

March 6, 1951

M. B. CURLEY

2,544,490

ADJUSTABLE COWLING FOR FANS OR THE LIKE

Filed July 7, 1949

2 Sheets-Sheet 1

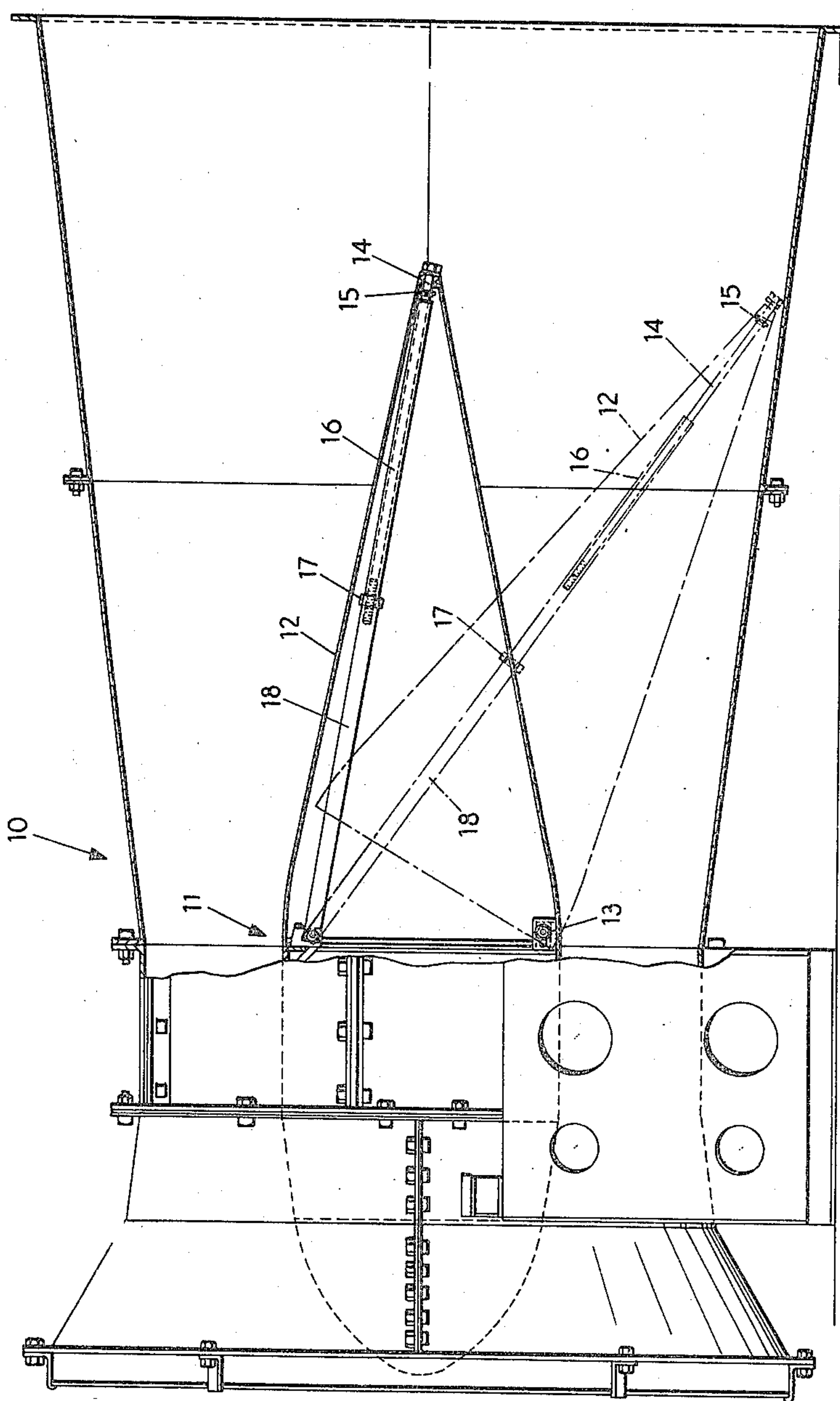


Fig. 1

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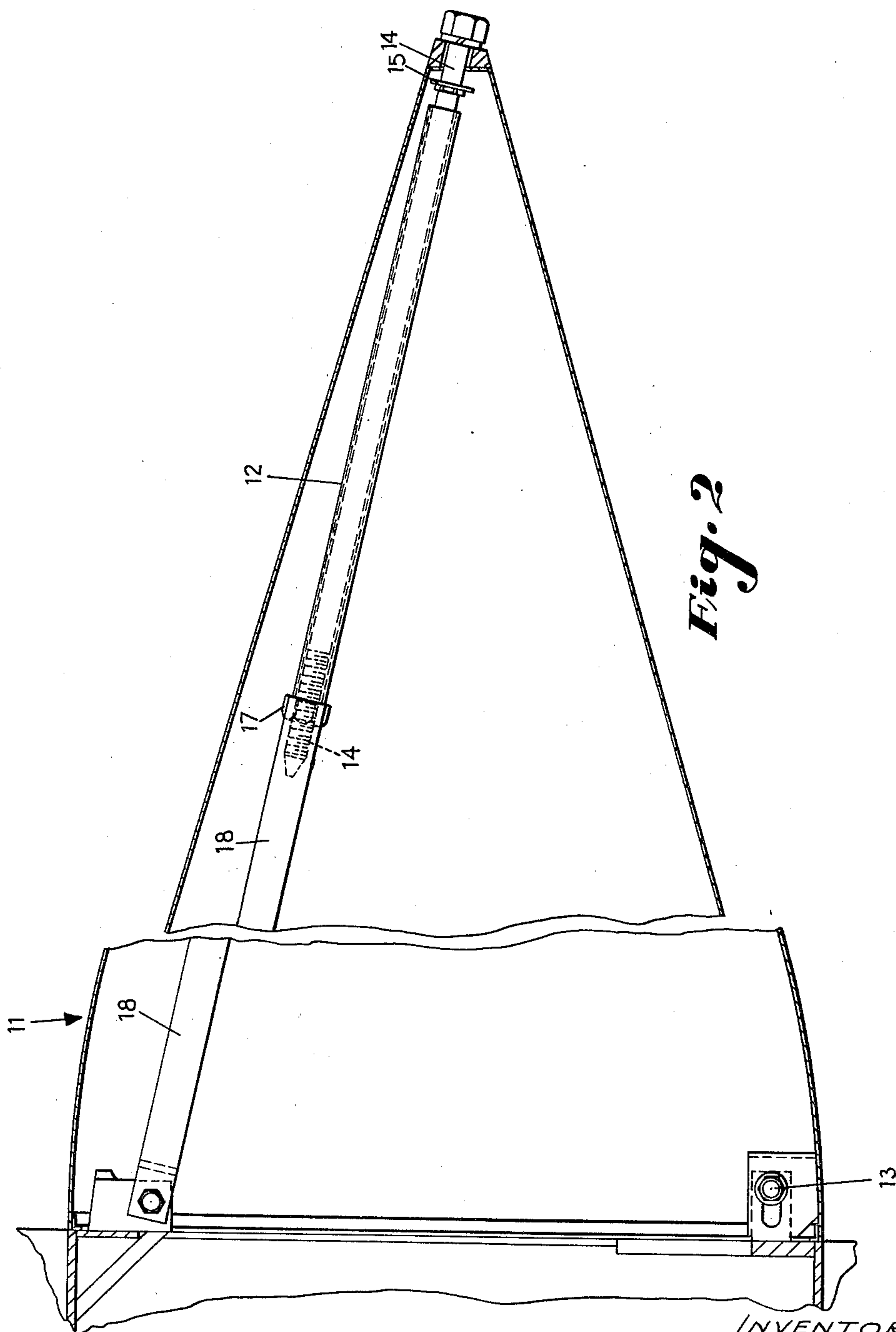
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2 Sheets-Sheet 2



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ADJUSTABLE COWLING FOR FANS
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5 Claims. (Cl. 230—120)

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This invention relates to a fan, and an object of the invention is to provide mechanism for attaching and detaching the cowling of a fan to provide for access to the interior thereof while making it easy for the cowling to be clamped into its normal operating position.

Other objects of the invention will appear hereinafter, the novel features and combinations being set forth in the appended claims.

In the accompanying drawings,

Fig. 1 shows a fan, partially in elevation and partially in section, incorporating the features of my invention; and

Fig. 2 is a view on a larger scale showing details of the fan cowling seen in Fig. 1.

Heretofore it has been the practice in attaching a cowling in a fan of at least one design to have an elongated bolt extending through the trailing edge of the cowling and into a nut or threaded opening located in the interior thereof. Necessarily when the operation of clamping the cowling in place was effected the operator had the difficult job of guiding the bolt to the nut or threaded opening which he could not see. This has been a very difficult job to perform whenever it was necessary to remove the cowling to gain access to the interior thereof to inspect or repair bearings or the like. In the fan of my invention this difficulty has been entirely obviated by means now to be described.

With the exception of the features described and claimed herein, the fan illustrated in the drawings is shown in complete detail in my Patent No. 2,191,341, dated February 20, 1940, for a ventilator and it includes the usual main outer casing 10 and an inner cowling 11, the fan blades not being shown but obviously being located in the constricted portion of the main casing 10. The discharge portion 12 of the cowling 11 is generally in the form of a cone. At its bottom the cone or cowling 12 is pivotally attached by bolt and bracket means 13 to the rigidly mounted center portion of the cowling 11 so that said cone 12 is free to swing downward on a transverse horizontal axis.

Clamping means to clamp the discharge or cone cowling 12 in place includes an aligned bolt 14 which extends loosely through a hole in the peak of the cone 12 and is free to rotate therein while being held against axial movement by a washer and snap ring 15. The elongated bolt 14 extends into a tubular guide 16 which leads to a nut 17 into which the threaded end of the bolt 14 is adapted to be removably threaded or attached. The nut 17 is carried by a yoke 18

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which is pivotally attached at its left-hand end, as viewed in the drawing, to a portion of the cowling frame. The guide 16, nut 17 and yoke 18 are all rigidly connected together to form in effect a single continuous pivoted arm.

As illustrated in the drawing, the casing 10 and cowling 11 provide the usual space through which air is forced by the fan. The discharge or cone portion 12 of the cowling 11 is free to swing downward about the pivot means 13 to permit access to the interior of said cowling. This swinging movement is limited by the casing 10, as indicated by the dotted line position of the discharge cowling 12. This, of course, is permitted by unscrewing the elongated bolt 14 from the nut 17. However, in any position which the cowling 12 may assume, the elongated bolt 14 is still within the tubular guide 16, as a consequence of which there is no difficulty whatever in guiding the bolt 14 to the nut 17. In other words, swinging of the cowling cone 12 back into position inherently guides the threaded end of the elongated bolt 14 to the nut 17 and by rotating the nut 17 by a tool operating on its hexagonal head the cone cowling 12 may be rigidly clamped in position through the intermediary of the yoke 18 and nut 17.

Should it be desirable to remove the cone cowling 12 entirely, this can be readily done by removing the bolt of the pivot bolt and bracket connection 13 after the cone is swung to the dotted line position illustrated in the drawing. To reassemble the parts it would only be necessary first to extend the elongated bolt 14 into the tubular guide 16 and then re-connect the bolt and bracket pivotal connection 13. Thereafter, the cone cowling 12 could be swung upward and the bolt 14 tightened to clamp it in position.

Obviously those skilled in the art may make various changes in the details and arrangement of parts without departing from the spirit and scope of the invention as defined by the claims hereto appended, and applicant therefore wishes not to be restricted to the precise construction herein disclosed.

Having thus described and shown an embodiment of the invention, what it is desired to secure by Letters Patent of the United States is:

1. A fan construction including an outer casing and an inner cowling providing a space through which air is forced, said inner cowling including a rigidly mounted center portion and a generally conical discharge portion, means pivotally attaching said discharge portion to said center por-

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tion for swinging movement with respect thereto, means for securing said discharge portion to said center portion including an arm means having a nut portion and a hollow guide portion leading to said nut portion, an elongated bolt extending through the peak of said discharge portion and into said hollow guide portion of said arm means, washer means carried by said bolt means limiting endwise movement of said bolt in said discharge portion, and pivot means mounting said arm means to said center portion and spaced from said discharge portion mounting pivot means, said outer casing being positioned to be struck by said discharge portion as the latter swings to maintain said bolt in said hollow guide portion.

2. A fan construction including an outer casing and an inner cowling providing a space through which air is forced, said inner cowling including a rigidly mounted center portion and a generally conical discharge portion, means pivotally attaching said discharge portion to said center portion for swinging movement with respect thereto, means for securing said discharge portion to said center portion including an arm means having a nut portion and a hollow guide portion leading to said nut portion, an elongated bolt extending through the peak of said discharge portion and into said hollow guide portion of said arm means, means limiting endwise movement of said bolt in said discharge portion, and pivot means mounting said arm means to said center portion and spaced from said discharge portion mounting pivot means, said outer casing being positioned to be struck by said discharge portion as the latter swings to maintain said bolt in said hollow guide portion.

3. A fan cowling including a rigidly mounted center portion and a generally conical discharge portion, means pivotally attaching said discharge portion to said center portion for swinging movement with respect thereto, means for securing said discharge portion to said center portion including an arm means having a nut portion and a hollow guide portion leading to said nut portion, an elongated bolt extending through the peak of said discharge portion and into said hollow guide portion of said arm means, means limiting end-

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wise movement of said bolt in said discharge portion, and pivot means mounting said arm means to said center portion and spaced from said discharge portion mounting pivot means.

4. A fan cowling including a rigidly mounted center portion and a generally conical discharge portion, means pivotally attaching said discharge portion to said center portion for swinging movement with respect thereto, means for securing said discharge portion to said center portion including an arm means having a nut portion and a hollow guide portion leading to said nut portion, an elongated bolt extending through the peak of said discharge portion and into said hollow guide portion of said arm means, and pivot means mounting said arm means to said center portion and spaced from said discharge portion mounting pivot means.

5. A fan cowling including a fixed portion and a generally conical discharge portion, means pivotally mounting said discharge portion for swinging movement with respect to said fixed portion, means for clamping said discharge portion to said fixed portion including an arm means having a nut portion and a guide portion leading to said nut portion, an elongated bolt extending through the peak of said discharge portion and into the guide portion of said arm means, and pivot means mounting said arm means for swinging movement about an axis spaced from said discharge portion mounting pivot means whereby said discharge portion may be swung with respect to said fixed portion while said bolt remains in the guide portion of the arm means.

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REFERENCES CITED

The following references are of record in the file of this patent:

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