

No. 678,341.

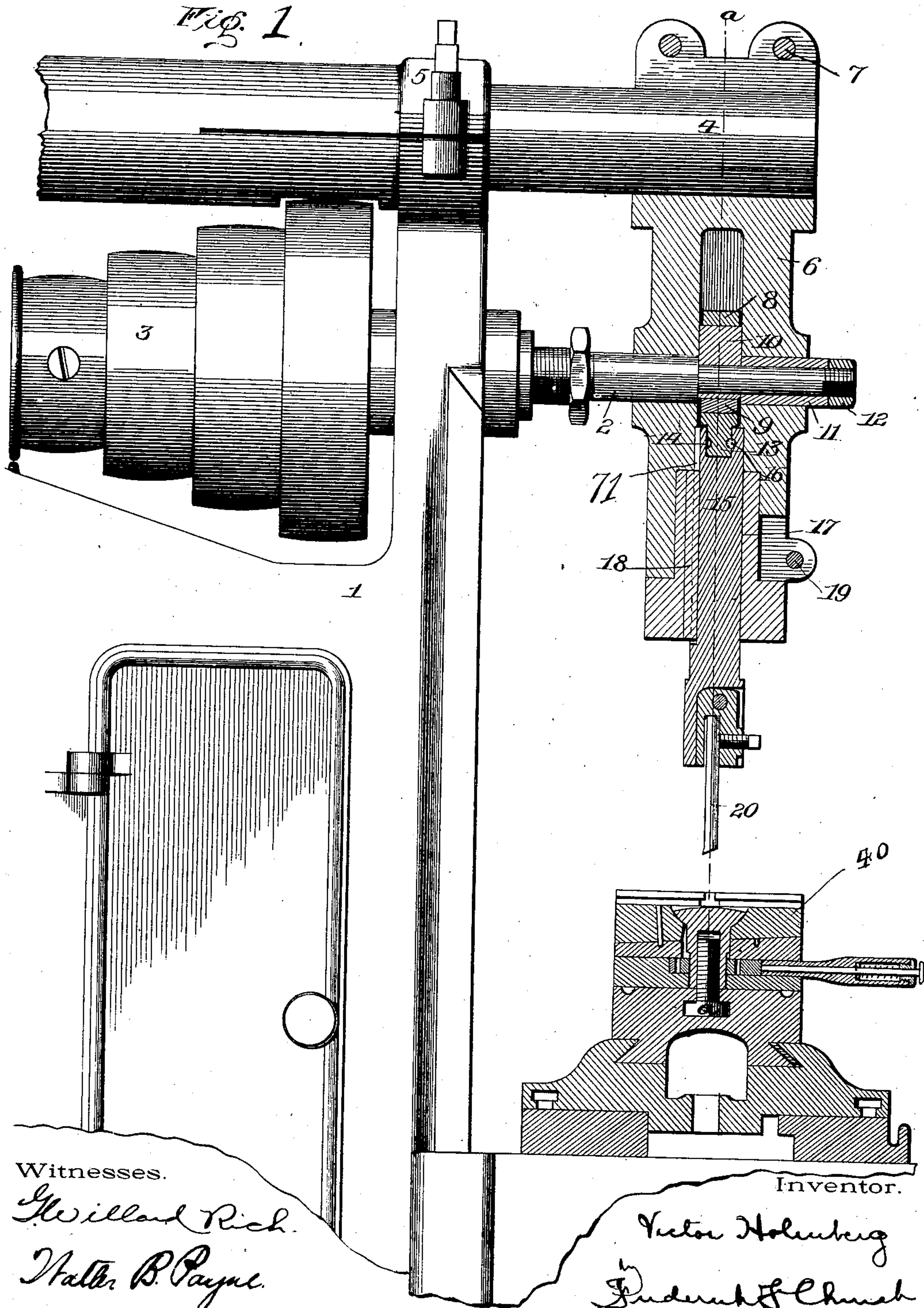
Patented July 9, 1901.

V. HOLMBERG.
ATTACHMENT FOR MILLING MACHINES.

(No Model.)

(Application filed Oct. 9, 1900.)

2 Sheets—Sheet 1.



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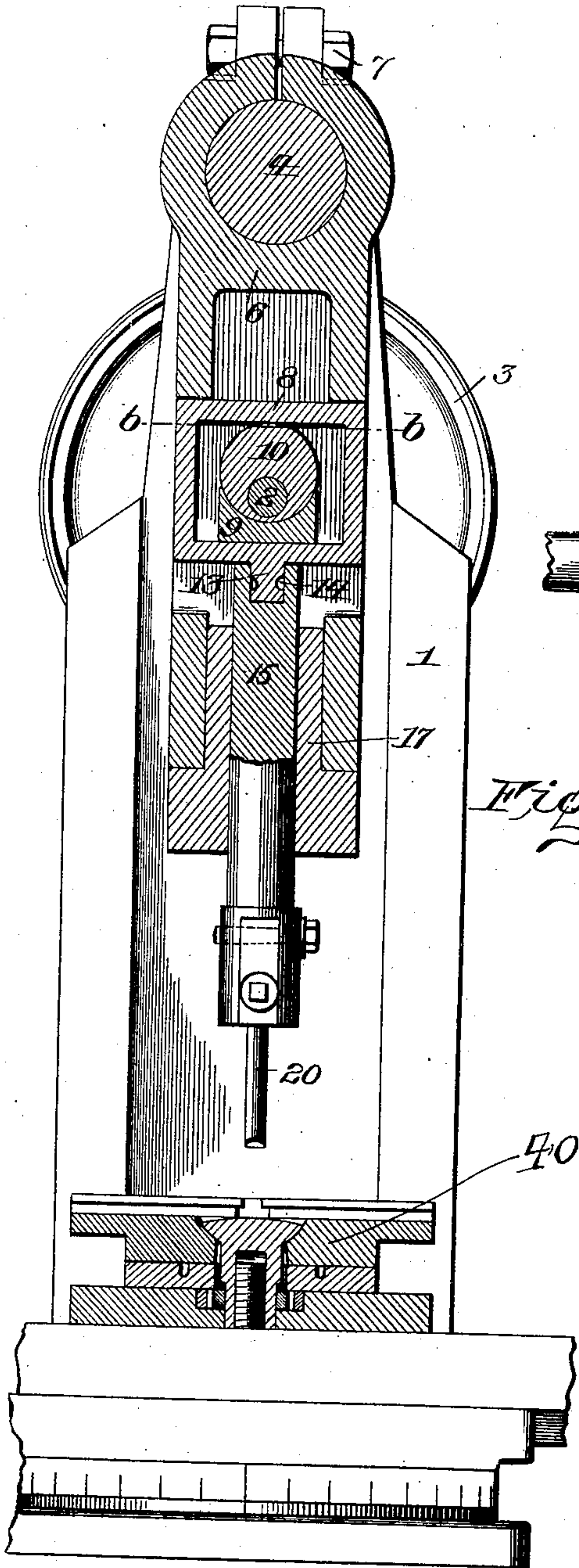


Fig. 2.

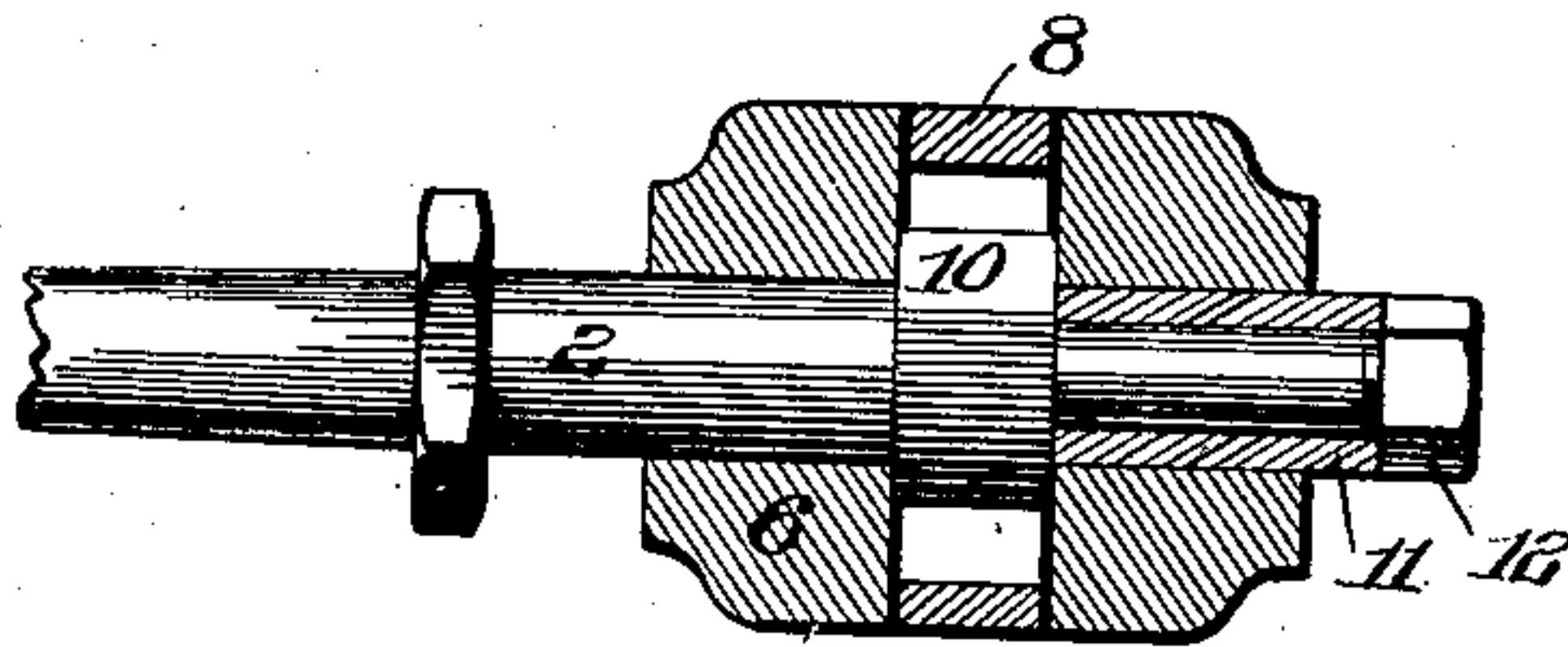


Fig. 3.

Witnesses.

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UNITED STATES PATENT OFFICE.

VICTOR HOLMBERG, OF ROCHESTER, NEW YORK, ASSIGNOR OF ONE-HALF
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ATTACHMENT FOR MILLING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 678,341, dated July 9, 1901.

Application filed October 9, 1900. Serial No. 32,493. (No model.)

To all whom it may concern:

Be it known that I, VICTOR HOLMBERG, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Attachments for Milling-Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the drawings forming a part of this specification and to the numerals marked thereon.

My present invention has for its object to provide an improved attachment for milling-machines whereby the latter may be employed as shapers, and particularly for the purpose of cutting or shaping stamping-dies having apertures with irregular outlines, although it is well adapted for other purposes, the construction and operation of the device being such that not only may the attachment be applied to the ordinary milling-machines now in use, but the operator may inspect and readily control the relation of the tool and work in such a manner as to accurately follow the lines or pattern marked upon the latter.

It further consists in certain improvements and combinations of parts, all as will be hereinafter fully described, and the novel features pointed out in the claims at the end of this specification.

In the accompanying drawings, Figure 1 is a side elevation of a portion of a milling-machine, showing in section my attachment applied thereto. Fig. 2 is a vertical sectional view thereof, taken on the line *a a* of Fig. 1; Fig. 3, a horizontal sectional view taken on the line *b b* of Fig. 2.

Similar reference-numerals indicate similar parts.

1 indicates a portion of the main frame of a milling-machine of the ordinary or any approved type, having the spindle or arbor 2 journaled therein and preferably provided with the usual driving-cones 3.

4 indicates the overhanging arm, adjustably secured in suitable clamps 5, located on the top of the machine, said arm, as usual, being preferably provided with the centering devices (not shown) and which cooperate with the spindle; but, as illustrated herein, the arm has its rear end projecting over the

work-support to receive the attachment, as usual in machines of this general description when employing attachments other than the spindle-center.

The attachment forming the subject-matter of my present invention embodies a frame 6, having at its upper end a recess or socket adapted to fit over the end of the overhanging arm and provided also with clamp-screws 7 for securing it rigidly thereto. This frame 6 is also provided with bearings located in line with the spindle 4 when the attachment is in position, and intermediate these bearings is arranged a transverse passage or recess, the sides of which form a bearing or way for the vertically-reciprocating yoke or cross-head 8, and within the opening in the cross-head is arranged the bearing-block 9, provided with an aperture in which operates an eccentric or cam 10; rigidly secured to the spindle 2 by means of the bushings 11 and lock-nut 12, so as to cause the cam to rotate with the spindle and reciprocating the yoke or cross-head in its guides. The lower side of the cross-head is provided with a stud or pintle 13, having an annular groove 14, said pintle fitting within a socket in the end of a tubular tool stock or holder 15, the connection between the yoke and tool-stock being formed by a pin 16, extending through the side of the stock and passing across the groove 14, so that the tool-stock will be reciprocated vertically by the cross-head and also permitted a rotary adjustment thereon. The tool-stock has its bearing in a sleeve or guide 17, provided at its lower end with a milled or knurled head or collar for operating it and also having an irregularly-shaped connection with the tool-stock, such as formed by a longitudinally-extending spline or key 18, operating in a groove or keyway 19, extending longitudinally of the tool-stock, so that while the stock is guided in the sleeve it cannot turn independently thereof. The lower end of the frame 6 is preferably split and provided with a clamp 19, whereby the sleeve 17 may be readily clamped in any position to which it may be adjusted on its axis. The lower end of the tool stock or holder is provided with a suitable clamp or holding device for receiving a cutting or shaping tool 20, preferably of such

nature that it will cut by a vertically-reciprocating motion, and in order that the adjustments may be accomplished offset from the center of the tool-stock.

- 5 From the above construction it will be seen that when the attachment is applied in the manner described and the spindle of the milling-machine is rotated the cross-head and the tool-stock connected thereto will be reciprocated vertically, and as the tool is preferably offset from the center its adjustment relative to said center may be readily accomplished by loosening the bolt 19 and rotating the sleeve, which carries with it the tool-stock, and said sleeve will be clamped by the tightening-bolt. The work to be operated upon—for instance, a stamping-die—may be held or clamped beneath the tool end upon the usual or any suitable bed or support 40, such as are usually employed in milling-machines and which are capable of various feeds and adjustments accomplished either automatically or by hand; but as the attachment is particularly adapted for cutting stamping-dies and also for giving the same the necessary clearance I prefer to clamp the work to a holder which is capable of being tilted at an angle relative to the plane of operation of the tool, as shown.
- 30 By arranging the attachment and tool as shown the upper face of the work can be inspected by the operator and the lines upon the face thereof—if, for instance, a blanking-die of irregular outline is to be made—can be seen at all times and the tool guided as may be desirable or necessary.

I claim as my invention—

1. An attachment for milling-machines embodying the frame adapted to be attached to the overhanging arm of the machine having the shaft-bearing therein, the guides and the vertically-extending bearing, in combination with the reciprocating cross-head operating in the guides, the cam operating therein and the reciprocating tool-stock arranged in the bearing in the frame.

2. An attachment for milling-machines embodying the frame adapted to be attached to the overhanging arm of the machine, having the shaft-bearing therein and the vertically-extending bearing, in combination with the reciprocating cross-head, the bearing-block therein, the cam operating in the block and adapted to be attached to a rotary shaft, and the reciprocating tool-stock adjustable upon the cross-head.

3. An attachment for milling-machines embodying the frame having means for attach-

ment to the overhanging arm of the machine, the cross-head guided to move vertically on the frame and means for operating it, of a tool-stock connected to the cross-head, and an adjustable guide for the tool-stock.

4. In an attachment for milling-machines, the combination with the frame having the split upper end, the aperture beneath it, a second aperture below the former and a vertically-extending guide, of a cross-head, and a tool-stock carried thereby and operating in the guide.

5. In an attachment for milling-machines, the combination with a frame having the aperture at the upper end, the aperture extending parallel therewith, and a guide extending at right angles to the apertures, of the reciprocating cross-head, and a tool-stock carried thereby and operating in the guide.

6. In a milling-machine, the combination with the overhanging arm, the work-support and a horizontal rotary shaft extending over the latter, of the detachable frame attached to the arm having the intermediate aperture and the vertically-extending guide, the cross-head, and the tool-stock connected to the head and operating in the guide.

7. An attachment for milling-machines consisting of a frame having means for attachment to the machine, a reciprocating head operating in the frame, a tool-stock carried by the head and rotarily adjustable thereon and a guide in which the tool-stock operates rotarily adjustable upon the frame.

8. An attachment for milling-machines consisting of a frame having means for attachment to the machine, a reciprocating head operating in the frame, a tool-stock swiveled to the head and a guide in which the tool-stock operates rotarily adjustable in the frame around said stock.

9. The combination with a frame, a reciprocating head operating therein and a tool-stock swiveled to the head, of a tubular guide on the frame having the irregular interior with which the stock engages and means for securing the guide rigidly to the frame.

10. The combination with a frame, a reciprocating head operating therein and a tool-stock swiveled thereon having the irregular exterior and a tool in the stock having the offset operating end, of the guide in which the stock slides rotatable in the frame and means for securing the guide rigidly in position.

VICTOR HOLMBERG.

Witnesses:

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