Feb. 3, 1931. E. G. BONDY 1,790,896

DRILLING MACHINE

Filed Oct. 28, 1926

Fig. 1.

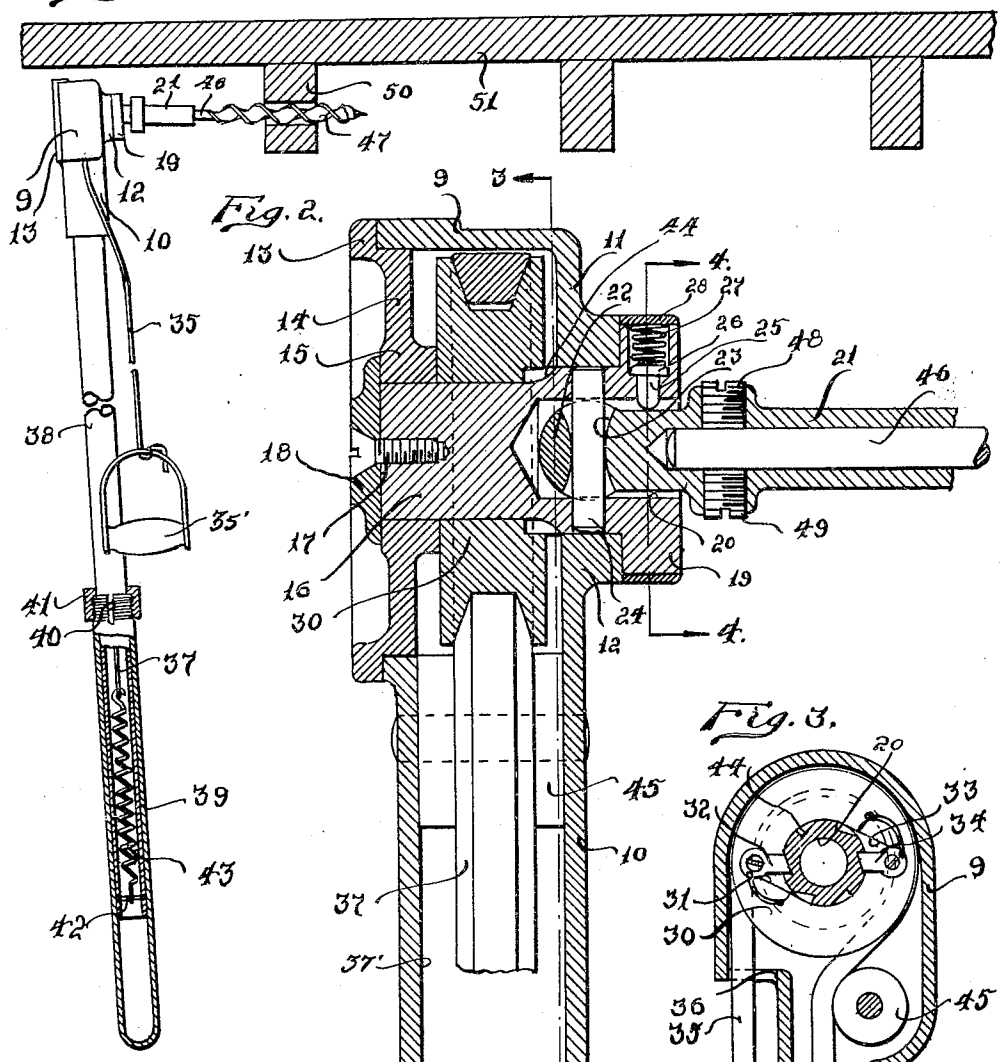


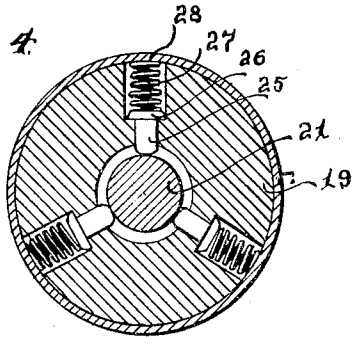

Fig. 2.




Fig. 3.




Fig. 4.




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# UNITED STATES PATENT OFFICE

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## DRILLING MACHINE

Application filed October 28, 1926. Serial No. 144,719.

My invention relates to a new and useful improvement in a drilling machine adapted for drilling at an angle to the shank or handle of the machine, and is particularly adapted for use by electricians and the like who are required to drill holes in joists and other supporting members upon which a floor or other superstructure may be mounted.

It is an object of the present invention to provide a drilling machine of this class which will be simple in structure, economical of manufacture and highly efficient in use.

Another object of the invention is the provision of a drilling machine of this class in which a certain amount of flexibility of the drill holder relatively to the rest of the machine may be afforded.

Another object of the invention is the provision of a drilling machine of this class in which a drill holder, having within certain limits a universal movement, may be utilized.

Other objects will appear hereinafter.

The invention consists in the combination and arrangement of parts hereinafter described and claimed.

The invention will be best understood by a reference to the accompanying drawings which form a part of this specification, and in which,

Fig. 1 is a side elevational view of the invention showing it in operative position with a part broken away and part in section.

Fig. 2 is a central vertical sectional view of the invention in fragment.

Fig. 3 is a fragmentary sectional view taken on substantially line 3—3 of Fig. 2.

Fig. 4 is a sectional view taken on line 4—4 of Fig. 2.

As shown in the drawings, the invention comprises a housing having side walls 9 extending into a laterally projecting neck 10 and provided with a base 11, projecting outwardly from which, centrally thereof, is a flange 12 surrounding an opening formed in the base. A cover 13 having a portion 14 inwardly offset and engaging within the housing walls is provided, this inwardly offset portion 14 having a central opening formed therein and provided with an inwardly projecting flange 15 surrounding the opening. Projected through the opening in the cover 13 so as to utilize the flange 15 as a bearing, and projected through the opening formed in the base 11 so as to utilize the flange 12 as a bearing, is a shaft 16, threaded into which is a screw 17 projected through the washer 18. This shaft 16 is provided at one end with the peripheral flange 19, and formed in the same end of the shaft 16 is a socket 20, projected into which is a drill holder 21 provided at its inner end with a spherical head 22, formed in which is a diametrically extending opening, the side walls 23 of which are arcuate, as shown in Fig. 2. Projected through the shaft 16 and through the opening formed in the head 22 is a locking pin 24 which serves to maintain the drill holder 21 on the shaft 16. Positioned in pockets formed in the flange 19 and projecting into the socket 20 so as to engage at their inner ends the periphery of the drill holder 21, are studs 25, each of which is provided with a head 26 engaging one end of a spring 27, the other end of which engages the ring 28 which is positioned around flange 19, the spring 27 normally tending to retain the studs 25 in engagement with the periphery of the drill holder 21, as shown in Fig. 2 and Fig. 4.

Fixedly mounted upon the shaft 16 interiorly of the housing is a sheave wheel 30 which is provided on one face with a recess 31 in which rides a rockably mounted dog 32. Diametrically opposite the recess 31 is a recess 33 in which rides the rockably or swingably mounted dog 34, these dogs being adapted for engaging the peripheral notches or recess 44 formed in the shaft 16. If desired, suitable springs may be used to retain the dogs in engaging position in the pockets.

Passing around the sheave wheel 30 is a flexible member, preferably a cord, belt, or the like, one end 35 of which projects through the opening 37′ exteriorly of the housing, and is provided at its free end with a suitable operating handle 35′. The other end 37 of the cord extends downwardly and projects into a tubular handle forming member 38 which is suitably secured at one end to the neck 10. The other end of the tubu-

lar member 38 extends into the tubular extension 39, this tubular extension being slitted as at 40 and provided with a locking cap which when threaded thereon will serve to clamp the slitted end of the extension 39 against the tubular member 38 so as to lock these members against relative longitudinal movement. The end 37 which projects into the member 38 is secured to one end of a spring 43, the other end of which is secured to a diametrically extending pin 42 mounted in the tubular member 38 adjacent its end, as shown in Fig. 1.

Rotatably mounted in the housing is a roller 45 for engaging the flexible cord which passes around the shaft 30, as shown in Fig. 3. A shank 46 of a drill 47 is adapted for insertion into the drill holder 21, radially projecting screws 48 and 49 being used to secure the drill shank 46 against rotation in the drill holder 21.

In Fig. 1 I have shown the drill 47 projected through a joist 50 upon which is positioned a flooring 51. In operation the operator would so adjust the handle as to maintain it at the proper length by relative longitudinal movement of the tubes 38 and 39. When the desired length of handle has been provided, a pulling on the handhold 35′ will effect a rotation of the sheave wheel 16 so as to ride the drill 47.

It is believed evident that the drill may be used for drilling purposes at an angle to the handle 38. By having the pin 24 projected through the head 22, as shown clearly in Fig. 2, and by having the bore 20 of a larger diameter than the neck of the drill holder, it is evident that a universal movement can be given to the drill holder on the spherical head 22 within certain limits, these limits being determined by the amount of clearance between the drill holder and the bore 20. In this way a flexibility is given to a device of this kind so that the operator need not always position the housing in alignment with the opening to be drilled, thus permitting the use of the device in close quarters, and at varied angles, and rendering the device more adaptable than where the drill holder 21 is on a fixed longitudinal axis relatively to the housing. When the drill has been rotated by rotating the wheel 30 in one direction, the spring 43 will be stretched and a release of pressure on the handhold 35′ will permit a rotation of the wheel 30 in the opposite direction, the dogs riding over the notches, the spring 43 effecting the withdrawal of the flexible member which passes over the wheel 30 sufficiently to place the device in operation for further forward or operative movement.

While I have illustrated and described the preferred form of construction, I do not wish to limit myself to the precise form of structure shown, but desire to avail myself of such variations and modifications as may come within the scope of the appended claims.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. A drilling machine comprising a long tubular support, a housing mounted at one end of the support in fixed position with respect thereto, a transverse shaft journaled in a fixed plane in said housing and having a socket at one end thereof exposed to the exterior of the housing, said support being sufficiently long so that the drill holder is adapted to hold a drill in operative position for drilling while the lower end thereof rests upon a surface to permit the arcuate movement of the drill about said lower end as a pivot, a drill holder extending into the socket and having a universal connection therewith, means for resiliently restraining the drill holder against the universal motion, a sheave wheel within the housing loosely mounted on said shaft in a plane fixed with respect to the support, a flexible member passing around said sheave wheel with one end thereof extending externally of the housing to provide a handle operable substantially parallel to the support, means arranged in the tubular support attached to the opposite end of the flexible member tending to retract the same, and means mounted on said sheave wheel for engaging the shaft and effecting its rotation in one direction and permitting the free motion thereof in the opposite direction, whereby the operator may rest the lower end of the support upon a surface and effect a drilling operation by movement of the working end about the lower end and by drawing the flexible member over the sheave wheel and generally along the support, without materially binding the flexible member against the housing or the drill in the bore hole.

2. A drilling machine comprising a long support, a housing mounted at one end of the support in fixed position with respect thereto, a transverse shaft journaled in a fixed plane in said housing, a drill holder extending from the shaft and connected thereto by a universal connection permitting a limited universal movement therebetween, said support being sufficiently long so that the drill holder is adapted to hold the drill in operative position for drilling while the lower end thereof rests upon a surface to permit the arcuate movement of the drill about said lower end as a pivot, a sheave wheel within the housing mounted on the shaft in a plane fixed with respect to the support, a flexible member passing around said sheave wheel with an end thereof extending externally of the housing to provide a handle capable of movement in a plane parallel to the support, whereby the operator may rest the lower end of the support upon a surface and effect a

drilling operation by movement of the working end about the lower end and by drawing the flexible member over the sheave wheel and generally along the support, without materially binding the flexible member against the housing or the drill in the bore hole.

In testimony whereof I have signed the foregoing.

EDWARD G. BONDY.