May 3, 1927. 1,626,923

W. M. DRENNON

UNIVERSAL BENCH MOTOR STAND

Filed Dec. 10, 1924 2 Sheets-Sheet 1

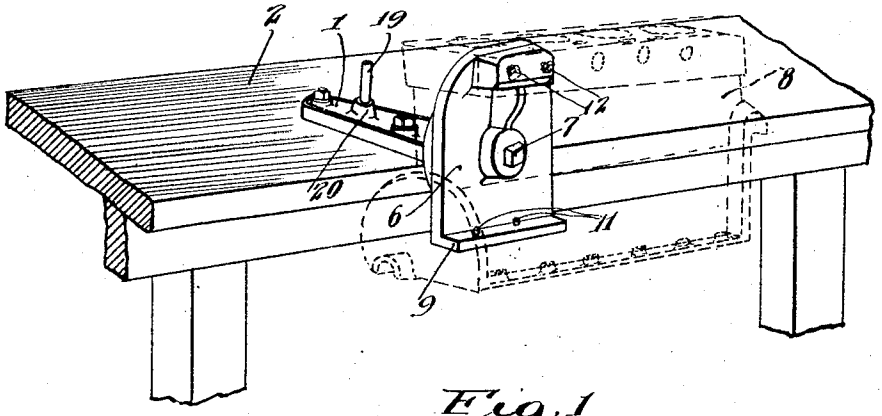


Fig. 1

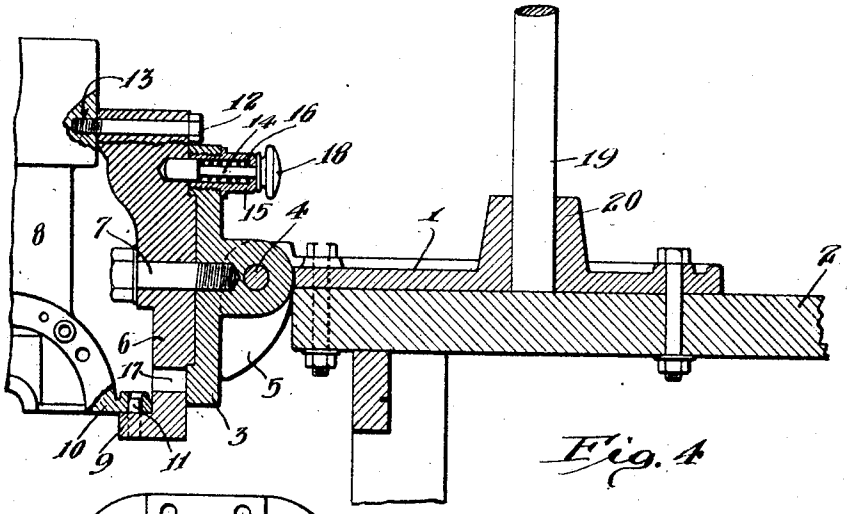


Fig. 4

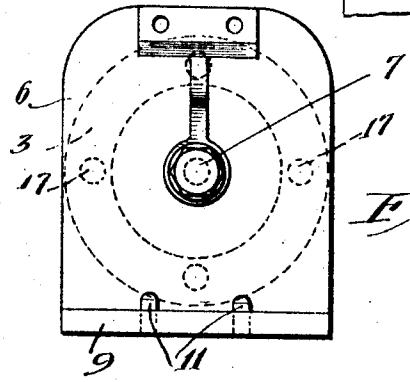


Fig. 5

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Fig. 2

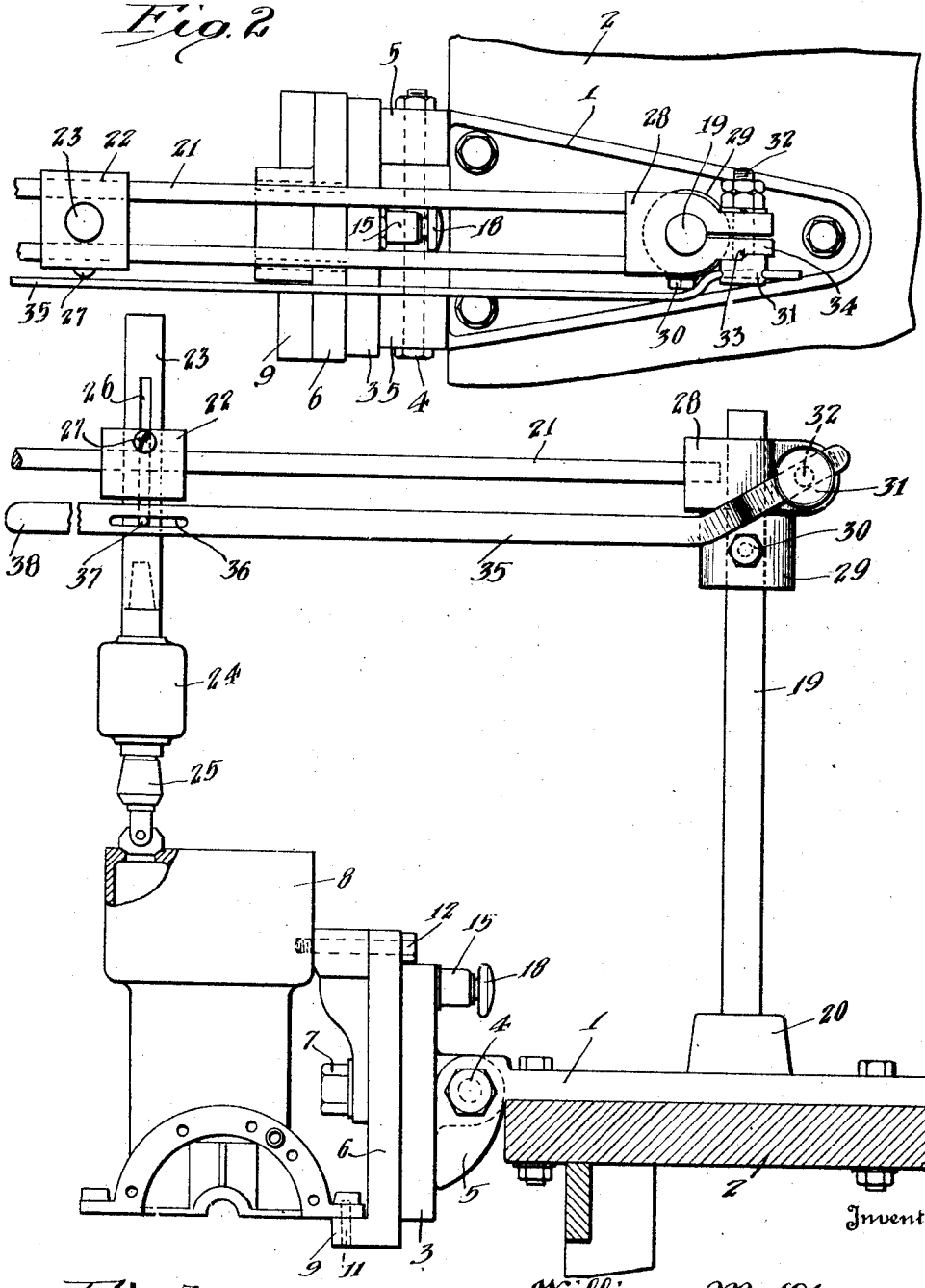


Fig. 3

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UNITED STATES PATENT OFFICE.

WILLIAM MARTIN DRENNON, OF ANAHEIM, CALIFORNIA.

UNIVERSAL BENCH MOTOR STAND.

Application filed December 10, 1924. Serial No. 754,973.

This invention relates to a bench stand for supporting cylinder blocks of engines, such as cylinder blocks of automobile engines. In repairing and refitting these blocks, it is often necessary to apply tools to them from different directions. The general object of this invention is to provide a simple bench stand which can be readily mounted upon an ordinary machinist's work bench and which is constructed in such a way as to support the cylinder block in position and at the same time enable the cylinder block to be held in different positions while work is being performed upon it; also to provide a bench stand of this kind with means for supporting the carriage for the tool which will enable the tool to be positioned over the block and moved when desired into operating position.

Further objects of the invention will appear hereinafter.

The invention consists in the novel parts and combination of parts to be described hereinafter, all of which contribute to produce an efficient universal bench motor stand.

A preferred embodiment of the invention is described in the following specification, while the broad scope of the invention is pointed out in the appended claims.

In the drawing:

Figure 1 is a perspective showing a portion of a bench with my bench stand applied to it. This view shows the post of the bench stand broken away but indicates in dotted lines the manner in which the stand will operate to support the cylinder block.

Fig. 2 is a plan of the bench stand and showing a portion of the bench, certain parts being broken away.

Fig. 3 is a side elevation of the bench stand and bench, and particularly illustrating the manner in which a tool and motor for driving the same may be supported and brought into operating position over the block.

Fig. 4 is a side elevation of the lower portion of the bench stand and broken away to further illustrate the means for holding the cylinder block in different rotative or oriented positions.

Fig. 5 is a front elevation of the rotary head of the bench stand.

In practicing my invention, I provide a base plate 1 which may be attached on the upper side of a machinist's bench 2 by any suitable means. At its forward end I provide a bracket 3 which is pivotally attached to the forward end of the plate on a horizontal axis by means of a bolt 4. At this point the plate 1 is provided with two downwardly projecting toes 5 (see Figure 4) with vertical forward faces which are engaged by the rear face of the bracket 3 so as to support the bracket in an upright position. The body of this bracket 3 is in the form of a vertical plate, and on its outer face a rotary head 6 is pivotally mounted by means of a bolt 7, the axis of which is disposed at right angles to the axis of the bolt 4.

The outer side of the rotary head 6 is provided with means for securing the same to a cylinder block 8. For this purpose, near its lower edge the rotary head is provided with a horizontal shoulder 9 which operates as a rest to support the flange 10 of the cylinder block, and I prefer to provide the shoulder 9 with one or more pintles 11 which are spaced apart to correspond with the regular bolt-holes which are formed in the flange 10. In this way the shoulder 9 not only operates to support the block, but will prevent its shifting on the rotary head. In addition to this, on the opposite side of the axis of rotation of the bolt 7 I provide means for securing the block to the rotary head, and this last named means is preferably in the form of through bolts 12, the threads of which engage the regular tapped openings 13 which are provided on the side of the block where the water connection is made to the block. The position of these pintles 11 and the bolts 12 of course would be varied, and the character of these connections would be adapted, to suit the particular cylinder block which was being operated upon.

Suitable means is provided for holding the rotary head in different rotated or oriented positions. For this purpose I provide a slip pin 14 (see Figure 2) mounted in a suitable guide 15 provided with a spring 16 for normally holding the head of the pin in one of a plurality of openings 17; the openings 17 are placed equidistant in the rotary head; the guide for the slip pin 14 is secured in the upper side of the bracket 3. The slip pin 14 should be short enough so that its head 18 will not interfere with the bracket 3 being thrown back in a position to rest on the base plate 1.

A post 19 is mounted in a suitable boss 20 on the base plate and extends vertically upward. On the upper portion of the post 19 I provide means for supporting a radial arm 21, which arm supports a carriage 22 which is movable along the arm. This carriage is provided with means for supporting a vertical tool to be used in operating upon the cylinder block. For this purpose the carriage 22 is in the form of a guide sleeve for a vertical spindle 23, the end of which carries a motor 24. The motor has a vertical shaft and on the under side of the motor the shaft is provided with a chuck 25 to hold a drill or any other tool. The spindle 23 is held against rotation by means of a keyway 26 receiving a set screw 27 carried by the carriage 22. The motor is attached co-axially on the spindle and the spindle must be non-rotatable to resist the reaction of the motor in driving the tool.

The arm 21 preferably consists of two bars, the inner ends of which are secured in a split collar 28 carried on the post 19. This collar 28 may be supported on another collar 29 which may be secured rigidly at any height by means of a set screw 30.

Suitable means is provided for securing the split collar 29 to the post. This means may be in the form of a cam 31 (see Figure 2) mounted on the bolt 32 and cooperating with a cam face 33 on one of the ears 34 of the split collar. Any suitable means may be provided for raising and lowering the spindle 23, but I prefer to accomplish this by means of a lever 35, one end of which is secured to the cam 31 and the other end of which has a slot 36 receiving a pin 37 which projects from the side of the spindle 23. The outer end of the lever 35 has a handle 38 which enables the lever to be swung up or down at will. In Figures 2 and 3 the split collar 28 does not clamp the post tightly, and the arm 21 can then be swung around readily into any position desired; however, when the spindle 23 has been brought to the proper position over the point where the tool is to operate, the depression of the lever 35 will operate the cam 31 to clamp the collar 28 rigidly to the post, and by reason of the slot 36 this downward movement of the lever will also slide the spindle down to apply the tool to the work.

It is understood that the embodiment of the invention described herein is only one of the many embodiments this invention may take, and I do not wish to be limited in the practice of the invention, nor in the claims, to the particular embodiment set forth.

What I claim is:—

1. In a bench stand for supporting the cylinder block of an engine, the combination of a base-plate constructed to rest upon the bench, a rotary head supported on the base-plate so as to rotate on a horizontal axis, said head having a transverse shoulder to be engaged by the flange of the cylinder block, a bolt carried by the rotary head on the opposite side of the said axis of rotation for connection to regular tapped holes in the block, means for holding the rotary head in a plurality of different positions, a post extending up from the base-plate, a radial arm carried by the post, and a carriage movable along the arm for supporting a motor for driving a vertical tool to operate upon the block.

2. In a bench stand for supporting the cylinder block of an engine the combination of a base-plate constructed to rest upon the bench, a rotary head supported on the base-plate so as to rotate on a horizontal axis, said head having a transverse shoulder with a pintle projecting from the shoulder to engage in a bolt opening in the flange of the cylinder block, and a bolt carried by the rotary head on the opposite side of the said axis of rotation for connecting to regular tapped holes in the block, a post extending up from the base plate, a rotary arm carried by the post, and a carriage movable along the arm for supporting a vertical tool to operate upon the block.

3. In a bench stand for supporting the cylinder block of an engine, the combination of a base-plate constructed to rest upon the bench, a rotary head supported on the base-plate so as to rotate on a horizontal axis, said head having a transverse shoulder to be engaged by the flange of the cylinder block, means carried on the opposite side of the said axis of rotation for connecting to the regular tapped holes in the block, a post extending up from the base plate, a split collar mounted on the post, means for clamping the split collar, a substantially horizontal arm extending out from the split collar, a carriage mounted to slide on the arm, and a vertical spindle guided to slide through the carriage, and constructed to support a motor for driving a tool.

4. In a bench stand for supporting the cylinder block of an engine, the combination of a base-plate constructed to rest upon the bench, a rotary head supported on the base-plate so as to rotate on a horizontal axis, said head having a transverse shoulder to be engaged by the flange of the cylinder block, means carried by the rotary head on the opposite side of the said axis of rotation for connecting to the block to secure the same on the head, a post extending up from the base plate, a split collar mounted on the post, a substantially horizontal arm carried by the split collar and extending radially from the post, a carriage movable along the arm, a spindle mounted to slide vertically through the carriage, a lever for raising or lowering the spindle pivoted on the split collar, a cam device associated with the pivot

point of said lever for clamping the split collar to the post, said spindle having means for carrying a motor for driving a tool.

5. In a bench stand for supporting the cylinder block of an engine, the combination of a base plate constructed to rest upon the bench, a bracket pivotally attached to the base plate so as to rotate on a substantially horizontal axis, said base plate having means for holding said bracket in an upright position, a rotary head pivotally mounted on said bracket to rotate on a horizontal axis substantially at right angles to the first named axis of rotation, said rotary head having means for securing a cylinder block thereto, a post carried by the base plate and extending upwardly therethrough, a rotary arm carried by the post, a carriage mounted on the rotary arm, and means for supporting a motor to drive a tool, on the carriage and guided so that the same can be raised or lowered.

Signed at Anaheim, Calif., this 1st day of December, 1924.

WILLIAM MARTIN DRENNON.