No. 654,146. Patented July 24, 1900.

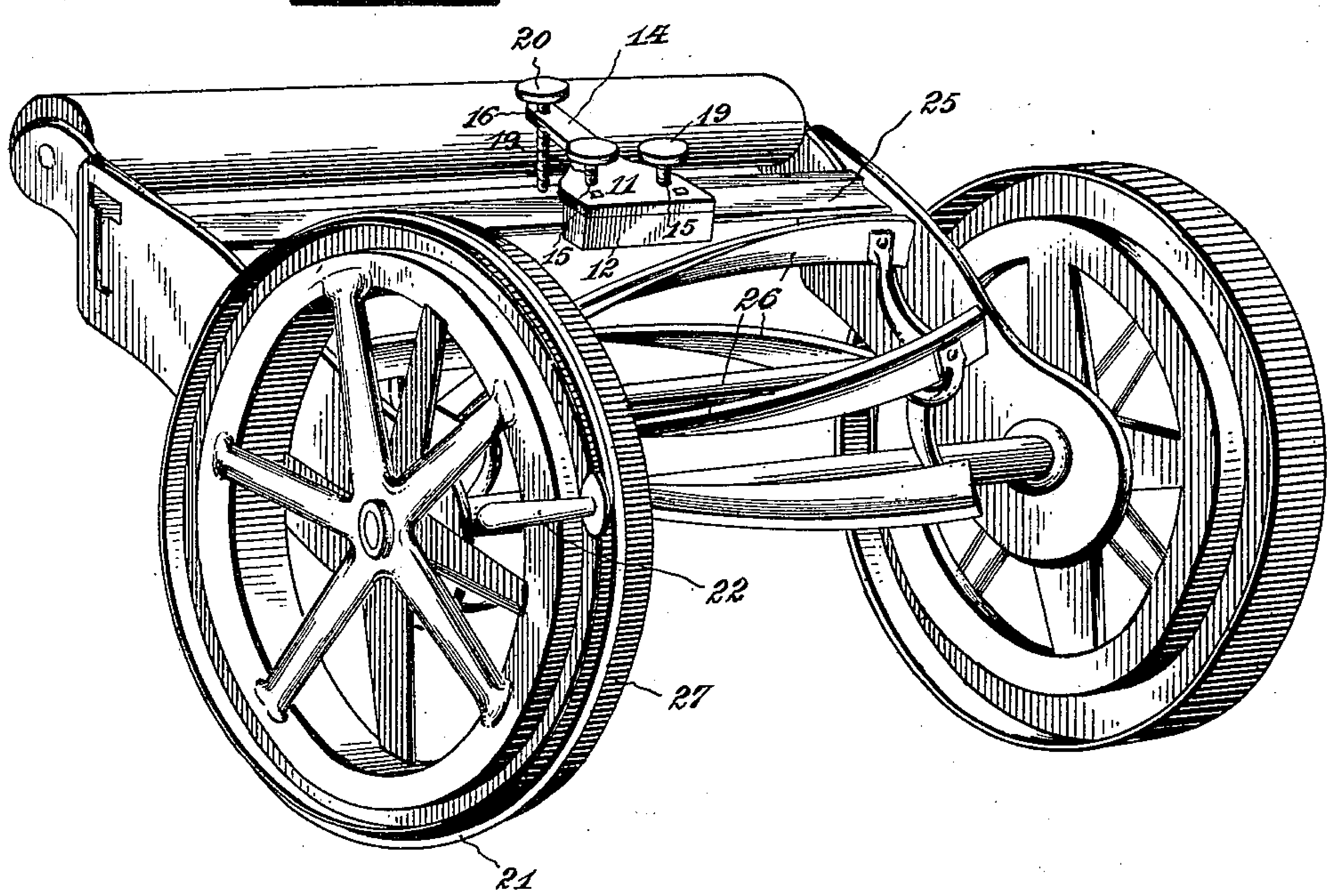
J. H. FREY.

SHARPENER FOR LAWN MOWERS.

(Application filed Nov. 2, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.



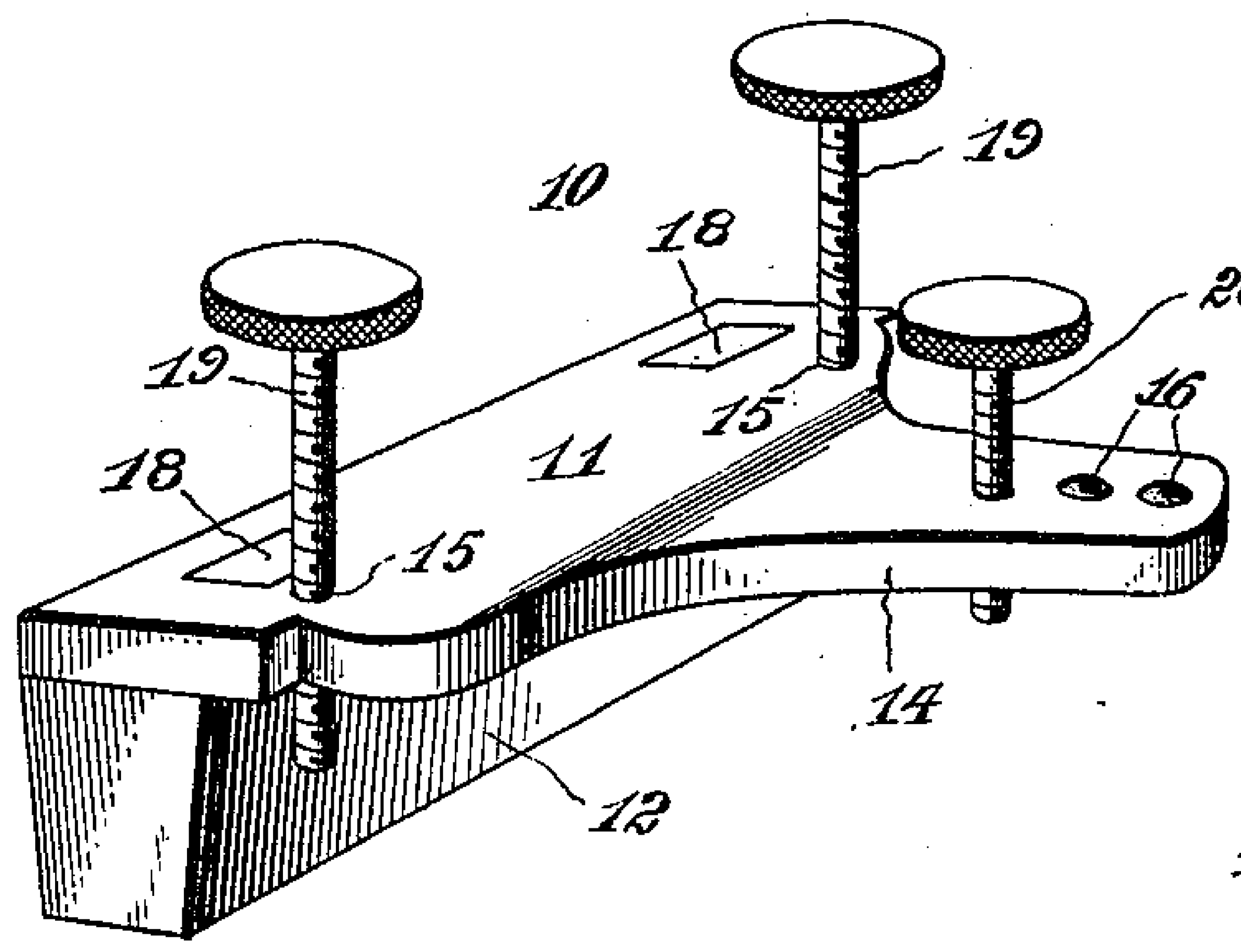
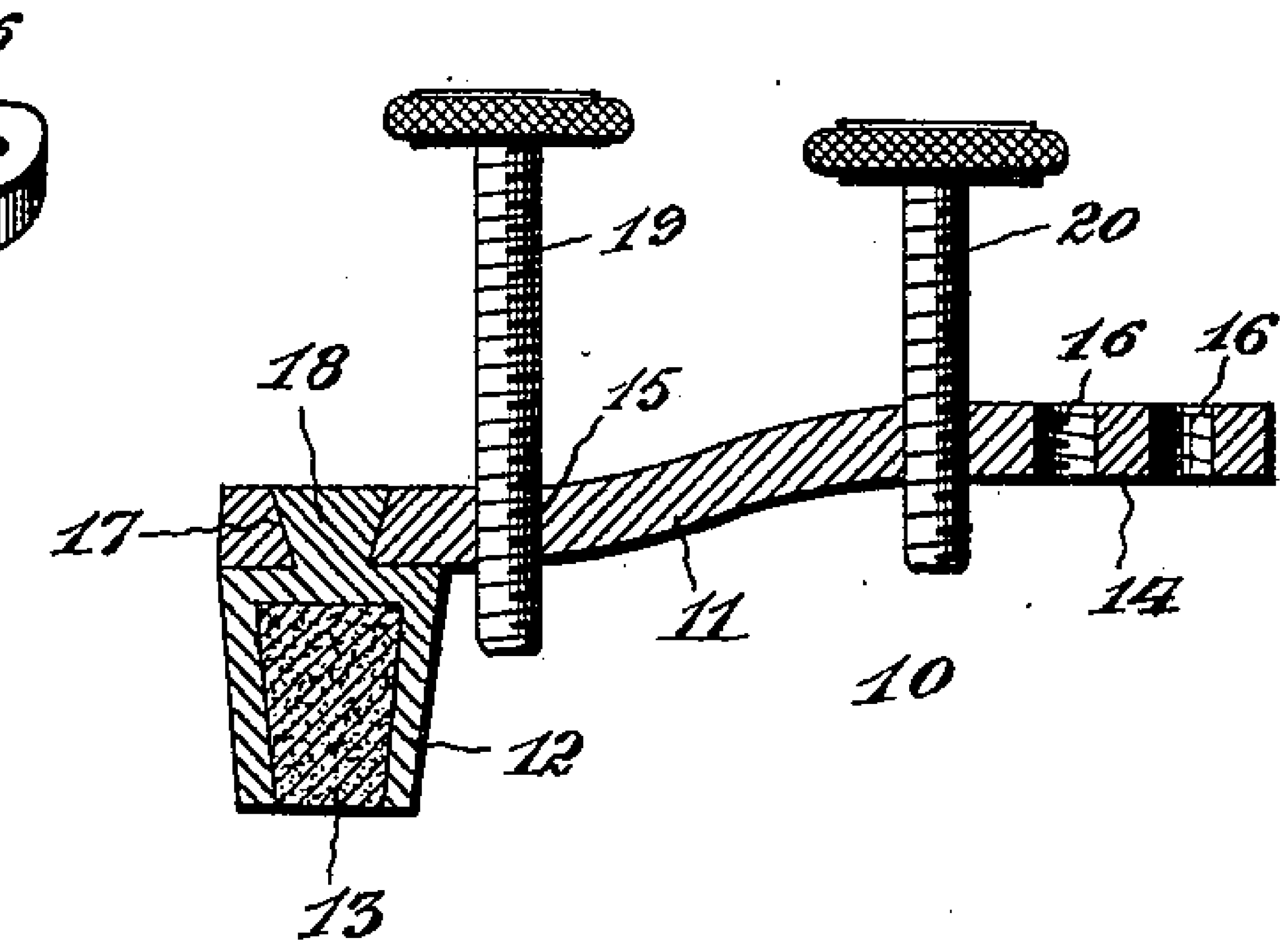


Fig. 5.

Fig. 6.



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(No Model.) 2 Sheets—Sheet 2.

FIG. 2.

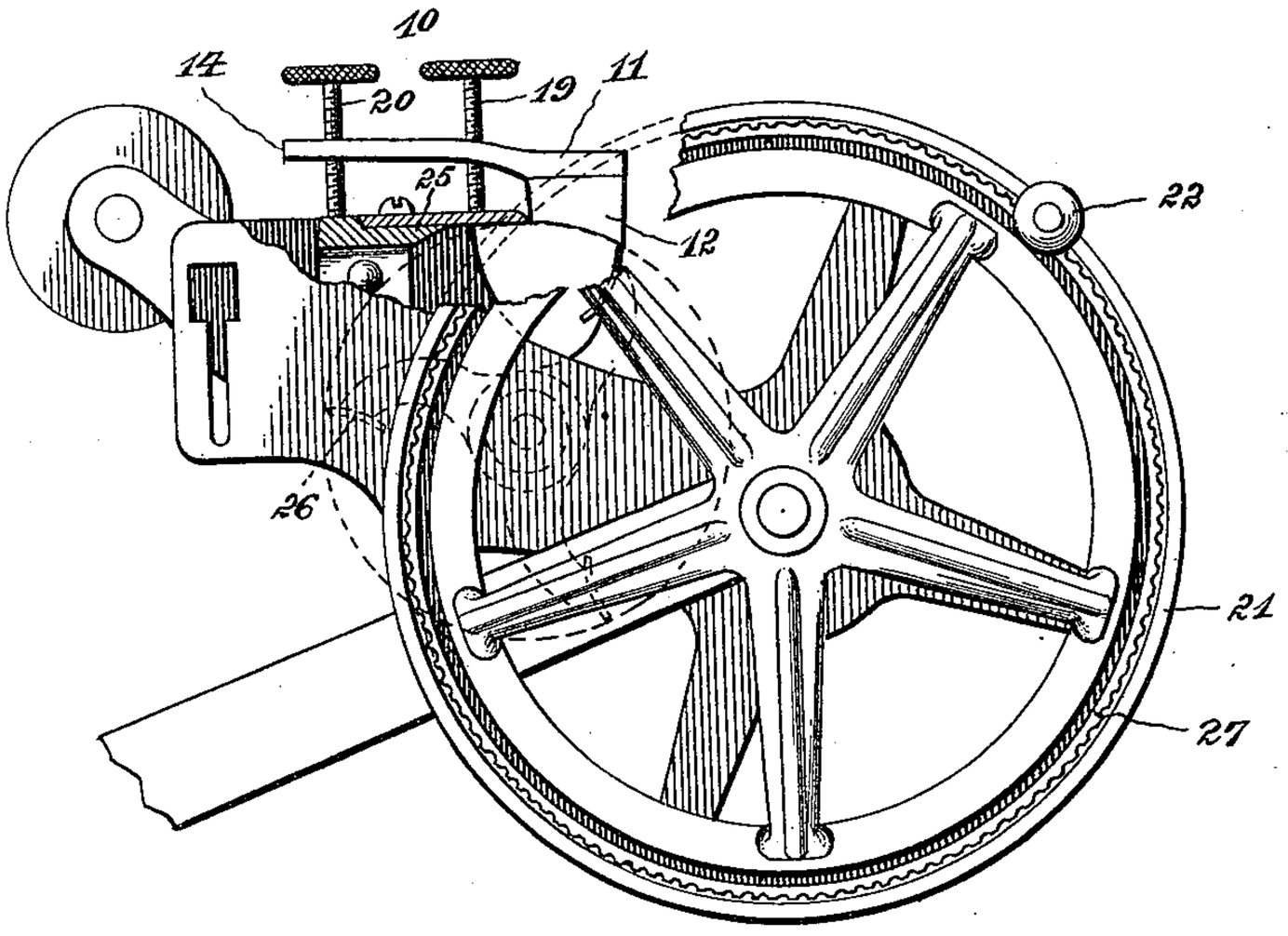


FIG. 3.

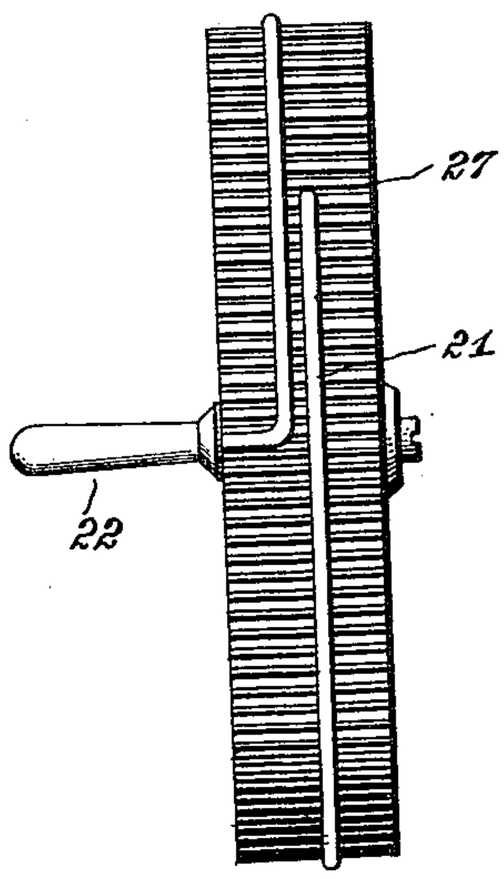
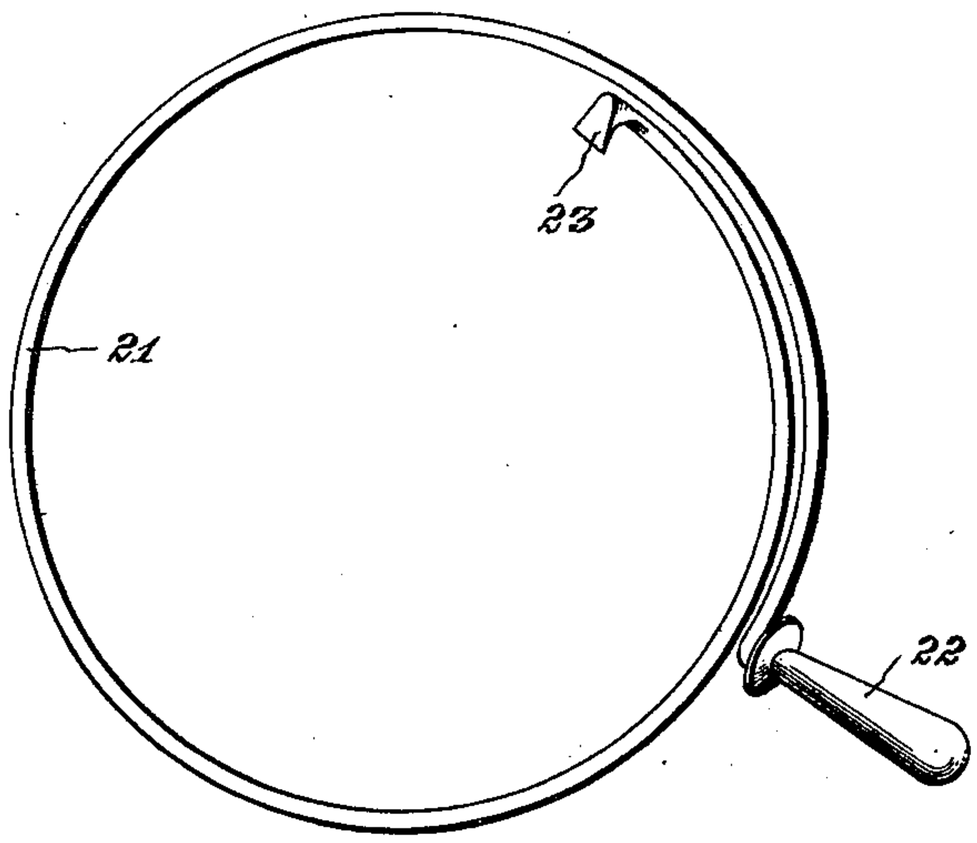


FIG. 4.



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UNITED STATES PATENT OFFICE.

JAMES HENRY FREY, OF FINDLAY, OHIO.

SHARPENER FOR LAWN-MOWERS.

SPECIFICATION forming part of Letters Patent No. 654,146, dated July 24, 1900.

Application filed November 2, 1899. Serial No. 735,601. (No model.)

To all whom it may concern:

Be it known that I, JAMES HENRY FREY, a citizen of the United States, residing at Findlay, in the county of Hancock and State of Ohio, have invented a new and useful Sharpener for Lawn-Mowers, of which the following is a specification.

My invention relates to improvements in devices for sharpening lawn-mowers by which the common method of removing and sharpening the mower-knives individually is obviated.

One object of the present invention is to provide an improved sharpener adapted to be shifted along the ledger-plate of an ordinary mower to present its abrasive surface in the path of the knives on the revoluble cutter, said sharpener having devices by which it may be adjusted to compensate for wear and to make it applicable to different styles of mowers.

A further object of the invention is to provide novel devices for rotating the mower-cutter by hand when the mowing-machine is inverted, said driving device adapted to be securely fitted to a traction-wheel with ease and facility and operating to hold itself securely in place on wheels of different sizes.

With these ends in view the invention consists in the novel construction, arrangement, and adaptation of parts, which will be hereinafter fully described and claimed.

In the drawings, Figure 1 is a perspective view of a mower in an inverted position and showing my sharpener device fitting on the ledger-plate thereof and the driving device applied to one of the traction-wheels. Fig. 2 is an end view, partly broken away, of the mower with the sharpener and the driving device applied thereto. Fig. 3 is a detail view of the driving device applied to a traction-wheel, said view showing the face of the traction-wheel. Fig. 4 is a detail view of the driving device detached from the traction-wheel. Fig. 5 is an enlarged detail perspective view of the sharpener removed from the mower. Fig. 6 is a cross-section of the sharpener, said view being taken on an irregular line through the sharpener of Fig. 5 to show the means for joining the holder or jacket to the plate.

The same numerals of reference are used to indicate like and corresponding parts in each of the several figures of the drawings.

The sharpener of my invention is designated in its entirety by the numeral 10, and this sharpener is peculiarly constructed to make it applicable to the ledger-plate of a mowing-machine, on which it is adapted to be shifted by hand to present its abrasive surface in the path of the blades on the rotating cutter, so that the blades will frictionally brush against the abrasive surface for the purpose of sharpening said blades by rotation of the cutter and without removing the blades from the machine.

In its detailed construction (shown more clearly by Figs. 5 and 6 of the drawings) the sharpener consists of a plate 11, a holder or jacket 12, and a block of abrasive material 13, which is housed or contained within the jacket and is secured thereby to the plate 11. This plate is cast in a single piece of metal with an arm or shank 14, which extends from one side thereof. Said plate is also provided with threaded apertures 15 near its ends and on opposite sides of the median line of the shank 14, said shank having a series of threaded apertures 16, which are disposed one in rear of the other. The plate is, furthermore, provided with dovetailed mortises 17, which are situated near the ends of the plate and lie substantially between the threaded apertures 15 and the front edge of said plate, although the particular location of said mortises is not essential.

The jacket or holder 12 is made, preferably, of a soft material, which will be readily or easily cut by the knives on the mower-cutter as they frictionally brush against the block of abrasive material 13, and this jacket or holder is provided with integral tenons 18, which are fitted in dovetailed mortises of the plate for the purpose of uniting the holder and the abrasive material to said plate. The block of abrasive material 13 may consist of emery or any other equivalent material, either in a single piece or molded to the required form, one face of said abrasive block lying flush with the edges of the holder at the lower open side thereof, as clearly shown by Fig. 6.

Adjustable screws 19 are fitted in the

threaded apertures 15 of the plate to be projected any required distance below the lower face thereof, and a single screw 20 may be fitted in either of the apertures 16 in the shank of said plate, said screws 19 20 being adjustable independently of each other for the purpose of placing the sharpener in a proper position on the ledger-plates of different mowers for the holder or jacket 12 to ride against the front edge of said ledger-plate and present the abrasive material 13 in such close relation to the path of the blades that the latter will frictionally brush the abrasive block.

The sharpener of my invention is adapted to be applied to the mower when the latter is inverted, and thus it is desirable to provide some means by which the cutter of the inverted mower may be easily rotated by hand, so that the blades and cutter will brush against the sharpener. This part of my invention contemplates the employment of a driving device which is particularly applicable to traction-wheels of different kinds of mowers, said traction-wheels being ordinarily provided with corrugated rims with which the driving device engages so firmly as to hold itself against any tendency to become displaced. In the preferred embodiment of this part of the invention I employ an expansible elastic ring or band 21, made of metal, preferably of strong elastic wire, although this particular material is not essential. The ends of the band or ring 21 are curved past one another to make the band freely expansible for application to traction-wheels of different diameters. One end of the band or ring terminates in a shank on which a hand-grasp 22 is supported; but the other end of the elastic band is bent to form a prong 23. The band may be spread by drawing the overlapping ends apart for the purpose of slipping the band on the periphery or tread of the traction-wheel, and upon releasing said band its inherent elasticity causes it to contract closely around the periphery of the traction-wheel. The prong 23 at one end of the band fits in one of the grooves or corrugations of the traction-wheel, which is closely circumscribed by the band, said prong serving to hold the elastic band against "creeping" circumferentially on the wheel. The hand-grasp 22 extends laterally from one side of the wheel for presentation in a position which facilitates the operation of rotating the wheel by hand, and this wheel serves, through the ordinary gearing of the mower, to rotate the cutter.

In order that others may understand the application of my sharpener and the means for rotating the mower, I have illustrated the parts applied to a mower by Figs. 1 and 2 of the drawings, in which the ledger-plate is indicated by the numeral 25, the cutter by 26, and one traction-wheel at 27.

To use my sharpener, the mower is turned upside down or inverted, as shown by Figs. 1 and 2. The driving-band 21 is fitted circumferentially on one traction-wheel for its prong 23 to engage with one rib thereof, while the hand-grasp 22 extends beyond one side of the wheel. The screws 19 20 are adjusted properly in the sharpener, and the latter is fitted to the ledger-plate 25 for the screws to rest on said plate, while one edge of the holder 12 rests against the edge of the plate, said screws being rotated to raise or lower the plate in order to bring the lower face of the abrasive block 13 quite close to the circular path described by the blades on the rotation of the cutter. The operator now grasps the handle 22 with one hand and holds the sharpener in place with the other hand. By rotating the traction-wheel the cutter is revolved for each of its blades to sweep against the face of the abrasive block, and the sharpener is shifted by the operator's hand along the ledger-plate, so as to present the abrasive block to different portions of each blade. In the operation of sharpening the cutter the knives thereof sever the material of the jacket or holder 12; but to compensate for the wear on the abrasive block as well as on the holder the screws 19 may be shortened so as to lower the plate. The holder 12 is united by the tenons to the mortised plate at a line which will not interfere with the adjustment of the screws 19; but when the abrasive block wears away the holder may be removed by forcing the tenons out of the mortises, thus providing for the insertion of a new abrasive block and holder. It will be understood that the handle 22 is applied to the drive-wheel having the gearing for operating the cutters and is operated to rotate the wheel in the usual direction thereof, so as to engage the cutter-blades with the abrasive blocks 13 in the same manner and direction as with the ledger-plate when operated to cut the grass.

The parts are simple and durable in construction, they are cheap of manufacture, and they may be readily applied to mowers of different sizes and styles.

Changes may be made in the form and proportion of some of the parts while their essential features are retained and the spirit of the invention embodied. Hence I do not desire to be limited to the precise form of all the parts as shown, reserving the right to vary therefrom.

Having thus described the invention, what I claim is—

1. A grinding device for lawn-mowers comprising a carrier-plate, a soft-metal jacket or holder provided with integral tenons having interlocking connection with said carrier-plate, and an abrasive block confined within said jacket and adapted to wear uniformly therewith, substantially as described.

2. A grinding device for lawn-mowers comprising a carrier-plate, a jacket or holder provided with integral tenons having interlocking connection with said carrier-plate, an abrasive block confined within said jacket or holder, and adjusting-screws mounted in said

carrier-plate in a plane in rear of the line of union of the jacket with said plate, substantially as described.

3. A grinding device for lawn-mowers comprising a carrier-plate provided with mortises, a soft-metal jacket or holder having dovetailed tongues fitted in said mortises and united thereby detachably to said carrier-plate, an abrasive block confined within said jacket and adapted to wear uniformly therewith, and a series of adjusting-screws mounted in said carrier-plate in a plane in rear of the line of union of said jacket with said plate, substantially as described.

4. In a sharpening device for lawn-mowers, a driving device applicable to the traction-wheel of the mower and having a hand-grasp arranged at one side of said driving device, substantially as described.

5. In a grinding device for lawn-mowers, an expansible band arranged to circumscribe a mower-wheel and provided with a holding-spur and with a hand-grasp, 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.

JAMES HENRY FREY.

Witnesses:
B. W. WALTERMIRE,
C. A. STOCKTON.