Jan. 8, 1952 P. R. FRANCIS 2,581,643

FOLDING FAN

Filed Nov. 20, 1950

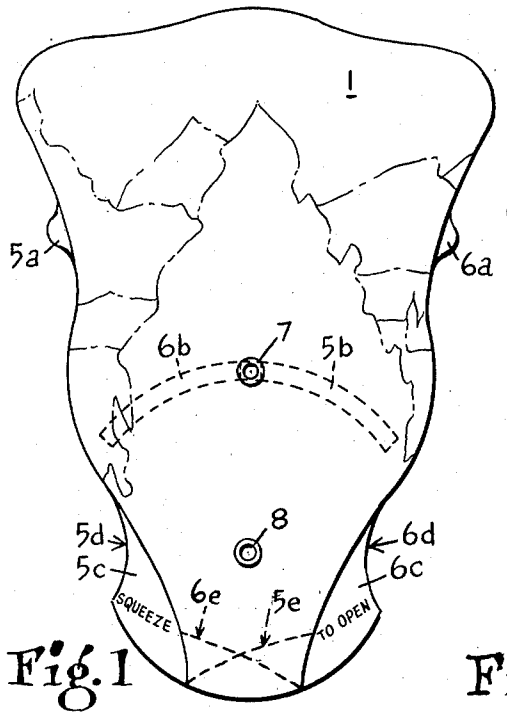

Fig. 1

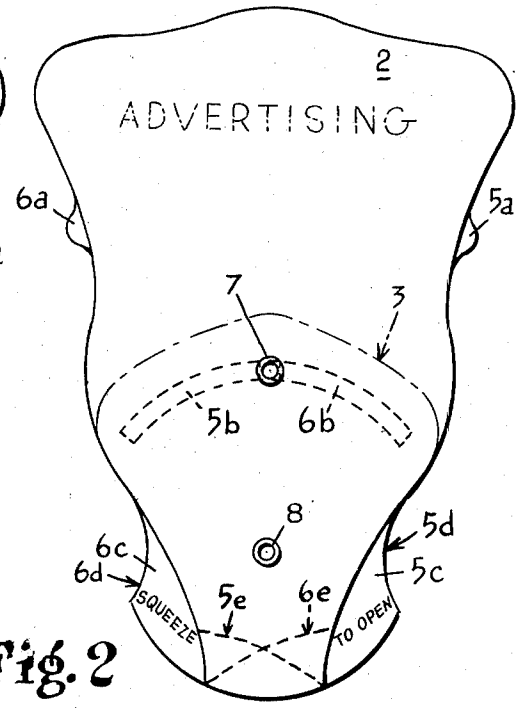

Fig. 2

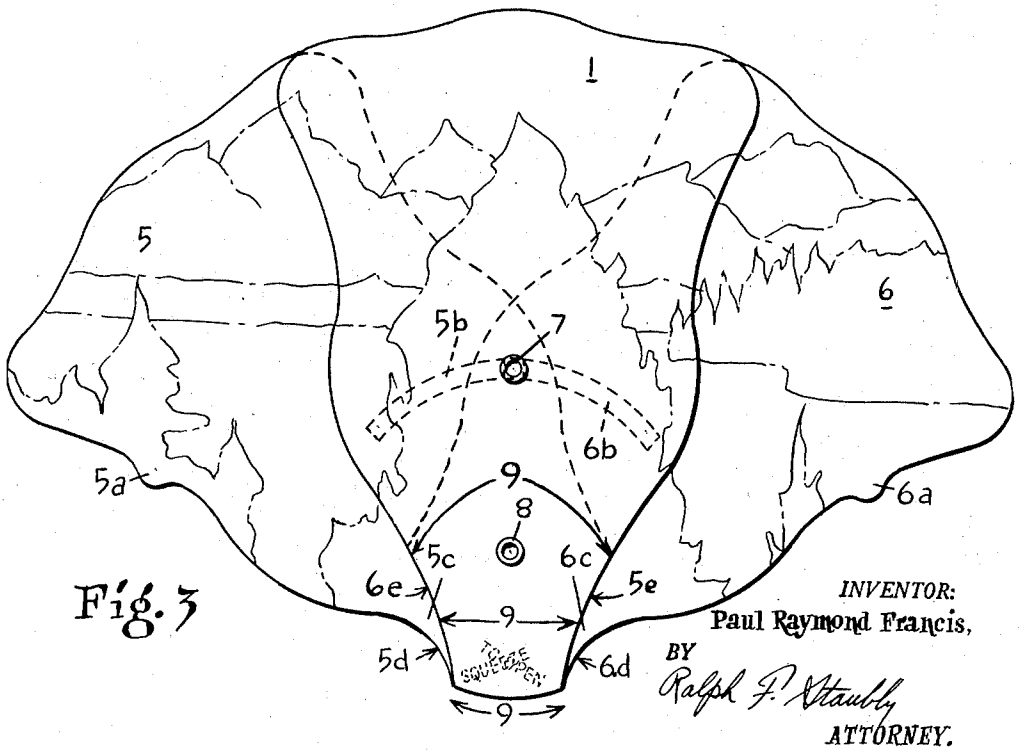

Fig. 3

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Patented Jan. 8, 1952

2,581,643

UNITED STATES PATENT OFFICE

2,581,643

FOLDING FAN

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Application November 20, 1950, Serial No. 196,651

4 Claims. (Cl. 230—269)

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My invention relates to a folding fan of the type having a central panel and two laterally swingable panels movable from positions generally behind said central panel to positions beside and, in effect, extending the surface thereof.

More specifically my invention relates to improvements in the grip and fan-opening parts of such a fan, whereby the fan may be opened by an easy and natural squeezing of the grip portion while it is held naturally in a user's hand.

Objects of invention

Accordingly, it is an object of my invention to provide a folding fan with an easily and naturally operable squeeze-to-open grip portion.

It is another object of my invention to provide a four-ply construction of the grip portion of the fan, in which there will be no extending operating tabs to become bent or broken during a fanning operation.

It is a further object to provide such a fan with concaved finger- and thumb-receiving grip contours whereby an effective and comfortable squeeze and/or grip may be applied thereto.

Other objects and advantages will become apparent as the description proceeds.

Detailed description

In the drawings:

Fig. 1 is a front elevational view of my fan in closed or folded condition.

Fig. 2 is a rear elevation of the closed fan.

Fig. 3 is a front elevation of the fan in opened or expanded condition.

The drawings disclose a preferred form of my invention.

The fan shown comprises a front panel 1 of roughly inverted bell-shape (Figs. 1 and 3), and a rear panel 2 (Fig. 2) which preferably has the same size and shape as the front panel 1. Optionally and alternatively, however, the back panel 2 may be terminated at the line 3, since the upper portion thereof is dispensable, although a stronger fan and a more pleasing appearance result when a full-length panel 2 is employed.

Lying between the panels 1 and 2, are two differently shaped panels 5 and 6. Except for the tabs 5*a* and 6*a* the panels 5 and 6 have the same size and shape as the panel 1 for the upper three-fourths of their extent. For the lower one-fourth of their extent, however, the panels 5 and 6 differ importantly in shape from panels 1 and 2 and also from each other, but as to each other they possess bilateral symmetry.

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The four panels are held in super-imposed assemblage by two hollow rivets or eyelets 7 and 8 inserted through alined openings in said panels. These eyelets 7 and 8 are, respectively, located on or near the vertical axis of symmetry of the panel 1 at or near the ½ and ¼ points measured vertically from the bottom edge of said panel. The openings through which the eyelet 8 passes, all snugly embrace the tubular portion of the eyelet between the outwardly flanged-over ends thereof. Panels 1 and 2 similarly cooperate with the eyelet 7. Panels 5 and 6, however, are provided with arc-shaped openings 5*b* and 6*b* of such extent as to permit their pivoting about eyelet 8 through an angle, which is disclosed as being approximately 45°. The ends of the openings 5*b* and 6*b* form stops which engage the eyelet 7 to limit the pivotal movement of the panels 5 and 6 between their extreme open and closed positions of Figs. 3 and 1, respectively. The extended panels may be provided on their front faces and/or rear faces with pictorial, advertising or other printed matter, the sections of which "match" when opened, as shown in Fig. 3. The back surfaces may contain similar or dissimilar matter, as desired.

The tabs 5*a* and 6*a* are conventional structures for grasping between the thumbs and fingers of the user for opening fans of this general type. In my fan, however, they may be omitted because of my novel construction of the grip portion of the fan, whereby the fan may be opened by a squeezing action applied as the fan is held in a normal gripping manner, without the necessity of assistance from the other hand as was needed for fans of the prior art.

The lower extremities of the panels 1 and 2, beginning at a point slightly above the eyelet 8, have the general shape of an upwardly and outwardly flaring flower bowl, as shown in Figs. 1 and 2. The panels 5 and 6 have oppositely displaced extensions 5*c* and 6*c* which in the closed condition of the fan produce opposite notches 5*d* and 6*d* for convenient gripping between a finger and an opposable part of the thumb or palm. When the squeezing action is exerted against the tabs 5*c* and 6*c* they are rotated about the eyelet 8 into the position shown in Fig. 3, forcing panels 5 and 6 into open-fan positions as in said figure. The panels 5 and 6 are so shaped that when they are in opened-fan positions their lower extremities overlap with each other and with those of panels 1 and 2 to form a strong four-ply grip portion in the region indicated by the arrows 9 in Fig. 3. As clearly shown in the draw-

ings, the parts 5c and 6c have arc-shaped lower edges subtending angles about the pivot formed by eyelet 8 equal to the angle of movement of each panel in folding or opening. The natural hand-fitting curvature of the grip portion also adds to the user's comfort, and the narrow bottom extension will fit even a small child's hand. The squeeze-receiving parts 5c and 6c are, by their being indented at 5d and 6d, protected against the repeated bending that would and does weaken extruding tabs, such as 5a and 6a. Also due to their lying in guide channels formed by panels 1 and 2, they would still be effective even if softened by long use or by moisture.

My invention is obviously capable of being used with folding-panel fans having greatly differing shapes of panels above the grip portion, as for example with the windowed advertising fan of copending application No. 198,119, filed by Virgil W. Francis, Jr., on November 29, 1950, and assigned to the assignee of this application.

Having thus described my invention, I claim:

1. A folding fan comprising: a central body portion having parallel front and rear panels, at least two oppositely laterally swingable panels movable from a folded-fan position generally behind said front panel to an opened-fan position generally beside said front panel, pivot-forming means passing through alined openings in said panels near their lower extremities to hold said panels assembled and to form a pivot for said swingable panels, the portions of said panels immediately adjacent to and below said pivot-forming means constituting the grip portions of said panels, arcuate openings in said swingable panels, fastening means passing through said arcuate openings and through said front and rear panels, whereby said front and rear panels are held against relative movement and said swingable panels are movable about said pivot-forming means within limits determined by said arcuate

openings, the grip portions of said front and rear panels having slightly concave downwardly and inwardly sloping lateral edges, and said laterally swingable panels having concaved edges sloping downwardly and outwardly below said pivot means and extending laterally beyond said front and rear portions in the grip portions thereof and having their laterally opposite edges cut away and of such shape that when said concave edges are squeezed by a hand holding said grip portions, the lower extremities of said four panels will be forced into co-extensive over-lapping relationship as said panels reach opened-fan position.

2. A folding fan according to claim 1 and in which each of said panels has a bottom edge subtending an angle about said pivot-forming means equal to that of the movement of each of said laterally swingable panels, said edges being substantially in end-to-end alinement when the fan is closed, and being substantially fully co-extensive when said fan is open.

3. A folding fan according to claim 2 and in which said edges are arcs about said pivot-forming means as a center.

4. A folding fan according to claim 1 and in which said pivot-forming means and said fastening means are located along the vertical axis of symmetry of said front panel near the one-fourth and one-half elevation points therealong, respectively.

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