

April 28, 1931.

H. F. SMITH ET AL

1,802,485

REFRIGERATING APPARATUS

Filed Nov. 30, 1928

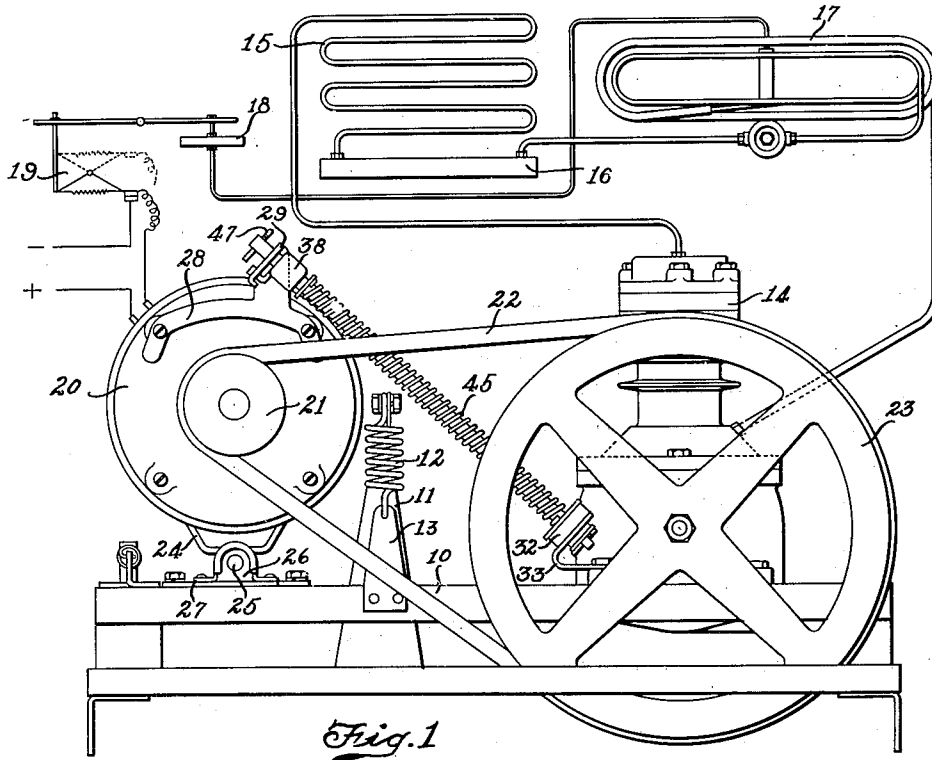


Fig. 1

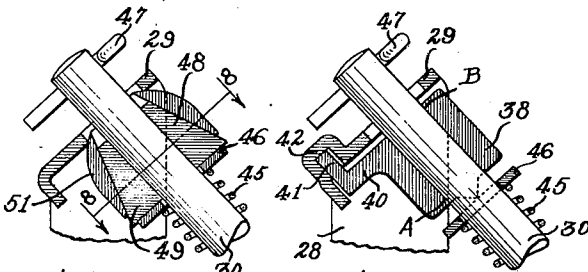


Fig. 7

Fig. 2

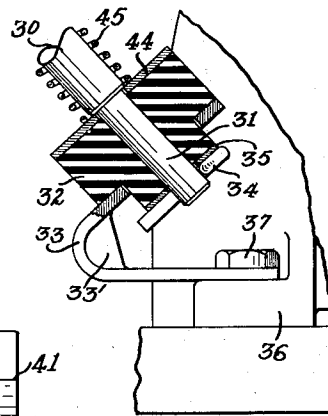


Fig. 3

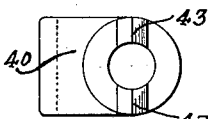


Fig. 4

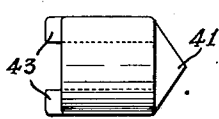


Fig. 5

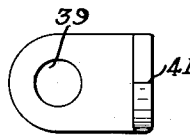


Fig. 6

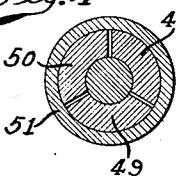


Fig. 8

Inventors
Harry F. Smith
Elmer L. Horlacher
By Spencer, Hardman and Fehr
Attorneys

UNITED STATES PATENT OFFICE

HARRY F. SMITH AND ELMER L. HORLACHER, OF DAYTON, OHIO, ASSIGNORS TO
FRIGIDAIRE CORPORATION, OF DAYTON, OHIO, A CORPORATION OF DELAWARE

REFRIGERATING APPARATUS

Application filed November 30, 1928. Serial No. 322,669.

This invention relates to refrigerating apparatus especially to the transmission means between the motor and compressor of said refrigerating apparatus.

An object of the invention is to maintain a belt between the motor and the compressor taut so that the compressor may be efficiently driven.

Another object is to automatically take up slack in the belt by moving the driving member away from the compressor as the belt wears or stretches with use.

Another object is to prevent the driving member from tilting toward the compressor and thus loosen the belt.

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 form of the invention is clearly shown.

In the drawings:

Fig. 1 discloses refrigerating elements to which the invention is applied.

Fig. 2 is a detailed view of the snubber mechanism.

Fig. 3 is a detailed view of the supporting means for the snubber mechanism.

Figs. 4, 5 and 6 are bottom, side and top views of the snubber element.

Fig. 7 is a cross section of a modification of a snubber mechanism.

Fig. 8 is a cross section on line 8—8 of Fig. 7.

The refrigerating apparatus to which the invention may be applied as disclosed in Fig. 1 constitutes a platform 10 floatingly mounted and supported at its point of oscillation by the bracket 11, spring 12 and strap 13. This construction is more particularly described in the co-pending application of Charles F. Kettering S/N 183,459, filed April 13, 1927. This platform supports a compressor or driven member 14 which feeds refrigerant into the condenser 15. The refrigerant then flows to a receiver 16 and then to an evaporator 17 and then back to the compressor. Control means for the motor or driving member 20 are constituted by a diaphragm 18 controlling a snap switch 19 to make or break the circuit which starts the

motor. The motor pulley 21 is attached to the shaft of the motor and drives the belt 22 which passes over the compressor pulley 23. The structure of these elements is more particularly described in the co-pending application of Harry B. Hull S/N 183,480 filed April 13, 1927. The above described elements are more or less illustrative of elements to which the invention may be applied and are not to be construed as limiting the invention to the particular type of refrigerating apparatus disclosed.

The motor or driving member 20 is supported by a motor bracket 24 on the shaft 25 yieldingly mounted in rubber 26. Plate 27 supports the motor assembly on the platform 10. A bracket 28 is attached at convenient places to the motor casing 20. This bracket has a perforated ear 29 extending in the same direction as the shaft 25 and preferably at an acute angle with the plane of the platform 10. A retainer 33 which is preferably in the form of an acute angle is supported by platform 10. It is convenient in the apparatus disclosed to attach it for support to the compressor leg 36 by the compressor bolt 37. It may however be attached to any other convenient place. The retainer may have a strengthening indentation 33' at its apex. A rubber bushing 32 with a reduced end may be inserted in a perforation on the upper side of the retainer. The rod 30 with the reduced end 31 is inserted thru a washer 44 and a central hole in the rubber bushing 32. The reduced end projects thru the rubber bushing 32 and is made fast to the bushing by a cotter pin 34. Washer 35 prevents the cotter pin from causing wear on the bushing. This rubber bushing yields to the extent of absorbing shocks and jars and also to absorb the vibration of the motor communicated through the rod and spring but it does permit much movement of the rod 30. The spring 45 is placed around the rod 30 and rests against the washer 44. The washer 46 is placed over the rod on top of the spring 45. A snubber element disclosed in its preferred form as 38 is placed over the rod. The rod is then inserted in the perforated ear 29 of the bracket and secured by

means of a cotter pin 47. This snubber element 38, as disclosed in Figs. 4, 5 and 6, has a hole 39 thru its central body portion. In the upper part it has an arm 40 with a projecting point 41 on the end of the arm and preferably at right angles to it. This point 41 preferably engages an indentation 42 in the projecting ear 29 of the bracket. On the bottom of the snubber element 38 are provided two knife edges 43 on opposite sides of the hole 39 and preferably with their knife edges extending parallel with the point 41.

It will be noted that the motor 21 is pivotally mounted in unstable equilibrium in the yielding material 26. The motor can therefore be tilted either towards the compressor or away from it unless the connections disclosed prevent such tilting. It is obvious that tilting the motor away from the compressor will tighten the belt 22 and also that the extent of such tilting is limited by the stretch of the belt 22. Spring 45 bears against its supports 44, 32, 33 and 36 on one end and bears against the upper part of the casing 20 on its other end through the elements 46, 38, 29 and 28 and tends to keep the motor tilted as far as possible away from the compressor 14 and hence keeps the belt 22 taut. Any wear or stretch of the belt 22 may be taken up by the automatic extension of spring 45. It is necessary however that the tilted movement of the motor 20 towards the compressor 14 be prevented. Such tilting movement is communicated by the bracket 28 to the point 41 of the snubber element 38. Pressure upon the point 41 tends to pivot 38 about the knife edges 43 bearing on the washer 46. Pressure upon the point 41 accordingly makes the snubber element 38 bite or grip the rod 30 at the points A and B disclosed in Fig. 2. The rod 30 being gripped by the snubber element 38 prevents further tilting of the motor 20 towards the compressor 14. Chrome plating the rod 30 prevents squeaks.

A modification of this snubber is disclosed in Figs. 7 and 8. The parts 48, 49 and 50 together form a truncated cone to surround the rod 30. The number and the exact form of these parts may be varied from that shown in the drawings. A cone shaped shell 51 surrounds these three elements. Pressure of the ear 29 of the bracket 28 upon the shell 51 presses likewise on the sloping sides of the elements 48, 49 and 50 and makes them grip to rod 30. Movement of the ear 29 downward is accordingly stopped and hence the tilting motion of the motor 20 towards the compressor 14 is likewise accordingly prevented. Spring 45 effectively exerts pressure thru the elements 46, 48, 49, 50, 51 and 29 and the top part of the motor 20 to keep the motor tilted as far away from the compressor 14 as the belt 22 will allow.

It is to be noted that with the above construction the belt is automatically kept tight at all times and the motor automatically positioned as the belt wears and stretches.

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

What is claimed is as follows.

1. In combination, a driving member, a driven member, belt means connecting said members, said driving member being yieldingly supported and snubber means opposing movement of said driving member towards said driven member, said snubber means comprising a rod supported near said driving member and a snubber adapted to grip said rod upon movement of said driving member towards said driven member.

2. In combination, a driving member, a driven member, belt means connecting said members, said driving member being yieldingly supported and snubber means opposing movement of said driving member towards said driven member, said snubber means comprising a rod supported near said driving member, a snubber adapted to grip said rod upon movement of said driving member towards said driven member and a spring surrounding said rod and adapted to urge said driving member away from said driven member.

3. In combination, a driving member, a driven member, belt means connecting said members, said driving member being yieldingly supported, a rod yieldingly supported and extending near said driving member, spring means surrounding said rod and adapted to urge movement of said driving member away from said driven member, and a snubber supported by said rod and connected to said driving member to oppose movement of said driving member towards said driven member.

4. In combination, a driving member, a driven member, belt means connecting said members, said driving member being yieldingly supported, a bracket attached to said driving member, spring means and snubber means bearing against said bracket, said spring means tending to urge said driving member away from said driven member and said snubber means opposing movement of said driving member towards said driven member.

5. In combination, a driving member, a driven member, belt means connecting said members, said driving member being yieldingly supported, a support for both of said members, a yielding bushing supported on said support, a rod yieldingly supported by said yielding bushing and extending near said driving member, spring means and snubber means supported on said rod and adapted

to bear against said driving member, said spring means adapted to urge said driving member away from said driven member and said snubber adapted to oppose movement of
5 said driving member towards said driven member.

6. In combination, a driving member, a driven member, belt means connecting said members, said driving member being yield-
10 ingly supported, a support for both of said members, a yielding bushing supported on said support, a rod yieldingly supported by said yielding bushing and extending near
15 said driving member, a bracket attached to said driving member, spring means and snubber means supported on said rod and adapted to bear against said driving mem-
20 ber through said bracket, said spring means adapted to urge said driving member away from said driven member and said snubber adapted to oppose movement of said driving member toward said driven member.

7. In combination a support, a driving member and a driven member, one of said
25 members being yieldingly mounted on and above said support, the other of said members being rigidly mounted on and above said support, belt means connecting said driving and driven members, means tending
30 to move said yieldingly mounted member away from said rigidly mounted member to thereby maintain said belt means taut, and snubber means tending to prevent movement of said yieldingly mounted member to-
35 wards said rigidly mounted member.

8. In combination, a support, a driving member and a driven member, one of said members being yieldingly supported on and
above said support, the other of said mem-
40 bers being supported rigidly on and above said support, belt means connecting said members, the mounting of said yieldingly mounted member permitting said member to
45 move away from said rigid member to thereby maintain the belt means taut and snub-ber means preventing movement of said yieldingly mounted member towards said rigidly mounted member.

9. In combination, a driving member, a driven member, belt means connecting said
50 members, one of said members being yieldingly mounted to allow movement of said member away from the other of said mem-
55 bers to thereby maintain the belt means taut, and means preventing movement of said yieldingly mounted member towards said rigid member while permitting said first named movement.

60 In testimony whereof we hereto affix our signatures.

HARRY F. SMITH.
ELMER L. HORLACHER.