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C. H. LAWTON.

HOLDER FOR ROTARY TOOL OPERATING MACHINES.

APPLICATION FILED APR. 5, 1905.

Fig. 1.

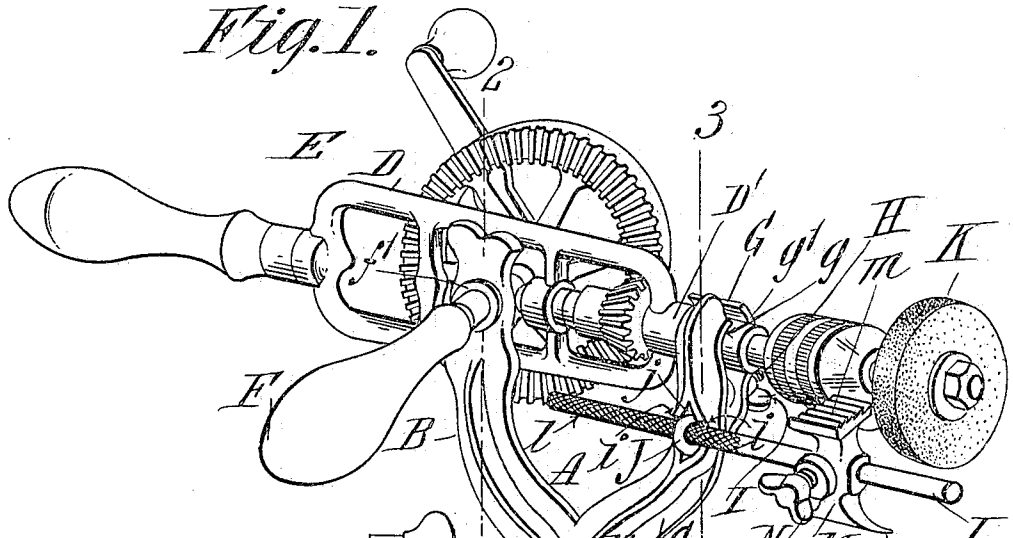
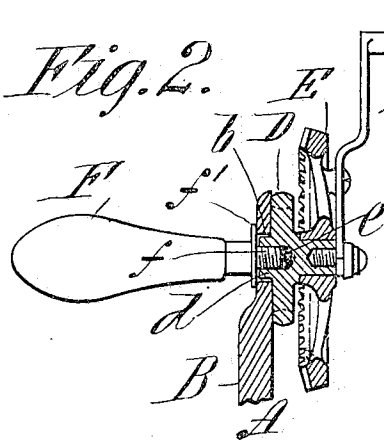


Fig. 2.



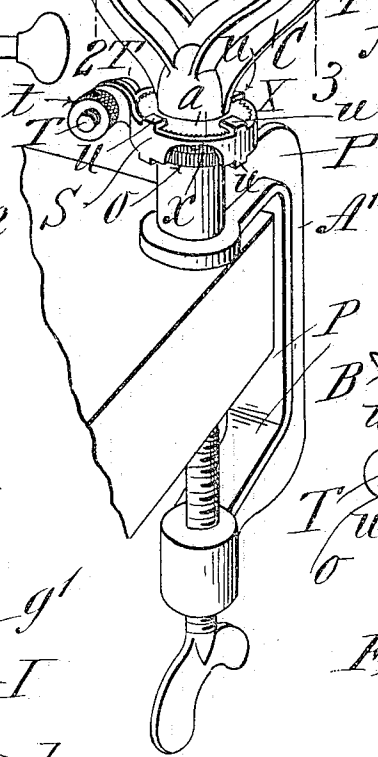


Fig. 4.

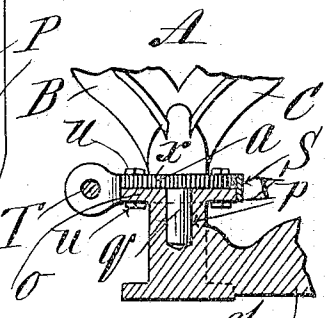


Fig. 3.

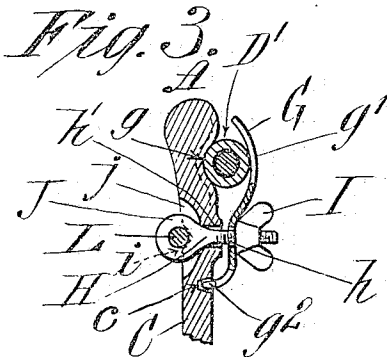


Fig. 5.

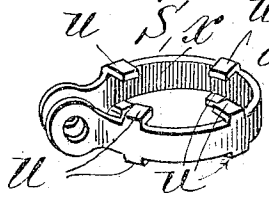
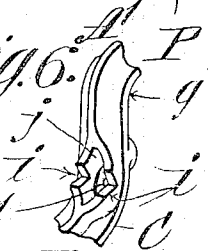


Fig. 6.



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UNITED STATES PATENT OFFICE.

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HOLDER FOR ROTARY TOOL-OPERATING MACHINES.

No. 809,822. Specification of Letters Patent. Patented Jan. 9, 1906.

Application filed April 5, 1905. Serial No. 254,032.

To all whom it may concern:

Be it known that I, CHARLES H. LAWTON, a citizen of the United States of America, and a resident of Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Holders for Rotary Tool-Operating Machines, of which the following is a full, clear, and exact description.

This invention relates to a holder and work-rest for rotary tool-operating machines, and more particularly to hand-operated gear-driven tools of the well-known type commonly used for hand drilling or boring.

The object of the invention is to provide convenient and efficient means for rigidly supporting a rotary tool-operating machine of the character mentioned in a horizontal or vertical position on a bench, table, or other available support in a manner which will permit the use of such a tool for a great variety of purposes, and thereby, in fact, constituting an efficient and practical substitute for a small lathe or drill-press, and amply sufficient when used as such for such light operations as knife or scissors grinding, buffing, and polishing, drilling, reaming, or wood and metal turning, &c.

The invention consists in a rotary-tool-operating-machine support comprising parts in combination and arrangement substantially as shown in the accompanying drawings and as set forth in the claims.

In the drawings, Figure 1 is a perspective view of the device shown as clamped to a table. Fig. 2 is a vertical section as taken on the line 2 2, Fig. 1. Fig. 3 is a vertical section as taken on the line 3 3, Fig. 1. Fig. 4 is a side view, partly in section, of the swivel connection uniting the screw-clamp and the bracket-support; and Fig. 5 is a perspective view of the swivel locking device. Fig. 6 is a perspective view of a portion of the bracket-support.

Similar characters of reference indicate corresponding parts in all of the views.

In the drawings, A represents the tool-holding support, preferably a metal casting suitably webbed or flanged and of stable design, and A′ is a hand screw or clamp of common form, to which the support A is pivotally united. The support A, as will be seen by referring to Fig. 1, comprises a disk-like or circular flanged base *a*, from which rise the two divergent upwardly-extending curved arms B and C. The upper end portion of arm B has a round hole *b* transversely formed therethrough, (see Fig. 2,) which receives the round hub-like projection *d*, which is centrally formed on the frame D of the rotary tool-operating machine *e*.

The tool or implement, which as a whole is represented by E and shown in Fig. 1 of the drawings, is a common form of what is known in the hardware trade as a "hand-drill," and an important feature of the holder which is included in my invention is the capability, complete in itself, of firmly supporting the tool-operating machine with no required change of or addition to the latter, thereby avoiding any possibility of impairing its usefulness in the slightest degree for the ordinary purposes of its design. This hub *d* is of less thickness or axial extent than the thickness of the upper portion of arm B in which hole *b* is located, by reason of which difference in thickness the face of hub *d* when entered in the hole *b* does not extend quite to the outer face of arm B, and thus the screw-stud *f* on the steadying-handle F draws the hub *d* against the resistance of washer *f*′, but as they do not come in contact there is always a reserve pressure to apply through handle F, thus insuring a close engagement of the upper end portion of arm B with the central portion of the machine-frame D.

That there may be no tilting of machine E out of a horizontal position, as shown in Fig. 1, and to further secure a rigid uniting of the machine to the support A, a grooved bearing-surface *g* is formed in the side, but near the upper end portion of arm C, against which the supporting shaft portion or journal D′ of the machine-frame D bears and is securely held, as in a vise, by a clamp G. This clamp G, which I preferably make of a metal plate, is near its upper portion formed curved, as at *g*′, that it may better engage and hold the shaft-guiding sleeve D′ between it and the bearing-groove *g*. The lower end portion of this clamp G is bent at an angle to the upper portion and terminates in a projection g^2, which when the clamp is in use constitutes a fulcrum-point. A recess or hole *c* is formed on the arm C, which receives this fulcrum-point g^2 and serves to prevent the clamp from any twisting or turning while being adjusted or while in use.

Referring to Figs. 1 and 3 of the drawings, the clamp G is provided about midway of its length with a perforation or hole *h*, and the arm C, directly opposite hole *h* when the

clamp is in place, has a hole h' therethrough. An eyebolt H is passed through these holes h' h, the eye J of which has a seat or bearing in a recess j, formed in the outer side of arm C, and the opposite or threaded end of the bolt H, passing through and protruding beyond the hole h in the clamp, is provided with a thumb-nut I. This eyebolt H besides holding the clamp G has the important function of contributing to the support of a work-rest, as will next appear.

The machine, as shown in Fig. 1, has supported in its chuck for rotation a small emery or other wheel K, suitable for knife-grinding. When the machine is used in this manner or when it is used as a lathe, it is desirable to provide a tool or work rest, and that a serviceable yet simple and inexpensive slide to constitute such work-rest may be had I have provided therefor a small though rigid rod or shaft L, which is passed through the eye J of bolt H. That this "slide" L, as it will be called, may be maintained rigidly in a position parallel to the spindle of the machine E, the side walls or cheeks at the boundaries of the recess j have formed edgewise therein on either side of the eye J the angular notches i i, (see Fig. 6,) into which the adjacent portions of the slide L are drawn on the tightening up of the thumb-screw I, and that there may be a more certain engagement of the notches i i and the bolt-eye J with the slide L a portion of the surface of slide L, as shown in Fig. 1, is roughened or knurled, (indicated as at l.) In operation a quick adjustment of the slide longitudinally is easily effected by loosening thumb-nut I until the slide L has been moved as desired, then on retightening the thumb-nut the slide is drawn into the notches i i, and incidentally with the tightening of eye J on the slide the clamp G is simultaneously tightened against the shaft-journal sleeve D′ of the machine E. A variety of forms of tool-rests fitted to engage slide L may be supplied with the device suitable for the many purposes that the machine is adapted for. In Fig. 1 of the drawings a duplex form of rest M is shown, in which two forms m and m' of tool-rests are combined. To reverse the position of the rest from that shown in the drawings for the purpose of using the rest m', the thumb-screw N is loosened and the rest is slid off from the slide L and replaced thereon the other side up.

A further convenient and desirable feature of the holder as a whole is the separable swivel-joint x, uniting the above-described portion of the holder A to the clamp portion A′, such joint including the locking or retaining device therefor.

The clamp shown in Fig. 1 of the drawings is identical with the well-known type in common use by machinists and others, except that a disk or head o is formed on the upper portion of the clamp-frame P. This "head," as it will be called, is of the same diameter and thickness as the base or flange a of support A and has a vertical upwardly open hole p (see Fig. 4) formed axially therein, which receives the downwardly-projecting pivot-pin q of base a.

Referring to Figs. 1, 4, and 5 of the drawings, a removable band or strap s of spring metal is provided, which is adapted to encircle the two adjacent portions o and a of support A and clamp A′. The extremities s s of this strap S are of somewhat increased width and rounded, as shown clearly in the various figures of the drawings, and have holes provided therein for the reception of a tightening-bolt T, which by means of the knurled nut t serves to draw the extremities s s of band S toward each other and constrict the edges of the base a and head o, uniting the same, and by reason of the large surface circumferentially of the strap S and of the base a and head o encircled thereby a very secure lock for the said parts is insured.

The efficiency of the above-described locking device is still further increased by roughening the inner surface of the strap S and the peripheries of base a and head o, respectively. This roughening of the surfaces mentioned is preferably made by straight knurling of the same, as indicated by x in the drawings.

The ears u on band S serve to hold the band in position relative to the base a and head o and prevent the band from either rising or dropping from its position opposite the peripheral edges of said base and head. A reference to Figs. 1, 4, and 5 illustrates this feature.

Various changes may be made in respect of details of construction without departing from the gist of the present invention.

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

1. In a device of the character described, a screw-clamp having formed thereon one member of a swivel-joint, a bracket extension having a base, constituting the fellow member of said swivel-joint, a plurality of supporting and fastening devices on said bracket extension for uniting thereto a rotary tool-operating machine, and means embodied in one of said machine supporting and fastening devices for also supporting and adjustably fastening to the said bracket extension a tool-rest support.

2. In a device of the character described, the combination with a bracket-support comprising upwardly-divergent members, B and C, one B thereof having an aperture b transversely therethrough and the other having in its side a recess g, and the sidewise-located cheeks constructed with the notches i, i, and tool-confining means coacting with said apertured portion of said bracket member B, of the clamp G located adjacent the recessed

side of bracket-arm C, the eye-ended bolt in said recess and protruding through both said arm C and the clamp, and having the fastening-nut, and a work-rest-supporting bar, slidably engaged through the eye of said bolt, and having double rests or engagements in said notches, *i*, *i*.

3. In a device of the character described, the combination with a swivel bracket-support comprising upwardly-divergent members, B and C, one B thereof having an aperture *b* transversely therethrough and the other having the sidewise-located notches *i*, *i* and means for confining said bracket in a fixed position, of tool-confining means coacting with said apertured portion of said bracket member B, the clamp G located adjacent the side of bracket-arm C, the eye-ended bolt protruding through both said arm C and the clamp, and having the fastening-nut, and a work-rest-supporting bar L, slidably engaged through the eye of said bolt, and having double rests or engagements in said notches *i i*, and a double work-rest, reversibly carried on said bar.

Signed by me at Springfield, Massachusetts, in presence of two subscribing witnesses.

CHARLES H. LAWTON.

Witnesses:
WM. S. BELLOWS,
G. R. DRISCOLL.