Dec. 11, 1928. 1,695,188

F. M. HENKEL

PORTABLE BENCH SAW

Filed April 28, 1927 3 Sheets-Sheet 1

Fig. 1.

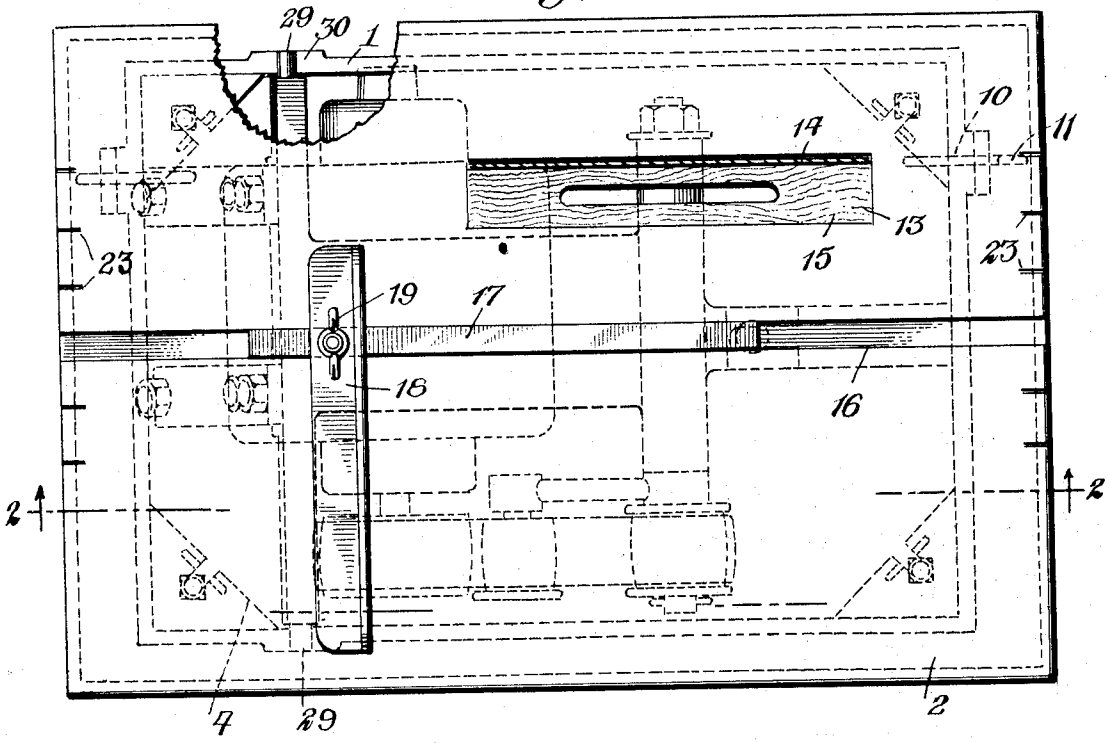
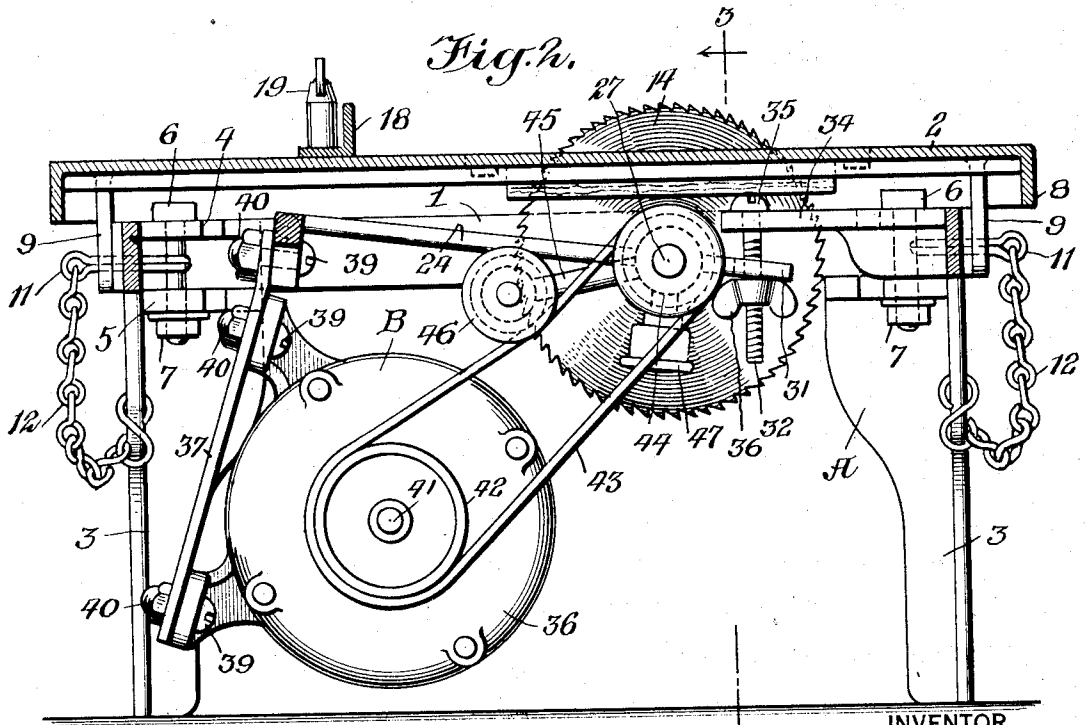


Fig. 2.



WITNESSES

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Fig. 3.

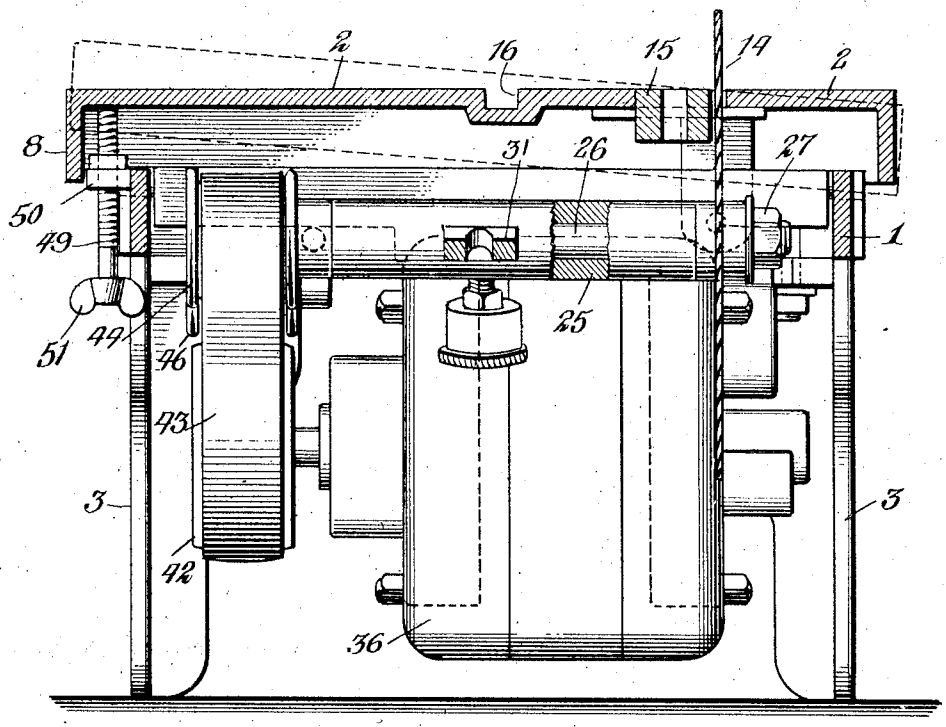
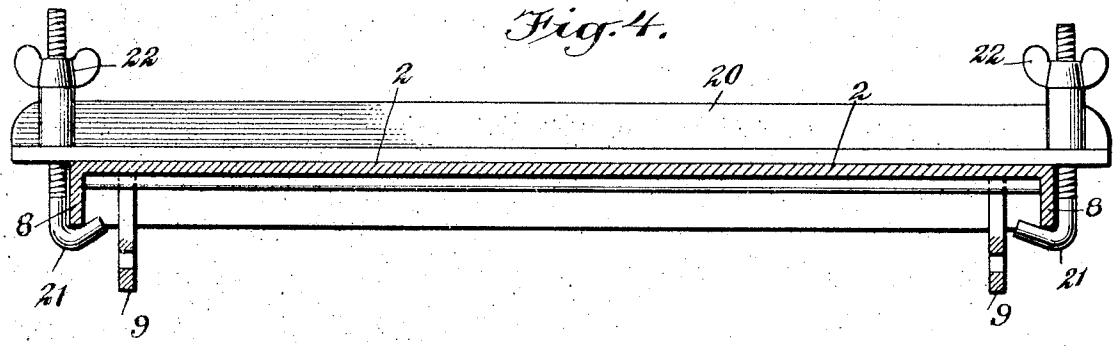


Fig. 4.



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3 Sheets-Sheet 3

Fig. 5.

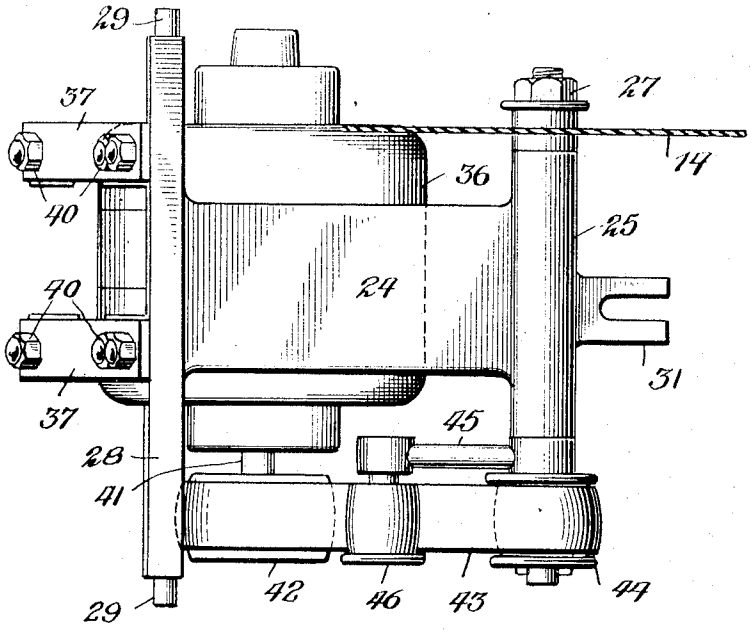
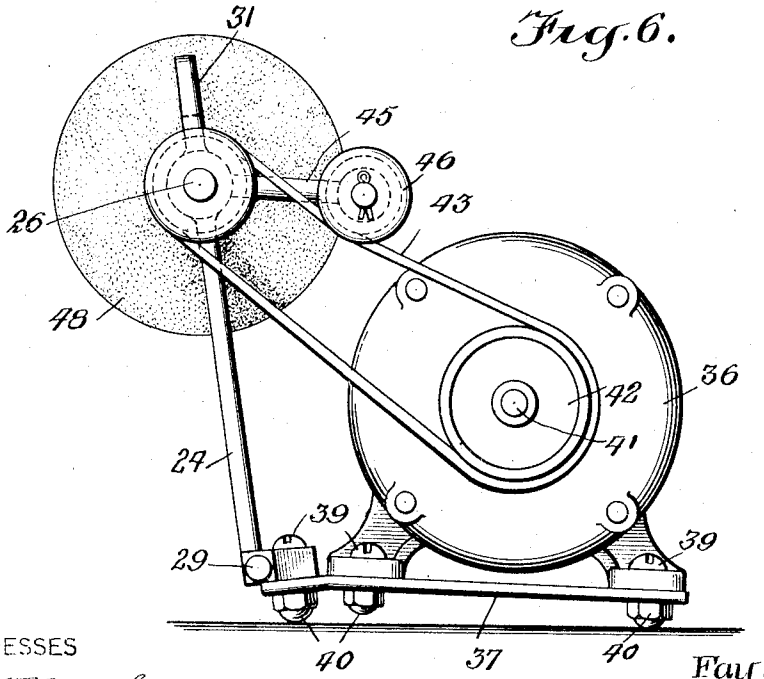


Fig. 6.



WITNESSES

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Patented Dec. 11, 1928. 1,695,188

UNITED STATES PATENT OFFICE.

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PORTABLE BENCH SAW.

Application filed April 28, 1927. Serial No. 187,308.

An object of the invention is to provide a device of this character which can be manufactured and sold at a reasonably low price and which will perform a great variety of useful functions yet will occupy but relatively small space and can be conveniently transported from place to place.

A further object is to provide a device of this character which includes a supporting unit and a power unit, the power unit being adjustably and removably mounted on the supporting unit but capable of ready detachment and independent use in connection with emery wheels or other tools.

A further object is to provide a device of this character of which the parts are so connected and assembled that they are not liable to become lost or misplaced and which will be strong and durable in use.

With these and other objects in view, the invention consists in certain novel features of construction and combinations and arragements of parts, which will be more fully hereinafter described and pointed out in the claims.

In the accompanying drawings—

Figure 1 is a plan view illustrating my improved device;

Figure 2 is a view in vertical longitudinal section on the line 2—2 of Figure 1;

Figure 3 is a view in vertical transverse section on the line 3—3 of Figure 2;

Figure 4 is a view in longitudinal section showing my improved guide bar in operative position on the platform;

Figure 5 is a plan view of the power unit with the latter in position it assumes in the supporting unit;

Figure 6 is a view in side elevation of the power unit showing the same on its own support and an emery wheel thereon instead of a saw.

A represents the supporting unit. The supporting unit A comprises a rectangular frame 1, on which a platform 2 is mounted, and the frame 1 is supported by legs 3. These parts 1, 2 and 3 are preferably castings, the frame 1 having integral perforated corner plates 4 and the legs 3 are preferably angular in horizontal section and have integral perforated lugs or angle plates 5. Bolts 6 are projected through the plates 4 and 5 and nuts 7 thereon serve to clamp and removably but rigidly secure the legs and the supporting frame 1 together.

The platform 2 is preferably strengthened by a depending flange 8 throughout its edges and is provided with depending perforated lugs 9 adjacent the ends of the platform and near one side edge of the platform. These perforated lugs 9 register with perforations 10 in the supporting frame 1 and are adapted to receive pivot pins 11 pivotally connecting the platform and the frame.

I preferably employ cotter pins as pivot pins, as cotter pins will expand in the openings or perforations and prevent accidental displacement thereof but will allow a free pivotal or hinged movement of the platform on the frame. I preferably connect these pins 11 with the legs 3 by chains 12 to prevent their accidental loss.

The platform 2 is made with an opening 13 through which a saw 14 of the power unit B projects. In this opening 13 I also locate a removable block 15 which can be utilized to support the platform at an angle by positioning the same between the platform and the frame 1 when the block is not desired for use as a partial closure for the opening 13.

The platform 2 has a longitudinal groove 16 therein in which a bar 17 is mounted to slide, and this bar 17 has an angular follower 18 clamped thereto by a wing nut 19 so that the follower may be positioned at any desired angle to feed the material to the saw. I also provide an angular guide bar 20 which may be positioned longitudinally of the platform and adjusted toward and away from the saw. As a securing and adjusting means for this bar I preferably employ hook bolts 21 which engage under the flange 8 of platform 2 and have wing nuts 22 thereon for clamping the bar at any desired adjustment. The ends of the platform may be provided with scales or scored as indicated at 23 so as to insure the proper positioning of the guide bar 20.

The power unit B has a frame 24, a bearing sleeve 25 being provided at one end of the frame for the reception of an arbor 26 to which the saw 14 or other tool or implement is secured by means of a nut 27 or any other standard coupling means. The frame 24 also has a transverse bar 28 thereon with trunnions 29 at the ends of the bar adapted to rest and pivot in bearing notches 30 in the frame 1.

On the end of frame 24 and intermediate the ends of the bearing 25 a bifurcated lug 31 is made integral, and this bifurcated lug straddles a depending screw 32 mounted in an arm 34 integral with one end of the frame

1. This screw 32 has a head 35 at its upper end resting on the arm 34 and a wing nut 36 is mounted on the screw and supports the bifurcated lug 31. Hence it will be noted that by adjusting the nut 36 the power unit may be adjusted on its pivots and the saw 14 may be elevated or lowered to the position desired.

It will thus be seen that the power unit has a three-point bearing which maintains it against accidental displacement, or, in other words, prevents it from getting out of proper alinement.

A pair of spring bars 37 is secured to the end of the frame 24, and an electric motor 36 is secured to the spring bars. It will be noted that the bars 37 have a slight bend adjacent their point of connection with the bar 28, and said spring bars 37 are secured to the bar 28 and to the motor 36 by bolts 39 having cap nuts 40 screwed against the spring bars. These cap nuts, that is, the end cap nuts constitute supporting feet for the power unit when it is detached from the supporting unit, as indicated in Figure 6, and the bends in the bars above referred to give a certain amount of latitude for the resiliency or cushioning action of the spring bars to cushion the vibration of the motor. Of course the motor is cushioned against vibration when the power unit is in the frame or supported on the nuts 40, and this is an important feature as it reduces vibration to a minimum. Furthermore, the springs compensate for unequal thicknesses of belt or joints thereof.

41 represents a motor shaft on which the pulley 42 is secured and an endless belt 43 connects the pulley 42 with a pulley 44 on arbor 26. An arm 45 is pivotally mounted on the bearing sleeve 25 and carries a weighted pulley 46 at the free end which bears upon the belt 43 and functions to take up slack in the belt and insure the proper frictional engagement with the belt and the respective pulleys. This arm 45 may be swung from one side to the other of the belt so that it functions equally when the power unit is in the supporting unit or when the power unit is utilized as a separate element.

I also preferably provide a grease cup 47 on the bearing 25 to lubricate the arbor 26 but it is of course to be understood that the invention is not limited to any particular means for lubricating the several parts.

In Figure 6 I illustrate the power unit detached from the supporting unit and having an emery wheel 48 secured on the arbor 26 so that this device may be used for sharpening tools or it may be employed for many other uses as a separate unit.

To provide an angular adjustment to the platform 2 I locate a screw 49 in a lug 50 on the frame 1. This lug of course has a screw threaded opening to accommodate the screw 49, the upper end of the screw engaging the under face of the platform, and a wing head 51 preferably is provided on the lower end of the screw to enable the same to be readily adjusted by the fingers to adjust the angle of the platform, as indicated by dotted lines in Figure 3.

The operation is as follows:

With the parts assembled as shown in Figures 1, 2 and 3 of the drawings, the saw 14 may be raised and lowered by adjusting the wing nut 36 causing the power unit B to move on its pivots or, in other words, causing the trunnions 29 to turn in the bearing recesses 30 of the frame 1. The material may be fed to the saw on the platform 2 by means of the follower 18, the latter moving longitudinally of the platform and positioned at any angle in accordance with the angle of the cut desired. The material can of course be guided by the bar 20 when the latter is clamped thereon to cut a strip of any desired width and it is of course to be understood that a crosscut or ripsaw may be used in accordance with the work to be done.

To cut the material at an angle to the surface thereof, the platform 2 is tilted and this can be done by adjusting the screw 49, the upper end of said screw bearing against the platform and causing the same to pivot on the pins 11. If a greater adjustment is desired than can be provided by the screw, the block 15 can be inserted between the frame and the platform, and it is to be understood of course that when this platform is tilted the block will be removed to allow the platform to assume an angular relation to the saw, providing ample space for this movement.

When it is desired to use the power unit B as a separate device, the platform 2 is removed and the power unit can then be removed by lifting the same, causing the trunnions 29 to move out of the bearing recesses 30 when the bifurcated lug 31 can be drawn from the screw 32 and the power unit can be positioned as shown in Figure 6.

While I have illustrated what I believe to be a preferred embodiment of my invention, it is obvious that various changes and alterations might be made in the general form of the parts described without departing from the invention and hence I do not limit myself to the precise details set forth but consider myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of the appended claims.

I claim:

1. A device of the character described, including a supporting unit having a platform thereon, a power unit comprising a frame, trunnions on the end of said frame, said supporting unit having recesses therein receiving the trunnions of the frame, a bearing on the frame, an arbor in the bearing adapted to receive a saw or other tool, spring bars secured to the frame, a motor fixed to the

spring bars, a pulley on the arbor, a pulley on the motor shaft, and an endless belt connecting said pulleys.

2. In a bench saw, including a removable power unit, said power unit comprising a frame, an arbor supported by the frame and adapted to carry a tool, spring bars connected to the frame, a motor fixed to the spring bars, means for transmitting motion from the motor to the arbor, and devices coupling the spring bars to the frame and to the motor and functioning as feet to support the power unit when the latter is removed from the supporting unit.

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