Dec. 4, 1923. 1,476,450

R. L. LEE

POWER STAND

Filed June 19, 1919

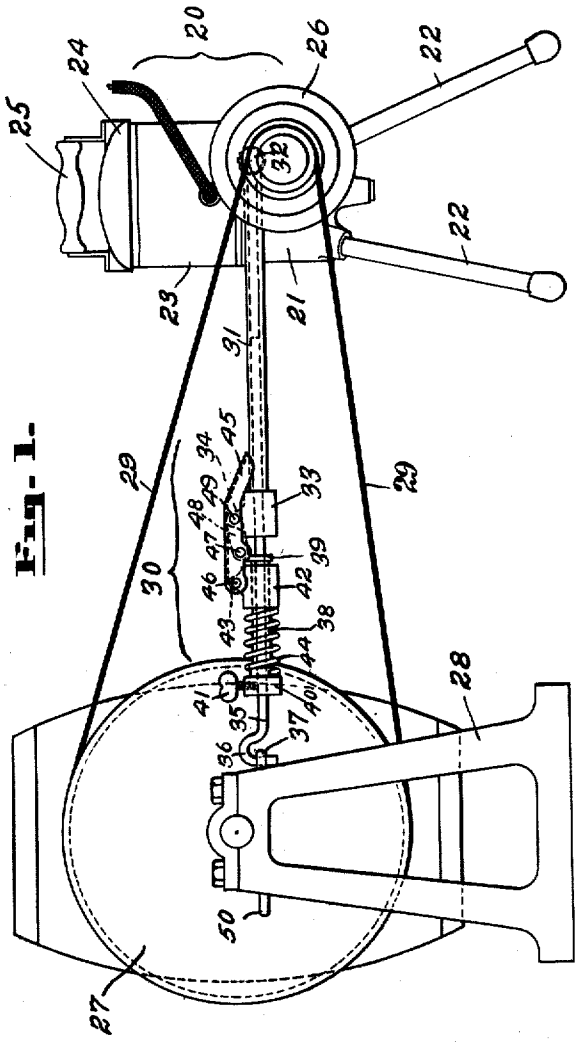


Fig. 1.

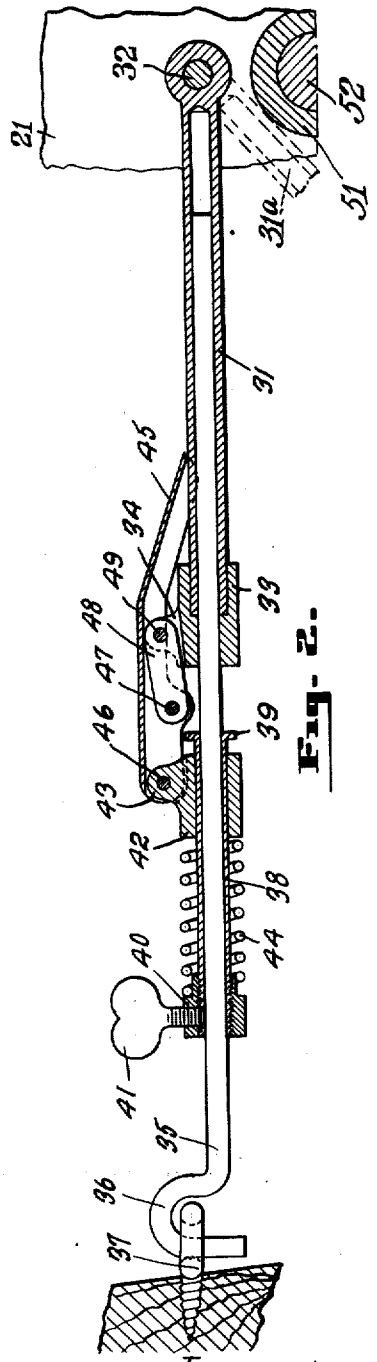


Fig. 2.

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UNITED STATES PATENT OFFICE.

RALPH L. LEE, OF DAYTON, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO DELCO-LIGHT COMPANY, OF DAYTON, OHIO, A CORPORATION OF DELAWARE.

POWER STAND.

Application filed June 19, 1919. Serial No. 305,409.

To all whom it may concern:

Be it known that I, RALPH L. LEE, a citizen of the United States of America, residing at Dayton, county of Montgomery, State of Ohio, have invented certain new and useful Improvements in Power Stands, of which the following is a full, clear, and exact description.

This invention relates to portable power units and more particularly to that type commonly known as power stands which latter are adapted primarily for domestic use in driving small work machines such as separators, churns, fanning mills and the like by means of a belt or other flexible connection. Such power stands consist primarily of a small electric motor mounted in elevated position from the floor, a driving pulley driven from the motor through speed reducing gears, a handle secured at such height that the power stand may be conveniently lifted and carried by one hand, and is generally provided with a spacing and bracing device for holding the power stand spaced from the work machine.

The present invention is an improvement on the invention described and claimed in the patent to Ernest Dickey, No. 1,383,391, dated July 5, 1921.

It is an object of the present invention to provide an adjustable spacing device to be used for spacing two machines of which either or both may be portable and for automatically keeping the belt or flexible connection taut should the belt or flexible connection in any way be stretched.

Another object of the present invention is to provide a power device with a spacing device which is adapted to space the power device from any one of several machines which are driven by the power device by means of a belt or other flexible connection.

A still further object of the present invention is to provide a power device with a spacer or belt tightener which is adapted to space the power device from any one of several machines which are driven by the power device by means of a belt and which may be adjusted to vary the tension in the belt so that the power device may be quickly released from the driven machine without changing the setting of the adjustable spacing device which produces the required amount of tension on the belt.

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

In the drawings:

Fig. 1 is a side elevation showing the work machine actuated by a power device by means of a belt, the work machine and power device being spaced by means of an adjustable spacing element or belt tightener; and

Fig. 2 is a sectional view of the spacing element connected to work machine and power device, portions of the work machine and the power device being broken away.

Referring to the drawings, a power device 20 is provided with a gear housing 21 supported by legs 22. An electric motor 23 is mounted upon the gear housing 21 and is provided with a cover 24 carrying a handle 25. Speed reduction gears, not shown, are mounted within the gear housing 21 and connect the motor with a series of pulleys 26 adapted to drive pulley 27 of a work machine 28, herein shown as a churn, by means of a belt 29. A spacing device 30 is adapted to maintain the power device and the work machine in correct spaced relation and to maintain the correct tension in the belt 29.

Spacing device 30 is provided with a tube 31 pivotally connected to the power device 20 by means of a bolt 32. A collar 33 connected to the end of the tube is provided with a projecting ear 34. A rod 35 slidably mounted within the hollow tube 31 is provided with a hook 36 adapted to cooperate with the screw eye 37 mounted upon the work machine 28. A sleeeve 38 slidably mounted on the rod 35 is provided with a shoulder 39 at one end while at the other end a holding collar 40 is attached by means of screw threads. Holding collar 40 is provided with a thumb screw 41 and is adapted to come into contact with and hold slidable rod 35 in a desired position relatively to the sleeve 38. A shiftable member or collar 42, slidably mounted upon the sleeve 38, is provided with a projecting ear 43. A spring 44 is held between collar 42 and holding collar 40 and is adapted to separate said collars 40 and 42. A lever 45 is fulcrumed upon the projecting ear 43 by means of

a pin 46, and is provided with a pin 47 to which is connected one end of link 48. The other end of link 48 is attached to ear 34 by means of a pin 49.

The operation of the device is as follows:

As will be seen upon reference to Fig. 1, the bolt 32, by which the spacing device is connected to the power device, is mounted directly over the bearing for the pulleys 26. The purpose of this arrangement is to hold the spacing device out from the power device so that it will not interfere with the carrying and placing of the power device. This will be better understood by reference to Fig. 2 in which 51 represents the bearing for the pulley shaft 52, and 31 shows the normal operating position of the spacing device. When the power device is carried about, the spacing device will drop to the limiting position 31^a, shown in dotted lines, the angle of which is such that the end of the spacing device will not interfere with the proper placing of the power device or drop down between the legs 22 where it may sustain injury when the power device is set down, or even cause the power device to upset.

The work machine 28 is placed in the desired position and the belt 29 is placed on the pulley 27 of the work machine and on one of the series of pulleys 26 according to the speed required for operating the work machine. The portable power device 20 is then moved by the handle 25 away from the work machine until the belt becomes tight. The lever 45 is then pulled outwardly into its open position and thumb screw 41 is then released, permitting the rod 35 to slide within the tube 31. The hook 36 of the rod 35 is then placed into the screw eye 37 and thumb screw 41 is then tightened, holding the rod in the desired position. The lever 45 is then pushed into its tightening position, as shown in the drawing, pushing the collar 42 and compressing the spring 44 between said collars 42 and 40. The spring tension between the collars 42 and 40 will tend to space said collars at a greater distance thereby tending to cause the power device or work machine to be spaced at a greater distance, whereupon tension will be placed on the belt.

It will be apparent from the foregoing description of the operation of the device that if the belt should stretch the spring 44 would tend to relax and would cause the power device and the work machine to be spaced at a greater distance thereby taking up the slack and causing the belt 29 to remain taut.

If the work machine is of such weight that it cannot be easily moved and should the drive be required from the opposite direction from that shown in the drawing, the spacing device which is pivotally mounted on the bolt 32 can be swung in an opposite direction from that shown in the drawing and can be connected to the screw eye 50 of the work machine.

It is often the practice to temporarily disconnect the work machine such as a churn, or a cream separator, from the power device. The spacing device as is herein described can be temporarily disconnected by lifting the lever 45 into the open position permitting the hook on the spacing device to be lifted out of the screw eye of the work machine thereby disconnecting the work machine from the power device. When it is desired to operate the work machine again the hook can be put into the screw eye of the work machine and the lever 45 pushed into its tightening position causing the power device and work machine to be spaced in their correct relative positions.

It will be apparent from the foregoing description that certain advantages are present. The work machine and power device will be maintained in the correct spaced relation causing the belt or flexible connection to remain taut by interposing the spacing device between the work machine and power device. The device is self-adjusting by virtue of the spring member which causes the spacing elements to be yieldingly forced apart by the lever 45. In this manner the spacing device adjusts itself to variations in the tension of the belt.

The spacing device may be quickly released to relieve the tension in the belt or may be quickly tightened again simply by operating the lever 45. This operation can be performed without manipulating the adjusting screw 41.

While the form of mechanism herein shown and described constitutes a preferred embodiment of one form of the invention, it will be understood that other forms might be adopted and various changes and alterations made in the shape, size, and proportion of the elements therein without departing from the spirit and scope of the invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a spacing and belt tightening device, the combination with spacing elements; of means for adjusting the elements in spaced relation under yielding pressure, including provisions for temporarily relieving the pressure without disturbing the adjustment.

2. In a spacing and belt tightening device, the combination with two devices to be spaced, of a tube adapted to be attached to one device; of a rod slidably mounted in the tube and adapted to be attached to the other device; and means for holding said tube and rod in spaced relation under yielding pressure.

3. In a spacing and belt tightening device, the combination with spacing elements; of

a member adjustably secured to one of the spacing elements; and means for connecting said member to the other spacing element under yielding pressure including means for temporarily relieving the pressure without disturbing the adjustment of the member.

4. In a spacing and belt tightening device, the combination with spacing elements; an adjustable member which may be secured to one of the spacing elements in adjusted position; and means interposed between said member and other spacing element including a coil spring for holding the elements in spaced relation, and provisions for temporarily relieving the pressure without disturbing the adjustment of the member.

5. In a spacing and belt tightening device, the combination with spacing elements; an adjustable member which may be secured to one of the spacing elements in adjusted position; and means interposed between said member and other spacing element including a coil spring and a manually operated handle for increasing the tension of the spring.

6. In a spacing and belt tightening device, the combination with spacing elements; and adjustable member which may be secured to one of the spacing elements in adjusted position; a shiftable member and a spring interposed between said shiftable member and adjustable member; and toggle links connecting the other spacing element and the shiftable member, one of said links being provided with an operating handle.

7. In a spacing and belt tightening device, the combination with a tube adapted to be attached to a machine; of a rod slidably mounted in the tube and adapted to be attached to a second machine; a sleeve slidably mounted on said rod and provided with means whereby said sleeve may be adjustably secured upon said rod; a shiftable member slidably mounted on said sleeve and a spring interposed between said shiftable member and a portion of said sleeve; and toggle links connecting the tube and the movable member, one of said links being provided with an operating handle.

8. In a spacing and belt tightening device, the combination with spacing elements; of adjustable means for holding the elements in spaced relation. including provisions for temporarily relieving the pressure without disturbing the adjustment.

9. In a spacing and belt tightening device, the combination with spacing elements; of a member adjustably secured to one of the spacing elements; and means for connecting said member to the other spacing element including provisions for temporarily loosening the connection without disturbing the adjustment of the member.

10. In a spacing and belt tightening device, the combination with spacing elements; of a member adjustably secured to one of the spacing elements; and means for connecting said member to the other spacing element, said means comprising a manually operable handle and including provisions for temporarily loosening the connection without disturbing the adjustment of the member.

11. In combination with a portable power device having a supporting base and a pulley support; a spacing device pivotally attached to the power device adjacent said pulley support, whereby the spacing device is held out of engagement with the supporting base.

12. A device of the character described, comprising a housing, a shaft extending outwardly therefrom, a boss extending outwardly from the housing and providing a bearing for the shaft, and a spacing and bracing means adapted to be extended laterally therefrom, said means being pivotally connected with the housing at a point higher than the boss whereby the latter is adapted to limit the downward swing of the former.

13. A device of the character described, comprising a housing, a shaft extending outwardly therefrom, a boss extending outwardly from the housing and providing a bearing for the shaft, and a spacing and bracing means adapted to be extended laterally therefrom, said means being pivoted to the housing immediately above the boss whereby the latter is adapted to limit the downward swing of the former.

14. A portable power stand comprising a spacing and bracing means adapted to extend laterally therefrom; means connected to said device and providing a fixed substantially horizontal axis about which the spacing and bracing means may be swung in a vertical plane; and means carried by the power stand arranged to cooperate with the spacing and bracing means to limit the downward swing thereof.

15. A device of the character described. comprising a housing, a shaft extending outwardly therefrom, a boss extending outwardly from the housing and providing a bearing for the shaft, and a spacing and bracing means adapted to be extended laterally therefrom, said means being pivotally connected with the housing at a point higher than the boss whereby the latter is adapted to limit the downward swing of the former to either side of the device.

16. A device of the character described, comprising a housing, a shaft extending outwardly therefrom, a boss extending outwardly from the housing and providing a bearing for the shaft, and a spacing and bracing means adapted to be extended laterally therefrom, said means being pivotally connected with the housing at a point higher than the boss whereby the latter is adapted

to limit the downward swing of the former to the same extent on either side of the device.

17. A portable power stand comprising a spacing and bracing means adapted to extend laterally therefrom; means connected to said device and providing a fixed substantially horizontal axis about which the spacing and bracing means may be swung in a vertical plane; and means carried by the power stand arranged to cooperate with the spacing and bracing means to limit the downward swing thereof, said last mentioned means being below the level of said axis.

18. A portable power stand comprising a spacing and bracing means adapted to extend laterally therefrom; means rigidly secured to said device and providing a fixed axis about which the spacing and bracing means may be freely swung vertically from one side of the device to the other; and means carried by the power stand arranged to cooperate with the spacing and bracing means to limit the downward swing thereof.

19. A portable power stand comprising a housing; a pulley spaced from the housing; and a spacing and bracing means adapted to extend laterally therefrom to be swung freely for attachment to a work machine, said means being secured thereto between the housing and the pulley.

20. A portable power stand comprising a housing; a power transmitting device supported from the housing adjacent its outer wall; and a spacing and bracing means adapted to extend laterally from the housing and pivotally attached thereto adjacent the power transmitting device.

In testimony whereof I affix my signature.

RALPH L. LEE.

Witnesses:
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