March 18, 1924. 1,487,486

C. C. SPREEN

CARRIAGE

Filed July 26 1923 2 Sheets-Sheet 1

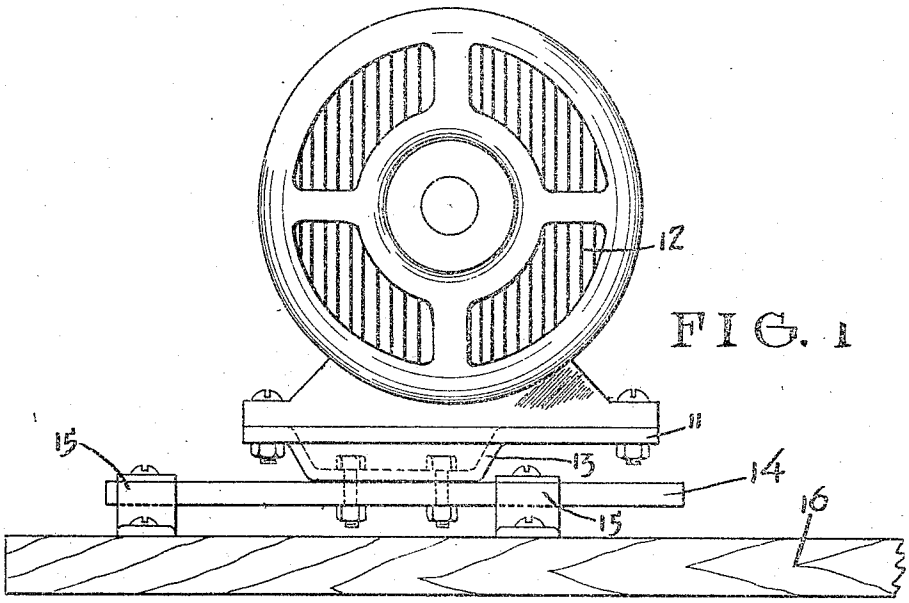


FIG. 1

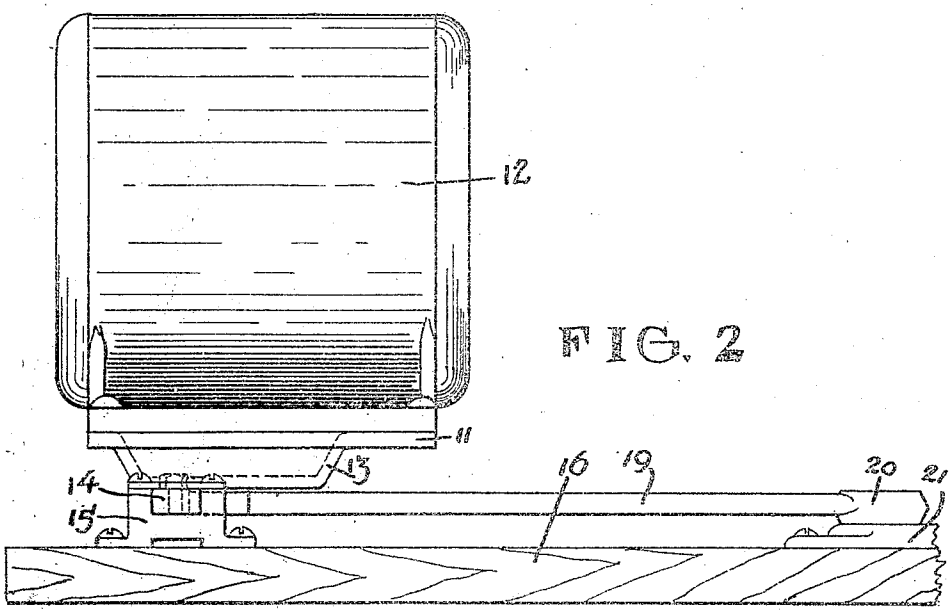


FIG. 2

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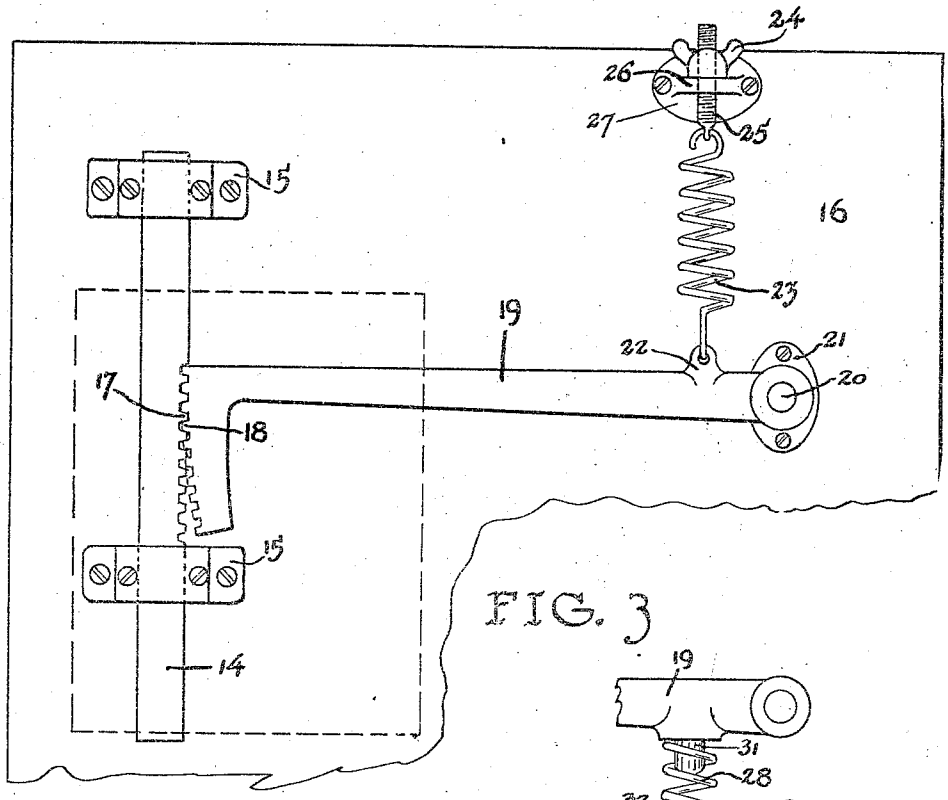


FIG. 3

FIG. 4

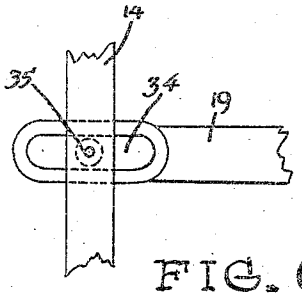


FIG. 6

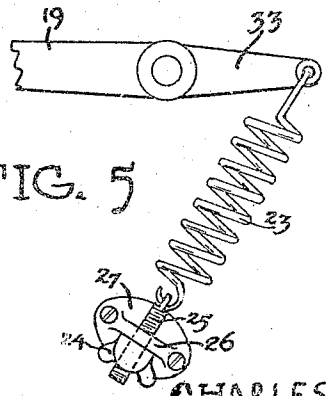


FIG. 5

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Patented Mar. 18, 1924. 1,487,486

UNITED STATES PATENT OFFICE.

CHARLES C. SPREEN, OF DETROIT, MICHIGAN, ASSIGNOR TO KELVINATOR CORPORATION, OF DETROIT, MICHIGAN, A CORPORATION OF DELAWARE.

CARRIAGE.

Application filed July 26, 1923. Serial No. 653,970.

To all whom it may concern:

Be it known that I, CHARLES C. SPREEN, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented a certain new and useful Improvement in Carriages, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

In the operation of compressors for refrigerating system by means of electric motors it has been found desirable to maintain tight the belt connecting the electric motor and the compressor by mounting the electric motor upon a base movable in the direction of the belt and by providing means acting to move the motor from the compressor. Installations of this character, however, are ordinarily operated by persons unskilled in the operation or maintenance of machinery and accordingly are very often operated without any repairs until deterioration absolutely stops further operation. Accordingly, the operator of one of these sets seldom takes any steps to either replace or shorten the belt but on the contrary permits the belt to continue to increase in length and relies upon the continued withdrawal of the motor to maintain tension upon the belt. The various means heretofore used for maintaining this tension have ordinarily comprised some sort of a coil spring acting directly upon the motor base and accordingly have comprised a device which decreases in effect rapidly as the extent of movement of the motor base increases and at the extremity of travel of the motor base exerts but a small fraction of the force originally exerted and therefore maintains upon the belt but a small fraction of the desired tension. My invention provides improved means for effecting this movement of the base and maintaining a substantially constant tension upon the belt.

In the drawings accompanying this specification and forming a part thereof I have shown, for purposes of illustration, certain physical embodiments which my invention may assume. In these drawings:

Figure 1 is a side elevation of one embodiment of my invention,

Figure 2 is an end view of the device shown in Figure 1 looking from the right,

Figure 3 is a plan view of the device shown in Figures 1 and 2 with the motor omitted and the motor base shown in dotted lines,

Figures 4 and 5 show an alternative method of applying the tensioning force, while

Figure 6 shows an alternative method of connecting the lever arm to the base.

The device shown in Figures 1, 2, and 3, comprises a motor base 11 arranged to carry an electric motor 12 and secured by means of brackets 13 to a rod 14 formed rectangular in cross section to prevent turning thereof in the guides 15 in which it is reciprocably supported and which are in turn carried by the unit base 16, whereby the motor is mounted in a manner to permit movement thereof directly in the line of the belt connecting it with the driven apparatus and to prevent any other movement.

The one side of this rod 14 is provided with a rack 17 adapted to be engaged by a sector 18 carried by a free end of a lever 19 which is pivoted at 20 to a bracket 21 carried by the unit base 16 and is provided adjacent its pivot with a lug 22 adapted to be engaged by one end of a spring 23 the other end of which is adjustably secured to the unit base 16 by means of a wing nut 24 which cooperates with a screw 25 connected to that end of the spring 23 and abuts an ear 26 carried by a bracket 27 secured to the unit base 16.

It will be apparent from the above description that the spring 23 acts through the lever 19 to impart to the rod 14 and the motor base 11 a tendency to move away from the driven apparatus and that the spring 23 therefore acts to maintain tension on the belt connecting the motor 12 with the driven apparatus. It will also be apparent that the positioning and proportioning of the parts is such that the full movement of the rod 14 and motor base 11 results in a shortening of the spring 23 which is too slight to alter appreciably the tension imposed by the spring 23 upon the belt and that the device herein disclosed therefore is effective to maintain throughout the entire movement of the base 11 substantially constant belt tension. It will also be apparent that the means of securing the end of the spring 23 to the unit base 16 provides a simple adjustment for the spring 23.

Under certain circumstances it may be more convenient to mount the belt tension-

ing spring upon the other side of the lever 19 and in such cases I may employ the modification shown in Figure 4 or the modification shown in Figure 5. The device shown in Figure 4 substitutes for the tension spring 23 a spring 28 compressed between the lever 19 at one end and at the other end a screw 29 carried by a bracket 30 secured to the unit base 16 and adjustable in the bracket 30 to permit convenient variation of the tension of the spring 28. Lateral movement of the spring 28 is prevented by studs 31 and 32 carried respectively by the lever 19 and the screw 29 and entering the respective ends of the spring 28. The device shown in Figure 5 utilizes the tension spring 23, screw 25, wing nut 24, and bracket 27, shown in Figure 3, but attaches the spring 23 to an extension 33 of the lever 19 which projects beyond the pivot 20.

Under certain circumstances it may be inadvisable to connect the lever 19 to the rod 14 by means of the sector 18 and rack 17 and in such cases I may utilize the arrangement shown in Figure 6 wherein the lever 19 is shown as provided with a slot 34 arranged to embrace a pin 35 carried by the rod 14 and to transmit motion from the lever 19 to the rod 14 by means of this pin and slot connection.

It will be apparent to those skilled in the art that I have provided means for maintaining substantially constant tension upon the belt connecting the motor 12 with the driven apparatus over a wide range of movement of the motor base 11 and that I have therefore avoided the defects inherent in the devices heretofore in use. It will also be apparent that my invention may be applied other than to the motor base herein shown and may be modified in various ways additional to the modifications herein disclosed and that these other uses and other modifications will still retain the advantages of my invention and lie within the spirit thereof. It will therefore be understood that the disclosure herein is illustrative only and that my invention is not limited thereto.

I claim:

1. In combination, a bar mounted to permit reciprocation in a direction parallel to its axis and to prevent motion of any other kind a base carried thereby and adapted to support an electric motor, a lever pivoted to swing in a plane parallel to the plane of said base and having a free end operatively connected to said bar whereby pivotal movement of said lever will result in reciprocation of said bar and said base, and means acting on said lever adjacent its pivot to cause such pivotal movement of said lever and thus cause such reciprocal movement of said bar and said base.

2. In combination, a bar mounted to permit reciprocation in a direction parallel to its axis and to prevent motion of any other kind, a base carried thereby and adapted to support an electric motor, a lever having a free end operatively connected to said bar whereby pivotal movement of said lever will result in reciprocation of said bar and said base, and means acting on said lever adjacent its pivot to cause such pivotal movement of said lever and thus cause such reciprocal movement of said bar and said base.

3. In combination, a bar mounted to permit reciprocation in a direction parallel to its axis and to prevent motion of any other kind, a base carried thereby and adapted to support an electric motor, a lever pivoted to swing in a plane parallel to the plane of said base and having a free end operatively connected to said bar whereby pivotal movement of said lever will result in reciprocation of said bar and said base, and means acting on said lever to cause such pivotal movement of said lever and thus cause such reciprocal movement of said bar and said base.

4. In combination, a reciprocable member, a base carried thereby and adapted to support an electric motor, a lever having a free end operatively connected to said member, and means acting upon said lever adjacent its pivot to swing it in one direction about its pivot to thereby reciprocate said member and said base.

5. In combination, a reciprocable member, a base carried thereby and adapted to support an electric motor, a lever pivoted to swing in a plane parallel to the plane of said base and having a free end operatively connected to said member, and means acting upon said lever adjacent its pivot to swing it in one direction about its pivot to thereby reciprocate said member and said base.

In testimony whereof, I hereunto affix my signature.

CHARLES C. SPREEN.