

Nov. 23, 1954

T. N. KELLY

2,695,074

RETRACTABLE SCREEN FOR JET ENGINES

Filed Sept. 14, 1951

2 Sheets-Sheet 1

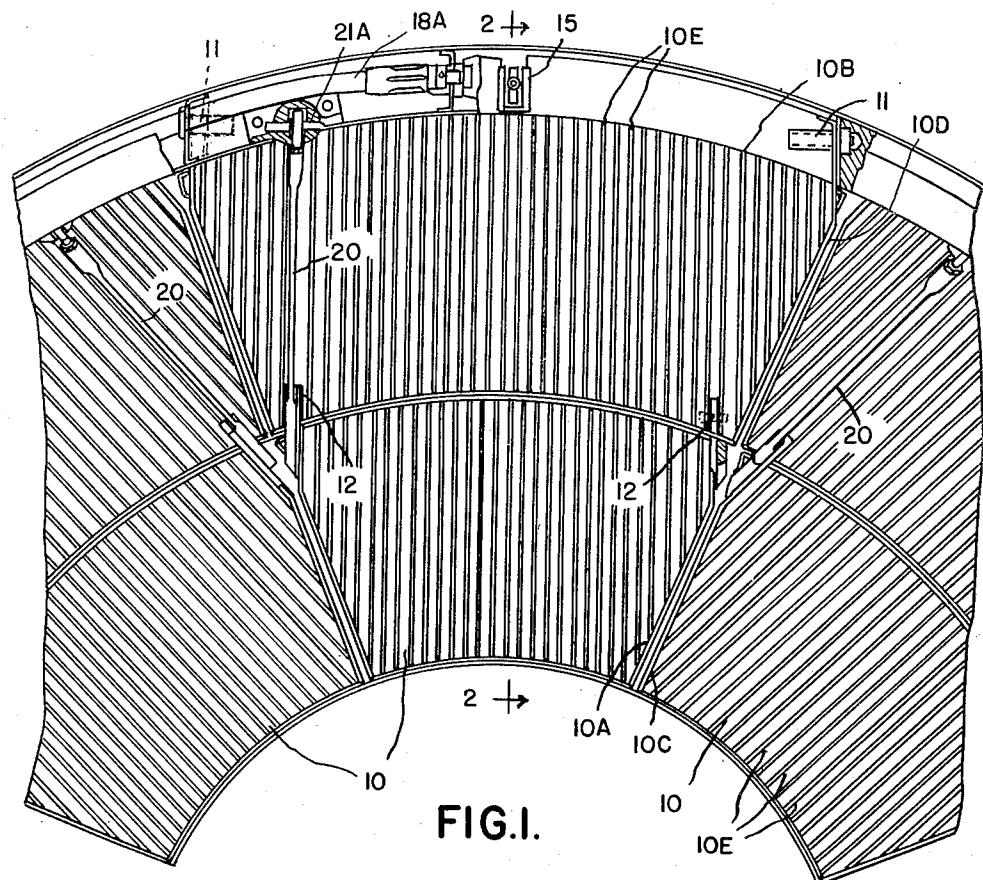


FIG. 1.

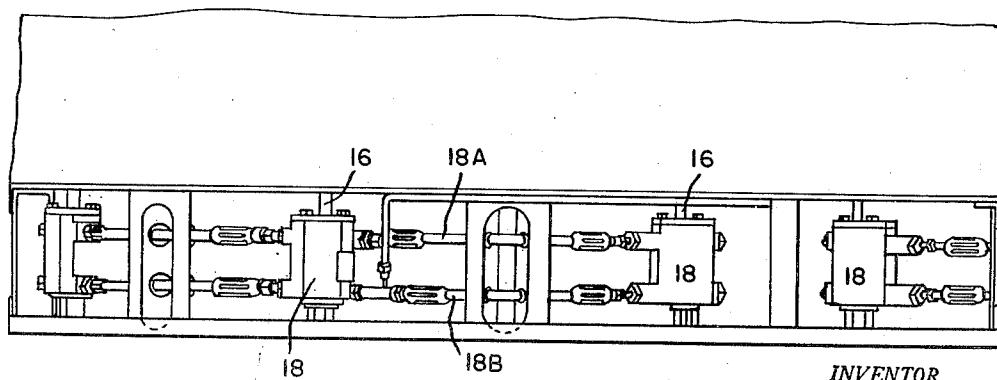


FIG. 6.

INVENTOR.
THOMAS N. KELLY

Frank J. Sarskey

ATTORNEYS

Nov. 23, 1954

T. N. KELLY

2,695,074

RETRACTABLE SCREEN FOR JET ENGINES

Filed Sept. 14, 1951

2 Sheets-Sheet 2

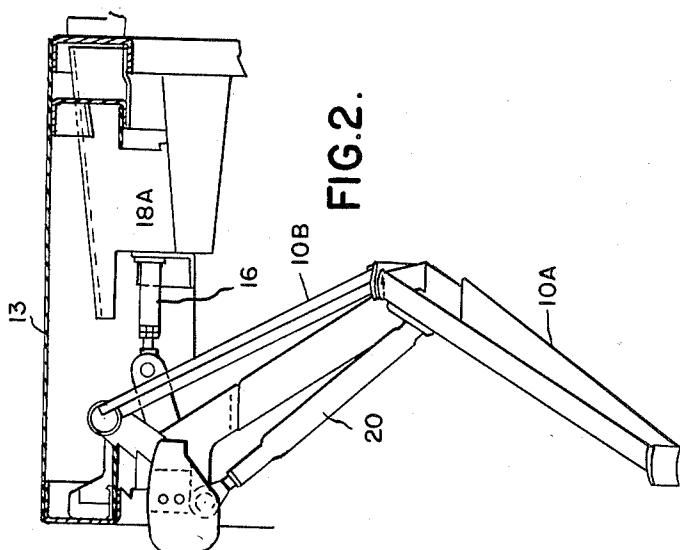


FIG. 2.

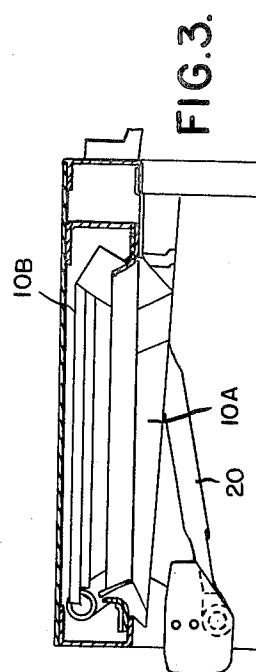


FIG. 3.

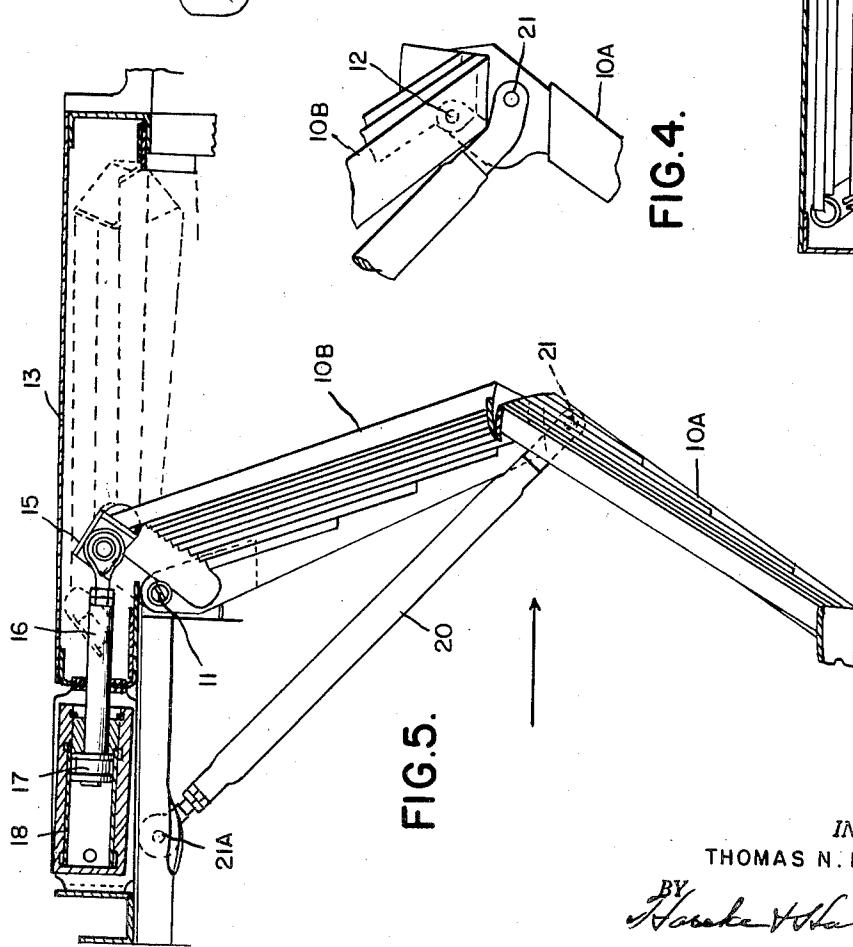


FIG. 4.

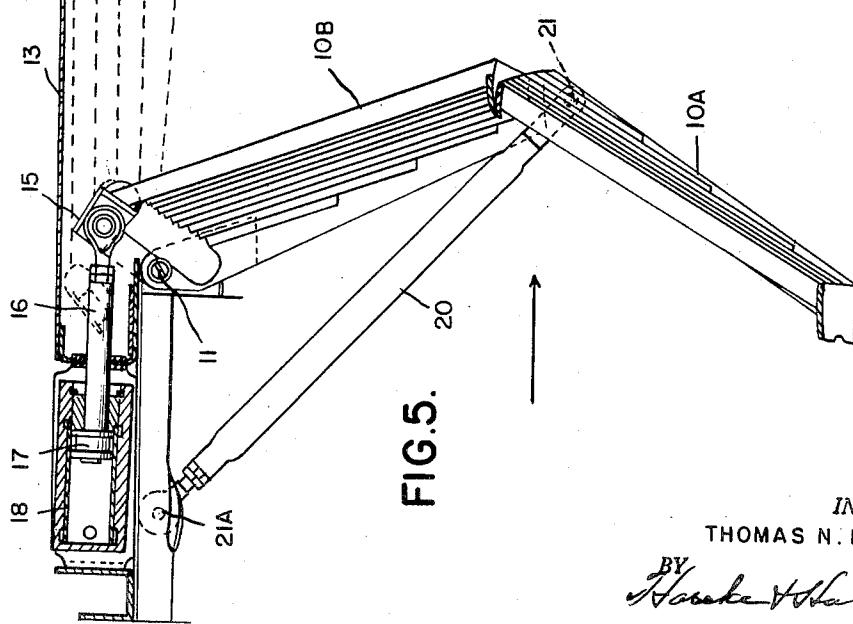


FIG. 5.

INVENTOR.
THOMAS N. KELLY

BY
Thomas N. Kelly

ATTORNEYS

United States Patent Office

2,695,074

Patented Nov. 23, 1954

1

2,695,074

RETRACTILE SCREEN FOR JET ENGINES

Thomas N. Kelly, Ferndale, Mich., assignor, by mesne assignments, to Smith-Morris Corporation, Ferndale, Mich., a corporation of Michigan

Application September 14, 1951, Serial No. 246,672

4 Claims. (Cl. 183—62)

The present invention relates to retractile screens for the air intakes of jet engines and has among its objects the provision of a screen which in its extended or active position, effectively screens such intakes and which in its retracted position, is of relatively small dimension longitudinally of the engine.

Another object is the provision of a screen which is retractile to position in which it has a very small frontal area.

Other objects and advantages will readily appear to those skilled in the art upon reference to the following description and the accompanying drawings in which

Fig. 1 is a front view of a portion of the screen in its extended or active position.

Fig. 2 is a section on line 2—2 of Fig. 1, showing the screen extended.

Fig. 3 is a similar section showing the screen retracted.

Fig. 4 is a fragmentary view showing in detail one of the screen hinges.

Fig. 5 is a sectional view similar to Fig. 1, showing a modification.

Fig. 6 is a part view of the motor installation.

As indicated in the drawings, the screen consists of an annulus designed to be placed in the annular air intake of a jet engine between the core portions of the engine and the outer shell.

It consists of a plurality of identical sector portions 10, each of which consists of two parts or sections 10A and 10B hinged together to form in their extended position the complete sector.

Each of the portions 10A and 10B consists of a suitable frame 10C and 10D carrying a plurality of radially arranged blades 10E, the outer frame 10D being hinged to a suitable supporting element at 11 and the other frame 10C being hinged to frame 10D at 12.

The sectors 10 and operating elements for the screen are suitably mounted in an annular channel or box frame shown in section at 13, so that they may form an assembled unit, capable of being installed as a whole.

Each of the frames 10B is provided at the center of its outermost portion with an ear 15 to which is pivoted the end of a rod 16 suitably fixed to the piston 17 of a hydraulic motor 18, the motors 18 being carried in the channel 13 and connected in parallel to conduits 18A and 18B so that all may be actuated simultaneously, suitable controls (not shown) being provided.

In the form of device shown, in Fig. 5, the motor 18 is mounted ahead (with respect to the air stream) of the screen, while in Figs. 2 and 3, it is to the rear of the screen. In Fig. 5, the position of the screen in extended or active position is shown in full lines while the folded or inactive position is shown in dotted lines.

By making the screen in sections hinged together, they may be retracted into a space of much less longitudinal dimension. Therefore, means is provided for folding the screen sector during the retracting movement. Such a means is shown at 20 as a strut member hinged at one end to the channel frame 13 and at its other end to the screen portion 10A. The hinge 21 at the screen end of the strut is below the hinge 12 connecting the portions 10A and 10B, while the hinge 21A at the other end of the strut is a short distance forward of the hinge 11 of the

2

sector. As shown in Fig. 1, there are preferably two of the struts 20 for each screen sector.

In extended position, the struts 20 will of course, act as stays or supports for the screen sectors, while in retracted position, they serve to hold the sector portion 10A in place.

In the device as shown in Figs. 2 and 3, the sectors 10 may be identical with those shown in Fig. 5 but the motors 18A are mounted to the rear of the sectors and because of this, the frame or channel 130 may be of smaller dimension longitudinally of the engine.

In the operation of the screen, pressure fluid is admitted to one end of each of the motors 18 or 18A and since the ear 15 is outside of the axis of hinges 11, the adjacent frame member and ear act as a crank arm to swing the sector portion. At the same time, the strut 20 swings the other sector portion to the position of Figs. 2 or 5 or to that of Fig. 3 or the dotted line position of Fig. 5 depending upon which end of the motor receives the pressure fluid.

Now having described the invention and the preferred form of embodiment, what is claimed is:

1. An annular screen for the air intake of jet engines consisting of a plurality of identical screen sectors, each consisting of a section hinged adjacent the outer periphery of the annulus and a section hinged to the free end of the first, means for swinging the first section to and from active position and means for simultaneously swinging the second section to extend across a portion of the inlet in active position or to a position of parallelism with the first section in inactive position.

2. A retractile air screen for the annular air inlet for jet engines consisting of an annular frame positioned about the outer periphery of the inlet, a plurality of identical screen sectors hinged to said frame, means mounted in said frame for swinging said screen sectors from within said frame to a screening position across said inlet and vice versa, a second set of screen sectors hinged to the free ends of the first and adapted to extend therefrom to the inner wall of the inlet, and means for extending said second sectors to a position of approximate alignment with the first when moved to active screening position and to fold the second sectors upon the first sectors when the latter are swung back into said frame.

3. A retractile screen for the annular air inlet for jet engines consisting of a plurality of screen sectors each consisting of a radially outer portion and a radially inner portion hinged together, a channeled perimetral frame opening inwardly, said outer sector portion being hinged to said frame adjacent one side thereof and swingable to a position substantially within said channel, a strut member having one end hinged to said frame adjacent to but outside of the hinge for the outer sector portion and having its other end hinged to the inner sector portion adjacent its hinge, and motor means carried in said frame and connected to the outer sector portion and operable to swing the latter out of said channel and to a position across said air inlet.

4. A screen element for the annular air inlet of a jet engine, said element being of sector shape and of two portions hinged together substantially midway of its radial length, an outer frame member having the outer sector portion hinged thereto, and a strut hinged at both ends and extending from said frame to the inner sector portion at a point spaced from but adjacent the hinge between the two sector portions.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
2,381,705	Vokes	Aug. 7, 1945
2,407,194	Vokes	Sept. 3, 1946
2,546,153	De Remer	Mar. 27, 1951
2,555,592	Kelly	June 5, 1951