J. H. PASCHALL.

MILLING ATTACHMENT FOR LATHES.

APPLICATION FILED SEPT. 10, 1917.

1,318,688. Patented Oct. 14, 1919.

Fig. 1.

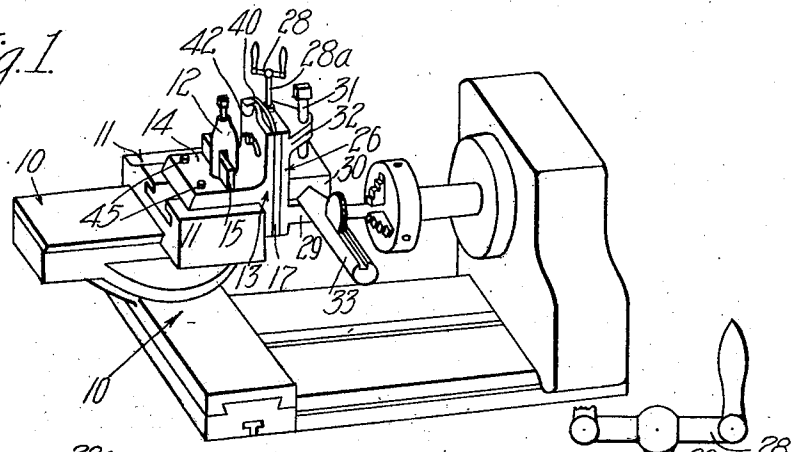


Fig. 2.

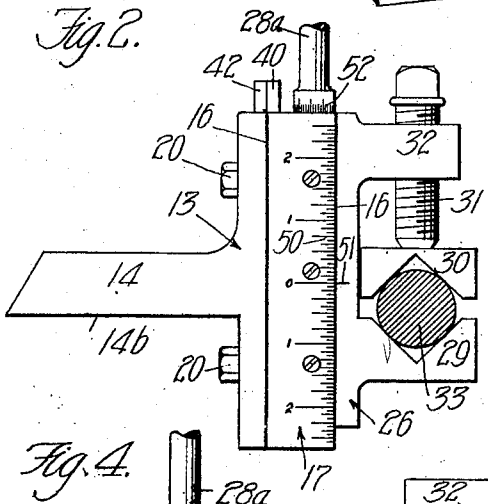


Fig. 3.

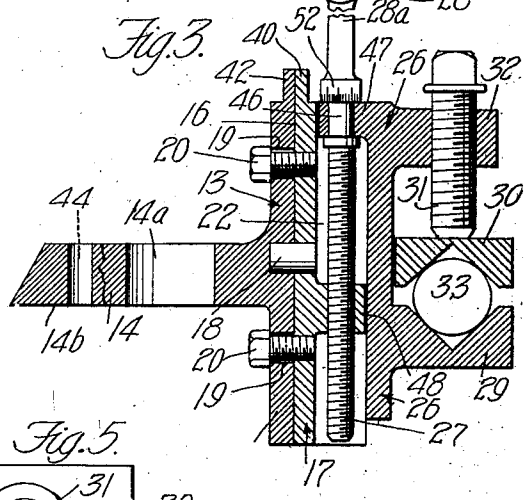


Fig. 4.

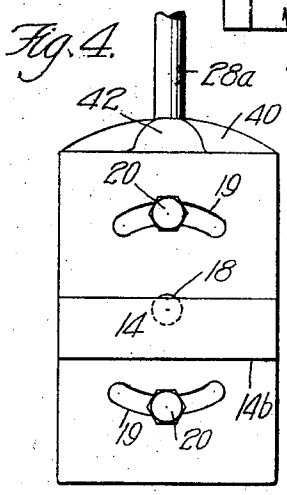
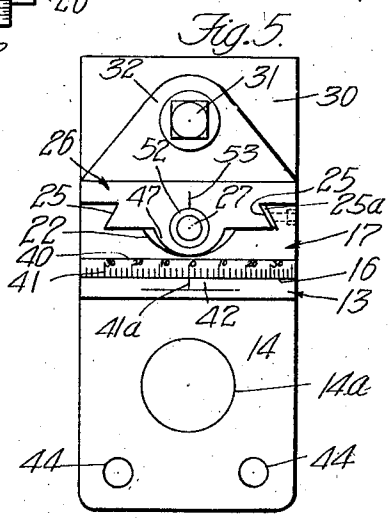


Fig. 5.



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MILLING ATTACHMENT FOR LATHES.

1,318,688. Specification of Letters Patent. Patented Oct. 14, 1919.

Application filed September 10, 1917. Serial No. 190,518.

To all whom it may concern:

Be it known that I, JAMES H. PASCHALL, a citizen of the United States, residing at Long Beach, in the county of Los Angeles, State of California, have invented new and useful Improvements in Milling Attachments for Lathes of which the following is a specification.

This invention relates to attachments for lathes with the object in view of providing a simple and efficient means, and inexpensive, which may be applied to an ordinary lathe to perform certain milling operations; it being an object to provide a lathe attachment enabling a small shop to carry on the most usual and the simpler forms of milling operations.

This invention refers more particularly to certain improvements upon my invention for which Letters Patent No. 1,216,600 was granted to me on February 20, 1917. These particular improvements are explained hereinafter. For the purpose of setting forth the improvements I first describe a preferred form of device, and then particularly set forth the improvements which are the specific subject matter of this application. For this purpose I refer to the accompanying drawings in which—

Figure 1 is a perspective illustrating my milling attachment as it appears in use on the lathe; Fig. 2 is a side elevation of the attachment; Fig. 3 is a vertical longitudinal section of the same; Fig. 4 is a rear elevation of the attachment; and Fig. 5 is a plan of the attachment.

In the drawings a lathe carriage is illustrated at 10, having the usual tool supporting member 11 and tool post 12. My attachment is mounted upon the member 11 in the manner shown. The vertical base member 13 of the attachment preferably has a solid mounting plate 14 projecting horizontally rearwardly from the base member 13; and this angular mounting plate 14 has a large central aperture 14^a adapted to receive the tool post 12.

A bar 15 is placed horizontally in the tool post and is forced down on the plate 14, forcing the under surface to a tight engagement with the upper flat surface of member 11. The under surface 14^b of the plate 14 is machined accurately; so that when the plate 14 is held thus in position, the milling attachment is held accurately in proper position upon the lathe.

The base member 13 has a vertical face 16 against which the way member 17 is held; the two interengaging faces of the base member and way member being accurately machined. The way member 17 is mounted upon a horizontal central pivot 18 and is swingingly adjustable about said pivot on the face 16. Slots 19 extend through the base member 13, and bolts 20 pass through said slots and screw into the way member; and, by loosening and tightening these bolts, the member 17 may be thrown to and set in any desired angular position. The lower bolt 20 may bear back against the vertical side face of carriage member 11; and there is sufficient space between the base member 13 and the carriage to insert a wrench to turn the bolt. The lower bolt need only be turned slightly; it does not have to be turned up excessively tightly, but only enough to hold the way member 17 back against the face 16; the upper bolt 20 is tightened up sufficiently to hold the way member in any angular position. Although I herein describe a bolt and slot means of holding the way member in position on the base, it will be seen that any other equivalent means may be used. The means of indicating the angularity of position is an improvement and is spoken of particularly hereinafter. In its normal central position the member 17 is so secured that the ways 25 thereon are vertical. The work holding member 26 slides vertically in the ways 25, a screw 27 and a hand wheel 28 providing means for moving the work carrying member vertically to any desired position. The work carrying member has a work clamp comprising a lower jaw 29 stationarily mounted upon the member 26 (preferably integral therewith) and an upper jaw 30 adapted to be pressed down by a screw 31 mounted in a boss 32 projecting from the upper end of the member 26. The work clamp is particularly designed for holding such articles as shafts, as shown at 33 in the drawings, holding such articles across the axis of the lathe on which the attachment is mounted. Such articles may be held in either horizontal or inclined positions.

The upper jaw I now prefer to make

relatively flat, with its notch not so deep as the notch in the lower jaw. And I make the upper jaw loose, not attached to the screw 31, so that it may be put in place after the work is in place; and so that it may be used in different positions. For instance, it may be turned over and its flat surface clamped down on any piece of work that has a flat upper face; or it may be turned on edge to reach down farther into the lower jaw to hold a small article.

When I specify herein a work holding means or clamp I do not necessarily mean that the work is held directly in the clamp. It may be held in a chuck (an index chuck may be used) which is held in the clamp.

One of the improvements herein concerned is the means for setting the member 17 to any desired inclined position. Upon the upper end of member 17 I now place a circular-edged flange 40, whose edge is concentric with the pivot pin 18 and is provided with an angle scale 41. A pointer projection 42 extends upwardly from the member 13; and the angularity of position of the member 17 may be read on the scale 41 against a line or mark 41ª on the projection 42. The provision of this scale greatly facilitates the accurate performance of the kinds of milling work for which the attachment is designed. For instance, if a surface or slot is to be milled at an angle to the axis of a shaft, this can easily be accomplished by turning the member 17 to the proper angle.

Another improvement has been hereinbefore partially described. I now make the part 14 in the form of a flat plate instead of in the form of two prongs, as heretofore. This flat plate gives good strength and gives a good lower surface for engagement with the carriage member 11. Furthermore, I drill dowel pin holes 44 through the plate 14 and in these holes I insert a pair of dowel pins, as shown at 45 in Fig. 1, which fit into correspondingly drilled holes in the carriage member 11. These pins lock the attachment from any accidental displacement in a horizontal direction. The attachment is thus held immovable upon the lathe carriage. Another feature of improvement is in the manner of mounting and connecting the vertical screw 27. This screw 27 extends into a central vertical recess 22 in the way member 17 between the ways 25, and is now mounted at 46 in a lug or boss 47 extending out from the upper back side of member 26; and the screw 27 screw threadedly engages the stationary lug or boss 48 which projects forwardly from the member 17. Screw 27 thus moves up and down with the work carrying member 26, instead of being stationary as heretofore. In order thus to move vertically and keep the hand wheel 28 above the upper end of the member 17, the hand wheel 28 is provided with a relatively long shank 28ª. This arrangement of the screw, traveling with member 26, provides that the clamp screw 31 shall not interfere with the screw handle 28 nor with the operator's hand. The screw 31 sometimes projects quite high above the boss 32, and if the screw 27 remained stationary on the member 17, then at times the clamp screw 31 would be moved up into interference with the handle 28, unless the handle shank 28ª were made still longer.

In order to accurately indicate the sliding position of member 26 on member 17, I provide the member 17 with a finely divided scale 50 which may be read against a mark 51 on member 26. And, further, I provide the screw 27 with a micrometer head 52 which may be read against a mark 53 on the upper end of member 26.

I have found my milling attachment to be a very efficient and economical means for performing the simple sorts of milling operations ordinarily desired to be done in the average machine shop. The particular improvements herein described make the device more fully satisfactory in its operation and capable of a larger variety of more accurate work. The present invention resides particularly in these improvements and the general and specific combinations of which they form a part. In the other features the device may be modified and changed without necessarily departing from the invention.

My attachment virtually converts a lathe into a milling machine; and without interfering with the ordinary use of the lathe, because the attachment is easily mounted and removed. And it may be used for operations other than milling operations; it may be used to hold work for lathe operations, or to hold a tool to work on a piece held in a lathe chuck, etc.

Having described a preferred form of my invention, I claim:

In a device of the character described, a base member having a horizontally projecting mounting plate with an aperture therethrough to receive a tool post of a lathe carriage and other apertures to receive pins set in the lathe carriage to lock the base member against horizontal displacement, a work carrying member, and means for mounting the work carrying member on the base member to allow it vertical movement and pivotal movement with reference thereto.

In witness that I claim the foregoing I have hereunto subscribed my name.

JAMES H. PASCHALL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."