May 17, 1955 C. J. WERNER 2,708,373

POWER TRANSMITTING DEVICE

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Fig. 1.

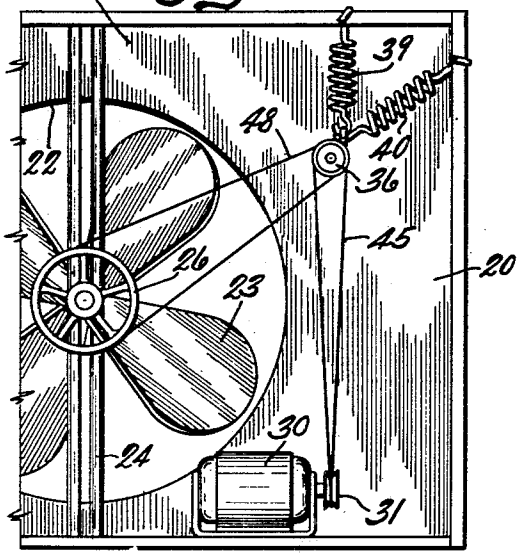
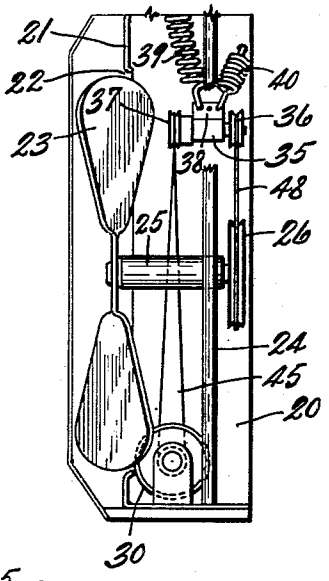


Fig. 2.



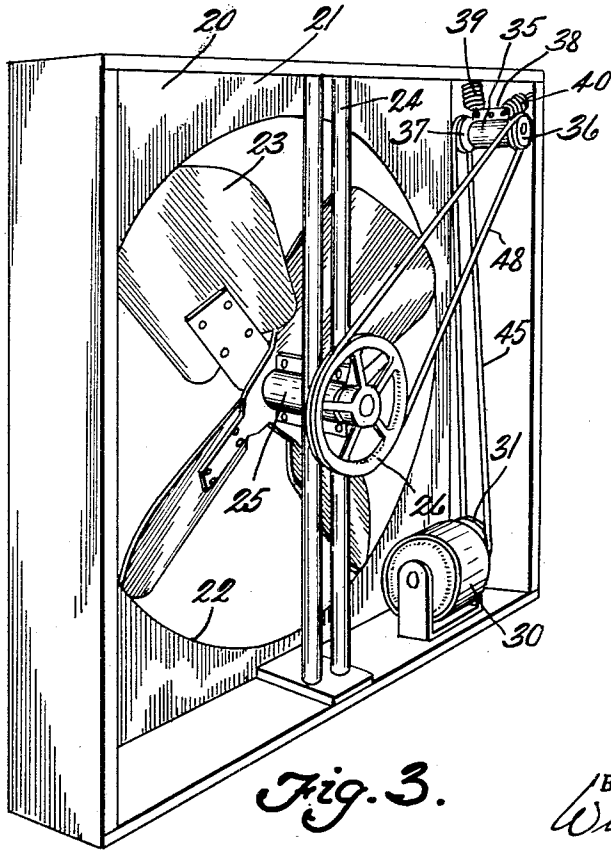


Fig. 3.

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POWER TRANSMITTING DEVICE

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This invention relates to an improved power transmitting device.

It is among the objects of the present invention to provide a self-aligning power transmitting device consisting of an intermediate shaft supporting two pulleys which are respectively connected by belts to a driving and to a driven pulley, arranged relatively one to the other in any suitable manner.

A further object of the present invention is to provide a power transmitting device as defined above, said device being operative automatically to tighten or to maintain said belts operatively taut. This invention lends itself advantageously to reverse operation of the driven member or fan in this instance by the single expedient of reversing the application of the belt on the driving pulley thereby avoiding the necessity of a reversible power unit.

These objects are accomplished by movably suspending the journal box in which the intermediate shaft, supporting the two pulleys, is rotatably supported. The suspension means may be any suitable member, preferably coil springs, which will permit the journal box to move automatically to bring the belt connected pulleys in operative alignment, the advantage of the use of springs being that they are adapted to hold the belts taut by exerting a pulling effort.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings wherein a preferred embodiment of the present invention is clearly shown.

In the drawings:

Fig. 1 is a view showing the present invention applied to an electric motor driven fan especially adapted for window use.

Fig. 2 is a side view of the device shown in Fig. 1.

Fig. 3 is a perspective of the mechanism shown in Fig. 1.

The improved power transmitting device, the subject matter of the present invention, may advantageously be used in a window fan where the air circulating fan is rotatably supported in a housing or shroud and driven by an electric motor through a belt connection. The simplest way of transmitting the power from a motor to a fan is to have the motor rotor shaft and the shaft upon which the fan is carried substantially parallel, each being provided with a pulley operatively connected by a belt. In window fans the housing or shroud must be comparatively narrow so as not to extend beyond the inside or the outside edges of the window frame. Usually the motor to drive the fan has an overall length greater than the width of the shroud and to avoid extension of the driving shaft of the motor beyond the one side of the shroud, which is generally covered with a protective screen, a bulge is provided at a front corner of the housing or shroud into which the motor may extend to compensate for the length thereof. This bulge, in what should be a normally straight and flat front on

the housing, detracts from its appearance and therefore is undesirable.

In order to eliminate the bulge so that the outside appearance of the window fan housing is not marred thereby, the electric motor may be mounted as shown in Figs. 1 and 3 of the drawings so that no portion thereof extends beyond the confines of the shroud. This displaces the motor from the fan pulley so that the rotor shaft of the motor is angularly arranged relatively to the fan shaft and its pulley thereby requiring a unique power transmitting drive connection between the motor and the fan.

The present invention provides such a power transmitting connection.

Referring to the drawings, the housing or shroud **20** of the window fan is rectangular in shape preferably square and of the width comparative to the width of a window frame in an ordinary dwelling. The one side of this shroud has a face plate **21** provided with a circular opening **22** in which the fan blades **23** rotate, this opening **22** being usually covered with any suitable screen which acts as a safety device. Suitable rigid uprights **24** are secured within the shroud for supporting the journal box **25** in which the shaft to which the fan blades **23** are attached is rotatably supported. At the end of the shaft opposite the fan blade **23** there is attached a pulley **26** to be driven by the electric motor **30** which, as shown in the drawings, is mounted within the housing on one side thereof the rotor shaft of said motor being longitudinal of the side on which the motor is mounted. The rotor shaft of the motor **30** has a pulley **31** attached thereto, the axis of which is substantially at right angles to the axis of the shaft supporting the fan pulley **26**.

In order to connect the driving motor **30** with the fan **23** or more specifically the pulley **31** of the motor with the fan pulley **26**, the power transmitting mechanism of the present invention is particularly adaptable, especially in an installation of this kind. This power transmitting mechanism consists of a journal box **35** rotatably supporting a shaft at one end of which a pulley **36** is attached and at the other end a pulley **37** so that both pulleys **36** and **37** rotate with the shaft supported within the journal box **35**. This journal box has an angular extension **38** to which corresponding ends of the two springs **39** and **40** are attached, the other ends of these springs being anchored to the sides of the shroud whereby said springs movably support the journal box **35** within the shroud or housing **20**. The spring **39** has its end attached to the angular extension **38** of the journal box **35** adjacent the pulley **37** which, as shown in Fig. 1, is connected with the pulley **31** of the motor by belt **45**. The other end of spring **39** is secured to the side of the shroud opposite the side on which the motor is mounted and at such a location so that the axial stretching line of spring **39** is substantially in parallelism with the belt **45** or in such a manner that the spring **39** exerts a pull upon the journal box **35** lengthwise of and in substantial alignment with the belt **45** thereby automatically holding the belt **45** taut and at the same time holding the pulley **37** in operative alignment with its connected motor pulley **31**. In like fashion spring **40** is attached to another side of the shroud or housing **20** and to the extension **38** adjacent pulley **36**, so that its axial stretching line is in substantial parallelism with the belt **48** connecting pulleys **36** and **26**, the spring **40** exerting a pulling or stretching force upon the belt **48** substantially lengthwise thereof to maintain it taut and at the same time holding the journal box **35** in suspension so that pulleys **36** and **26** are in operative alignment.

From the aforegoing it may be seen that springs **39**

and 40 movably suspend the journal box 35 within the shroud or housing 20 so that the respective pairs of belt-connected pulleys are held in operative alignment, both springs acting to maintain the belts taut in order to provide efficient power transmission between the electric motor and the fan belt 26. Any other suitable means may be provided for movably supporting the journal box 35 within the shroud or housing 20 so that pulley alignment is substantially maintained. However, it has been found that coil springs, as shown are most preferable in that they exert their forces and perform their functions under more varied circumstances and shiftable positions than would many other means for movably supporting the journal box 35. It will, of course, be understood that the side of the casing opposite the side provided with the opening 22 is covered with a protective screen thus preventing any of the working parts within the housing from extending beyond this protective covering.

While the embodiment of the present invention as herein disclosed, constitutes a preferred form, it is to be understood that other forms might be adopted.

What is claimed is as follows:

1. A power transmitting device comprising in combination, a driving pulley, a driven pulley, a journal box supporting a rotating shaft having a pulley attached at each end thereof, a belt connecting one shaft pulley with the driving pulley and another belt connecting the other shaft pulley with the driven pulley, and plural resilient suspension means suspending said journal box from a stationary support for free spatial movement, each suspension means acting on said journal box in a direction substantially aligned with the belt engaging the shaft pulley adjacent the respective suspension means whereby to maintain the pulley connected belts taut and each pair of belt connected pulleys in operative alignment.

2. A power transmitting device comprising in combination, a driving pulley, a driven pulley, a journal box supporting a rotatable shaft having a pulley attached

at each end thereof, a belt connecting one shaft pulley with the driving pulley and another belt connecting the other shaft pulley with the driven pulley, and coil springs attached to the journal box adjacent each of the respective pulleys thereon and to a stationary support, said springs yieldably suspending the box from the support for free spatial movement, the tensional axis of each spring being in substantial alignment with the belt nearest adjacent the respective spring to maintain thereby the belts taut and each pair of belt connected pulleys in operative alignment.

3. A power transmitting device comprising in combination, a driving pulley, a driven pulley, a journal box supporting a rotatable shaft having a pulley attached at each end thereof, a belt connecting one shaft pulley with the driving pulley and another belt connecting the other shaft pulley with the driven pulley, and coil springs attached to the journal box adjacent each of the respective pulleys thereon and to a stationary support, said springs yieldably suspending the box from the support for free spatial movement, the tensional axis of each spring being in substantial linear alignment with the belt nearest adjacent the respective spring to maintain thereby the belts taut and each pair of belt connected pulleys in operative alignment.

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