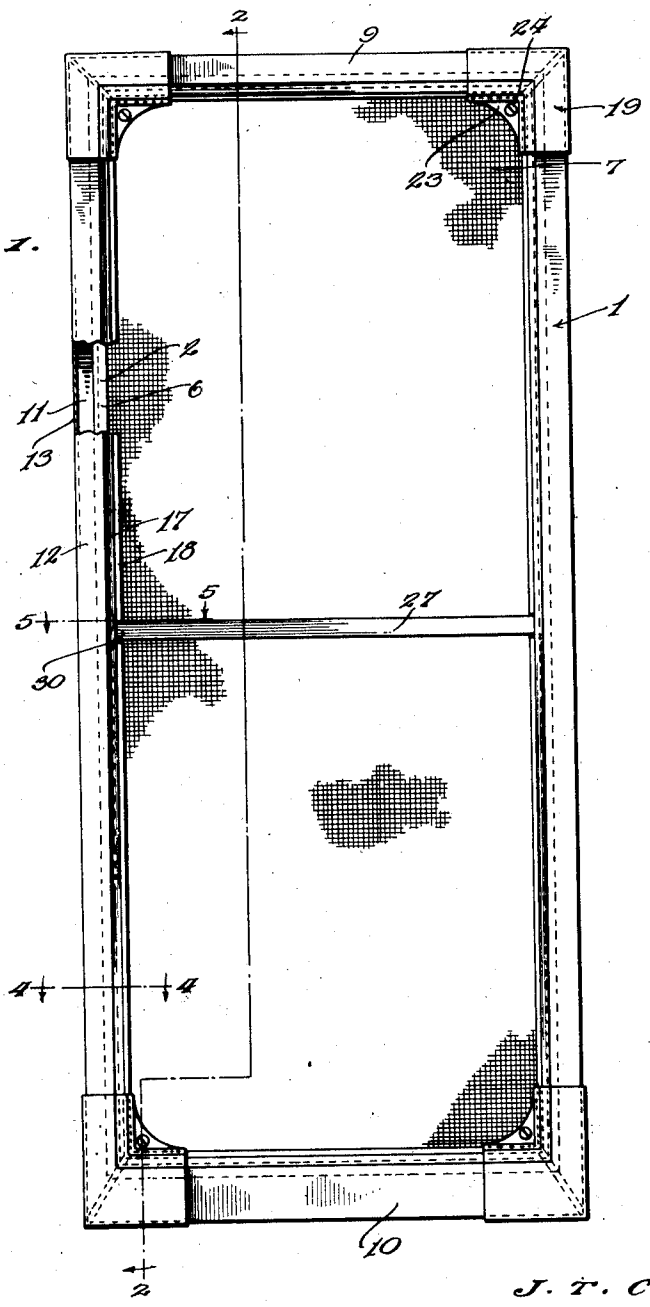
June 14, 1927. 1,632,022

J. T. COOK

WINDOW SCREEN

Filed May 6, 1926 2 Sheets-Sheet 1

Fig. 1.



Inventor

J. T. COOK.

By Lacey & Lacey, Attorneys

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J. T. COOK

WINDOW SCREEN

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Fig. 2.

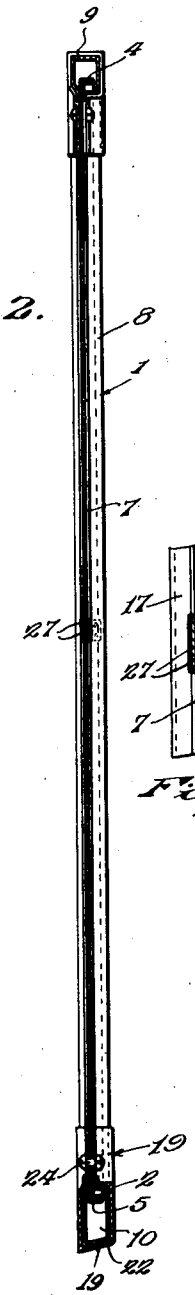


Fig. 3.

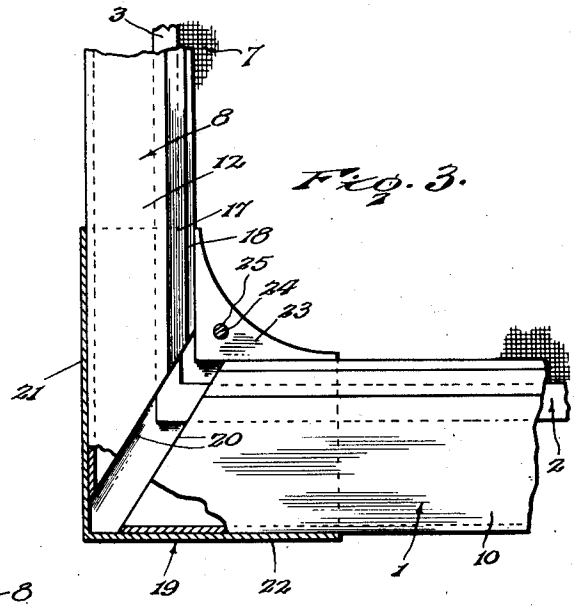


Fig. 6.

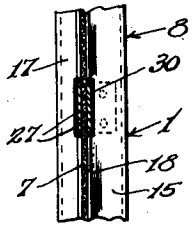


Fig. 4.

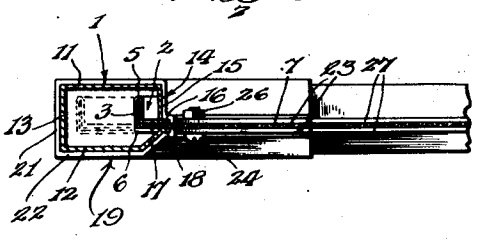
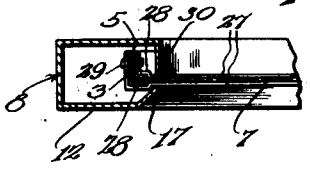


Fig. 5.



Inventor

J. T. Cook.

By Lacey & Lacey, Attorneys

Patented June 14, 1927. 1,632,022

UNITED STATES PATENT OFFICE.

JOHN THOMAS COOK, OF HOWELL, MICHIGAN, ASSIGNOR OF ONE-HALF TO FRANK J. FINCH, OF JACKSON, MICHIGAN.

WINDOW SCREEN.

Application filed May 6, 1926. Serial No. 107,220.

This invention relates to improvements in window screens and more particularly to that type generally known as "full size" screens or, in other words, those which are designed to occupy the entire space of the window frames in which they are installed. It not infrequently happens that a screen constructed to fit a window frame of given dimensions will be found incapable of installation in the frame either due to inaccuracy in the dimensions of the screen or to irregularities in the presumed dimensions of the window frame due to settling or other causes, and it then becomes necessary to plane or otherwise machine the frame of the window screen or otherwise make alterations therein which may result in the necessity of piecing or overlapping the mesh of the screen, rendering it unsightly and likewise frequently leaving open spaces through which insects may enter. Furthermore, such screens are, when constructed of wood, subject to warping, as result of which they are rendered unfit for use without alterations being made. Likewise, if stock screens of standard sizes are not available, it becomes necessary to manufacture the frame and properly stretch the screen material within the same, and this requires time and skilled labor which adds materially to the cost of the screens. Therefore, the present invention has as its general object to provide a screen of the type which may be accurately adjusted to fit within a window frame of approximate given dimensions without the necessity of in any way altering the frame of the screen by machining or other mechanical methods.

More particularly, the invention has as its general object to provide a screen of the type referred to above which, by a simple adjustment of its frame members, may be adapted to fit any window frame of a standard size within reasonable limits regardless of distortion of the frame such as might be anticipated, and that this result may be accomplished without in any way necessitating restretching of the screen material and without the necessity of resorting to machining of the screen frame or any alteration thereof except an extremely simple adjustment of its component parts, which may be effected by the most inexperienced person.

Another object of the invention is to provide a screen, the frame of which will be adjustable in the sense that it may be adapted to fit accurately within a window frame approximating given standard dimensions, without in any way disturbing the screen material or fabric or causing any distortion thereof and in which, notwithstanding the adjustment provided for, the screen material may consist of one integral sheet so that no overlapping or seams will be necessary in making the desired adjustment.

Another object of the invention is to provide a window screen of the type referred to so constructed that there can be no buckling or other distortion of the screen material in the event of sagging or settling of the window frame after the screen has been installed, the screen likewise being so constructed that any such distortion of the window frame may be compensated for by an adjustment of the screen parts.

Another object of the invention is to so construct the screen that the auxiliary frame thereof or, as will presently be explained, the frame which actually carries the screen material, together with the material stretched therein, may be replaced in the event the screen material becomes torn or deteriorates, without the necessity of supplying a new main frame.

In the accompanying drawings:

Figure 1 is a view in elevation of a screen constructed in accordance with the invention, a portion of one of the side members of the main frame being broken away.

Figure 2 is a vertical sectional view taken substantially on the line 2—2 of Figure 1, looking in the direction indicated by the arrows.

Figure 3 is a detail view partly in elevation and partly in section, illustrating one corner of the screen structure.

Figure 4 is a detail horizontal sectional view taken substantially on the line 4—4 of Figure 1, looking in the direction indicated by the arrows.

Figure 5 is a similar view taken substantially on the line 5—5 of Figure 1, looking in the direction indicated by the arrows.

Figure 6 is an enlarged sectional view illustrating the structure disclosed at the intermediate portion of Figure 2.

The screen embodying the invention comprises a main frame which is indicated in general by the numeral 1, and an auxiliary frame indicated in general by the numeral 2. The frame 2 is formed of sheet metal

and is rectangular and of dimensions less than but approximating the dimensions of the window frame in which the screen is to be installed, and this frame includes side members 3, a top member 4, and a bottom member 5. The members of the frame are formed from strip sheet metal and each member is folded upon itself midway its longitudinal edges as indicated by the numeral 5, and thence at right angles toward the inner side of the frame as indicated by the numeral 6. The screen sheet is indicated by the numeral 7 and is of wire mesh material, as is common in such screens, and the margins of the rectangular screen sheet are engaged within the members of the frame at the time the fold 5 is formed and, when the fold 6 is formed, the said margins of the screen sheet will be securely and permanently anchored. It will now be evident that the screen sheet is stretched taut within a rectangular frame, the members of which are firmly braced and substantial, due to their two ply thickness and the formation of the bend 6 to provide two right angularly disposed portions, and that when the margins of the sheet are once anchored in the frame members, there will be no likelihood of the margins of the sheet being pulled loose, nor will there be any likelihood of sagging or bulging of the screen sheet, but the same will at all times be held taut and in flat condition.

While it has been common heretofore to anchor the margins of a screen sheet in the members of a rectangular frame, such frames have been disposed within the window frames and secured in place by any suitable means ordinarily employed for the purpose. However, such screens present the disadvantage that unless they accurately fit the window frames, which is seldom the case, they become distorted and the screen sheets, in turn, become distorted so as to bulge. However, in the present invention this is entirely overcome by the employment of the main frame 1, as will now be described.

The main frame 1 is likewise made of sheet metal and the same comprises side members 8, a top member 9, and a bottom member 10. These members of the main frame are all substantially of counterpart construction and form except that the bottom member 10 is somewhat deeper than the top member 9 and preferably has its under side sloped at a suitable incline to adapt it to rest upon the inclined sill of the window frame within which the screen is installed. Inasmuch as the side, top and bottom members of the main frame are of counterpart construction so far as their general contour is concerned, a description of one of the side members will suffice for all of said members. As clearly shown in Figure 4 of the drawings, each of the members is of hollow formation and comprises spaced outer and inner walls indicated respectively by the numerals 11 and 12, which walls are connected by an integral side wall 13, the said member being formed from an integral blank of sheet metal. The member further comprises a side wall which is indicated in general by the numeral 14 and which is formed by bending the material of which the member is formed at right angles to the wall 11 to provide a side wall portion 15 and forming the edge of this side wall portion with a right angularly projecting flange 16. The inner side wall 12 is bent at an obtuse angle to provide a side wall portion 17 which is likewise provided at its edge with a flange 18 which opposes the flange 16 and is spaced with respect thereto. The members 8, 9 and 10 of the main frame are formed separate from one another and when properly arranged to constitute the main frame 1, they are connected at their relatively adjacent ends by corner members which are indicated in general by the numeral 19 and which will presently be described, the said relatively adjacent ends of the frame members being beveled or cut at an angle, as clearly shown in Figure 3 of the drawings, and as indicated by the numeral 20. When the members of the main frame are formed, their flanges 16 and 18 will be nearly in contact with each other so that when the two frames are assembled by assembling each member of the auxiliary frame with the respective member of the main frame, the screen sheet 7 will be snugly engaged at its opposite sides by the said flanges, the members of the auxiliary frame being received within the corresponding members of the main frame, as clearly shown in Figures 2, 3, 4 and 5 of the drawings. Therefore, the auxiliary frame is freely housed within the main frame and in practice, the auxiliary frame will be of dimensions somewhat less than the dimensions of the window frame within which the screen is to be installed and, prior to relative adjustment of the sides, top and bottom members of the main frame, will occupy a position within the main frame substantially such as illustrated in dotted lines in Figure 4 of the drawings.

The members of the main frame are connected at the corners of the frame by the corner members 19 previously referred to, and each of these corner members comprises right angularly disposed hollow branches 21 and 22 which have the same contour as the side members 8 and top and bottom members 9 and 10 respectively of the main frame, and in assembling the sides, top and bottom members of the said frame and the corner members, the ends of the frame members are frictionally adjustably inserted into

the proper branches of the corner members in the manner clearly shown in Figures 3 and 4 of the drawings. As stated, the branches 21 and 22 of the corner members 19 have substantially the contour of the members of the main frame the ends of which they accommodate, except that, as will be observed by reference to Figures 1, 2, 3 and 4 of the drawings, the flanges which correspond to the flanges 16 and 18 of the frame members are replaced by web portions 23 which are located in the angles between the opposite walls of the said corner members 19 and, when the parts are assembled, are located in the corners of the main frame. It will be evident at this point that the ends of the members of the main frame are slidably adjustably fitted in the branches of the corner members 19, and in order that the parts may be held in the position to which they are adjusted, bolts 24 are fitted through openings 25 in the webs 23 of each of the corner members and nuts 26 are fitted onto the bolts so that when the bolts are tightened the walls of the corner members will be drawn together or toward each other so as to firmly bind the ends of the frame members which are received within the said branches and thus frictionally hold the same against displacement after the desired adjustment has been effected. The bolts 24, of course, pierce the screen sheet but this portion of the screen sheet is snugly held between the opposing faces of the webs of the corner members and, therefore, this is not a matter of consequence.

In the installation of the screen within a window frame, the bolts 24 are removed, and the main frame is then expanded by adjusting the ends of its members in the corner members of the frame until the frame snugly fits within the window frame, whereupon the bolts are inserted and tightened to maintain the parts in the positions to which they have been adjusted. In making these adjustments, the members of the main frame will be moved independently of and with respect to the corresponding members of the auxiliary frame 2 but inasmuch as the auxiliary frame 2 is a substantially rigid and integral structure and the screen sheet is tightly stretched therein, the screen sheet will maintain its stretched condition after the desired adjustment of the members of the main frame has been effected. It will be understood, therefore, that while the members of the auxiliary frame may initially assume approximately the position shown in dotted lines in Figure 4 of the drawings, within the respective members of the main frame, when the main frame is expanded to fit properly within the window frame, the shifting of the members of the main frame will bring the parts substantially to the position shown in full lines in the said figure. In any event, the screen sheet is clamped between the flanges 16 and 18 of the members of the main frame so that to all intents and purposes the main frame constitutes the frame within which the screen sheet is stretched. In practice, the auxiliary frame intended for installation in window frames of a given standard size will be made of less dimensions than the window frame and in several slightly varying dimensions so that a wide range of adjustment is provided for.

It will likewise be evident from the foregoing description that regardless of the adjustment of the screen as a whole to adapt it to fit a window frame of a given size, there will be no necessity for disturbing the screen sheet so that the same will remain intact and in its originally stretched condition, thereby avoiding any overlapping of parts of the sheet.

Where the dimensions of the screen are such as to warrant reenforcement at its intermediate portion, metal strips 27 are disposed against the opposite sides of the screen sheet in position extending transversely of the same intermediate its upper and lower margins and the ends of these strips are bent to conform to the contour of the side members of the auxiliary frame 2, as indicated by the numeral 28, and rivets 29 are secured through the ends of the strips and through the said side members of the frame. In the event such strips are employed, the flanges 16 and 18 of the side members 8 of the main frame will be cut away so as to provide a slot 30 at each side of the main frame to accommodate the end portions of the said strips 27.

The main frame 1 may be provided upon any of its members with hinges or other devices which are ordinarily employed for holding a screen of this type in place.

Having thus described the invention, what I claim is:

1. In a window screen, a main frame comprising hollow frame members each including spaced side walls and a connecting wall, the side walls having inwardly turned portions provided with marginal flanges substantially in contact at the inner sides of the respective frame members, corner members having right angularly disposed hollow branches slidably and adjustably receiving the ends of respective ones of the frame members and including spaced side walls and webs in the corners between the walls for intimate engagement with the ends of the frame members, clamping bolts secured through the said webs adjustable to clamp the corner members to the respective frame members to maintain the frame members in positions of adjustment with respect to the corner members, a rigid auxiliary frame having its frame members arranged within

the corresponding members of the main frame, and a screen sheet stretched within the auxiliary frame and having its portions adjacent its margins extending between the flanges of the side walls of the members of the main frame.

2. In a window screen, an expansible and contractible main frame, an auxiliary frame assembled with the main frame and supported thereby independently of the expansive and contractive adjustment of the main frame, a screen sheet stretched within the auxiliary frame, and bracing strips extending transversely within the auxiliary frame and connected at their ends to the opposite side members of said frame and extending at opposite sides of the said screen sheet.

In testimony whereof I affix my signature.

JOHN THOMAS COOK. [L. S.]