May 1, 1923.

1,453,470

E. J. LEES

ARBOR SUPPORT

Original Filed April 26, 1918

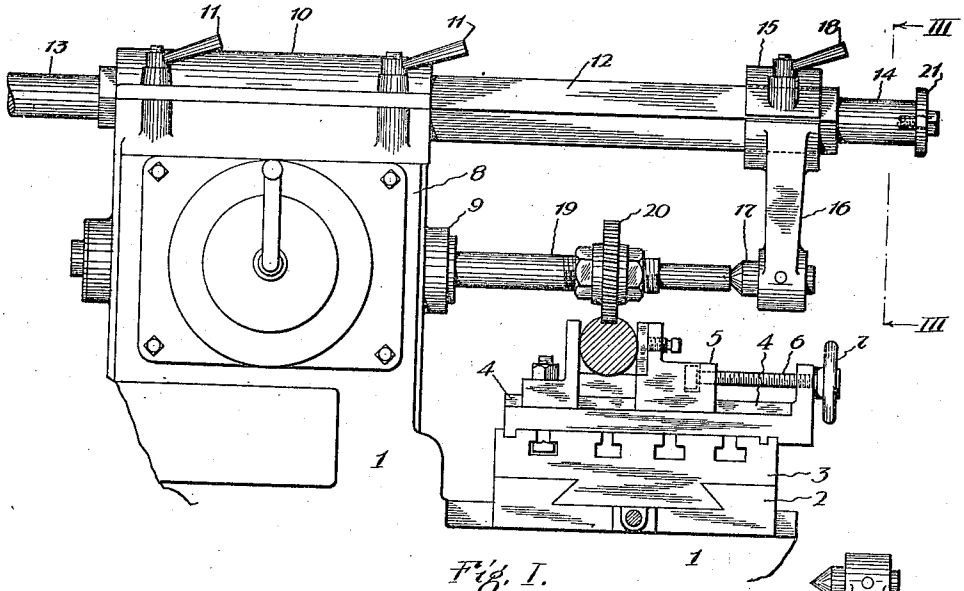


Fig. I.

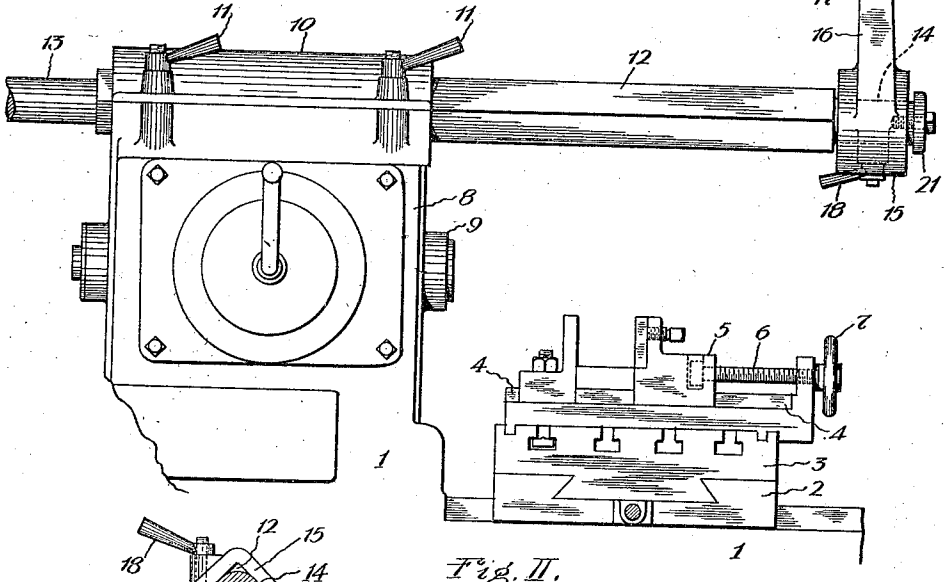


Fig. II.

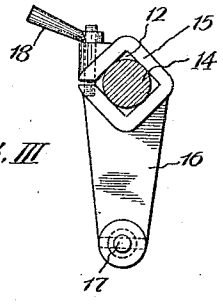


Fig. III

Inventor.

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by his atty.

Chas. B. Hughes.

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UNITED STATES PATENT OFFICE.

ERNEST J. LEES, OF CLEVELAND, OHIO, ASSIGNOR TO HOSEA T. BRADNER, OF CLEVELAND, OHIO.

ARBOR SUPPORT.

Original application filed April 26, 1918, Serial No. 230,979. Divided and this application filed February 8, 1919. Serial No. 275,685.

To all whom it may concern:

Be it known that I, ERNEST J. LEES, a citizen of the United States, residing at No. 6210 Carnegie Ave., Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Improvement in Arbor Supports, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

This invention pertains to an arbor support for metal working machines, and more particularly to an arrangement for swinging the same out of the way preparatory to mounting of the operating parts.

I am well aware that machine tool supports of this character are not new, and also know that such removal of the arbors has been accomplished both by a swinging movement and by a straight line withdrawal. When the support is movable about a pivot it becomes difficult to accurately center and fix it true to the cooperating spindle. When the support is slid along a square socket the centre is held true but the actuation is cumbersome. My idea enables the advantages of each to be had without their disadvatages, and this I have accomplished by employing a combination of both of the aforementioned practices, that is to say, I provide an arbor support proper which is capable of being swung upwardly and at the same time I fit the over-arm about which it swings in a square socket so that the center carried by the support is always held true when in position to hold the arbor.

Adverting to the drawings:

Figure I is an elevation of a part of a metal working machine showing blank and tool supports together with an arbor support embodying my invention.

Figure II is a similar view showing certain parts in relatively different positions.

Figure III is a section on line III—III of Figure I.

A suitable frame 1 carries a slideway 2 in which a slide 3 is adapted to move. The upper surface of the slide 3 is fashioned with a relatively transverse slideway 4 along which a carriage 5 may be moved through the agency of a screw 6 and handwheel 7. The carriage 5 is purposed to support any suitable blank not shown. Extending upwardly from the frame 1 is a column 8 provided with a clutch drive collar 9 of any approved type. The top 10 of the column 8 is fashioned with a squared socket not shown but extending in substantial alignment with the axis of the collar 9. The usual binder handles 11 are provided for fixing within the socket an over-arm.

According to my invention this over-arm has both rounded and squared sections and specifically has a middle portion 12 squared and its two ends 13 and 14 rounded and of somewhat reduced size. The dimensions of the portion 12 are such as to fit within the squared socket of the top 10 of the column 8 so that the over-arm is capable of being moved through the socket when the binder handles 11 are loosened. As will be readily understood, when the over-arm is withdrawn to the right so that the rounded end 13 occupies the squared socket the over-arm may be turned around.

Fitted around the squared section 12 is a split arbor support 15 having a depending extension 16 which carries a center 17 adapted to occupy a position in axial alignment with reference to the clutch drive collar 9. The support 15 may be clamped to the section 12 by a similar binder handle 18. An arbor 19 carries a tool 20 and is mounted to rotate between the collar 9 and center 17.

It will be evident that when the handle 18 is loosened the arbor support 15 may be slid from the squared section 12 on to the round extremity 14 upon which it is loosely held in place by an end collar 21 so that it may be swung upwardly and out of the way when it is desired to remove the arbor 19, as appears in Figure II.

It will be observed that I have provided an alternative means whereby the arbor support may be swung out of the way. In addition to the mode of doing this, as illustrated in Figure II, the support 15 may be left secured to the section 12 and the over-arm bodily withdrawn after loosening the handles 11 until the rounded section 13 occupies the socket formed in the top 10 whereupon the over-arm and arbor support may be turned around as a unit.

The advantage which my structural arrangement offers is that it enables an arbor support to be swung upwardly out of the

way and yet permit of its being returned to its functionating position and there fixed so that the center 17 is always accurately pointed whenever the section 12 extends not only into the socket provided in the top 10 but also into the support 15. The handles 11 and 18 may be tightened with absolute assurance that the center 17 is in precise alignment with the collar 9 as is required for the proper operation of the tool.

It is to be understood that the application of this invention is not to be considered as limited to any particular kind of metal working machine and therefore not applicable solely to a support for an arbor, notwithstanding the arbitrary title selection. Any member slidably attached to an upright standard is to be construed as the equivalent of the adjustable column extension or over-arm. The essential idea is that a pair of members are so designed and connected as to permit of distinct relative movements. According to the exemplification of the drawing one of such members is formed with an angular socket and the other with both a corresponding angular section and with a round section which latter section is however likewise fitted to said socket to enable it to be swivelled therein. Any side of the angular section may be said to be tangential to the rounded section. It will be understood, moreover, that while a perfectly round section is preferable a slight variation therefrom might be permitted without departure from the principle of enabling a turning movement within the angular socket. The underlying scheme is of course duplicated in the structure illustrated because the distinct relative movements may be accomplished either as between the column and over-arm or as between the over-arm and the support 15, thus giving the operator the option of swinging the support by itself around the over-arm, or swinging both over-arm and support around as a unit without requiring a loosening of the handle 18.

This application is a division from the application which eventuated on March 11, 1919 as Patent Number 1,296,821.

I claim:

1. An arbor support comprising a column provided with an angular socket, an over-arm having a section of corresponding angularity as and fitted in said socket, another section of said over-arm being rounded, and an arbor support fitted to said angular section and adapted to be slid along to enclose said rounded section and enable its being swung around.

2. A device of the character described comprising a member and an arm movable relatively thereto, said arm having an angular and a rounded section, the latter being tangential to the sides of the angular section, and a support formed with an angular bearing slidable longitudinally on either section of said extension and adapted to swivel about the rounded section.

3. A device of the character described, comprising an arm and a support carried by said arm, the engaging surfaces between said arm and support being constructed and arranged to permit of distinct movements of said support relatively to said arm, certain of said engaging surfaces preventing one such movement of said support during the other movement thereof.

4. A device of the character described, comprising a member, an arm carried thereby and capable of distinct movement relative thereto, a support movably carried by said arm, the engaging surfaces between said arm and support being constructed and arranged to permit of distinct movements of said support relatively to said arm, certain of said engaging surfaces preventing one such movement of said support during the other movement thereof.

5. A device of the character described, comprising a movably supported arm, a support movably carried thereby to swing and move end-wise relatively thereto, the arrangement being such that said swinging movement is hindered by the co-acting surfaces between said arm and support until the latter has been moved to a given point, and a center fitted in said support.

6. A device of the character described, comprising a member, an arm movably carried thereby, and a support movably carried by said arm, one of said movable parts being provided with angular and rounded male sections and the other being provided with a female angular section, whereby relative movements may take place between said arm and support endwise of the arm or about its axis.

7. A device of the character described comprising the combination of an arm and a support, one of said parts being provided with an angular socket and the other part being fashioned with a section of corresponding angularity as and fitted in said socket, another section of said other part being rounded of reduced size and adapted to receive said socket, and a center carried by said support and adapted to be swung around when such rounded section occupies said socket.

8. A device of the character described, comprising a member having a flat sided socket, an element having both a flattened and a rounded section either of which will fit in said socket, and a center carried by said member.

9. A device of the character described, comprising a supporting member, a second member, adjustably attached to the first member, a third member movably carried by

the second member, one of said last mentioned pair of members being formed with a socket having a flat side and the other being fashioned with a flattened and a round section either of which will fit in said socket, and a center carried by one of said last mentioned pair of members.

10. In apparatus of the class described, the combination of an arm having a section of angular shape in cross section, and another section whose maximum diameter at any point is less than the minimum diameter at any point of said angular section, and a support having a socket shaped to slidably fit the angular section of said arm whereby it may be moved from said angular section on to the other section of said arm for swinging movement thereabout.

11. In apparatus of the class described, the combination of a member having an overarm and a support movably carried by said arm, said arm and support being provided one with a female angular bearing and the other with a male angular section adapted to fit and move in said female bearing, that one of said last mentioned parts which has the male angular section being additionally fashioned with a rounded section likewise adapted to move within said female angular bearing to enable a relative swinging movement of the parts.

Signed by me, this 28th day of January, 1919.

ERNEST J. LEES.

Attested by—
CHARLES H. SCHUN,
HOMER C. WARNER.