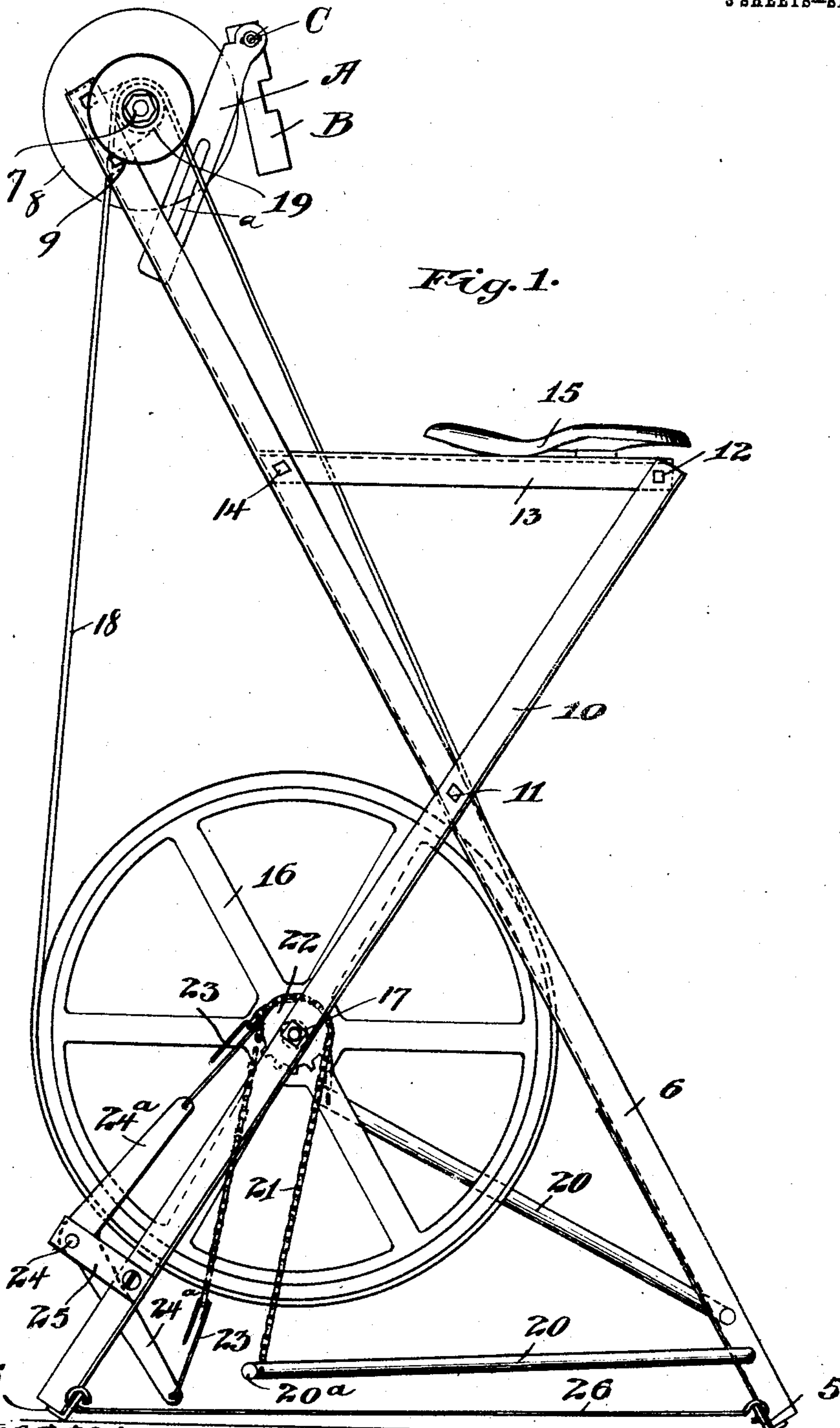


No. 779,697.

PATENTED JAN. 10, 1905.

C. H. FERGUSON.  
CONVERTIBLE TOOL SUPPORT FOR GRINDSTONES.  
APPLICATION FILED DEC. 31, 1903.

3 SHEETS—SHEET 1.



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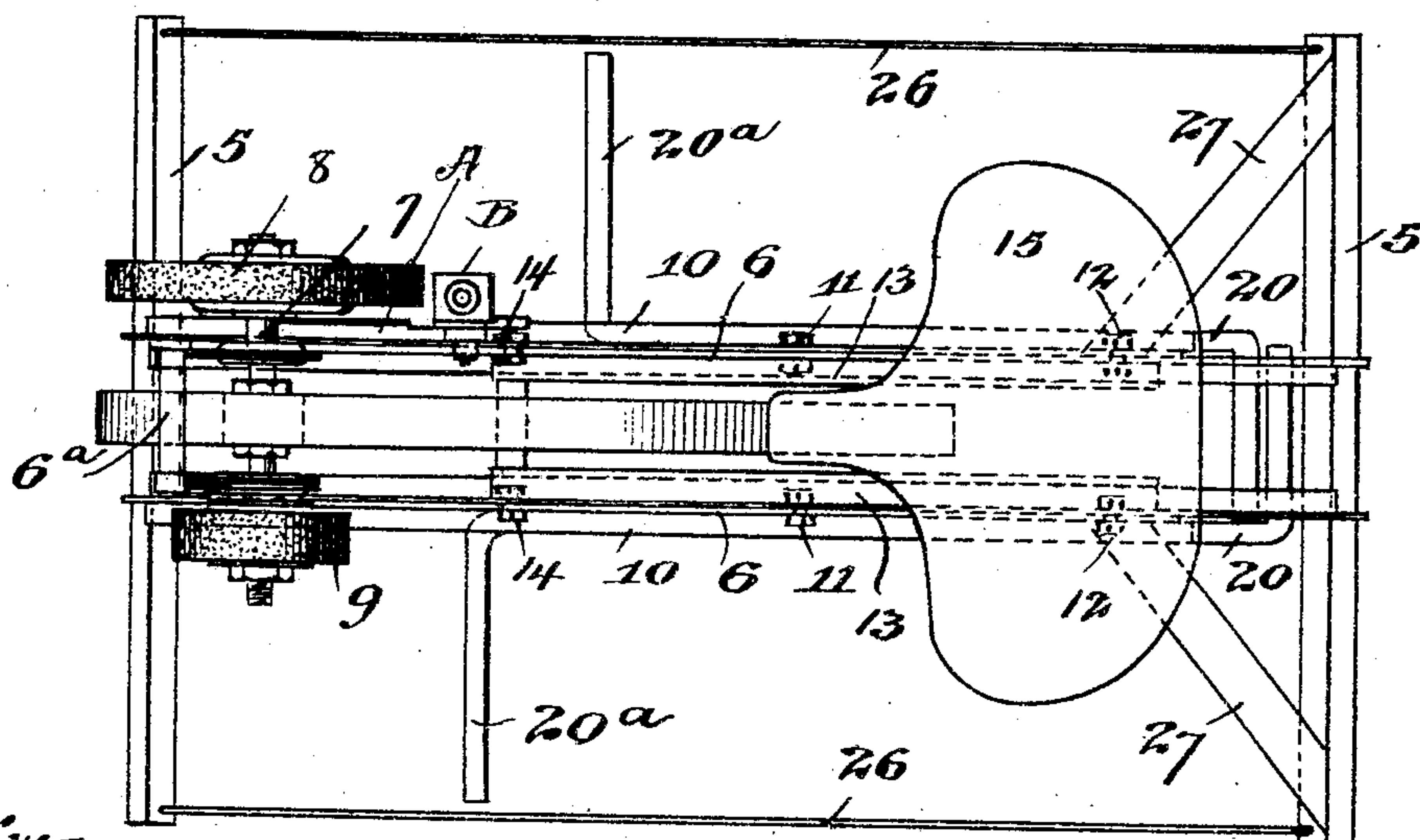
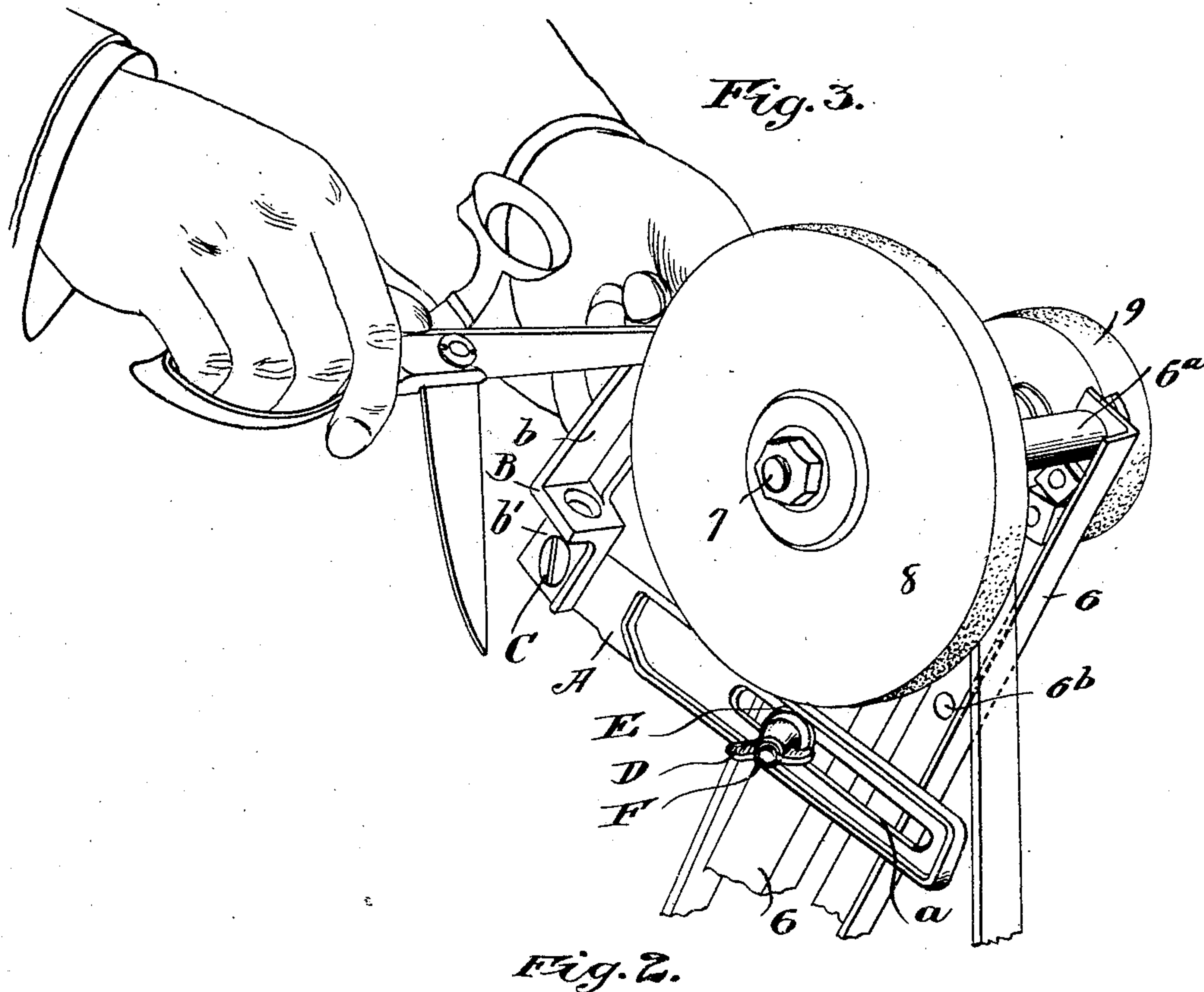
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3 SHEETS—SHEET 2.



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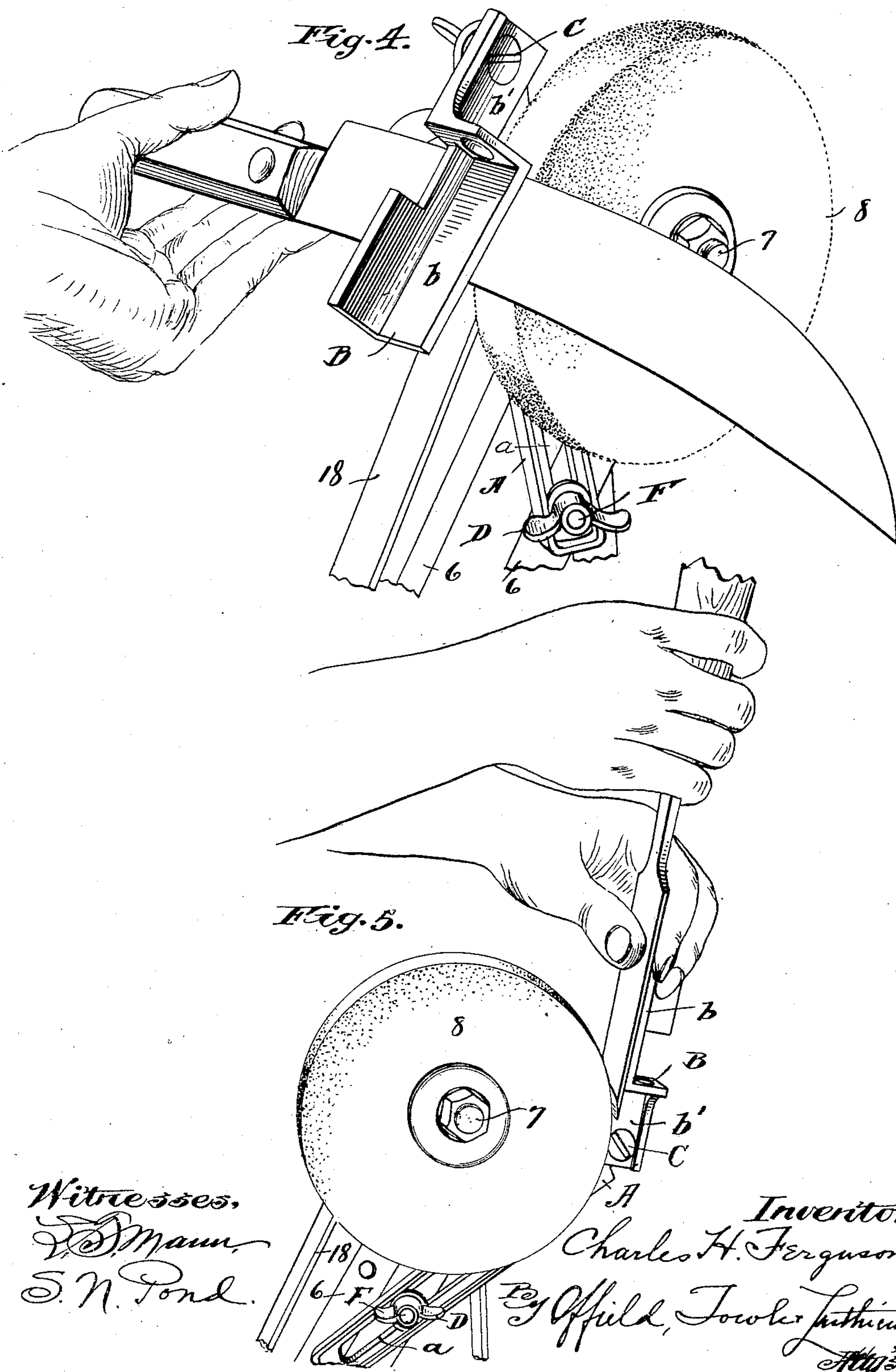
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3 SHEETS—SHEET 3.





# UNITED STATES PATENT OFFICE.

CHARLES H. FERGUSON, OF CHICAGO, ILLINOIS.

## CONVERTIBLE TOOL-SUPPORT FOR GRINDSTONES.

SPECIFICATION forming part of Letters Patent No. 779,697, dated January 10, 1905.

Application filed December 31, 1903. Serial No. 187,369.

*To all whom it may concern:*

Be it known that I, CHARLES H. FERGUSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Convertible Tool-Supports for Grindstones, of which the following is a specification.

My invention relates to a convertible tool-support for use in connection with emery-wheels and other grindstones, and has for its object to provide a simple and easily-manipulated support which is readily adjustable to varying positions relatively to the grinding-wheel and its supporting-frame, so as to support in proper position for sharpening edged tools of various kinds and characters and enable the latter to be uniformly ground at exactly any predetermined bevel.

To this end my invention consists in a tool-support in the nature of a bracket having a plurality of members adjustably connected to each other, the whole being adjustably connected to the frame of the grindstone in the proximity of the grinding-disk and capable of a considerable variety of adjustments relatively to the latter, adapting it to positions favorable for supporting a corresponding variety of edged tools and maintaining the latter at a constant angle to the periphery of the stone during the entire sharpening operation, all as hereinafter more particularly described, and definitely pointed out in the claim.

In order to adequately illustrate the structure of my present device and its uses in association with a grindstone and its frame as a support for a variety of tools during the sharpening operation, I have shown in the accompanying drawings a preferred mechanical form of the invention in connection with several different adjustments thereof relatively to the grindstone and its frame for the accommodation of different edged tools.

Referring to the drawings, Figure 1 is a side elevational view of a grindstone-frame and grinding-disk of a collapsible character, such as is adapted to cooperate with my improved tool-support. Fig. 2 is a top plan view thereof. Fig. 3 is a perspective view, in elevation,

of the upper portion or head of the grinder, 50 illustrating my improved tool-support as applied thereto and adjusted to a form and position adapted to support in grinding position a scissors or shears blade. Fig. 4 is a view similar to Fig. 3 and illustrating my improved tool-support adjusted and positioned in a manner suitable to constitute a support for a knife-blade during the grinding operation; and Fig. 5 is a view similar to Figs. 3 and 4, illustrating my improved tool-support adjusted and positioned to constitute a support for the grinding of a chisel.

Referring to the drawings, and first briefly describing a suitable or convenient form of grindstone-frame, preferably of the collapsible type, with which my improved tool-support is adapted to cooperate, 5 designates each of a pair of transverse base-supports on which are mounted a pair of upwardly and forwardly inclined side bars 6, connected and suitably spaced at their upper ends by a tie-bolt 6<sup>a</sup> and having mounted thereon near their upper ends journal-bearings for a rotary grindstone-shaft 7, having a grinding-disk 8 mounted on one overhanging end thereof and a polishing-disk 9 similarly mounted on the other overhanging end. Oppositely-inclined side frame members 10 extend from the forward horizontal base member 5 to and beyond points 11, at which they cross and are pivoted to the oppositely-inclined frame members 6, at their upper ends being pivoted at 12 to the rear ends of a pair of horizontal supporting-bars 13, which latter are pivoted at their forward ends at 14 to the side frame members 6 and adjustably support a saddle 15.

16 designates a combined driving-pulley and fly-wheel mounted on a shaft 17 between the side frame members 10 and connected by a driving-belt 18 to a small pulley 19, fast on the grindstone-shaft 7. The pulley 16 is driven by a pair of foot-pedals 20, mounted at their rear ends in the lower ends of the side frame members 6 and at their opposite extremities provided with lateral offsets 20<sup>a</sup>, Fig. 2, for the feet of the operator and having sprocket-chains 21 connected to said ends and passing around sprockets 22, mounted on



the shaft 17, which have clutch or ratchet engagement with the pulley 16, the opposite ends of said sprocket-chains being connected, as by hooks 23, to the free ends of the arms 24<sup>a</sup> of an angle-lever 24, which is mounted to oscillate in and between a pair of arms or brackets 25, secured to and extending forwardly of the lower end portions of the side frame members 10.

10 The transverse base members 5 are connected at their respective ends by tie-rods 26, and 27 designates a pair of diagonal braces extending from the outer ends of the rear base-support 5 upwardly to the main inclined frame member 6, as shown in Fig. 2, for the purposes of increased rigidity.

The several supporting-frame members hereinabove described are herein shown as made of angle-iron; but it will be understood that the particular construction of grindstone-frame hereinabove described constitutes no part of my present invention beyond the fact that the frame as an entirety constitutes a cooperating support to maintain the tool-support in the desired proximity to the grinding-disk, said form and construction of grindstone-frame constituting the subject-matter of a companion application, Serial No. 187,368, filed concurrently herewith.

30 Referring now to the more immediate subject-matter of my present invention, A and B designate two members of my improved tool-support which are pivotally united with capacity for ready relative angular adjustment by a screw-bolt C. The member A is in the nature of an arm having an elongated slot *a* formed longitudinally of its free end portion, whereby it is adapted to be secured to the outer face of either of the side frame mem-  
40 bers 6 at any angular inclination relatively to the latter and at any extent of longitudinal adjustment from the latter within the limits of the length of the slot *a* by any suitable securing means, such as the wing-nut D and washer E engaging a short threaded bolt F passed through an aperture 6<sup>b</sup> in the side frame member 6, Fig. 3. The bracket member B preferably takes the form of a short angle-bar *b*, having at its inner end an integral  
50 shank *b'*, through which it is pivotally united to the bracket member A.

Fig. 3 of the drawings illustrates the relative adjustment of the members A and B to each other as well as the positioning and ad-  
55 justment of the member A on the supporting-frame when the device is designed as a support for grinding the blades of a pair of scissors or shears, the arm B being in this case adjusted with its upper end in close proximity  
60 to the periphery of the stone 8 and with its squarely-cut end constituting a rest or support for the flat surface of the blade and supporting the latter at a constant inclination to the periphery of the the stone, such as serves  
65 to produce a grinding effect of the proper or

desired bevel or angle upon the cutting edge of the blade. Fig. 4 illustrates the same device differently adjusted to serve the purpose of a support and guide for a knife-blade in the sharpening operation. In this arrangement  
70 the slotted arm A is clamped at its lower or outer end to the frame member 6 and is inclined upwardly at a sharp angle to the vertical, so as to lie alongside one surface of the grinding-disk, while the arm B is swung down-  
75 wardly and adjusted at such an angle to the arm A as brings its outer flat face opposite and approximately tangential to the periphery of the grinding-disk. In grinding the knife-blade is held in the manner shown  
80 pressed against said outer flat face of the support B, with its edge resting against the periphery of the stone, and by drawing the knife-blade back and forth transversely of the guide and always in flat contact with the latter, first  
85 on one side and then on the other, a sharpened edge of uniform and even bevel throughout is imparted to the blade. Obviously the degree of inclination of the bevels which create the edge can be varied by adjusting the angle of  
90 inclination of the support B relatively to the periphery of the disk.

Fig. 5 illustrates still another capability of my improved attachment, wherein it constitutes a support and guide for a chisel in  
95 the grinding operation. For this purpose the slotted arm A is adjusted, as shown, to extend upwardly and in a direction forward of the grinding-disk and on one side of the plane of the latter, while the member B is  
100 adjusted to extend upwardly of the upper end of the member A vertically, or at a slight inclination to the vertical, according to the desired bevel to be imparted to the chisel, which latter in the sharpening operation is  
105 held with its flat face in surface contact with the flat outer face of the guide and pressed downwardly until its inclined or beveled edge engages the periphery of the stone. Where the chisel is of greater width than the stone,  
110 a uniform and even sharpening effect is secured by slowly moving the chisel edgewise transversely of the stone in a manner well understood by those familiar with the art of grinding tools, with its surface at all times in  
115 flat contact with the face of the guide.

The herein-described attachment is capable of service in other adjustments for a large variety of tools, only a few of which are here-  
120 in shown, owing to the necessary limitations of the illustration; but such instances as are herein shown will suffice to make clear the character and principle of operation of the device. It will be seen that not only does the practically universal angular adjustment  
125 of the members A and B relatively to each other enable the latter to serve as a convenient support and guide for almost any tool to be sharpened and with its edge at almost any angle of inclination to the periphery of the  
130



stone, but the extensible character of the arm  
A and the angular adjustments of which it is  
capable relatively to the supporting-frame of  
the machine on which it is mounted readily  
5 enables the device to be employed with stones  
of considerable varying diameter, or, what  
amounts to the same thing, enables it to be  
used continuously with a single grinding stone  
or disk until the latter has been worn down  
10 to a size at which it is no longer useful or  
practicable.

I am aware that various modifications and  
changes might be made in respect to details  
of form and construction from the device  
15 as herein shown without departing from the  
principle or sacrificing any advantages of the  
invention. Hence I do not limit the inven-  
tion to the particular form and structure here-  
in shown and described, except to the extent  
20 indicated in specific claim.

I claim—

The combination with a grindstone and its  
supporting-frame, of a convertible tool-sup-  
port comprising a slotted arm adapted for  
adjustable connection through its slotted por- 25  
tion to an upright member of the grindstone-  
frame and lying in a plane parallel with the  
plane of the stone, and a tool supporting and  
guiding member pivotally connected at one  
end to the upper end of said slotted arm and 30  
having one or more laterally-offset tool-en-  
gaging surfaces disposed in the plane of the  
stone and opposite the periphery thereof and  
adjustable to varying degrees of angularity  
relatively to said periphery.

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