Oct. 26, 1948. H. S. NEWTON 2,452,206

SANDING MACHINE

Filed July 2, 1946 2 Sheets-Sheet 1

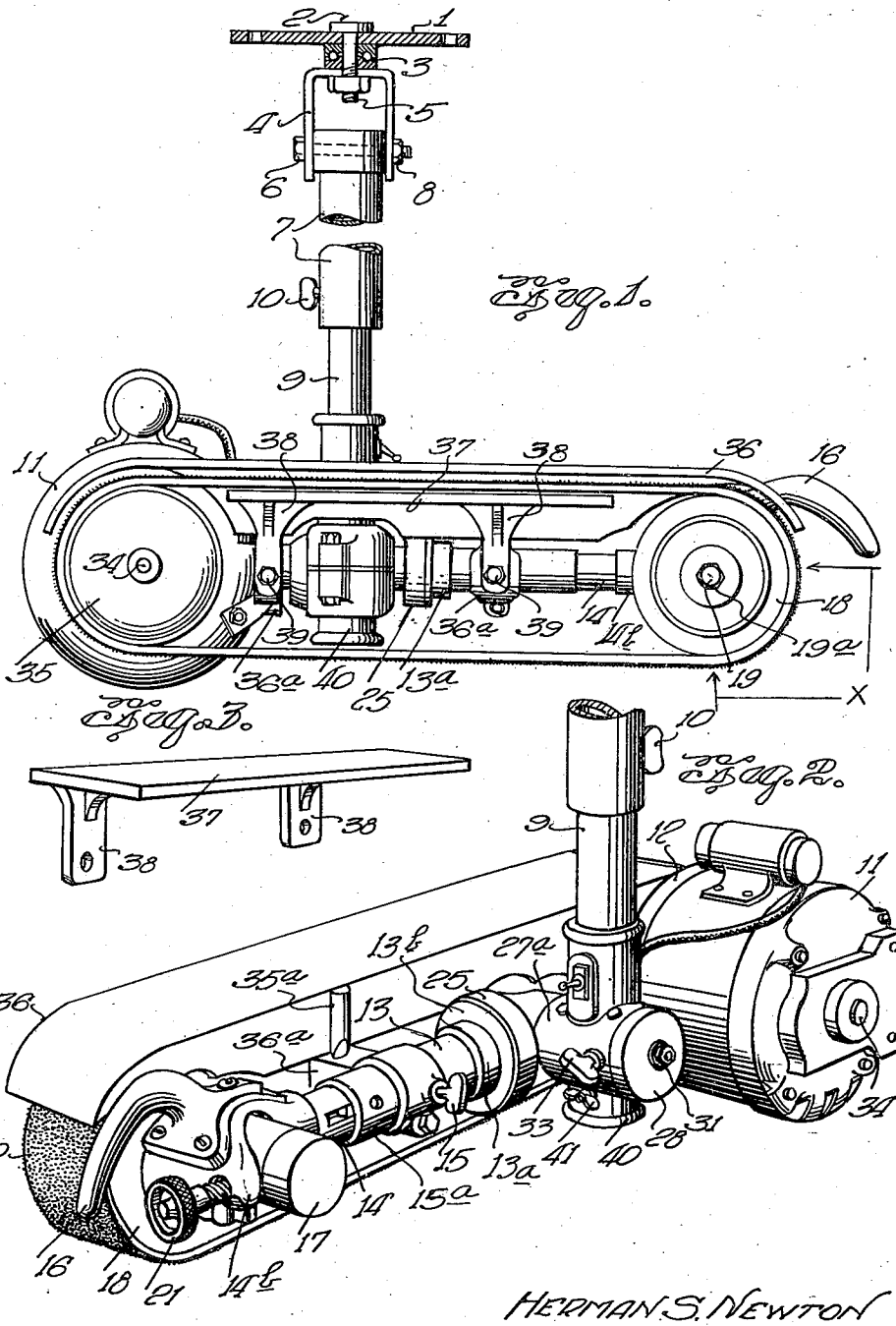


Fig. 1.

Fig. 2.

Fig. 3.

HERMAN S. NEWTON
INVENTOR.

BY

ATTORNEY

Oct. 26, 1948. H. S. NEWTON 2,452,206

SANDING MACHINE

Filed July 2, 1946 2 Sheets-Sheet 2

Fig. 4.

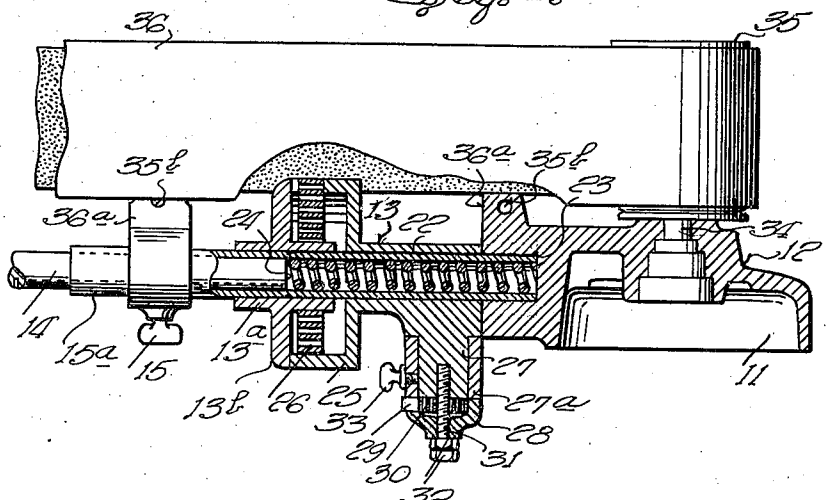
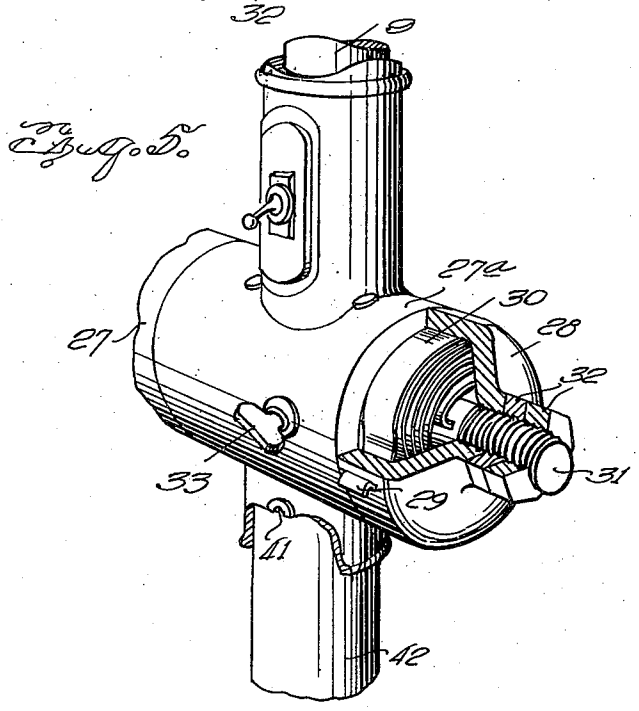


Fig. 5.



HERMAN S. NEWTON
INVENTOR.

BY

ATTORNEY

Patented Oct. 26, 1948

2,452,206

UNITED STATES PATENT OFFICE

2,452,206

SANDING MACHINE

Herman S. Newton, Temple, Tex.

Application July 2, 1946, Serial No. 681,054

5 Claims. (Cl. 51—135)

1

This invention relates to polishing, abrasive or sanding machines and more particularly to sanding machines employed in metal working and wood working.

The objects of the invention are, first, to provide an all purpose polishing, abrasive or sanding machine in the sense that it is equipped with a double ended working head capable of vertical, diagonal, horizontal and rotative displacement and, by virtue of pulleys on each end of the head, a belt may be used for vertical, diagonal or horizontal polishing, abrasive action or sanding. Second, the provision of a polishing, abrasive or sanding head having such a variable flexibility that it may be conveniently and quickly moved to any one of a variety of positions best suited to the type of work being performed. Third, the provision of a convertible polishing, abrasive or sanding head capable of operating various types of polishing, abrasive, sanding, or metal working and wood working attachments.

Another object of the invention is to provide a polishing, abrasive or sanding machine so constructed as to be readily adaptable for stationary mounting on suitable floor standard.

Other objects of the invention include a removable platen resisting pressure of work on a belt polisher, abrasive or sander when employed; a telescoping spring adjustment, combined with a tiltable spindle bearing for maintaining proper and constant tension on the respective belt employed.

With the foregoing objects as paramount, the invention has further reference to certain features of accomplishment which will become apparent as the description proceeds, taken in connection with the accompanying drawings wherein:

Figure 1 is a side elevation of a polishing, abrasive for sanding machine constructed according to the invention, showing the belt disposed horizontally.

Figure 2 is a perspective view of a polishing, abrasive or sanding machine constructed according to the invention.

Figure 3 is a front perspective view of the removable platen.

Figure 4 is a plan view of a polishing, abrasive or sanding machine with partial cross section showing telescopic compression spring, and

Figure 5 is a perspective view of that portion of the machine in which the electric switch is mounted and including a partial cross section disclosing a flat coil spring in relation to the cap housing and bolt.

2

Continuing with a more detailed description of the drawings, reference numeral 1 denotes a ceiling plate for suspension of the machine from a ceiling. A bolt 2 is passed downward through the center of the ceiling plate 1, through the center of a ball-bearing race 3 and through an inverted U-shaped bracket 4 and held securely in place by nut 5. A bolt 6 is passed through the two ends of the inverted U-shaped bracket 4 and the uppermost part of tubular section 7 and held securely in place by means of a nut 8. The conjunctive relationship of parts 1, 2, 3, 4, 5, 6, 7, and 8 creates a suspension element, permits a free 360 degree rotation of the machine and allows the machine to be swung back and forth to fully cover the working surface of the work being done by the polishing, abrasive or sanding machine.

Tubular sections 7 and 9 are telescopically related for purposes of raising and lowering the machine to the desired or necessary position for work and are held in the desired or necessary elevated position for work by suitable means such as thumb screw 10.

An electric motor 11 is mounted to the work head of the polishing, abrasive or sanding machine by means of a bell-shaped casting 12 through the use of attachment bolts common to such types of motors or by other means commonly employed in making such attachments.

As an integral part of and continuous with the bell-shaped casting 12, the casting proceeds in an irregular, though substantially cylindrical shape receiving the end of a tubular element 13 to which reference will again be made presently. Concentrically disposed in the element 13 is another tubular member 15a which receives telescopically the section of member 14, whereby the relation of the tubular members 13, 14 and 15a each to the other will permit longitudinal displacement of varying distances desired or necessary to perform the work at hand and are held securely at the desired or necessary displacement position by suitable means such as thumb screw 15.

For convenience in adjusting the working head of the machine to the proper position for the work being done, a handle 16 is attached to a casting 14b on one end of tubular member 14 by means of screws through the base of handle 16, so shaped as to conform to the contour of that portion of casting 14b to which it is attached.

Through a suitable opening in member 14 an axle housing 17 is inserted for support and placement maintenance of a free pulley 18 which is secured to the axle 19 by means of a nut 19a. In order to secure proper tracking of belt 20, the male

threaded end of control knob 21 penetrates a female threaded opening in casting 14b to rest bluntly against the axle housing 17 for purposes of tilting free pulley 18 in a manner and to the degree desired or necessary to secure and maintain proper tracking of the belt 20.

Disposed longitudinally within tubular member 15a is a compression spring 22 with one end bearing against a solid section of casting 12 at point 23, and whose opposite end bears against the end of the telescoping section of tubular member 14 at point 24, the coil compression spring 22 maintaining a constant pressure against the inserted end of telescoping section of member 14, thus automatically maintaining a correct and constant tension on the belt 20. Fixation of the tubular sections 13 and 14 is effected by means of thumb screw 15.

In an annular housing 25 of the cylindrical section of tubular element 13 is anchored the outer end of a flat coil or clock type spring 26, the inner end of which is affixed to the inner end of a sleeve 13a which carries an integral flange 13b, closing the open end of annular housing 25, the arrangement being such as to create a torque intermediate the ends of the tubular assembly, permitting a manual or automatic rotative action to counterbalance the weight of the motor and will permit the contact surface of the belt 20 to conform to the surface of the work when the belt 20 is brought into working contact with the work being done.

A cylindrical and integral part 27 of casting 13 protrudes from the back of and perpendicular to the longitudinal axis of casting 13 and is received in a cylindrical housing 27a which is an integral part of tubular section 9. In a cap housing 28 and through a spline 29 is anchored the outside end of a flat coil spring 30, the inside end of which is operatively attached to a bolt 31 which is fixedly secured in the center of the end of cylindrical part 27. The cap housing 28 serves as an adjustable anchor at spline 29 for the flat coil spring 30 and proper relative positions of cap housing 28, the cylindrical part 27 and the flat coil spring 30 is maintained by means of double locking nuts 32. The function of the flat coil spring 30 is to counterbalance the weight of the motor 11 so that the forward end of the working head may be raised and lowered to conform to the work. The working head may be secured in a horizontal position by means of a screw 33.

To the protruding end of motor shaft 34, which extends through the bell shaped housing 12, pulley 35 is operatively attached by means of slot and key locking device common to this type of assembly.

When the sanding machine is inoperative or when work is being performed on the underside of belt 20, a removable guard 36 may be secured in place by means of pins 35a attached to the rear thereof and which enter apertures 35b in the bosses 36a and which are integrally formed on the tubular casting 13. When work is to be performed on the upper side of the belt 20 the removable guard 36 may be removed to permit free access of the work to the contact surface of the belt 20. When such work is being performed on the upper side of the contact surface of the belt 20 a removable platen 37 may be attached to the working head of the machine by means of two brackets 38 utilizing two bolts 39 entering bosses 36a to afford a backing for the work being performed and to prevent a sagging effect on the belt 20 under the pressure of work being performed on the upperside of contact surface of belt 20.

At the lower end of, and formed integrally with, tubular section 9 and cylindrical housing 27a is an inverted cylindrical recess 40 capable of telescopically receiving the upper end 42 of a tubular section of a suitable floor standard and secured in position by a thumb screw 41. The purpose of this assembly is to permit the sanding machine head to be mounted on a floor standard for the performance of such types of work as may require such assembly, without removing the head from the suspension mechanism.

From the foregoing, it is apparent that by virtue of the highly variable flexibility of the polishing, abrasive or sanding machine, a highly versatile machine is afforded, and it is pointed out that the primary purpose of this machine is to have the abrasive belt 20 contact the work at area X. Pulley 18 is to be any of several types of conventional soft surface wheels available for this purpose. Working area X is the most commonly used surface on the abrasive belt, though the platen arrangement does afford an additional working surface.

Manifestly, the construction of such a polishing, abrasive or sanding machine as shown and described is capable of some modification and such modification may be construed as falling within the scope and meaning of the appended claims is also considered to be within the spirit and intent of the invention.

What is claimed is:

1. A polishing, abrading and sanding machine comprising an elongated body consisting of two telescopically related members one of which has a lateral extension thereon, a suspension member adapted to be attached at one end to an overhead support and having a housing on its opposite end embracing said lateral extension, spring torsion means having one end stationary with respect to said housing and its opposite end stationary with respect to said extension to resist oscillative displacement of said body on the axis defined by said extension.

2. A polishing, abrading and sanding machine comprising an elongated body consisting of two telescopically related tubular members normally extended under spring compression, one of said members carrying a motor and having a lateral mounting member thereon on which said body is arranged to oscillate, a pulley on the shaft of said motor, a second pulley carried by the companion member whose shaft is parallel with that of said first pulley, an abrasive sheet surrounding said pulleys, a torsion spring surrounding said body and adapted to resist rotative displacement of said body about its longitudinal axis.

3. A polishing, abrading and sanding machine comprising an elongated body consisting of two telescopically related tubular members normally extended under spring compression, one of said members carrying a motor and having a lateral mounting member thereon on which said body is arranged to oscillate, a pulley on the shaft of said motor, a second pulley carried by the companion member whose shaft is parallel with that of said first pulley, an abrasive sheet surrounding said pulleys, a torsion spring surrounding said body to resist rotation thereof about its longitudinal axis, a second torsion spring embracing the lateral mounting member of said first tubular member for resisting oscillative displacement of said body transverse to its longitudinal axis.

4. The structure set forth in claim 2, further defined in that a second torsion spring is mounted relative to the lateral mounting member and adapted to resist variable displacement of the body transverse to the normal horizontal position thereof.

5. A polishing, abrading and sanding machine including an elongated body, means affixed to said body in transverse relation to the longitudinal axis thereof at its mid-section for suspending said body from an overhead support for vertical adjustment, torsion means embracing said body for resisting rotation of the latter about its longitudinal axis, and torsion means embracing said transverse suspension means for resisting oscillative displacement of said body on an axis transverse to said longitudinal axis.

HERMAN S. NEWTON.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,365,583	Brown	Jan. 11, 1921
1,821,624	Emmons	Sept. 1, 1931
2,401,670	Spetz	June 4, 1946
2,416,493	Newton	Feb. 25, 1947