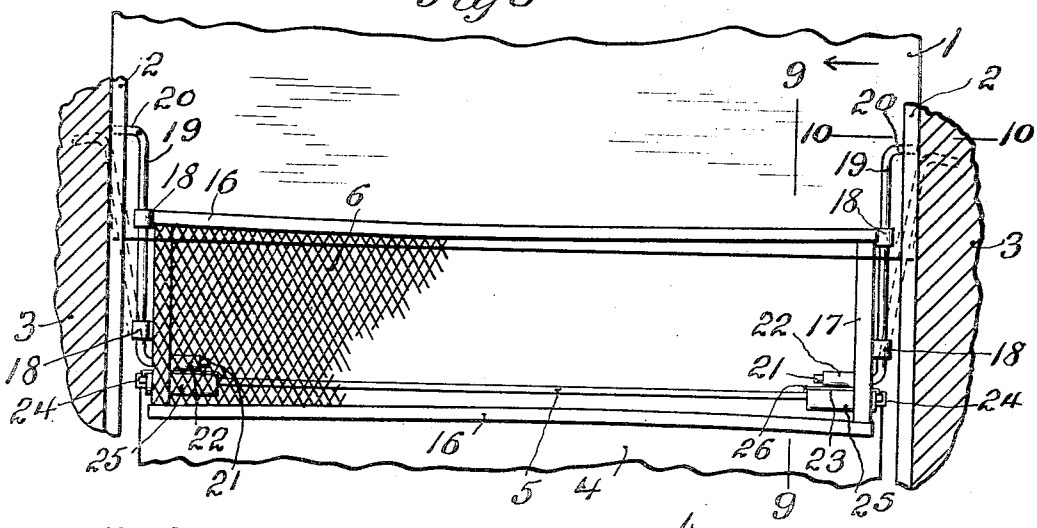


Fig 9

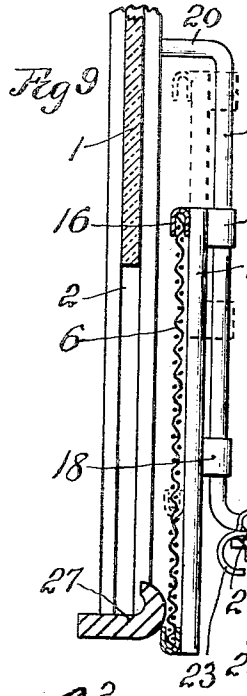


Fig 11

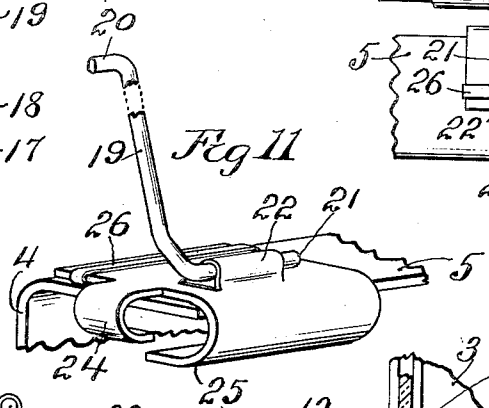


Fig 10

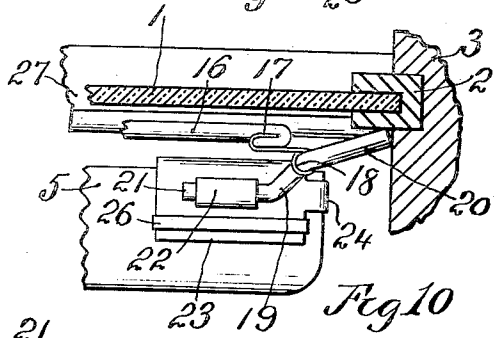


Fig 13

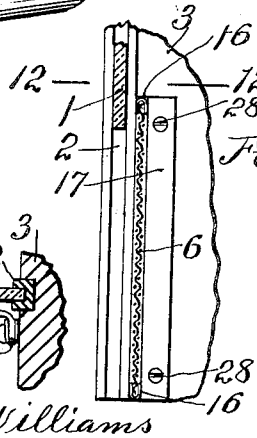


Fig 12

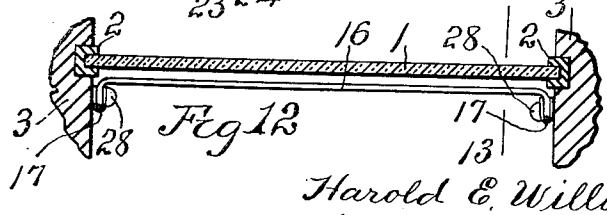
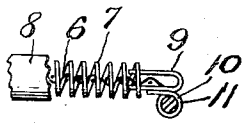


Fig 14



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UNITED STATES PATENT OFFICE

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WINDOW SCREEN

Application filed January 30, 1932. Serial No. 589,810.

Our invention relates to improvements in window screens. It relates particularly to elastic screens and methods of making same.

One of the objects of our invention is to provide a novel screen of the kind described, which is simple, cheap, durable, not likely to get out of order, which is adapted for windows of different widths and for easy and secure attachment to automobiles of different types, which does not require in its use any alteration of the automobile, and which can be easily and quickly applied to or removed from its operative position by an unskilled person. It also provides a novel method of making the screen.

The novel features of our invention are hereinafter fully described and claimed.

In the accompanying drawings illustrative of the preferred embodiment and modifications of our invention,

Fig. 1 is an inside elevation of a portion of a screen embodying one form of our invention, shown partly applied to a windshield window.

Fig. 2 is a similar view of the same form shown in operative position.

Fig. 3 is an enlarged view, partly in elevation and partly in section of the screen shown in Figs. 1 and 2.

Fig. 4 is a section on the line 4—4 of Fig. 3.

Fig. 5 is an outside elevation, enlarged, and partly broken away, of the screen fastening device shown in Figs. 1 and 2, shown applied to the cowl, a part of which is shown.

Fig. 6 is a top view of the same.

Fig. 7 is an inside elevation, partly broken away, of the screen illustrated in Figs. 1 to 6.

Fig. 8 is an outside elevation of a modification of our invention, shown mounted in a windshield window, part of the wire netting being omitted.

Fig. 9 is an enlarged vertical section on the plane of the line 9—9 of Fig. 8.

Fig. 10 is a section, enlarged, on the line 10—10 of Fig. 8.

Fig. 11 is an enlarged perspective view, partly broken away, of the screen fastening device, shown at the right in Fig. 8, mounted on a portion of the cowl.

Fig. 12 is a horizontal sectional view, on the line 12—12 of Fig. 13, of another modification of our invention, shown mounted in a window, portions of the jambs of which are shown.

Fig. 13 is a section on the line 13—13 of Fig. 12.

Fig. 14 is an enlarged view, partly in cross section, of an upper corner portion of the screen shown in Fig. 1.

Similar characters of reference designate similar parts in the different views.

Referring to Figs. 1 to 7, 1 designates the usual windshield vertically slidable in guides 2 of the jambs 3 of an automobile windshield window. 4 designates that rear portion of the cowl of the machine which is located at the inner side of the windshield and at the lower part of the window. In the form shown in Figs. 1, 2 and 5, this portion of the cowl 4 is provided at its upper part with a forwardly extending flange 5.

The parts just referred to are parts of a machine of a type in general use.

For screening the opening below the windshield 1, when the latter is raised, as shown in Figs. 1 and 2, we provide a screen comprising the following described parts.

6 designates woven wire netting of a fineness, as shown, adapting it to exclude insects, such as flies, bugs or mosquitoes and adapted to be extended lengthwise across a window opening, such as is normally closed by the windshield 1. The crossed wires of the netting 6 are disposed obliquely to the longitudinal edges of the netting, whereby the netting is adapted for extension or contraction in length. Said longitudinal edges of the netting 6 are fastened to longitudinal elastic binding, which as shown in Figs. 3, 4 and 7 comprises two longitudinal spiral springs 7 which are respectively fastened to the folded over longitudinal edges of the netting 6 by being screwed lengthwise into longitudinal engagement with the meshes of said folded over portions.

Two elastic tubes 8, preferably of soft rubber, respectively embrace said springs 7,

said tubes being longitudinally slit, the longitudinal edge portions of the netting 6 being respectively extended through the slits of the tubes, as shown in Figs. 3 and 4. The ends of the rubber tubes 8, as are the ends of the spiral springs 7, are fastened to two folded end plates 9 between which are respectively fastened the ends of the netting 6.

For holding the longitudinally elastic screen so formed stretched in operative position, as shown in Fig. 2 across the window opening, the end plates 9 each has fastened to it two ring clips 10. The two pairs of ring clips 10 are respectively slidably mounted on two screen holding devices, comprising, as shown in Figs. 1, 2, 5, 6 and 7, two wire members 11 and 12, each having at its lower end a hook 13 adapted to rest on the top of the flange 5, of the cowl 4, and each having a rearwardly extending arm 14 adapted to engage the under side of the flange 5. The upper ends of the members 11 and 12 are provided respectively with two laterally outwardly extending arms 15 adapted to respectively bear against the jambs 3 and rear sides of the windshield guides 2.

The hooks 13 of the wire members 11 and 12 are reversely disposed, as shown in Fig. 7, with the arms 14 at the outer sides laterally of the points at which the hooks bear upon the upper side of the flange 5, whereby, when the screen is stretched, as shown in Fig. 2, the elastic tension of the screen will cause the hooks 13 to crampingly engage the upper and lower sides of the flange 5, thereby holding the screen stretched in its operative position.

In mounting the screen shown in Figs. 1 to 7, the screen, which is normally shorter than the width of the window opening across which it is to be stretched, has the hooks 13 mounted on the cowl flange 5 with the arms 14 engaging the under side of the flange, after which the members 12 and 11 are forced laterally outwardly to the vertical position, shown in Figs. 1 and 7 with the arms 15 respectively bearing against the jambs 3 and against the inner sides of the guides 2. The hooks 13 crampingly engaging the flange 5 will firmly hold the screen stretched in this operative position, the netting 6, by reason of its wires being oblique to the length of the screen and to the springs 7, permitting of the extension of the netting with the rubber tubes 8 and the spiral springs 7.

In the form shown in Figs. 8 to 11, the netting 6 has binding at its upper and lower longitudinal edges comprising folded elastic fabric 16 sewed or otherwise secured to said edge portions. The wires of the netting are disposed oblique to the longitudinal bound edges, so that the netting is extensible and contractible as to length, the elastic binding 16 serving to normally contract the screen. By having the elastic binding folded over and embracing and attached to opposite side edge portions of the netting, as shown in Figs. 11 and 14, a smooth finish is imparted to such edge portions and the ends of the wires of the netting are protected and prevented from catching the clothing or scratching the hands of a person handling the screen.

To hold the screen stretched across a window, two upright channel plates 17, having their channels facing outwardly, clamp the ends of the netting 6 and the binding 16, Fig. 10.

Each plate 17 has a ring clip 18 vertically adjustable on an end supporting member 19 comprising a wire having at its upper end a laterally outwardly extending arm 20 adapted to bear against the adjacent jamb and against the inner side of the windshield guide 2. The lower ends of the members 19 are respectively provided with two inwardly extending arms 21 respectively pivoted in two loops 22 provided on the upper sides respectively of two anchoring plates 23 which rest on the top of the flange 5, and are provided each at its end with a downwardly extending hook 24 adapted to releasably engage the adjacent end of the flange 5 to hold the screen stretched. The forward edge of each anchoring plate 23 has a downwardly extending forwardly turned flange 25 adapted to releasably engage the front edge of the cowl flange 5, for holding the anchoring plate 23 from rearward movement.

A rubber band 26 encircles each plate 23 lengthwise thereof and bears against the flange 5 to protect the latter from being marred by the plate 23.

The screen, as shown in Fig. 9 extends below the cowl flange 5 and at its front side bears against the rear edge of a rubber seat 27 on top of the cowl and against which the lower edge of the windshield 1 rests when in the lowered position.

In Figs. 12 and 13 is shown another modification similar to the one shown in Figs. 8, 9 and 10, provided with the elastic screen having the netting 6 bound at its upper and lower edges by elastic binding 16, and having at its ends the end plates 17, which are respectively attached to the jambs 3 by screws 28.

In each form of the invention the screen extends, as shown, above the lower edge of the windshield 1 when the latter is raised.

By having the screens shown in Figs. 1, 8 and 13 longitudinally elastic, they are adapted to be fitted to windows of different widths and are held stretched and under tension.

We do not limit our invention to the struc-

tures shown and described, as other modifications, within the scope of the appended claims may be used, without departing from the spirit of our invention.

What we claim is:—

1. An elastic screen comprising two longitudinal spiral springs, and a longitudinally extensible and contractible woven wire screen having folded opposite longitudinal edge portions with which said springs have respectively interwoven engagement.

2. An elastic screen comprising two longitudinal spiral springs, a longitudinally extensible and contractible woven wire screen opposite longitudinal edge portions of which have respectively interwoven engagement with said springs, and two longitudinally slit elastic tubes respectively encircling said springs and through the slits of which said edge portions respectively extend.

3. A longitudinally elastic woven wire screen, and means adapted for releasable holding engagement with the cowl of an automobile for holding the screen stretched across the front window opening of the automobile.

4. A longitudinally elastic woven wire screen, and two devices respectively attached to the ends of the screen and having means adapted for engagement with the cowl of an automobile and with the jambs respectively of the front window of the automobile for holding the screen stretched across the front window opening.

5. A woven wire screen, and two devices respectively attached to the ends thereof and having means for releasably lockingly engaging the cowl of an automobile, whereby the screen is adapted to be held stretched across the front window opening of the automobile.

6. A woven wire screen, and two devices respectively attached to the ends thereof, each of said devices having means adapted to releasably crampingly engage the upper and lower sides of a portion of the cowl at the rear of the front window of an automobile, whereby the devices are held from movement toward each other and the screen is held stretched across the front window opening.

7. A woven wire screen, and two devices respectively attached to the ends thereof, each of said devices having a hook adapted for releasable holding engagement with a portion of the cowl at the rear of the front window of an automobile, whereby the screen is adapted to be held stretched across the front window opening.

8. A woven wire screen, and two devices respectively attached to the ends thereof, each of said devices having a hook adapted to rest on the upper side of a forwardly extending portion of the cowl at the rear of the front window of an automobile, and having an arm adapted to extend under and engage the under side of said portion, whereby said hook is adapted to lockingly engage said portion and be held thereby from movement thereon in one direction.

In testimony whereof we affix our signatures.

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