May 27, 1930. J. J. BROSNAN 1,760,189

PORTABLE BORING MACHINE

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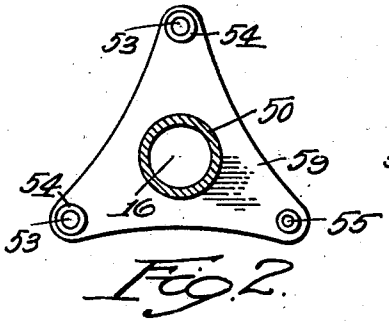


Fig. 2.

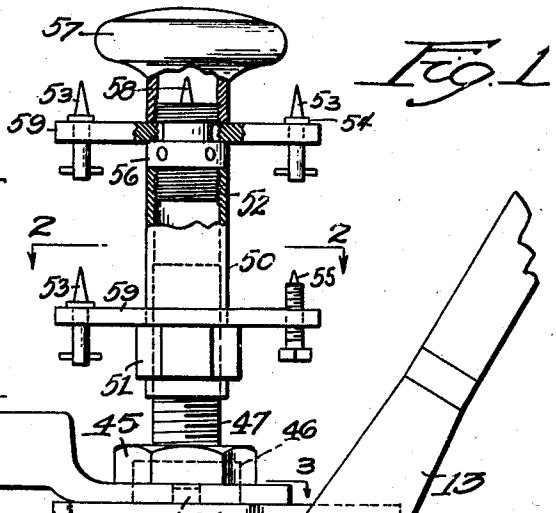


Fig. 1.

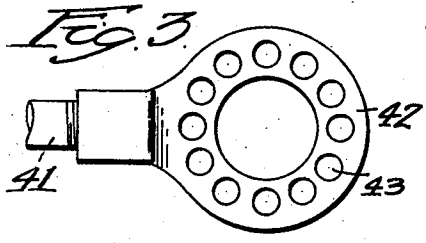


Fig. 3.

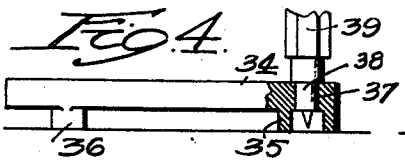


Fig. 4.

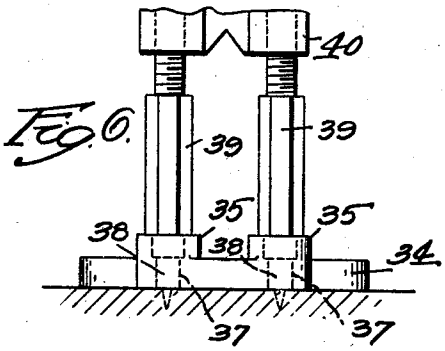


Fig. 6.

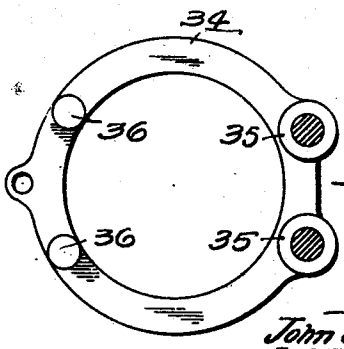


Fig. 5.

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Fig. 9.

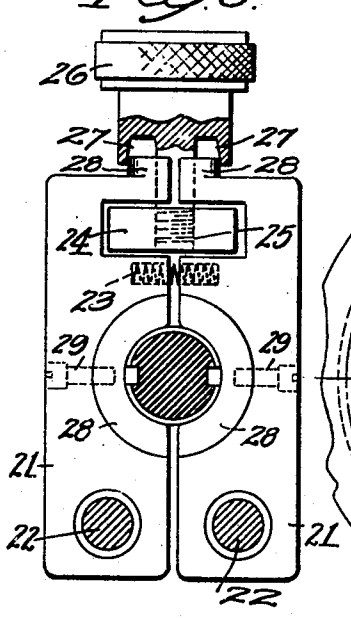
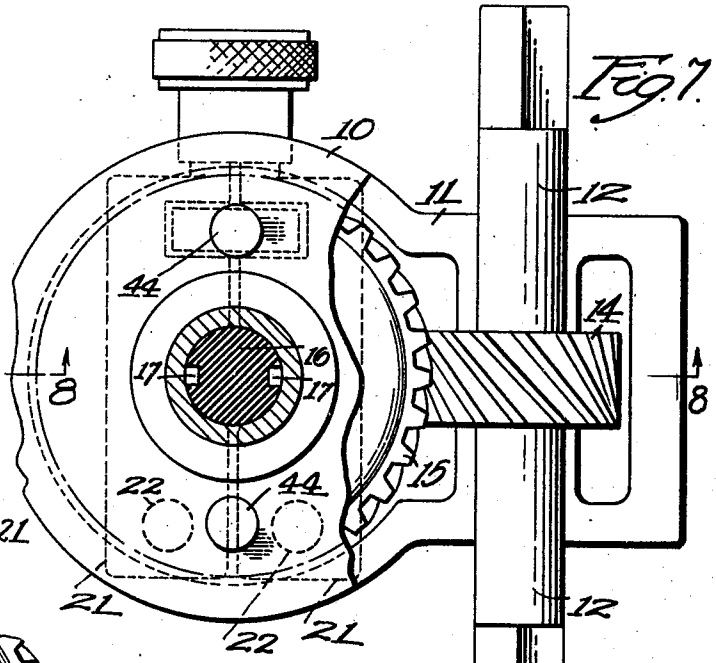


Fig. 7.



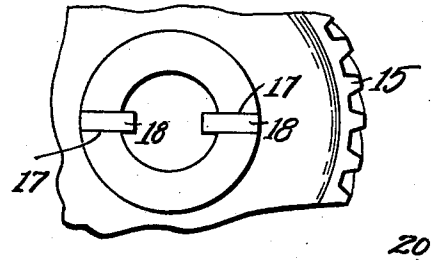
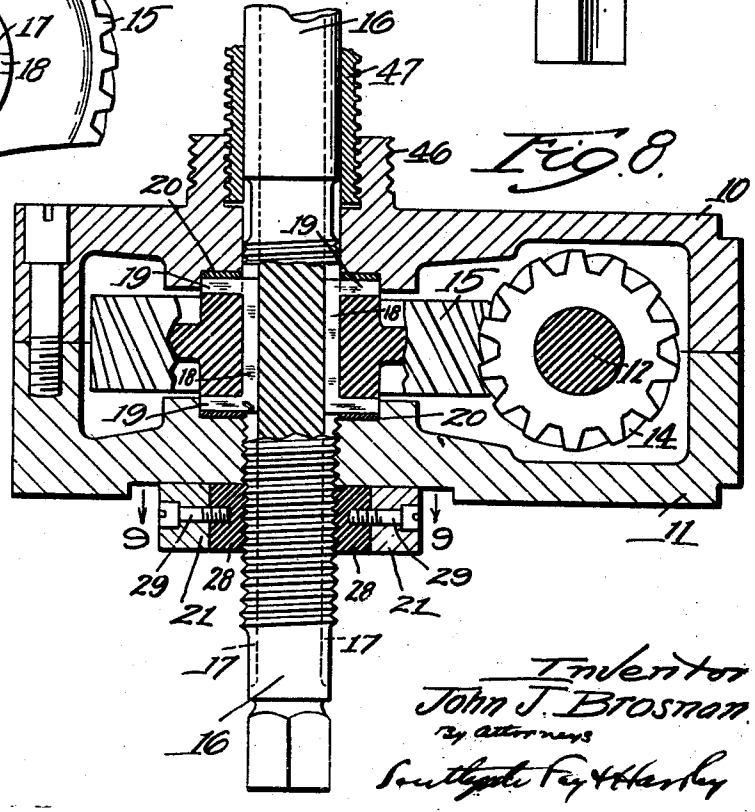


Fig. 10.

Fig. 8.



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Fig. 11.

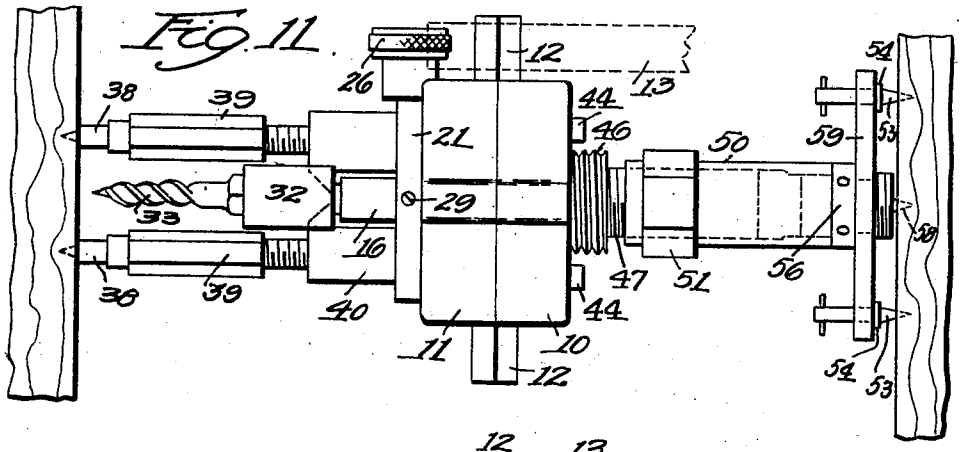


Fig. 14.

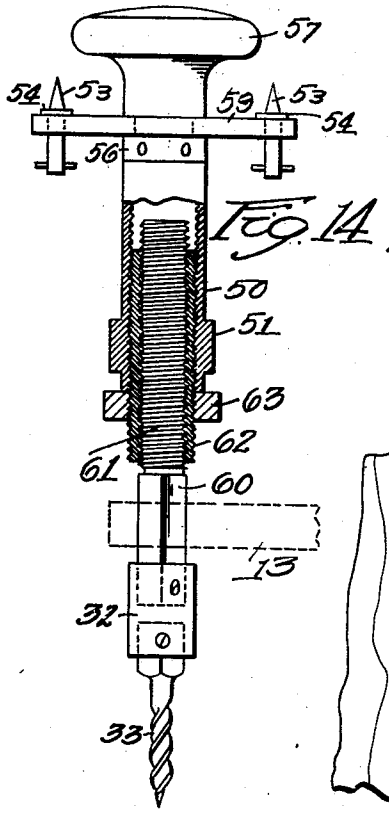


Fig. 12.

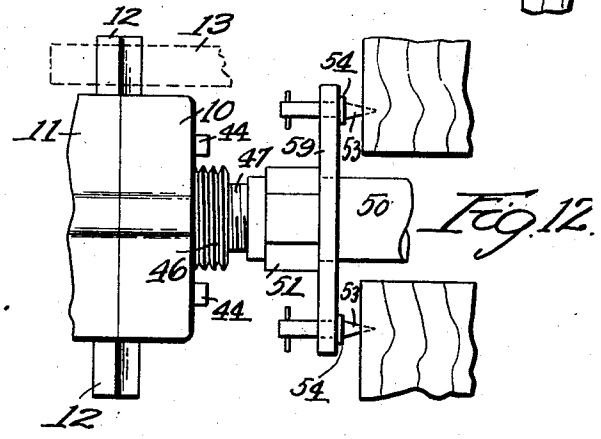
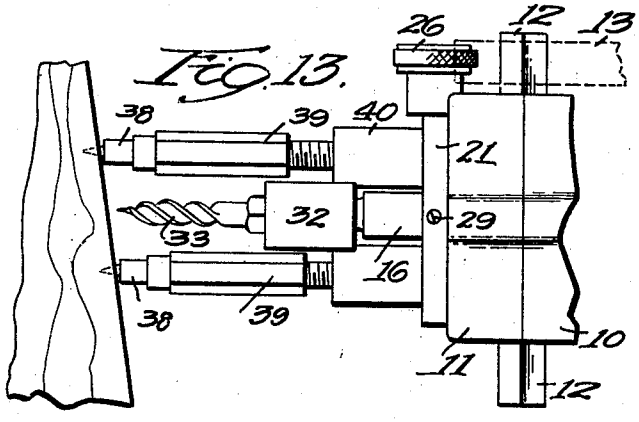


Fig. 13.



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UNITED STATES PATENT OFFICE

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PORTABLE BORING MACHINE

Application filed January 10, 1929. Serial No. 331,483.

This invention is an improvement over that shown in my Patent No. 1,272,370, patented July 16, 1918.

The principal objects of the present invention are to provide an improved form of device for the same general purposes as shown in that patent; to provide a construction in which the handle for holding the device can be turned to various angles so as to be able to locate the operating shaft in any desired position when the machine is used up against a wall or in a restricted space; to provide means for supporting the device in several different positions; to provide adjustable supports at the tool end of the machine and also at the other end, suiting it for being adapted to function between a pair of joists or in a place where a hole has already been driven; to provide an adjustable base suitable for supporting it either on a smooth surface or on a rough board, in the latter case the support being perforated to allow spurs to project into the wood; to provide an improved nut for the screw which is adapted to feed a boring tool into the work; to provide means whereby the device can be set up against a supporting surface which is not at right angles to the line of the boring tool and to provide a simple construction which can be used without the frame for boring in a small space.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings in which—

Fig. 1 is a side elevation, partly in section, showing a preferred embodiment of the invention and the ordinary use thereof;

Fig. 2 is a plan, partly in section, of one of the holding plates in the upper part of the device;

Fig. 3 is a plan of the holding handle;

Fig. 4 is a side view, partly in section, of the supporting base, turned the other side up;

Fig. 5 is a sectional view on the line 5—5 of Fig. 1, showing the supporting base illustrated in that figure;

Fig. 6 is a side elevation taken in the direction of the arrow 6 in Fig. 1;

Fig. 7 is a plan of the casing with the parts cut away to show the interior construction;

Fig. 8 is a sectional view of the casing on the line 8—8 of Fig. 7;

Fig. 9 is a plan view of the nut looking in the direction of the arrows 9, in Fig. 8;

Fig. 10 is a plan of the operating gear with the key shown in position;

Fig. 11 is a plan showing the tool arranged with its axis horizontal, showing how the holding means operates when the device is set up between the two joists spaced apart;

Fig. 12 is a similar view showing the use of the other holding device which can be employed when there is an opening through one of the supporting members;

Fig. 13 is a similar view showing the setting up of the device when the support is at an inclination, and

Fig. 14 is an elevation, partly in section, showing the tool arranged without the frame and gears for operating the tool simply by a wrench.

The invention involves several features shown in my prior patent above identified but mostly in a different form as will appear. It also involves several additions included for the purposes above mentioned.

It will be understood that the set up shown in Fig. 1 is only one way in which the invention can be used, but it is the ordinary way, and I will describe that first.

In this form the invention involves a casing made of two parts 10 and 11 secured together by screws. This casing is provided with an operating shaft 12 having two square heads, one on each end as shown in Fig. 7. A ratchet wrench or spanner 13 can be placed on either end and operated in the ordinary way to operate the tool.

On this shaft 12 is a spiral gear 14 operating a spiral gear 15 on a vertical axis as shown in Fig. 8. In the center of this gear is an opening or passage, through which passage the tool shank 16 passes. The shank is provided with a pair of opposite key ways 17. Into these key ways extend keys 18 which are held inside the gear and having flanges 19 at the top and bottom on opposite sides of the gear. A pair of washers 20 are located behind these keys in the casing.

It will be seen that, on account of the pres-

ence of the keys, the screw-threaded shank 16 will be rotated with the gears and can be moved up or down freely in the casing. A nut is provided fixedly mounted on the casing as shown in Fig. 9. It consists of two halves 21 pivotally mounted on studs 22 on one side and held apart by a spring 23. A lug 24 on the casing keeps these parts in the proper position and has a threaded hole which supports a screw 25. The screw has a knurled head 26 and a conical internal surface 27 that engages with the outside edges of a lug 28 one each half of the frame 21 in that plane.

The frame 21 carries two half nuts 28 held in by screws 29. It will be seen therefore that by manipulating the knurled head 26 the two halves can be separated to allow the screw to be put in and taken out but when the head is screwed up the two half nuts will engage the screw to feed the shaft 16 up and down as it turns.

On the end of the shank a collar 32 is fixed in which the tool 33 is held. The frame is intended to be supported by a base 34. This base is provided with four lugs 35 and 36. The lugs 35 are provided with countersunk perforations 37. Into these perforations extend spurs 38 on screw-threaded adjusting and supporting rods 39 when the device is set up in the manner shown in Figs. 1 and 6. The spurs extend into the wood of the surface on which the device is supported and as the ends of the screws 39 are formed to fit exactly the countersunk perforations 37 the base will be supported exactly at right angles to these screws and against the surface of the wood and the spurs will hold it against shifting so that it constitutes an effective base for the machine.

This base 34 can be turned the other side up, as shown in Fig. 4, and receive the spurs without allowing them to enter the wood. This arrangement is used when the base engages a finished wood surface or anything that should not be marred in the operation. The lugs 36 project the same distance from the base 34 as the lugs 35 and in this case they constitute four feet for the base. The screws 39 screw into lugs 40 integral with the half 11 of the casing.

The casing is held in any desired position angularly by an handle 41 having a circular end plate 42 provided with a series of perforations 43 arranged in a circle. The top member 10 of the casing has a pair of lugs 44 opposite each other adapted to enter two opposite perforations 43. In this way the handle 41 can be located at any desired angle so that the operator can change the frame and change the position of the support in accordance with the necessity, if the machine is located up against a wall or in a restricted place. A nut 45 is adapted to be screwed down on a threaded integral lug 46 on the top of the casing 10 to hold down the plate 42 constituting a part of the handle.

Into the inside of the lug 46 is screwed an externally threaded adjusting sleeve 47 and this sleeve has a cylindrical passage through it for the upper end of the shank 16. On the upper end of this sleeve screws a cylindrical sleeve 50, having an angular portion 51 for the application of a wrench. The sleeve 50 has an internal screw thread at the bottom for fitting the screw threaded sleeve 47 and also has an internal screw thread 52 at the top. This sleeve screws down on the sleeve 47 for adjustment, to any desired point.

On this sleeve 50 fits a plate 59 having two spurs 53 which are provided with cotter pins and their position limited on one side by the cotter pins and on the other by integral collars 54 and it also has a third spur 55 which is screw-threaded through the plate for adjustment to bring it to a correct position. The plate is shown as arranged in the form of a triangle, each of these spurs being equally distant from the center and their purpose will be explained below.

Extending into the screw thread 52 is a plug 56 having spanner holes by which it can be turned and having screw threads at each end, the lower receiving the screw thread 52 and the upper receiving a screw thread in a circular hollow handle 57. This plug also has a spur 58 for use in engaging a surface and pressing the tool against it when the handle is not used.

Between the integral collar of this plug and the bottom of the handle is adapted to be supported another plate 59 made exactly like the other except that the opening through it at the center is screw-threaded to fit the screw on the top of the plug 56.

The parts can conveniently be set up in full as shown in Fig. 1 but it will be understood that in this figure the plates 59 are not being used because the machine is held by the handle 57 at the top. The casing is held from turning by the handle 41 and pressure is put on by the operator through the handle 57. It is operated by the handle wrench 13 in an obvious manner.

If it is desired to press the tool between two joists parallel to each other and both of soft wood the base 34 can be removed or not as desired and the spurs 38 forced into soft wood at one side. The handle 57 is removed and the spur 58 together with the spurs on the upper plate 59 forced into the wood at the other side by manipulation of the nut 51 for adjustment. The above is shown in Fig. 11.

With the same setting at the left hand end the right hand end can be set up by the use of the other plate 59 in a case where the support is on two studs separated from each other or there is a hole through the stud. In this case the plate 59 bearing against the shoulder of the nut 51 furnishes the spurs for engaging

in the wood as shown in Fig. 12. The other parts of the device may extend through part way into the space between the studs.

In case one of the joists or other surfaces on which the tool is to be supported is angularly supported as in Fig. 13, the screws 39 can be adjusted accordingly to set up the instrument in that way.

In Fig. 14 I have shown another way of setting up parts of this device to provide a very simple tool in which the wrench is placed on a shank 60 of a screw 61 which is constructed to take the place of the shank 16. This screw, however, is not provided with any slots but is a complete screw and extends into an internally and externally threaded screw 62 which fits in its turn in the sleeve 50, adjusted by the nut 51. In this case a knurled collar 63 is used to hold the adjustment and also either one of the plates 59 can be employed, one being shown with the handle 57 but, of course, the other combinations as suggested can be used for this part also.

In this case the tool can be used by holding the handle 57 in the hand or employing the plate 59 as desired and the wrench 13 operates directly on what is the equivalent of the shank of the boring tool to rotate the latter and secure the desired result. This is a simple way of setting up part of this tool where it is not possible to get the whole tool in but, of course, there is no multiplication of the power. It permits of the use of the tool to bore holes in places that cannot be conveniently bored by ordinary tools or by the whole stand as shown in the other figures.

In place of the ratchet 13 the shaft 12 can be connected to a motor and the device operated by power. Also for high speed operation the ratchet 13 can be applied to the square end of the shank 16 and the boring tool 33 can be fixed to the end of the shaft 12.

It will be seen therefore that this tool can be changed by the use of the several adjustments and replacements shown to permit it to be used for boring holes in various kinds of places and its use is so universal that it would be used practically everywhere where it may be desired to do so. The replacements are of a simple character and can be applied by the ordinary workman and they are so constructed as to provide practically two tools, one much simpler than the other and by sacrificing the power, holes can be bored by this tool also in restricted places.

Although I have illustrated and described only one embodiment of the invention I have shown various attachments applied thereto and I am aware of the fact that modifications can be made therein and especially in the attachments without departing from the scope of the invention as expressed in the claims. Therefore, I do not wish to be limited in this respect but what I do claim is:—

1. In a boring machine, the combination of a casing, a gear therein having a key, a screw-threaded shank having a key way for said key passing through the center of the gear, a pair of pivoted frames on said casing, each having a half nut for engaging the screw-threaded part of said shank, a lug on the casing, a screw having a knurled head and a conical interior surface carried by said lug, the two members of said nut frame having projections adapted to be engaged by said conical surface for forcing the nut frames together and a spring for normally forcing them apart.

2. In a boring machine, the combination with a casing, a shank for holding the boring tool, and screws adjustably mounted and having spurs on the ends for engaging in a surface on which the casing is to be supported, of a base having two sets of lugs thereon, one set having perforations fitting the ends of said screws but allowing the spurs to pass through the base, said perforations, when the base is held the other side up, preventing the spurs from passing into the wood and the other set of lugs engaging the surface against which the tool is to be pressed.

3. In a boring tool, the combination with a casing, means for adjustably holding the casing at one end in position, a screw-threaded shank extending through the casing, means for turning the shank and feeding it forward, and means for holding the boring tool on the end of the shank, said casing having an integral lug thereon, of a handle having a plate in line therewith having perforations therethrough whereby, when the handle is turned, the lug will extend into one of said perforations to provide for adjustment of the handle angularly and a nut screwing down on the plate to hold the handle in adjusted position.

4. In a boring machine, the combination with a shank having means for supporting a boring tool at one end, means for supporting the shank, a sleeve above the shank concentric therewith, a second sleeve having means on the end for adjusting it along the first sleeve, a plug fitting into the end of the last named sleeve and means supported by said plug for steadying the tool.

5. In a boring machine, the combination with a shank having means for supporting a boring tool at one end, means for supporting the shank, said shank being screw-threaded, a sleeve above the shank concentric therewith and having an external screw thread, an internally screw-threaded sleeve having an angular portion on the end for adjusting it fitting said screw thread, a plug screwing into the end of the last named sleeve and a spur supported by said plug for steadying the tool.

6. In a boring tool, the combination with a casing and means for supporting it at one

end, of a screw-threaded shank extending through the casing for holding the boring tool, a screw-threaded sleeve supported by the shank and extending in the opposite direction therefrom, an internally screw-threaded sleeve adjustably mounted thereon and having a screw thread in its upper end, a plug fitting the larger internal screw thread and projecting above it, and a plate supported by said lug and having spurs projecting up from its corners, said plug also having a spur for use in supporting this end of the boring tool.

7. In a boring tool, the combination with a casing and means for supporting it at one end, of a screw-threaded shank extending through the casing for holding the boring tool, a sleeve supported by the shank and extending in the opposite direction therefrom, a sleeve adjustably mounted thereon and having a screw thread in its upper end, a plug fitting the larger screw thread and projecting above it and a hollow handle above said plug for use in supporting this end of the boring machine.

8. As an article of manufacture, a brace plate for a boring machine having at the corners thereof, a series of spurs, one of which is adjustable for engaging the surface against which the tool is to be braced, the other spurs being readily movable but having means to prevent their being removed accidentally from the plate.

9. The combination in a boring machine of a casing having an integral lug thereon and carrying a boring tool shank, with a handle having a plate provided with a circular series of perforations therearound, each one for engaging said lug, whereby the plate can be supported to extend at any angle from the machine and means for holding the plate down on the casing after adjustment.

In testimony whereof I have hereunto affixed my signature.

JOHN J. BROSNAN.