

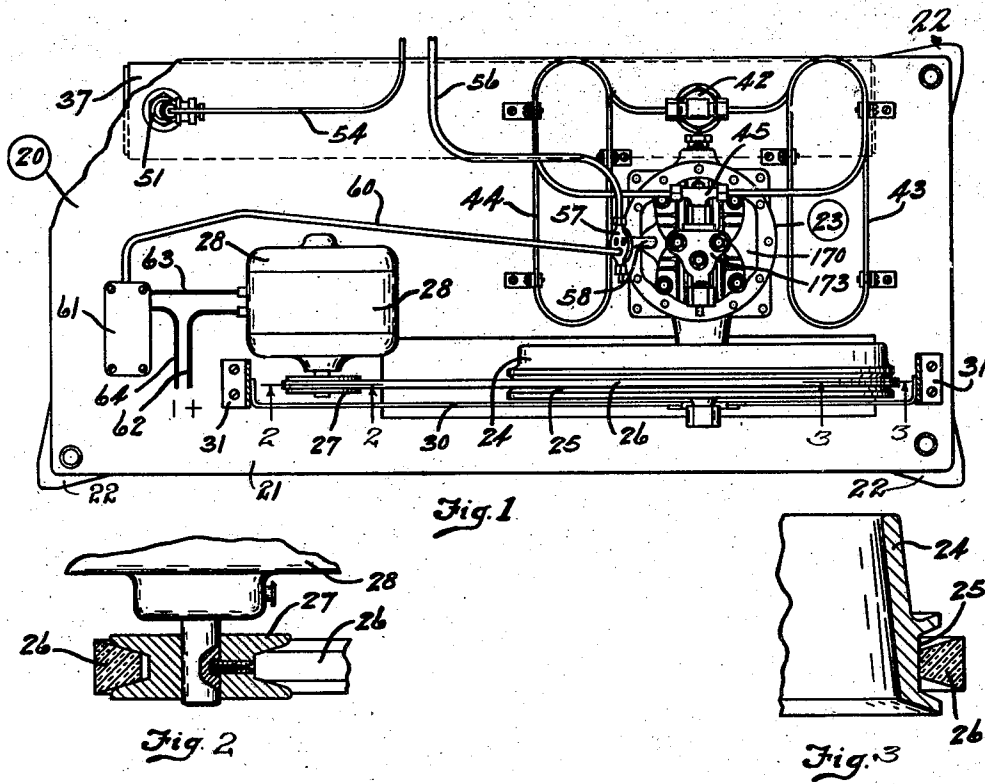
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REFRIGERATING APPARATUS

Original Filed Oct. 3, 1923



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UNITED STATES PATENT OFFICE.

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REFRIGERATING APPARATUS.

Original application filed October 3, 1923, Serial No. 666,218. Divided and this application filed April 30, 1924. Serial No. 710,131.

The present invention relates to transmission mechanism and particularly to belt and pulley construction.

The present invention is a division of my copending application, Serial No. 666,218, filed October 3, 1923.

In the present invention a prime mover and a driven machine are connected through belt and pulley connections and one of the objects of the present invention is to provide belt and pulley connections whereby under normal operating conditions, there is substantially no slippage between the belt and pulleys. In case of abnormal condition of load, the belt and pulley connection is such that slippage takes place to such an extent that the prime mover will not stall.

Another object of the present invention is to prevent burning of the belt in case of abnormal condition of load.

One manner of carrying out the above objects is to provide a substantially non-slipping driving connection between the belt and one of said pulleys and to provide for slippage between the belt and the other pulley in case of abnormal condition of load.

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

In the drawings:

Fig. 1 is a plan view of a refrigerator unit embodying the present invention.

Fig. 2 is a sectional view of the motor pulley and driving belt; and

Fig. 3 is a fragmentary sectional view of the compressor flywheel and driving belt.

Referring to the drawings: the refrigerator unit includes a bench 20 including a top or platform 21 supported by legs 22 at a distance above the floor. On the upper side of the platform 21 there is mounted a compressor 23, the shaft of which carries a flywheel 24 provided with a belt groove 25 for receiving a belt 26, which is connected with a pulley 27 operated by an electric motor 28 also mounted upon the platform 21. Protection against the pulleys and belt is afforded by means of a wire mesh screen or pulley guard 30 secured by brackets 31 to the platform 21.

A receiver 37 is carried on the under side

of the platform 21 and its inlet opening is connected by a T 42 to which two condenser coils 43 and 44 are connected in parallel. The other ends of the coils 43 and 44 are connected by a T 45 to the compressor 23.

The coils 43 and 44 are suitably supported above the platform 21.

The receiver 37 is suitably connected by a fitting 51 to a high-pressure pipe 54 which in turn is connected to an evaporator (not shown). A low-pressure pipe 56 leading from the evaporator is connected with a coupling 57 to a pipe 58 which is connected to the inlet of the compressor 23. The coupling 57 also connects a control pipe 60, leading to a switch controller 61, with the pipes 56 and 58. The motor 28 is connected with a current source by wires 62 and 63 connected with the controller switch 61 and by a wire 64 connecting the switch 61 with the current source. The controller 61 may be of the type shown in the copending application of Jesse G. King, Serial No. 677,137, filed Nov. 26, 1923.

For the understanding of the present invention it is sufficient to state that when the pressure in the pipe 60 exceeds a certain value, the motor will be rendered operative to withdraw evaporated refrigerant from the evaporator, causing the same to be compressed and condensed and delivered back to the evaporator in somewhat liquefied condition. When the pressure pipe 60 falls below a certain amount then the switch 61 will disconnect the motor from the current source to stop the operation of the pump. While the pump is idle the refrigerant will evaporate in the evaporator until the pressure in pipe 60 increases again to a point where the motor will begin operation. Thus the cycle of operation is repeated automatically.

The pulley groove 25 in the flywheel 24 is wider than but not as deep as the belt 26 which is keystone shaped in cross section as shown in Figs. 2 and 3. Therefore, driving engagement is provided by the inner surface of the belt engaging the bottom surface of the groove 25. Referring to Fig. 2, the groove provided in the motor pulley 27 is of such a width and shape that driving engagement is with the sides of the belt 26 and not thru the inner surface of the belt. This arrangement of the belt with the pulleys 27 and 24 provides that in case the compressor

should stick, the motor may keep on operating, since the belt 26 may slip in the belt groove 25 with respect to the flywheel 24 or may slip off the flywheel. The belt 26 can be
5 adjusted to provide for driving the pump by the motor 28 under normal conditions, but under abnormal conditions, such as sticking of the pump, the motor will not be stalled but will be free to operate until the current
10 is turned off. Since the motor can not stall, when there is an abnormal load, the danger of said motor burning out is removed. Furthermore in case the compressor or work machine is stalled, the entire belt is subjected
15 to the same degree of slippage and the slipping is not concentrated at a certain part of the belt as would be the case if slippage was permitted at the motor pulley in which case the frictional engagement would cause the
20 belt to be heated to such a degree as to cause same to burn. In the present invention, the entire belt is subjected to such frictional engagement, in the event that the work machine should stall. Thus the temperature of the
25 belt will not be raised to such a degree as to cause same to be injured. Furthermore as a portion of the belt is being heated, due to frictional engagement with the flywheel, the other portion thereof which is not in engagement with the pulley is being cooled.
30 In this manner the temperature of the belt will not be raised to such a degree as to cause injury to same.

While the form of embodiment of the
35 present invention as herein disclosed, constitutes a preferred form, it is to be understood that other forms might be adopted, all coming within the scope of the claims which follow.

40 What I claim is as follows:

1. A transmission mechanism comprising, a driving pulley and a driven pulley, and a belt for connecting said pulleys, said driving pulley having driving engagement with
45 the side edges of the belt, and said driven pulley having driving engagement with the inner surface of the belt.

2. A transmission mechanism comprising, a driving pulley and a driven pulley, one of

said pulleys having a peripheral groove, and
50 a belt connecting said pulleys, said belt and said grooved pulley having driving engagement therebetween through the sides of the belt and the side walls of the groove, the
55 other of said pulleys having driving engagement through the inner surface of the belt.

3. A transmission mechanism comprising, a relatively large pulley and a relatively
60 small pulley, said small pulley having a peripheral groove and a belt connecting said pulleys, said belt and said small pulley having driving engagement therebetween through the sides of the belt and the side
65 walls of the groove, the other of said pulleys having driving engagement through the inner surface of the belt.

4. A transmission mechanism comprising, a plurality of pulleys, one of said pulleys
70 having a peripheral groove and a belt connecting said pulleys, said belt and grooved pulley having driving engagement therebetween through the sides of the belt and the
75 side walls of the groove, the other of said pulleys having driving engagement through the inner surface of the belt.

5. In combination, a prime mover and a machine adapted to be driven thereby; and a
80 transmission mechanism between said prime mover and said machine including a pulley driven by the prime mover and having a peripheral groove, a second pulley for driving
85 the machine, and a belt connecting said pulleys, said belt and grooved pulley having driving engagement therebetween through the sides of the belt and the side walls of the
90 groove, the other of said pulleys having driving engagement through the inner surface of the belt.

6. A transmission mechanism comprising, a driving pulley and a driven pulley, and a
90 belt for connecting said pulleys, one of said pulleys having driving engagement with the side edges of the belt, and the other of said pulleys having driving engagement with the
95 inner surface of the belt.

In testimony whereof I hereto affix my signature.

HARRY B. HULL.