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O. W. HOWARD

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VARIABLE-SPEED CONTROL MOTOR MOUNT

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2 Sheets-Sheet 1

Fig. 1

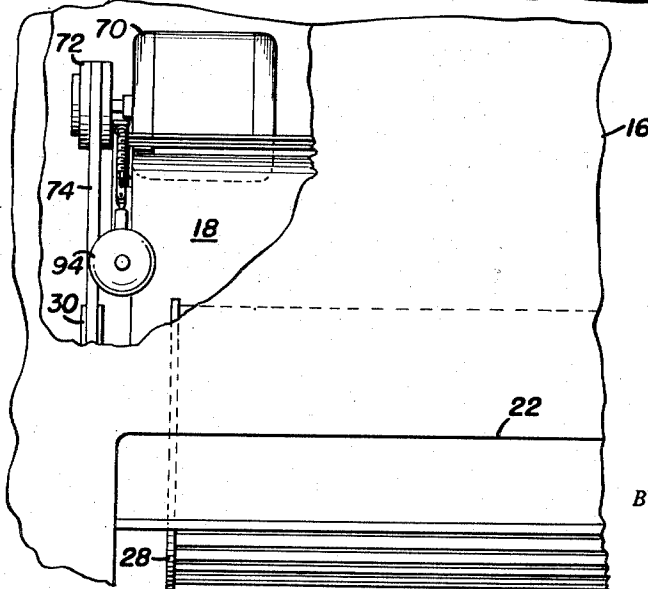
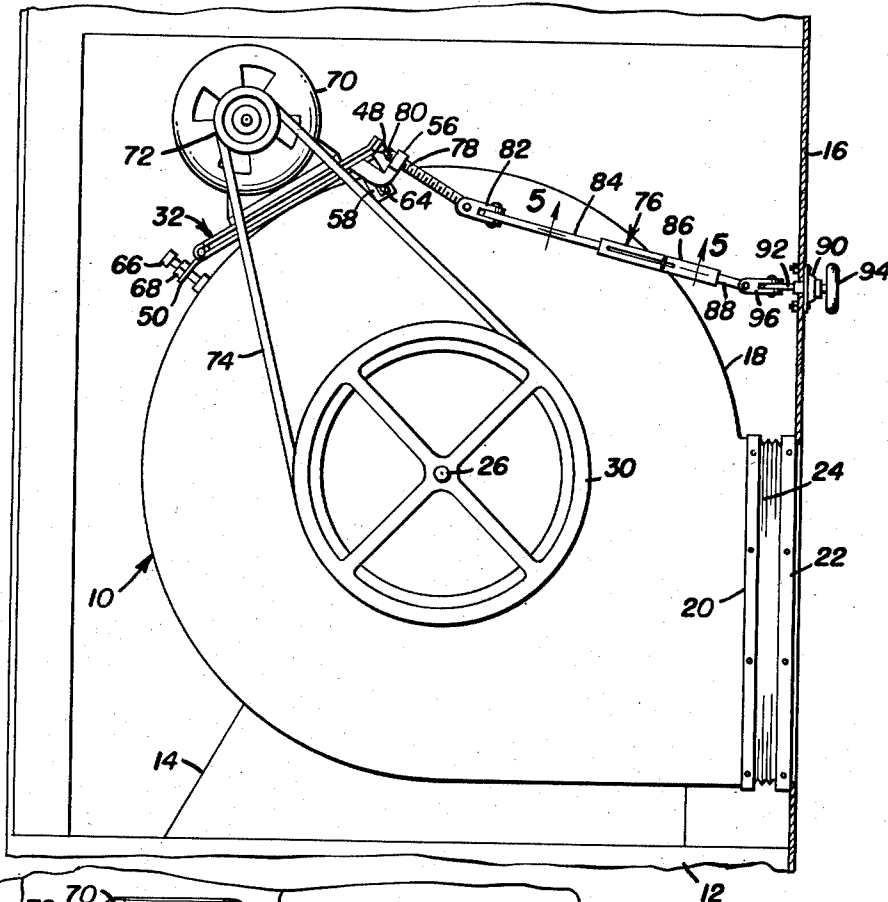


Fig. 2

Oliver W. Howard
INVENTOR.

BY *Alfonso A. O'Brien*
and Harvey B. Jackson
Attorneys

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VARIABLE-SPEED CONTROL MOTOR MOUNT

Oliver W. Howard, Abilene, Tex., assignor of
twenty-five per cent to W. Lee Byrd, Abilene,
Tex.

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2 Claims. (Cl. 248—23)

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This invention relates generally to a variable speed control and more particularly to a variable speed control for a belt driven blower.

The primary object of this invention is to provide means for varying the speed of a blower whereby the volume of air moved thereby may be reduced or increased as desired.

Another object of this invention is to provide a linkage whereby the variable speed control means can be operated at a distance from the blower to which it is attached.

Another object of this invention is to provide an exceptionally simple, durable and compact mechanism for varying the speed of the pulley on the blower, which can be readily applied to blowers now on the market without any change in the construction thereof.

A further object of the invention is to provide means whereby the motor for the blower may be pivotally mounted on the blower so as to vary the tension in the belt connecting the blower pulley to the motor, said motor being provided with a variable speed pulley which is responsive to the variation in the tension of the drive belt.

These, together with various ancillary features and objects of the invention, which will later become apparent as the following description proceeds, are attained by the present invention, a preferred embodiment of which has been illustrated, by way of example only, in the accompanying drawings, wherein:

Figure 1 is a side elevational view of a blower mounted on a support, the blower being provided with a variable speed control, which is the subject of this invention;

Figure 2 is a partial front elevational view of the blower of Figure 1, a portion of the support being removed to show the connection between the motor and the blower;

Figure 3 is a perspective view of an adjustable mount for attaching the motor to the blower in pivotal relation;

Figure 4 is a central vertical sectional view taken substantially upon the plane indicated by the section line 4—4 of Figure 3, the motor being shown in dotted lines;

Figure 5 is a partial central vertical sectional view taken substantially upon the plane indicated by the section line 5—5 of Figure 1 and showing the adjustable feature of the linkage;

Figure 6 is a transverse vertical sectional view taken substantially upon the plane indicated by the section line 6—6 of Figure 5;

Figure 7 is an enlarged partial elevational view of the lower plate of the mount shown in Figure

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3 and particularly shows the construction of a mounting bracket and the mounting arm for an adjusting means.

Referring now more specifically to the accompanying drawings, wherein like numerals designate similar parts throughout the various views, it will be seen that the embodiment of the invention depicted in the drawings as illustrative of the principles of the invention, comprises a blower having mounted thereon means for driving said blower at variable speeds. Referring more specifically to Figure 1, it will be seen that the invention comprises a conventional blower which will be referred to hereinafter by the reference numeral 10. The blower 10 is mounted in a support 12 by support legs 14 carried by the blower 10 and secured to the support 12. The support 12 is provided with a front wall 16 which is intended to be mounted in an opening such as a window or the like. The blower 10 has a housing 18 which is provided with a flanged outlet 20. The front wall 16 of the support is also provided with a flanged outlet which is designated by the reference numeral 22. A flexible conduit 24 extends between and is secured to the flanged outlets 20 and 22. The flexible conduit 24 forms an expansion joint between the blower 10 and the support 12. Rotatably journaled in the blower housing 18 is a shaft 26. Mounted on the shaft 26 within the blower housing 18 is a conventional blower fan or rotor 28. Also carried by the shaft 26, but externally of the blower housing 18 is a pulley 30 which is intended to be driven by a motor.

Secured to the top of the blower housing 18 is a mount for a motor, said mount being generally designated by the reference numeral 32 and shown in greater detail in Figures 3, 4 and 7. The mount 32 includes a first plate 34 and a second plate 36 in overlying relation to the first plate 34. The plates 34 and 36 have formed along one edge thereof a plurality of hinge eyes 38 through which are passed a hinge pin 40, which secures the plates 34 and 36 together in hinged relation. The upper plate 36 is provided with a plurality of apertures 42 through which are passed fasteners 44 for securing an electric motor to the second plate 36. The plate 36 has a corner opposite its hinged edge which is partially severed from the plate and bent up at an angle thereto to form an offset arm 46. Carried by the underside of the arm 46 is a socket member 48, the function of which will be explained in detail hereinafter. Integral with and extending beyond the hinged edge of the first plate 34

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at a slight angle thereto is a mounting bracket 50. The mounting bracket 50 is located centrally of the hinged edge of the plate 34. The mounting bracket 50 is provided with an aperture 52 which is adapted to receive a mounting bolt. Carried by the plate 34 at one corner thereof and substantially underlying the arm 46 is an L-shaped bracket 54. One arm of the bracket 54 is secured to the plate 34 and the other arm carries at its free end an internally threaded sleeve 56. The axis of the sleeve 56 is at an angle to the plates 34 and 36 and substantially normal to the plane of the arm 46. Also carried by the plate 34 is a second mounting flange 58, which is integral with a flange 60 secured to the underside of the plate 34. The mounting flange 58 is secured adjacent the arm 54 and extends normal to the plane of the plate 34. The mounting flange 58 is provided with an aperture 62 for receiving a mounting bolt.

Referring once again to Figure 1, the mounting flange 58 is secured to the side of the blower housing 18 by a bolt 64 which passes through the aperture 62. A bolt 66 is passed through the aperture 52 in the mounting flange 50 and is rigidly secured to the top of the blower housing 18. A nut 68 is threadedly received on the bolt 66 and engages the upper side of the mounting bracket 50, whereby when it is tightened down on the bracket the bottom of the plate 34 is thrown into compressive engagement with the top of the blower housing 18. Carried by the mount 32 is a conventional electric motor 70 on which is mounted a variable speed drive pulley 72. A drive belt 74 connects the drive pulley 72 with the driven pulley 30 of the blower.

Connected to the mount 32 and carried by the front wall 16 of the support 12 is a linkage for pivoting the upper plate 36 with respect to the plate 34 about the hinge pin 40. The linkage is generally designated by the reference numeral 76 and includes a bolt 78 threadedly received in the internally threaded sleeve 56 for motion longitudinally thereof. The bolt 78 has a reduced upper end 80 which is universally received in the socket 48 of the arm 46 carried by the plate 36. Carried by the lower end of the bolt 78 is a universal connector 82. Attached to the other end of the universal connector 82 is an elongated guide 84 which is slidably received in a sleeve 86 carried by the rod 88. Mounted on the front wall 16 is a control which includes a mounted bracket 90, a shaft 92 rotatably mounted therein and extending therethrough, and a control handle 94 mounted on the end of the shaft away from the blower 10. The shaft 92 is connected to the rod 88 by a universal connector 96. As is readily apparent, when the control handle 94 is rotated the bolt 78 is also rotated in the same direction. Likewise rotation of the control handle 94 results in the movement of the upper end 80 of the bolt 78 towards the plate 36 whereby it is tilted with respect to the plate 34 about the hinge pin 40. When the control handle 94 is rotated counter-clockwise the upper end 80 will be withdrawn and the plate 36 may turn to its original position by the weight of the motor 70. Since the length of the linkage 76 is varied as the bolt 78 is moved longitudinally through the sleeve 56, it is obvious that an expansion connection such as that shown between the rod 84 and sleeve 86 is required.

Referring now to Figure 5, it will be seen that the sleeve 86 slidably receives therein the rod 84. Adjacent the end in which the rod 84 is

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received, the sleeve 86 is provided with a pair of diametrically opposite slots 88. A cotter key 100 is passed through the end of the rod 84 and is slidably received in the slots 88. By this construction the rod 84 may have its effective length varied by sliding in and out of the sleeve 86 and at the same time is rotatably connected to the sleeve 86 by the cotter key 100.

The variable speed drive pulley 72 mounted on the motor 70 is a special pulley and does not form a part of this invention. A special pulley of this type is fully described in the U. S. Patent No. 2,050,358, and the construction is such that when the tension on the associated drive belt is increased, the effective diameter of the guide pulley is reduced whereby the speed of the drive belt is also reduced.

In order that the speed of the blower 28 may be controlled, it is necessary to either increase or decrease the tension of the drive belt 74. In view of the foregoing description of the operation of the linkage 76, it will be seen that when the plate 36 is tilted with respect to the plate 34 in response to clockwise rotation of the control handle 94, that the electric motor 70 is tilted away from the pulley 30 and results in an increase in the tension of the drive belt 74. The increase in the tension of the drive belt 74 results in the effective diameter of the variable speed pulley 72 being reduced, whereby the speed of the pulley 30 is also reduced accordingly. When the control handle 94 is rotated counter-clockwise, the electric motor 70 is moved towards the pulley 30 with the resultant reduction in the tension in the drive belt 74. The effective diameter of the variable speed pulley 72 is then increased, and the speed of the pulley 30 is also increased accordingly. It is obvious that the air moved by the blower 10 is directly proportional to the speed of the pulley 30 so that any change in the speed of the pulley 30 results in a change in the volume of the air moved by the blower 10.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. For use in a variable speed control including a motor and a driven shaft, a mounting attachment comprising a first plate adapted to be secured to support means for the driven shaft, a second plate overlying said first plate and being adapted to have secured thereto the motor, said plates having meshing hinge knuckles pivotally connected by a hinge pintle to permit relative hinging of said plates, said first plate having depending therefrom an L-shaped support, a sloping sleeve carried by said L-shaped support, said sleeve being internally threaded and in alignment with a generally spherical socket carried by an upwardly struck tab on said second plate, an adjusting bolt threadedly engaged in said sleeve and having an upper end universally received in said socket, means for facilitating rotation of said bolt to adjust the relationship of said plates.

2. For use in a variable speed control includ-

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ing a motor and a driven shaft, a mounting attachment comprising a first plate adapted to be secured to support means for the driven shaft, a second plate overlying said first plate and being adapted to have secured thereto the motor, 5 said plates having meshing hinge knuckles pivotally connected by a hinge pintle to permit relative hinging of said plates, said first plate having depending therefrom an L-shaped support, a sloping sleeve carried by said L-shaped support, said sleeve being internally threaded and in alignment with a generally spherical socket carried by an upwardly struck tab on said second plate, an adjusting bolt threadedly engaged in said sleeve and having an upper end universally received in said socket, means for facilitating rotation of said bolt to adjust the rela-

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tionship of said plates, said means including a control handle carried by a remotely disposed support, linkage connecting said control handle to said bolt for transmitting rotary motion from said control handle to said bolt, said linkage including a slack take-up device to compensate for longitudinal movement of said bolt.

OLIVER W. HOWARD.

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