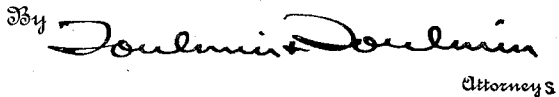


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UNITED STATES PATENT OFFICE.

THOMAS BURKE, OF RICHMOND, INDIANA.

DRILLER.

1,189,237.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, THOMAS BURKE, a citizen of the United States, residing at Richmond, in the county of Wayne and State of Indiana, have invented certain new and useful Improvements in Drillers, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to drillers and especially to adjustable spindle bearing blocks, whereby the drill can be adjusted vertically.

The invention, however, has a wide range of application to machines of different types. In devices of the kind now in use the spindle bearing block is usually clamped to the rail or arm of the drill by suitable adjustable clamping devices. This means of retaining the spindle bearing block is open to the objection that the drill creeps upwardly when great pressure is applied thereto in use.

It is an object of this invention to provide means to hold the spindle bearing block with its drill in any adjusted position, prevent the above-mentioned creeping and utilize the upward thrust on the spindle bearing block to securely lock the same in place.

It is a further object of my invention to provide certain improved details of structure hereinafter described and illustrated in the accompanying drawings.

In the said drawings, Figure 1 is a front elevation of my improvement; Fig. 2 is a cross section on the line 2—2 of Fig. 1, looking in the direction of the arrows; and Fig. 3 is a detail, perspective of the clamping lever.

In the embodiment of the invention here shown an arm or rail 1 with a downwardly extending projection 1' at its outer end, has a vertically extending groove 2 at its outer edge to receive the spindle bearing block 3 having a rib 4 cooperating with said groove 2. It will be seen that the spindle bearing block is capable of being adjusted by sliding the same vertically through the groove on the arm 1. The spindle bearing block, as shown, has spaced bearings 5 and 6 to support a spindle 7, the spindle having lock nuts 8 thereon to support the same on the upper bearing and antifriction devices, as shown at 9, below the lower bearing, whereby the spindle is suitably mounted and freely rotatable. The spindle is rotated through the universal joint 10 which is connected to

any suitable source of power. A tapered socket, as shown at 11, receives the drill. In order to securely clamp the spindle bearing block to the arm 1 the said arm with its downwardly projecting extension 1' is provided with a vertically extending slot 12 in which is mounted a lever 13. This lever 13 is provided with trunnions or lugs 14 and 15, these lugs being located centrally thereof in a horizontal plane and slightly above the center in a vertical plane. The arm 1 and its downwardly projecting portion have located at each side thereof a vertically extending and inclined slot. The lug 14 projects into the slot, indicated at 16, and the lug 15 projects into the slot indicated at 17. It will be seen that by this arrangement the lever is pivoted within the slots and is capable also of vertical movement therein. Each slot is provided with an inclined surface, as shown at 18, located between the lugs or trunnions of the lever 13 and the spindle bearing block. As will be described later said lever moves with the spindle bearing block, being connected thereto, and it will be seen that as the spindle bearing block moves upwardly, the trunnions 14 and 15 will also move upwardly and engage the inclined portions 18 and become wedged, this upward movement being due to the vertical thrust upon the bearing block when the device is in operation. The lever 13 is bifurcated at each end, as shown at 19 and 20, Fig. 3. The bifurcation 19 engages a bolt 21, while the bifurcation 20 engages a bolt 22. The bolt 21 has an enlarged head at one end, passes through a vertical slot on the end of the arm 1, said slot being indicated at 23, and is screw-threaded into the spindle bearing block, as indicated at 24. The bolt 22 passes through a slot 25 located at the outer edge of the arm 1 and its extension 1', this bolt being screw-threaded in the lower portion of the spindle bearing block, as shown at 26. The rotation of the bolt 22 within the said block is prevented by a tapered pin 27. The other end of the bolt 22 is screw-threaded and has thereupon an adjusting nut 28, the bifurcation 20 being located between the adjusting nut 28 and the spindle bearing block. It will also be noticed that the vertical edge of the lever 13 is spaced its entire distance from the inner surface of the outer edge of the arm 1 and its extension 1'. By this arrangement the clamping device comprising the lever

can be adjusted within wide limits. If it is desired to lower the position of the spindle bearing block all that is necessary is to loosen the nut 28 and slide the block downwardly. The bolt 21 being in engagement with the upper end of the lever 13 will also cause same to slide downwardly with the block and the trunnions 14 and 15 will slide within their slots. When the block is in its proper position the nut 28 can then be tightened, the lower end of the lever moving toward the left of Fig. 1 and the upper end of the lever toward the right, thereby engaging the head of the bolt 21 and clamping the device securely in place. The trunnions or lugs 14 and 15 thereby bear closely against the inclined surfaces 18. When in this position it will be seen that it is practically impossible to cause the upward displacement of the bearing block as the trunnions would also move upwardly and the block and trunnions would be wedged against the inclined surfaces. In order to adjust the device upwardly the nut 28 can be loosened sufficiently to allow this movement. The nut is then tightened and the spindle ready to operate as before.

It will be seen that I have provided a device which is easily adjustable and has a powerful clamping action and when once clamped it is practically impossible to displace it vertically. It is also to be understood that the device is capable of use in connection with all kinds of machines where it is desired to adjustably clamp the parts together and at the same time prevent relative movement of the parts. Furthermore, it will be noticed that the greater the upward thrust the more will the lugs be wedged and locked against the surfaces 18.

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

1. In a device of the character described, a member comprising a supporting arm, a member comprising a spindle bearing block adjustably mounted on said arm, a guideway between said members, a clamping device connected to one of said members and extending across the path of said guideway to the other of said members, and means which reacts on said clamping device to automatically increase the clamping force thereof as the thrust imparted to said spindle bearing block increases during the operation thereof.

2. In a device of the character described, a supporting arm, a spindle bearing block adjustably mounted on said arm, a clamping lever to clamp said arm and block together,

and means in engagement with said lever to prevent the relative displacement of the block and arm when the device is in operation.

3. In a device of the character described, a supporting arm, a spindle bearing block adjustably mounted on said arm, said arm having an inclined surface and a lever having a pivot in adjustable engagement with said inclined surface, said lever being arranged to adjustably clamp said arm and block together.

4. In a device of the character described, a member constituting a supporting arm, a member constituting a spindle bearing block adjustably mounted on said arm, a lever pivotally mounted on one of said members in engagement with the other of said members, means for adjusting said lever to clamp the members together, and means co-acting with said lever to prevent displacement of the members relative to each other.

5. In a device of the character described, a member comprising a supporting arm, a member comprising a spindle bearing block adjustably mounted on said arm, one of said members having an inclined surface, a lever mounted in slidable and pivotal engagement with said inclined surface, and means to adjust said lever to clamp the members together.

6. In a device of the character described, a supporting arm, a spindle bearing block adjustably mounted on said arm, said arm having an inclined surface, a lever having centrally located pivotal means in slidable and pivotal engagement with said inclined surface, said spindle block having spaced apart bolts slidably engaging the ends of said lever, and means for adjusting said lever to clamp the arm and block together and prevent relative displacement of the same.

7. In a device of the character described, a member comprising an arm, a member comprising a spindle bearing block adjustably mounted on said arm, a guideway between said members, one of said members being provided with a portion inclined to the axis of the spindle, and clamping devices attached to one of said members projecting across the path of said guideway to the other member and co-acting with said inclined portion, whereby the clamping force is automatically increased as the thrust imparted to said spindle bearing block increases during the operation thereof.

In testimony whereof, I affix my signature.

THOMAS BURKE.