(No Model.)

H. R. HERSCHEL.

HARROW DISK SHARPENER.

No. 552,999. Patented Jan. 14, 1896.

Fig. 2.

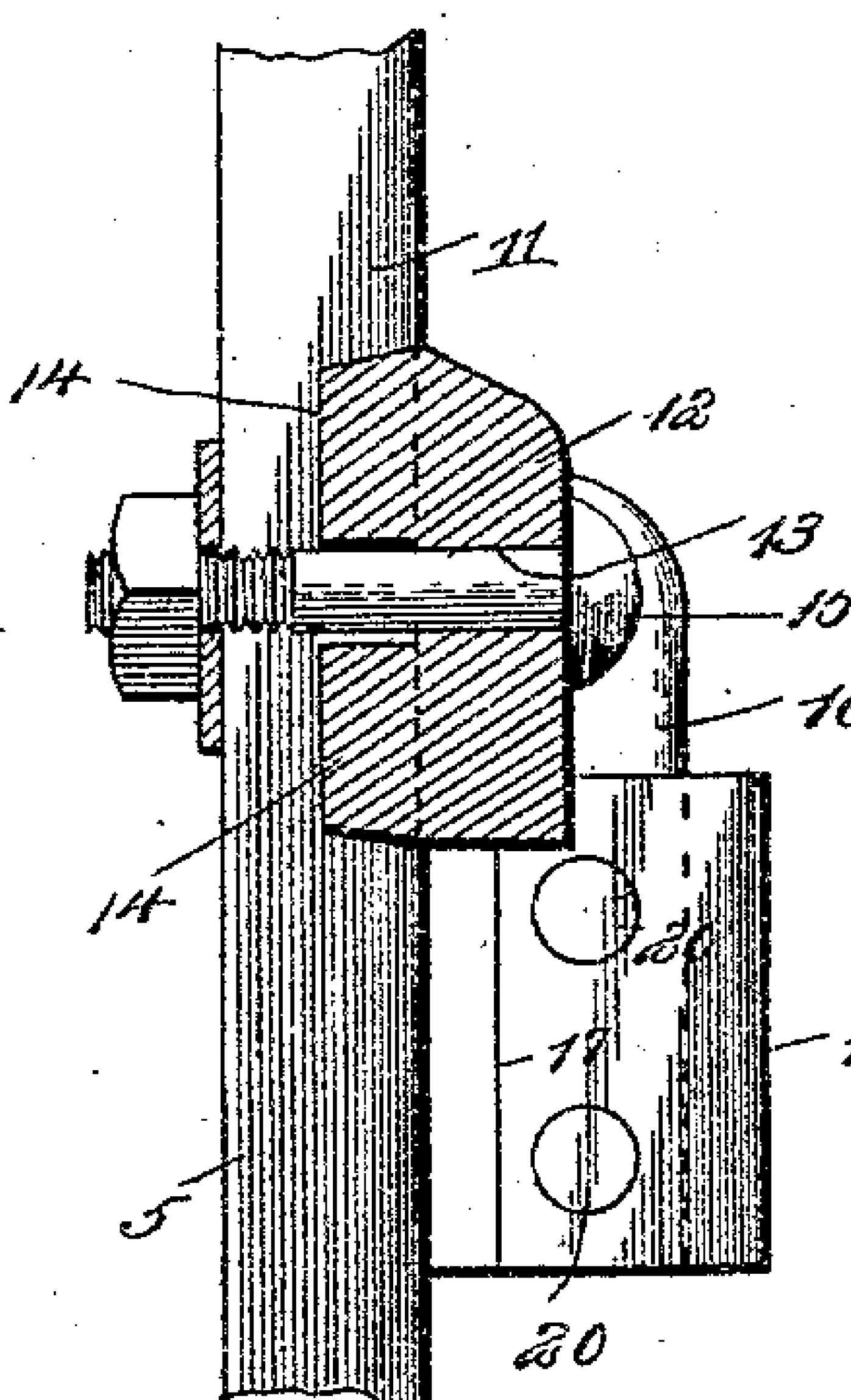


Fig. 4.

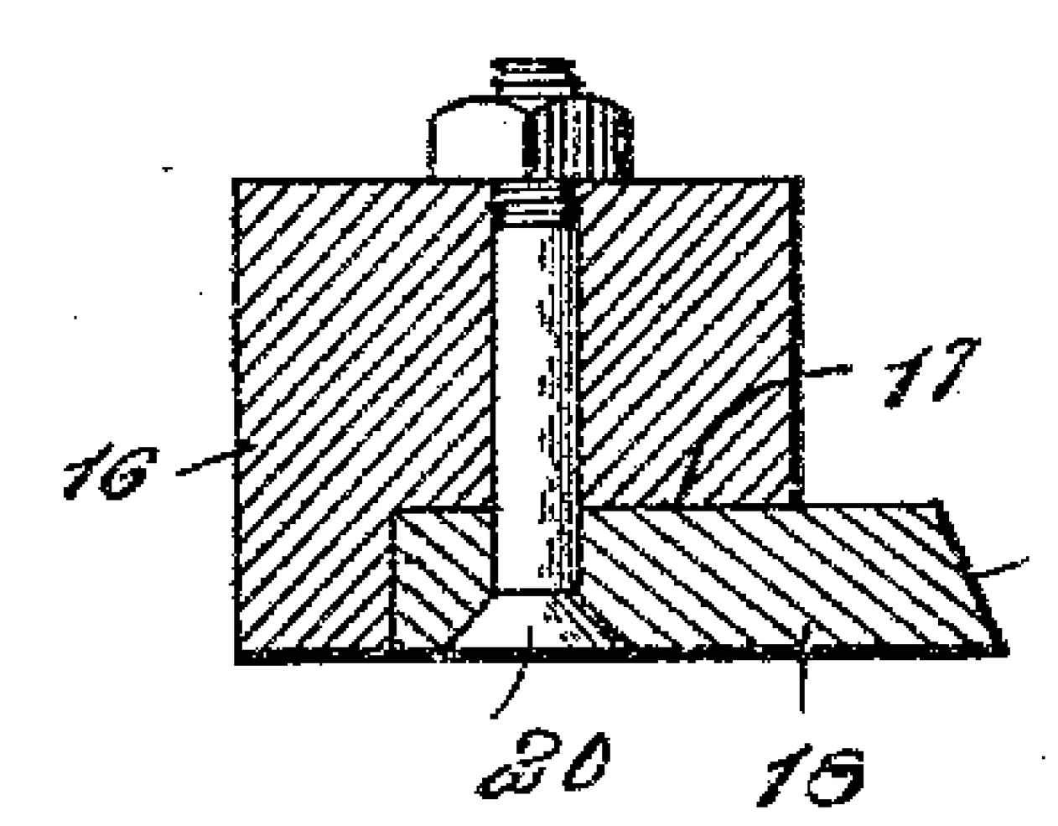


Fig. 1.

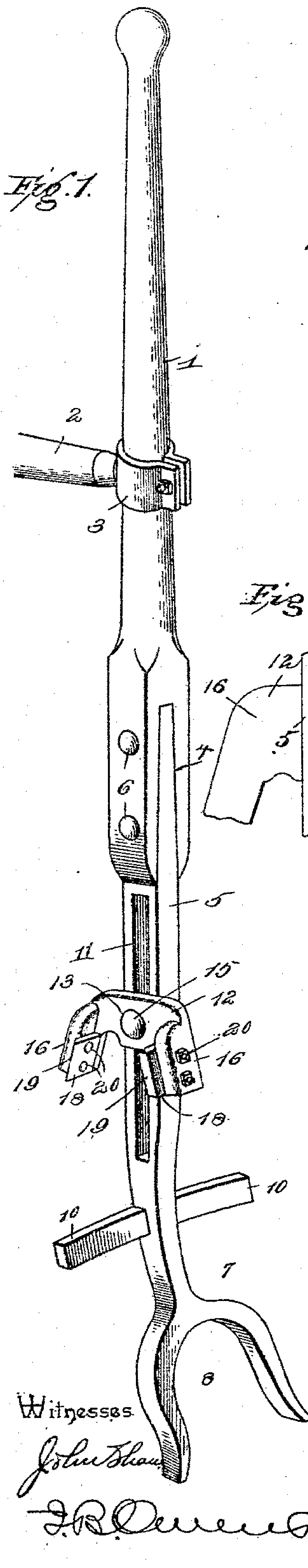


Fig. 6.

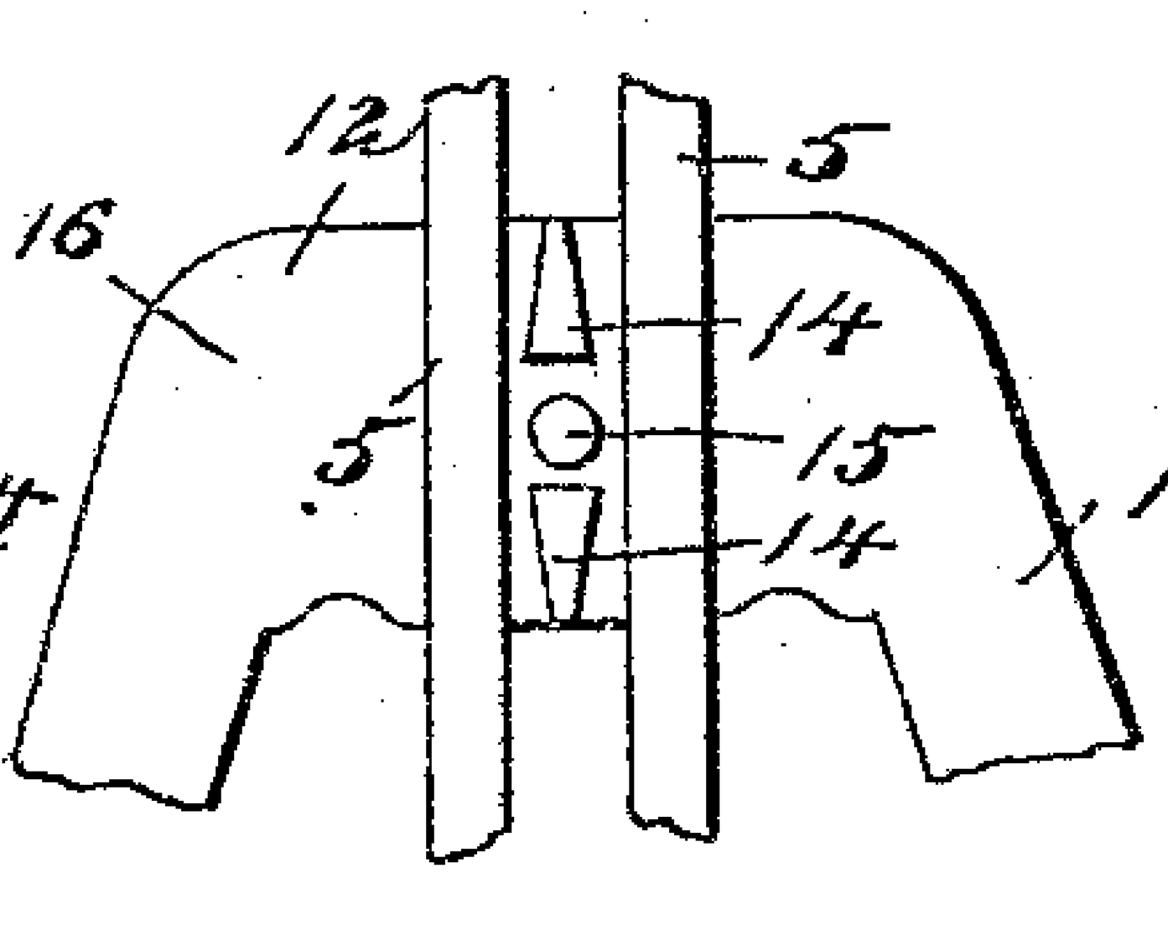


Fig. 3.

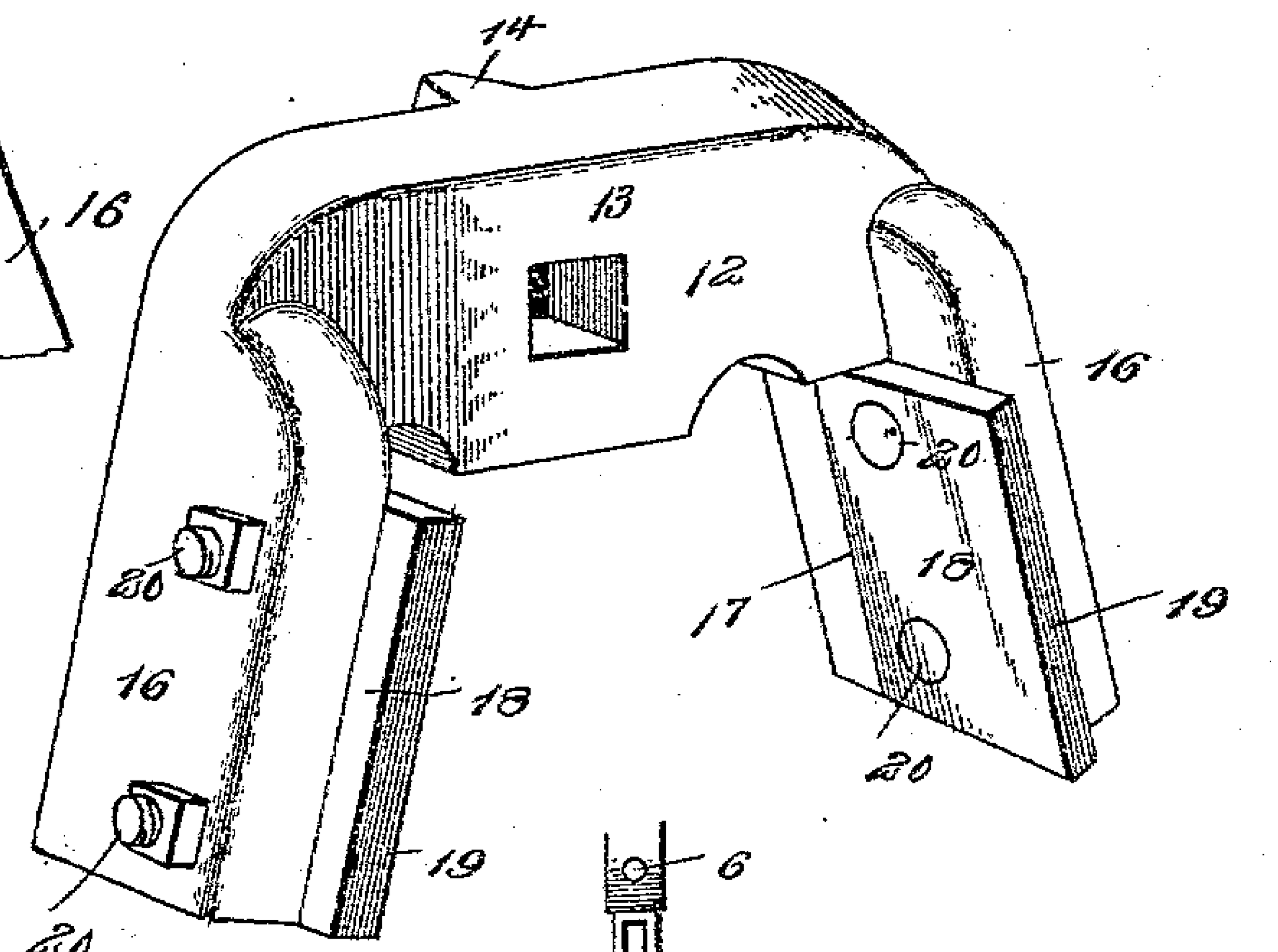
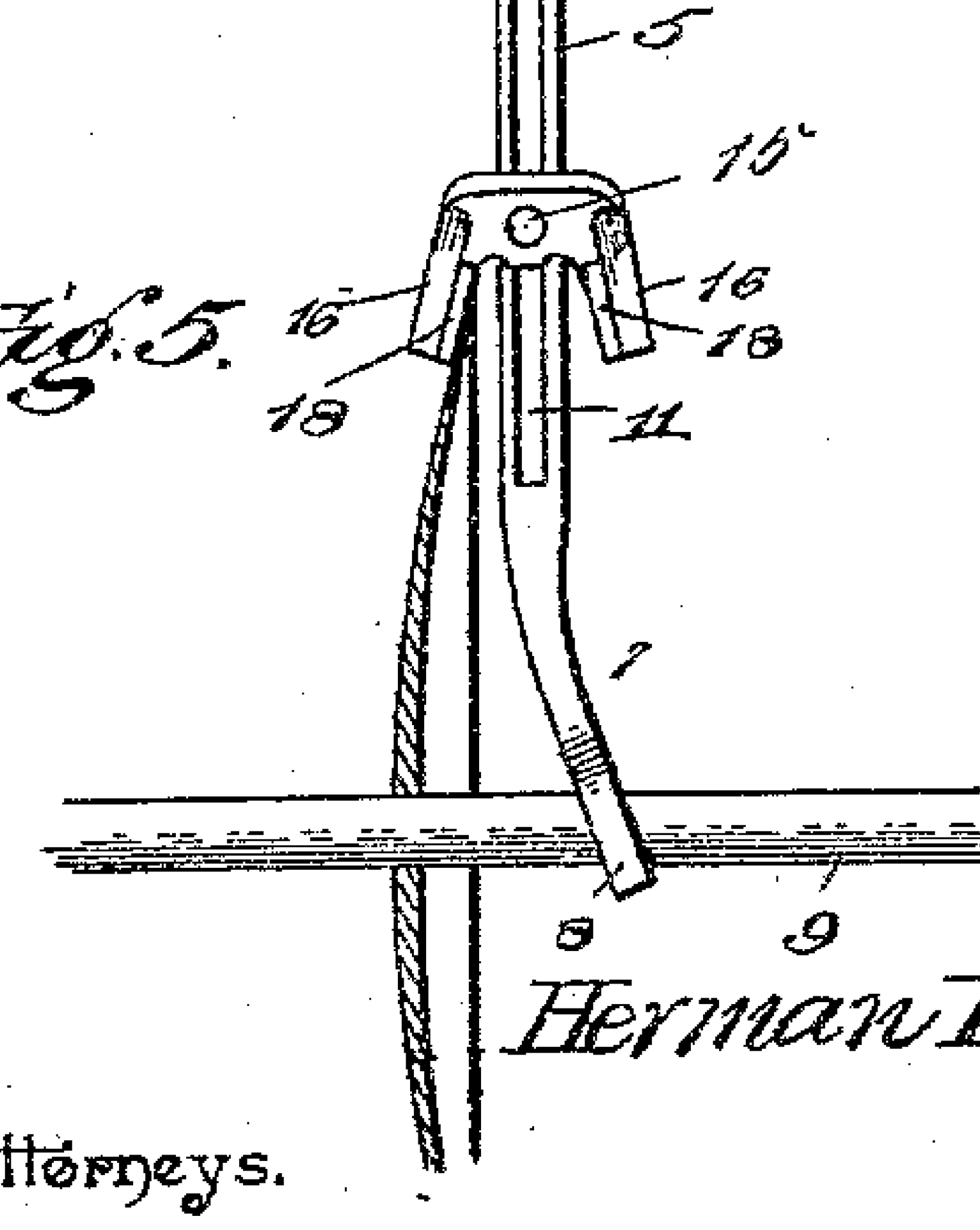


Fig. 5.



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HARROW-DISK SHARPENER.

SPECIFICATION forming part of Letters Patent No. 552,999, dated January 14, 1896.

Application filed December 31, 1894. Serial No. 533,477. (No model.)

To all whom it may concern:

Be it known that I, HERMAN R. HERSCHEL, a citizen of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have invented a new and useful Harrow-Disk Sharpener, of which the following is a specification.

This invention relates to an improvement in disk-sharpeners of that class which are adapted to operate on the disks while in place upon the machine, and by slidably connecting them to the axle of the disks, so that they may be swung on the same and the cutting-tools or edges thereof made to engage the peripheries of the disks.

The object of the present invention is to improve the construction of these devices and to make them capable of sharpening either side of the disk without special adjustment.

A further object is to construct the sharpener so that it will be more convenient to use and so that the operator may stand in sharpening the disks and not be obliged to bend or kneel at his work.

To these ends the invention consists in certain specific improvements in the device for carrying the sharpening-knives, and in the means for adjustably connecting said device to the main portion of the tool.

The invention also consists in an improved and simplified device or construction by which the knives are held at their work and prevented from swinging out of the proper relation thereto. All of this will be more fully described hereinafter and the novelty thereof embodied in the claims.

In the drawings, Figure 1 represents a perspective view of a disk-sharpener constructed after the manner of my invention. Fig. 2 is a detail section taken longitudinally through the tool-carrying device and extending to the bar for supporting the same. Fig. 3 is an enlarged perspective view of the tool-carrying device, showing the tools attached to the same. Fig. 4 is a detail section taken through one arm of the tool-carrier and showing the same in section. Fig. 5 is a reduced sectional view taken longitudinally with the axle of a harrow-disk and through the same, and showing the relation of my tool thereto. Fig. 6 is a detail elevation showing portions of the slotted bar and knife-carrier and the tapering lugs on the latter.

The reference-numeral 1 indicates the handle of the sharpener, and is formed preferably of wood, and which is formed of such a length that the person using the instrument may stand erect at his work, the latter being located upon or just above the surface of the ground. Rigidly secured to the handle 1, about midway its length, is the arm 2, which is held in place by a clip 3, and which has for its purpose to assist in the manipulation of the tool, all of which will be understood.

The lower end of the handle 1 is bifurcated at 4, so as to form two parallel arms between which the upper end of the bar 5 is arranged and held in place by bolts 6, passing through the arms of the bifurcation and through the upper end of the bar. The upper end of the bar 5 tapers slightly in conformity with a corresponding taper in the bifurcation, or rather in the slot which forms the same. The bar 5 is of a length equal to about two-thirds the length of the handle 1, and has its lower end bent or offset laterally to a slight degree and in a direction opposite to the direction in which the arm 2 extends. This offset portion is designated by the numeral 7, and it terminates in the fork 8, the arms of which are arranged in a line at right angles to the line of the arm 2. This fork 8 has its crotch rounded, as distinguished from acute, and is adapted to embrace the axle 9 (see Fig. 5) of the harrow-disks.

Formed integral with the bar 5, at a point just above the offset or bent portion 7, are the arms 10, which are two in number and which are horizontally aligned with each other, they being extended in the same line as the arms of the fork 8. These arms are secured to one side of the bar 5 and do not project out from the middle of the bar, and this side to which the arms are secured is the outer bending side of the part 7. In addition to this the arms 10 bend slightly inward, so that their extremities will lie in a transverse line with the center of the bar 5. The purpose of the arms 10 is to prevent the bar 5 from turning on the axle 9 when operating, and this is effected by

the engagement of said arms with the disk, all of which will be explained hereinafter.

Formed in the bar 5 and extending from a point just below the lower end of the handle 1 to a slight distance above the arms 10 is the slot 11, which has a transverse disposition parallel with the arms 10, and which is adapted to carry the device to which the cutting-knives are attached. This device consists of a casting having a main portion 12, which is adapted to extend horizontally, and which has a vertically-enlarged portion at its middle in which a bolt-hole 13 is formed. The side of the main portion 12 which lies against the bars 5 is formed with two lugs 14 thereon, and these lugs are vertically aligned with each other and extend transversely in relation to the main portion 12, they being arranged one on each side of the bolt-hole 13. The lugs 14 are adapted to fit within the slot 11, and are of less width than said slot, so as to permit of the lateral adjustment of the knife-carrier. 15 indicates a bolt which is passed through the hole 13 and through the slot 11, and which is provided to hold the tool-carrying device in place. Thus it will be seen that the tool-carrying device is held adjustably on the bar 5, and that it is capable of being adjusted laterally thereon, owing to the lugs 14 being narrower than the slot 11. Formed integral with the respective ends of the main portion 12, and projecting downwardly and outwardly therefrom, are the arms 16, which are one for each end of the main portion 12, and which are flattened transversely in relation to the longitudinal disposition of the main portion 12. Formed on the inner side of the arms 16 are the recesses 17, which have at the sides adjacent to the bar 5 a shoulder, and which have their opposite sides open, so that the respective cutting blocks or plates 18 may be seated within the recesses, and so that their edges 19 may project beyond the outer sides of the recesses. Each of the inner sides of the arms 16 slants from the edge adjacent to the bar 5 inwardly toward each other and outwardly, so that the cutting blocks or plates 18 will be slanted correspondingly, thus making it possible for their edges 19 to more effectively engage with the edges of the disk.

20 indicates a series of bolts, which are two for each cutting-plate 18, and which are passed through said plates and through the arms 16.

From Fig. 5 the use and mode of operating the invention will be apparent, especially since it does not differ from the method of using other devices in this class. There it will be seen that the fork 8 is made to embrace the axle 9, and that the knife-carrying device is adjusted so that either of its arms will be capable of embracing the outer side of the disk, with the bar 5 on the opposite side. This will place one of the cutting blocks or plates 18 with its edge in engagement with the disk and will make it possible to sharpen the same by swinging the handle 1 back and forth. If the disk is to be sharpened on each edge, or rather on each side of its edge, the instrument may be readily reversed, as may be seen by reference to Fig. 5.

It will be observed that the lugs 14 taper slightly from their inner to their outer ends, so that their outer ends will be narrower than their inner ends, which attribute of form makes it possible for the knife-carrying element of my invention to have a slight rocking movement on the bolt 15. This adjustment is limited by the lugs 14, and in practice it will probably not amount to more than a swing of one inch in length at the outer end of the arms 16. By these means the bevel or inclination at which the edge of the disk is cut may be regulated. It will be understood that the arms 10 engage with the sides of the disk and prevent the instrument from turning so as to throw the blocks or plates 18 out of the proper relation to the disks. It will also be observed that the arms 16 in embracing the edge of the disk hold the instrument in place and prevent it from being disconnected accidentally.

Having described the invention, what is claimed is—

1. A harrow disk sharpener, consisting of a bar provided at one end with a suitable handle and at its other end with a fork, and formed with a longitudinal slot, a knife carrying device comprising a main portion extending transversely of the bar and having a pair of aligned lugs fitting within the slot in the bar and tapered to a reduced thickness at their opposite ends, whereby the knife carrier may be rocked upon its connection with the bar, and a retaining bolt passed through the knife carrier and through the slot in the bar, substantially as described.

2. A harrow-disk sharpener consisting of a bar provided at one end with a suitable handle and at the remaining end with a fork, the bar having a longitudinal slot intermediate of its ends, a knife-carrying device comprising a main portion extending approximately horizontal and having two vertically-aligned lugs fitting within the slot in the bar, said lugs being tapered to a reduced thickness at their outer ends, the knife-carrying device also comprising two downwardly and outwardly extending arms respectively secured to the ends of the main portion and having recesses therein capable of receiving the knives, knives fitted within the said recesses and having their ends extended parallel with the arms, and a bolt passed through the main portion of the knife-carrying device and through the slot in the bar, substantially as described.

3. A harrow disk sharpener, consisting of a bar provided with a fork at its lower end and a handle at its upper end, and a knife carrier provided with clamping means and arranged to reciprocate on said bar, said carrier comprising a main top portion flattened for facial contact against said bar and provided on its rear face with wedge-shaped guiding lugs

adapted to travel in a groove or slot provided therefor in said bar, and two arms depending obliquely from the extremities of said top portion and flattened to lie transversely thereto, each arm being provided on its inner face with a shouldered recess and a knife secured in said recess, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

HERMAN R. HERSCHEL.

Witnesses:

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OLIVER F. BECKER.