June 19, 1923. 1,459,155

J. P. IOOR

WINDOW SCREEN

Filed Jan. 8, 1921

FIG. I

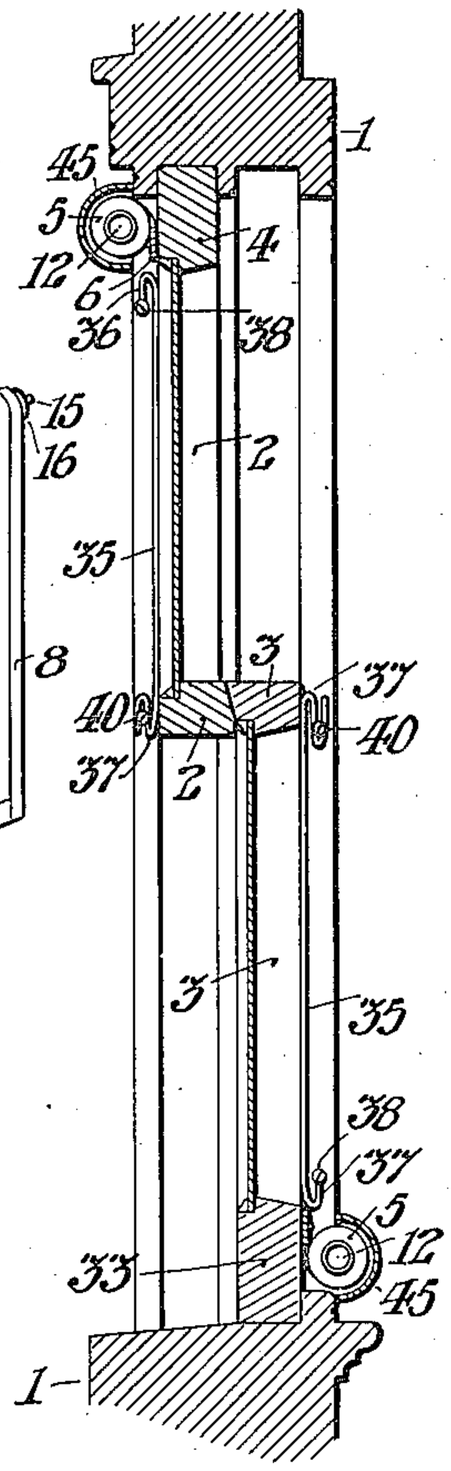


FIG. II

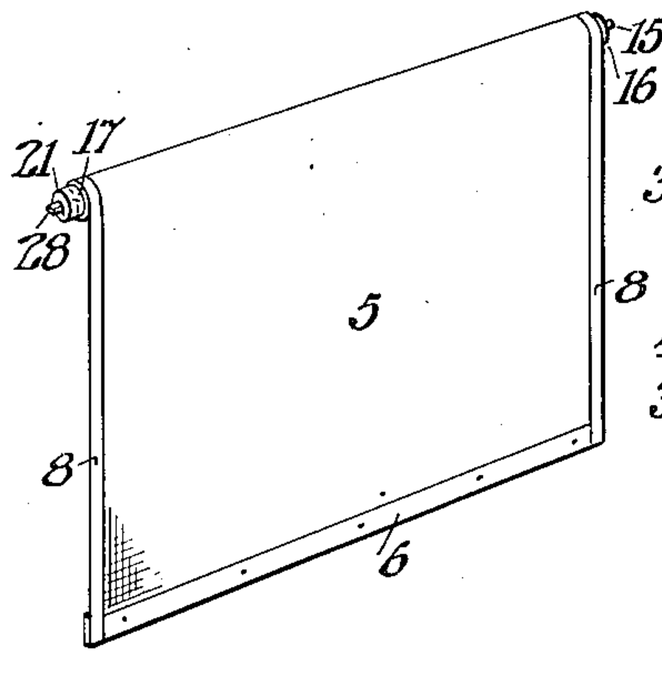


FIG. III

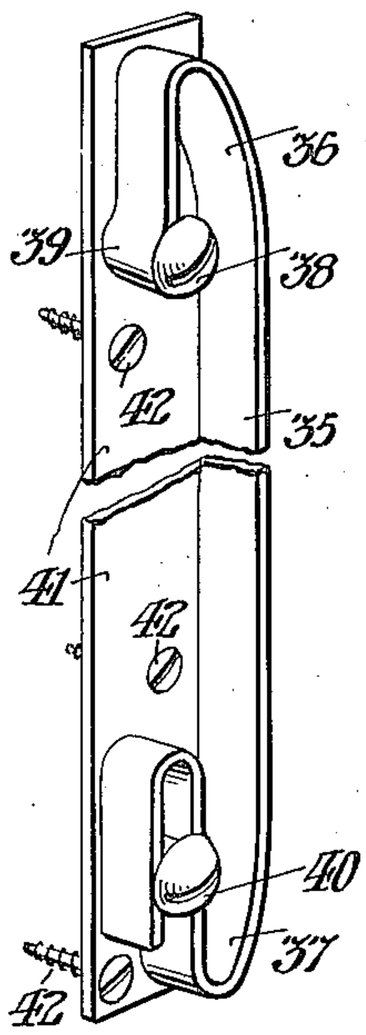
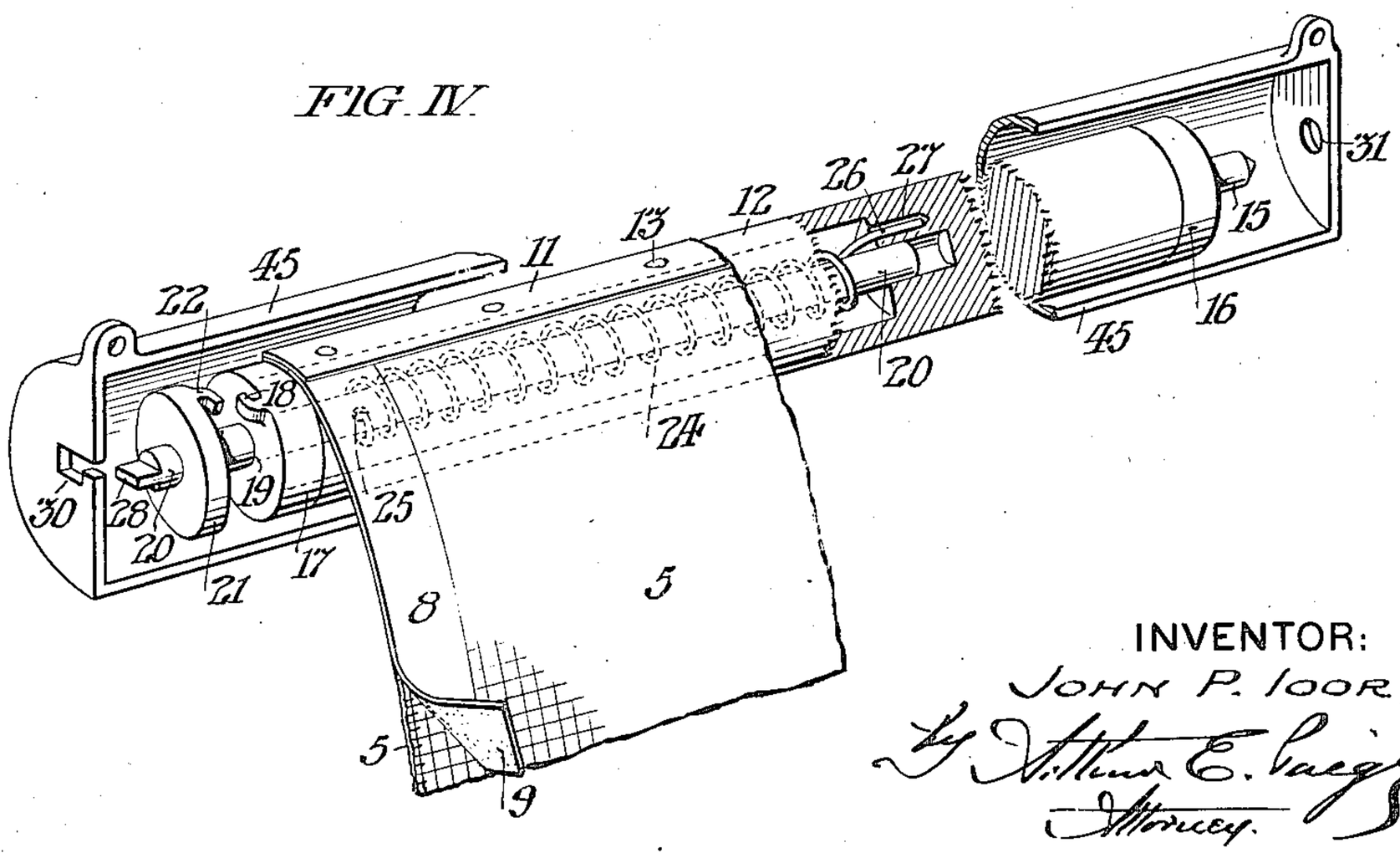


FIG. IV



INVENTOR:
JOHN P. IOOR,
by Arthur E. Briggs
Attorney.

Patented June 19, 1923. 1,459,155

UNITED STATES PATENT OFFICE.

JOHN P. IOOR, OF PHILADELPHIA, PENNSYLVANIA.

WINDOW SCREEN.

Application filed January 8, 1921. Serial No. 435,966.

To all whom it may concern:

Be it known that I, JOHN P. IOOR, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Improvement in Window Screens, whereof the following is a specification, reference being had to the accompanying drawing.

My invention relates to screens of the type including a web of flexible foraminous material attached at one end to a spring roller and at the other end to a window sash, in such relation that when the sash is opened, said web is drawn from the roller over the window opening normally occupied by the sash, and, when the sash is closed, said web is automatically wound upon said roller. As ordinarily constructed and arranged, such screens have three disadvantages, to wit, first, they cost more than screens of the rigid frame type. Second, they are more difficult and, consequently, more costly to install than screens of the rigid frame type, because skilled labor is required for their installation. Third, it is difficult to maintain the opposite vertical edges of the web of such screens in sufficiently close relation with ordinary window frames to prevent ingress of insects at such edges.

Therefore, it is the general object of my invention to obviate the disadvantages above contemplated and provide a screen of the class aforesaid which is, first, less costly than an ordinary screen of the rigid frame type. Second, which may be installed and removed by an unskilled operator, with the same facility as an ordinary window shade. Third, to provide cheap and effective means, including removable sealing strips, to maintain the edges of the flexible web in such close contact with an ordinary window frame as to prevent ingress of insects at such edges, and, fourth, to so construct and arrange said sealing strips that they may be used in lieu of ordinary weather strips to seal the joints between the sash and the window jambs when the screens are removed from their operative position.

My invention includes the various novel features of construction and arrangement hereinafter more definitely specified.

In the drawing; Fig. I is a diagrammatic vertical sectional view of a window frame provided with a convenient embodiment of my invention.

Fig. II is a complete perspective view of one of the screen webs and its appurtenances indicated in Fig. I.

Fig. III is a fragmentary perspective view of one of the spring rollers carrying a flexible foraminous web, as indicated in Fig. I.

Fig. IV is a fragmentary perspective view of one of the sealing strips indicated in Fig. I.

In said figures; the window frame 1 is provided with ordinary glazed sashes 2 and 3. It is to be understood that said sashes have the ordinary appurtenant balancing devices so that they are detained in any position of vertical adjustment to which they may be manually moved.

Said sash 2 has its upper rail 4 detachably connected with the lower end of the flexible screen web 5, conveniently by the cross bar 6 which may be attached to said rail 4 by small tacks or screws and which may be attached to said web by adhesive. Said web 5 is conveniently formed of a cheap grade of textile netting and has its opposite vertical edges reinforced by tapes 8 which may be conveniently comparatively heavy textile material provided with a coating 9 which melts at a temperature somewhat above ordinary atmospheric temperature, and is then adhesive, but congeals at ordinary atmospheric temperature, so that it may be readily heated and applied to said netting to reinforce the edges thereof. The so called "adhesive" tape, which is used for surgical bandages, will answer the purpose of that feature of my invention.

The upper end of said screen web 5 may be similarly reinforced by an adhesive tape 11 and said web thereby attached to the wooden roller 12, conveniently by small tacks 13 driven through said tape 11. Said roller 12 has, at one end thereof, the stationary axial metallic trunnion 15 conveniently in integral relation with the metallic cap 16 tightly fitted on the end of said roller 12. The opposite end of said roller 12 is provided with the metallic cap 17, rigidly connected therewith, and having one or more hooked projections 18. Said cap has the axial opening 19 as a bearing for the spring shaft 20. Said shaft has rigidly secured thereon the collar 21 provided with one or more hooked projections 22 arranged in op-

position to said hooked projections 18 and thus adapted to interlock therewith when said shaft 20 is shifted axially to engage said projections in opposition. However, said spring shaft 20 is normally thrust axially outward with respect to said roller 12, as indicated in Fig. III, to disengage said hooked projections 18 and 22, by the spiral spring 24, so that said roller 12 may be turned upon said shaft and its trunnion 15 aforesaid, but, said spring is attached to said shaft at one end, conveniently by extension through the opening 25 in said shaft, and said spring is attached at its other end to said roller 12, conveniently by having its end 26 extending parallel with its axis into the hole 27 in the body of said roller, and, when wound, said spring tends to wind said web 5 upon said roller 12 when said shaft 20 is held stationary, and thus automatically maintains said web taut in any position to which it may be withdrawn from said roller. Said shaft 20 is conveniently flattened, at its outer end, as indicated at 28, so that it may be held stationary while said trunnion 15 turns, when said roller is mounted in ordinary brackets 30 and 31 used for supporting window shades.

It is to be understood that the function of said hooked projections 18 and 22 is to interlock said roller 12 with said spring shaft 20, when said spring 24 is wound, so that the entire roller may then be readily inserted in such ordinary shade brackets as above contemplated by first inserting the flattened end of said shaft 20 in the bracket 30 and then turning said roller, in the direction to unwind said web, sufficiently to disengage the hooked projections 18 from said hooked projections 22, while the latter are thus held stationary, and then permitting said roller 12 to move axially under the thrust of said spring 24 and engage its trunnion 15 in said bracket 31. That is to say; said brackets may be permanently attached to the window jambs at the top thereof and said spring roller be inserted between them when the distance between its opposite axial supports 15 and 28 is minimized by the telescoping movement of said spring shaft 20, and then be axially extended into operative relation as above described; said roller and its screen web being automatically detained in such operative position by the above described axial and torsional resilience of said spring 24.

Said sash 3 has its lower rail 33 similarly attached to a flexible screen web 5 mounted upon a spring roller 12 and constructed and arranged as above described.

Said sashes 2 and 3 and their respective screen webs 5 are so disposed that, when the sashes are opened, said webs are drawn over the window spaces thus opened, so as to screen them in planes respectively coinciding with the outer face of the upper sash 2 and the inner face of the lower sash 3. Therefore, I find it convenient to locate the sealing strips 35 for the upper sash upon the outer side thereof and the sealing strips 35 for the lower sash upon the inner side thereof. Said strips 35 are disposed in pairs at the opposite edges of the webs 5, so as to contact with the marginal reinforcing tapes 8 of the respective webs 5, in close proximity to the side members of said window frame 1. I find it convenient to form said strips of any slightly resilient sheet metal, with spring bights 36 and 37 at respectively opposite ends thereof; each of said strips being initially bowed so that it tends to press against the side rails of the sash frames throughout its length. I also find it convenient to attach each strip to the adjacent vertical member of the window frame by a single stud screw 38 extending through a loop 39 formed in the end of the bight 36, the opposite end bight 37 of each strip being held in operative position by the similar stud 40, against which said bight 37 slides. Moreover, although said stud screws 38 and 40 may be directly detachably engaged with said window frame 1, a more substantial construction is afforded by mounting suitable studs in a plate 41; in which case, such plate may be attached to the window frame by other screws 42.

As indicated in Fig. I; said spring rollers 12 may be respectively provided with hoods 45 and said brackets 30 and 31 may be mounted in such hoods, which may be formed of pressed sheet metal.

However, I do not desire to limit myself to the precise details of construction and arrangement herein set forth, as it is obvious that various modifications may be made therein without departing from the essential features of my invention, as defined in the appended claims.

I claim:

1. In a window screen, the combination with a flexible web of textile material; of adhesive tapes, of textile material, reinforcing respective edges of said web; a hollow wooden roller: means connecting one end of said web to said roller; a metallic trunnion extending axially in rigid relation with said roller at one end thereof; a metallic cap at the other end of said roller, having a clutch hooked projection, extending circumferentially in the direction in which said web is adapted to be wound upon said roller, and having an axial bearing; a spring shaft, extending in the hollow of said roller, journaled at its inner end in said roller and journaled at its outer end in said bearing; a clutch collar rigidly mounted on said spring shaft and having a clutch hooked projection extending circumferentially in the direction in which said web is arranged to be unwound

from said roller; means at the outer end of said spring shaft, arranged to prevent rotation thereof, including a portion having its sides flattened parallel with the axis of said shaft; a spiral spring in the hollow of said roller, encircling said shaft, having one end engaging said shaft and the other end engaging said roller, and adapted to be wound by unwinding movement of said web and also adapted to thrust said shaft axially outward with respect to said roller, to disengage said hooked projections when they are released from each other; a bracket having a journal in which said trunnion may rotate; a bracket having a bearing in which said shaft may be held against rotation; and a hood connecting said brackets and secluding said roller.

2. In a window screen, the combination with a flexible web; of adhesive tapes, reinforcing respective edges of said web; a hollow roller; means connecting one end of said web to said roller; a trunnion extending axially in rigid relation with said roller at one end thereof; a cap at the other end of said roller, having a clutch hooked projection, extending circumferentially in the direction in which said web is adapted to be wound upon said roller, and having an axial bearing; a spring shaft, extending in the hollow of said roller, and journaled at its outer end in said bearing; a clutch collar rigidly mounted on said spring shaft and having a clutch hooked projection extending circumferentially in the direction in which said web is arranged to be unwound from said roller; means at the outer end of said spring shaft, arranged to prevent rotation thereof, including a portion having its sides flattened parallel with the axis of said shaft; a spiral spring in the hollow of said roller, having one end engaging said shaft and the other end engaging said roller, and adapted to wind said web and also adapted to thrust said shaft axially outward with respect to said roller, to disengage said hooked projections when they are released from each other; a bracket having a journal in which said trunnion may rotate; and a bracket having a bearing in which said shaft may be held against rotation.

3. In a window screen, the combination with a flexible web; of a hollow roller; means connecting one end of said web to said roller; a trunnion extending axially from said roller at one end thereof; an axial bearing at the other end of said roller; a clutch hooked projection, adjacent said bearing, extending circumferentially in the direction in which said web is adapted to be wound upon said roller; a spring shaft, extending in the hollow of said roller and journaled at its outer end in said bearing; a clutch collar rigidly mounted on said spring shaft and having a clutch hooked projection extending circumferentially in the direction in which said web is arranged to be unwound from said roller; means on said spring shaft, arranged to prevent rotation thereof; a spiral spring in the hollow of said roller, encircling said shaft, having one end engaging said shaft and the other end engaging said roller, and adapted to wind said web and also adapted to thrust said shaft axially outward with respect to said roller, to disengage said hooked projections when they are released from each other; a bracket having a journal in which said trunnion may rotate; and a bracket having a bearing in which said shaft may be held against rotation.

4. In a window screen, the combination with a flexible web; of a hollow roller; means connecting one end of said web to said roller; a trunnion extending axially from said roller at one end thereof; an axial bearing at the other end of said roller; a clutch hooked projection, adjacent said bearing, extending circumferentially in the direction in which said web is adapted to be wound upon said roller; a spring shaft, extending in the hollow of said roller and journaled at its outer end in said bearing; a clutch collar rigidly mounted on said spring shaft and having a clutch hooked projection extending circumferentially in the direction in which said web is arranged to be unwound from said roller; means on said spring shaft, arranged to prevent rotation thereof; a spiral spring in the hollow of said roller, encircling said shaft, having one end engaging said shaft and the other end engaging said roller, and adapted to wind said web and also adapted to thrust said shaft axially outward with respect to said roller, to disengage said hooked projections when they are released from each other; a bracket having a journal in which said trunnion may rotate; and a bracket having a bearing in which said shaft may be held against rotation.

5. The combination with a flexible web; of a hollow roller; means connecting one end of said web to said roller; a trunnion extending axially from said roller at one end thereof; an axial bearing at the other end of said roller; a clutch projection, on said roller, arranged to engage in the direction in which said web is adapted to be wound upon said roller; a spring shaft, extending in the hollow of said roller and journaled at its outer end in said bearing; a clutch projection on said spring shaft arranged to engage in the direction in which said web is arranged to be unwound from said roller; means on said spring shaft, arranged to prevent rotation thereof; a spiral spring in the hollow of said roller, encircling said shaft, having one end engaging said shaft and the other end engaging said roller, and adapted to wind said web and also adapted to thrust said shaft axially outward

with respect to said roller, to disengage said projections when they are released from each other; a bracket having a journal in which said trunnion may rotate; and a bracket having a bearing in which said shaft may be held against rotation.

6. Means arranged to resiliently hold the edges of a window screen in sealed relation with a window frame, while permitting longitudinal movement of said screen, including a base plate having means to attach it to the window frame; two screw studs on said base plate, projecting parallel with the plane of said screen; a sealing strip, of resilient metal having a spring bight at each end, one spring bight pivotally connected to one of said screw studs, and the other spring bight in sliding engagement with the other of said studs.

7. Means arranged to resiliently hold the edges of a window screen in sealed relation with a window frame, while permitting longitudinal movement of said screen, including a base plate having means to attach it to the window frame; with its plane in transverse relation with the plane of the screen; a sealing strip, supported by said base plate, having a resilient bight at each end; two studs on said base plate holding said strip parallel with the plane of said screen, arranged to permit one end of said strip to slide with respect to the other end thereof.

8. Means arranged to resiliently hold the edges of a window screen in sealed relation with a window frame, while permitting longitudinal movement of said screen, including a base plate having means to attach it to said frame; a sealing strip, supported by said base plate, with the plane of said strip parallel with the plane of said screen; said strip having a resilient bight at each end; and means connecting the ends of the bights of said strip with said base plate, arranged to permit one end of said strip to slide relatively to the other end thereof.

In testimony whereof, I have hereunto signed my name at Philadelphia, Pennsylvania, this tenth day of November, 1920.

JOHN P. IOOR.

Witnesses:
ARTHUR E. PAIGE.
CAROLYN E. REUTER.