

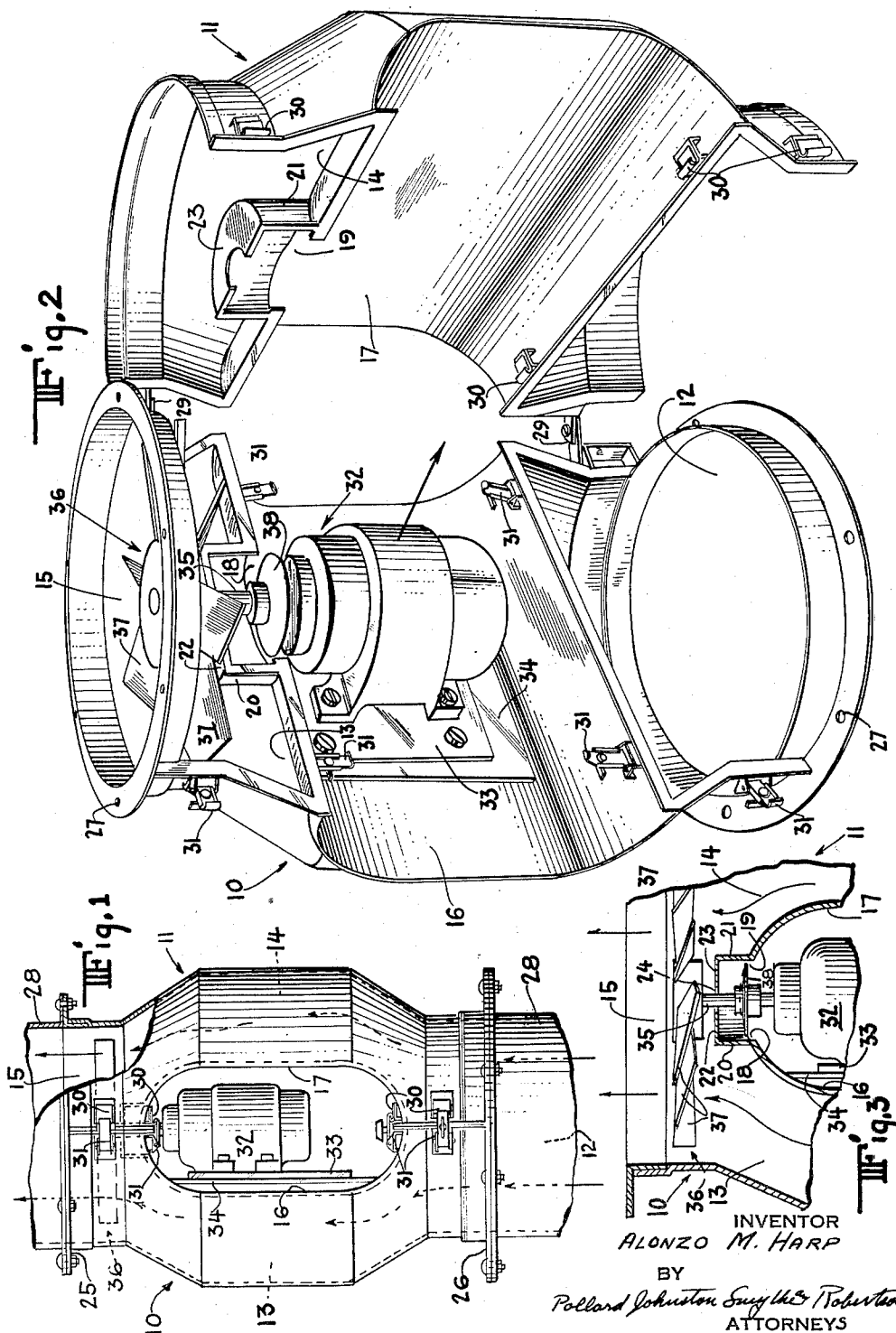
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This invention relates to fan casings, and particularly to a two piece hinged casing in which the motor, the motor shaft and the fan wheel can be readily removed.

In order to prevent the deterioration of the fan motor in a fan unit for moving destructive gases or fluids, fan units have been made wherein the hollow tubular casing thereof has a walled aperture therethrough, in which the fan motor is placed to segregate it from such gases or fluids. The gases or fluids pass through the casing on either side of the aperture and the fan blades are located in the path of fluid flow either before or after the path splits to go through the portion of the casing on either side of the aperture. In such units, the easy removal and replacement of the motor, the motor shaft and the fan blades is extremely difficult.

It is an object of this invention to provide a fan casing of split hinged construction so formed as to permit the easy removal of the fan wheel, the motor shaft and the motor while keeping the motor segregated from the fluid flowing through the casing when the fan casing is in operative position and the fan unit is operating.

The fan unit for circulating gases through a duct according to this invention includes a two part hollow tubular casing having a walled aperture therethrough for receiving a fan motor therein. The mounting of the motor in the walled aperture results in the segregation of the motor from the gases flowing through the unit. One of the parts of the casing is secured to the duct and the other part of the casing is hinged to the fixed part. The fan motor is secured to one of these parts and releasable locking means are provided to secure the free edge of the hinged part to the corresponding edge of the fixed part. A drive shaft, connected at one end to the motor and driven thereby, passes through the wall of the aperture. Connected to the other end of the drive shaft and rotatable therewith is a fan wheel. When the locking means is released and the hinged part of the casing is swung away from the fixed part, access to the motor is provided.

These and other objects, features and advantages of the invention will become apparent from the following detailed description and drawings which are merely exemplary.

In the drawings:

Fig. 1 is a side elevation of a fan unit embodying the invention;

Fig. 2 is a perspective view of the fan unit with the hinged part of the casing in open position; and

Fig. 3 is an enlarged cross-sectional view of the end of the fan unit in which the fan wheel is located.

As illustrated in Fig. 1, the fan unit includes two parts or sections 10 and 11, in the general form of two semi-cylinders. The fan unit draws fluid in at intake passage 12, through passage 13 in section 10 or passage 14 in section 11, and outlet passage 15. The bottom and top portions of parts 10 and 11 are in communication while the passages 13 and 14 along the central portions of parts 10 and 11 are separated by a walled aperture formed

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by wall 16 on section 10 and wall 17 on section 11 when the sections are in their closed, Fig. 1, position. Walls 16 and 17 are spaced from the respective outer walls of sections 10 and 11 adjacent their center and are connected to said outer walls along their side edges, thereby forming passages 13 and 14, respectively.

At the top of walls 16 and 17 (as seen in the drawings) are semi-circular openings 18 and 19, respectively, and semi-cylindrical extensions 20 and 21, respectively, having half discs 22 and 23, respectively, on their upper ends. When the sections 10 and 11 are in their closed or Fig. 1 position, openings 18 and 19, extensions 20 and 21, and half discs 22 and 23 combine to form a circular opening in the walled aperture, a cylindrical extension overlying said opening, and a circular disc across the open top end of the cylindrical extension. A circular opening 24 is formed in this circular disc by cooperating semi-circular cut outs in half discs 22 and 23.

At the opposite ends of one of the parts of the fan unit, part 10 in the drawings, are flanged rings 25 and 26 having suitable bolt holes 27 for securing the fan unit to the duct 28. The other section 11 of the fan unit is hinged to section 10 along a side edge by hinges 29, so that it may be swung between a closed position, shown in Fig. 1, against section 10, and an open position, shown in Fig. 2, away from section 10. Suitable locking devices, such as hooks 30 on section 11 and snap over clamps 31 on section 10, are provided to secure the sections in closed position and prevent the leakage of fluid into the walled aperture.

A motor 32 and a motor plate 33 are secured to one side wall of the walled aperture, wall 16 of section 10 in the drawings, on a plate 34 by screws or other suitable means. The motor drive shaft 35 extends through the opening in the walled aperture and through the opening 24 in the top plate of the cylindrical extension. A fan wheel 36 is attached to the other end of shaft 35 for rotation therewith and includes a plurality of fan blades 37. Also attached to shaft 35 intermediate its ends is a disc 38 which coincides with the opening in the walled aperture to tend to close the same and help prevent fluid which might leak past opening 24 from passing into the walled aperture.

From the above description and from the drawings, it is clear that when the fan unit is in operative position in the duct and drive shaft 35 is rotating the fluid in the duct is drawn into inlet 12, through passages 13 and 14 and is forced up through outlet 15 without coming into contact with the motor 32. Should access be desired to motor 32, shaft 35 or fan wheel 36, clamps 31 are released and section 11 is swung away from section 10, thereby completely exposing the operative parts of the fan unit without disturbing the connection between the fan unit and the duct.

If desired, a fan and a motor (not shown) can be provided at the other end of the unit also. In addition, it is clear that the motor 32, plate 33 and plate 34 can all be secured to hinged section 11 instead of fixed section 10.

It is to be understood that other details of construction can also be varied without departing from the spirit of the invention except as defined in the appended claims.

What is claimed is:

1. A fan unit for circulating gases through a duct including a two part hollow tubular casing having a walled aperture therethrough for receiving a fan motor therein so that said motor is segregated from the gases passing through said casing, one of said parts being secured to said duct and the other of said parts being hinged to said fixed part, each of said parts having a semi-circular opening therein, the two semi-circular openings being aligned with each other when in closed position

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so as to form a circular opening in the wall of said aperture, said fan motor being secured to one of said parts, locking means for releasably securing the free edge of said other part to said fixed part, a drive shaft passing through said circular opening and connected at one end to said motor to be driven thereby, and a fan wheel connected to the other end of said shaft and rotatable therewith, access to said motor being provided when said locking means is released and said other part is swung to open position.

2. A fan unit for circulating gases through a duct including a two part hollow tubular casing having a walled aperture therethrough for receiving a fan motor therein so that said motor is segregated from the gases passing through said casing, each of said parts having a passage therethrough formed by the outer wall of said part and a portion of the wall of said aperture, one of said parts being secured to said duct by a flanged ring and the other of said parts being hinged to said fixed part along a side edge thereof, each of said parts having a semi-circular opening therein, the two semi-circular openings being aligned with each other when in closed position so as to form a circular opening in the wall of said aperture, said fan motor being secured to said fixed part, locking means for releasably securing the said other part to said fixed part at a number of points, so as to prevent leakage of fluid into said aperture from said casing, a drive shaft passing through said circular opening and connected at one end to said motor to be driven thereby, and a fan wheel connected to the other end of said shaft and rotatable therewith, access to said motor, said fan wheel and said shaft being provided when said locking means is released and said other part is swung to open position.

3. A fan unit for circulating gases through a duct including a two part hollow tubular casing having a walled aperture therethrough for receiving a fan motor therein so that said motor is segregated from the gases passing through said casing, a cylindrical extension at one end of said aperture extending into one end of said casing, said extension having an opening therethrough, said extension being formed by a semi-cylindrical extension on each of said parts when said parts are secured together, one of said parts being secured to said duct and the other of said parts being hinged to said fixed part along a side edge thereof, said fan motor being secured to said fixed part, locking means for releasably securing the free side edge of said other part to said fixed part, a drive shaft passing through the opening in the cylindrical extension and connected at one end to said motor to be driven thereby, and a fan wheel connected to the other end of said shaft and rotatable therewith, access to said motor being provided when said locking means is released and said other part is swung to open position, so that said motor, said fan wheel and said shaft can be removed.

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drical extension and connected at one end to said motor to be driven thereby, and a fan wheel connected to the other end of said shaft and rotatable therewith, access to said motor being provided when said locking means is released and said other part is swung to open position, so that said motor, said shaft and said fan wheel can be removed.

4. A fan unit for circulating gases through a duct including a two part hollow tubular casing having a walled aperture therethrough for receiving a fan motor therein so that said motor is segregated from the gases passing through said casing, each of said parts having a passage therethrough formed by the outer wall thereof and a portion of the wall of said aperture, a cylindrical extension at one end of said aperture extending into one end of said casing, said extension having an opening therethrough, said extension being formed by semi-cylindrical extensions on each of said parts when said parts are secured together, one of said parts being secured to said duct by flanged rings at each end and the other of said parts being hinged to said fixed part along a side edge thereof, said fan motor being secured to said fixed part, locking means for releasably securing the said other part to said fixed part at a number of points, so as to prevent leakage of fluid into said aperture from said casing, a drive shaft passing through the opening in the cylindrical extension connected at one end to said motor to be driven thereby, a circular disc secured to said shaft and located adjacent the base of said cylindrical extension between said opening and said motor, said disc having a diameter approximately the same as the interior diameter of the cylindrical extension so as to minimize gas leakage therethrough, and a fan wheel connected to the other end of said shaft and rotatable therewith, access to said motor, said fan wheel and said shaft being provided when said locking means is released and said other part is swung to open position, so that said motor, said fan wheel and said shaft can be removed.

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