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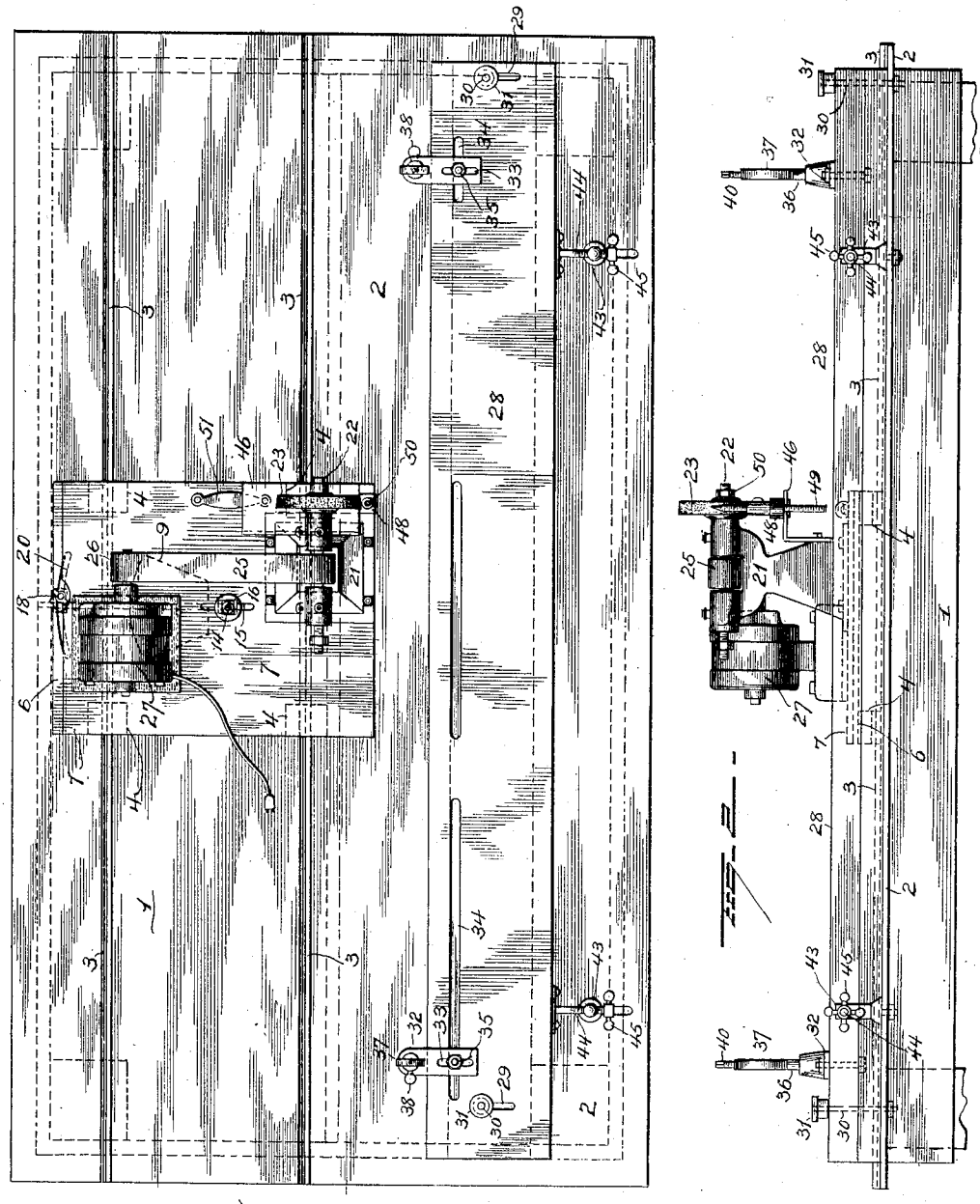
MACHINE FOR SHARPENING LAWN MOWER BLADES.

APPLICATION FILED APR. 12, 1919.

1,344,168.

Patented June 22, 1920.

2 SHEETS—SHEET 1.



Witnesses
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2 SHEETS—SHEET 2.

Fig. 3.

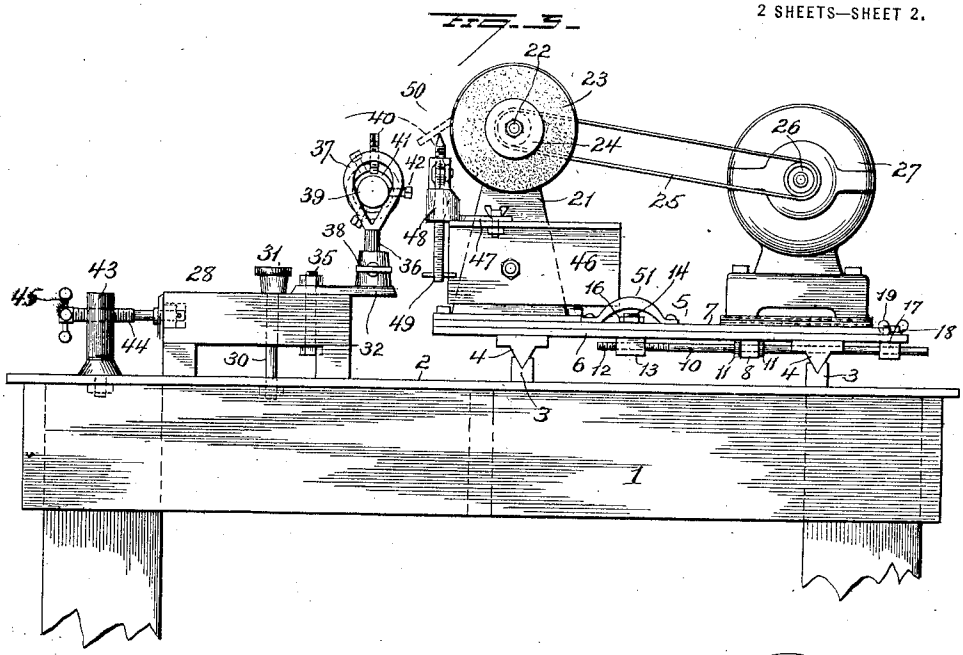


Fig. 4.

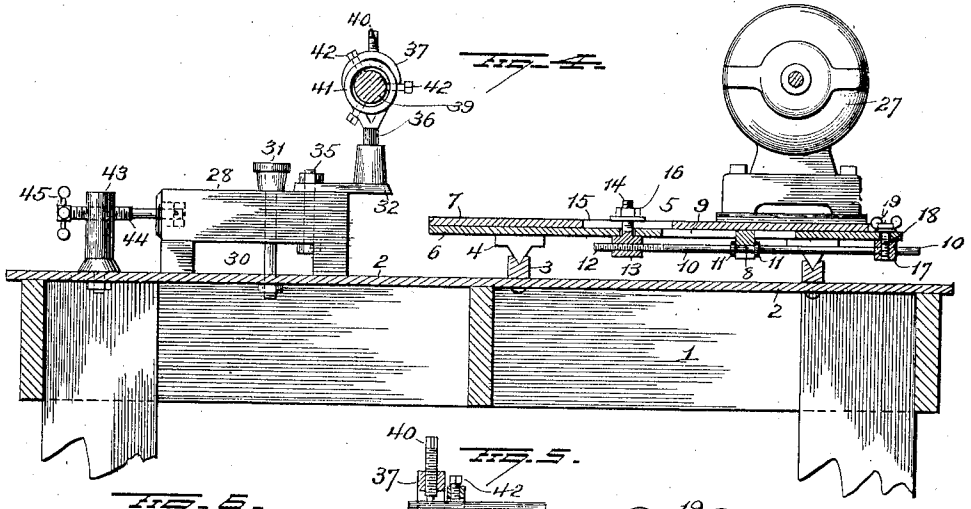


Fig. 5.

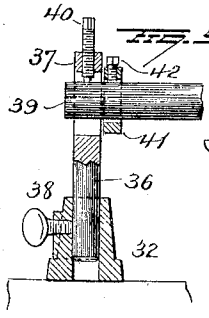


Fig. 6.

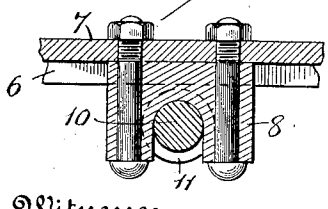
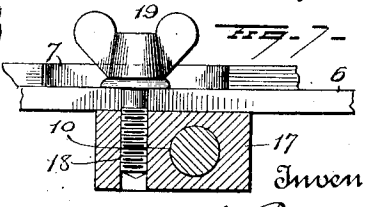


Fig. 7.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR SHARPENING LAWN-MOWER BLADES.

1,344,168. Specification of Letters Patent. Patented June 22, 1920.

Application filed April 12, 1919. Serial No. 289,524.

To all whom it may concern:

Be it known that I, CHARLES F. BROWN, a citizen of the United States, and a resident of Greeneville, in the county of Greene and State of Tennessee, have invented certain new and useful Improvements in Machines for Sharpening Lawn-Mower Blades; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in machines for sharpening lawn mower blades,—one object of the invention being to so construct a machine of this character that the grinding means can be accurately adjusted relatively to the blade.

A further object is to provide a machine for sharpening or grinding lawn mower blades, which can be easily and accurately operated and controlled; which shall effectually and quickly sharpen the blade, and in which sufficient turning movement shall be imparted to the blade to cause the spiral edge portion to be maintained in contact with the grinding wheel when the latter is moved in a direction parallel with the axis about which said blade rotates when in use.

With these and other objects in view, the invention consists in certain novel features of construction and combinations of parts as hereinafter set forth and pointed out in the claims.

In the accompanying drawings; Figure 1 is a plan view of a machine embodying my improvements; Fig. 2 is a front view; Fig. 3 is a view in elevation; Fig. 4 is a transverse sectional view with the grinding wheel and its mounting omitted. Fig. 5 is a detail view partly in section showing one of the mountings for the shaft 39 of the cutter frame; Fig. 6 is a detail view showing the connection between the shaft 10 and the top plate of the carriage, and Fig. 7 is a detail sectional view showing one of the mountings for the shaft 10 and the connection of this mounting with the table.

1 represents a table or support having a top 2 made preferably of sheet steel and provided with tracks 3, 3, which latter may conveniently consist of metal bars having V-grooves to receive the V-shaped portions of guides 4, 4, secured to a carriage 5, so that the latter can be moved longitudinally of the table top.

The carriage 5 comprises a bottom plate 6 and a top plate 7 located thereon.

The top plate 7 has secured to its under face, a block 8 (Figs. 3, 4 and 6) which depends through an opening 9 in the bottom plate 6 and is grooved for the accommodation of an adjusting rod 10,—longitudinal movement of the latter relatively to the top plate being prevented by collars 11 on said rod at respective sides of the block 8. The forward end portion of the rod 10 is threaded as at 12, and this threaded portion of the rod passes through a head 13 on a pin 14, the latter being pivotally mounted in the bottom plate 6 and passing through an elongated slot 15 in the top plate 7. The head 13 bears against the under face of the bottom plate 6 and the pin 14 is threaded to receive a nut 16 which bears against the upper face of the top plate 7,—the plates 6 and 7 being thus clamped together when the parts shall have been properly adjusted. The rear portion of the adjusting rod 10 passes freely through a block 17 normally clamped to the bottom plate 6 by means of a screw 18, the head 19 of which bears against the upper face of said bottom plate. The screw 18 passes through a slot 20 in the bottom plate and this slot is curved concentric with the pivot pin 14 so that when the clamping screw 18 and nut 16 are loosened, the top plate and the grinding mechanism located thereon as hereinafter explained, as well as the adjusting rod 10, may be moved on the pivot pin as a fulcrum to adjust the angularity of the grinding means relatively to the work.

Mounted upon the top plate 6 of the carriage 5, near the forward portion of the latter, is a pedestal 21 provided with suitable bearings for the accommodation of the shaft 22 of a grinding wheel 23. A pulley 24 is secured to the shaft 22 and receives motion, by means of a strap 25 from a pulley 26 on the driven shaft of an electric motor 27, the latter being suitably mounted on the top plate of the carriage.

A work-support 28 is mounted upon the table top 2 and may be of a length approximately the same as that of the table. This support is provided near its ends with elongated slots through which bolts 30 pass, said bolts also passing through the table top 2 and provided at their upper ends with nuts 31, thus permitting said support to be adjusted relatively to the grinding means.

Brackets 32 are adjustably mounted on the support 28,—said brackets being provided with slots 33 and the support 32 being provided with slots 34 through which clamping bolts 35 pass,—whereby the brackets 32 can be adjusted lengthwise of the support and also laterally with respect thereto. The brackets 32 are made with socketed portions for the reception of the shanks 36 of work holders 37, the latter being normally held in fixed positions by means of set screws 38 engaging said shanks. The work holders 37 each have a general pear or conical shape with a similarly shaped opening having its apex at its lower end. The openings of the work holders receive the shaft 39 of a blade or cutter frame such as commonly employed with lawn mowers and in which the blades are of spiral form. The shaft of the cutter frame is prevented from displacement in its mountings in the work holders, by means of set screws 40 and longitudinal movement of said shaft will be prevented by collars 41 secured to said shaft by set screws 42 and engaging the work holders.

In order to provide simple means for moving the work support and work holders carried thereby, to adjust the work relatively to the grinding means, posts 43 are secured to the table top 2 and through these posts, screws 44 pass,—said screws being swiveled to the slidable support 28 and provided at their free ends with hand wheels 45 to facilitate the operation of said screws.

A bracket 46 is secured to the pedestal 21 on which the grinding device is mounted and to this bracket, the arm 47 of an internally threaded clamping sleeve 48 is secured. A vertically adjustable guide screw 49 passes through the sleeve 48 and its upper pointed end 50 is adapted to engage the spiral blade to be sharpened.

When the cutter frame shall have been mounted in the work holders and the several parts of the machine shall have been adjusted by means of the devices hereinbefore described, so that the edge portion of the blade to be ground is properly presented to the grinding wheel, the operator will move the carriage longitudinally of the table (a handle 51 being provided to facilitate such operation) and the motor will have, in the meantime, been put in operation to rotate the grinding wheel. As the carriage is moved forwardly, the engagement of the end 50 of the guide screw 49 with the blade being ground, will cause the cutter frame to turn on its axial mounting in the work holders and the edge of the spirally formed blade will be thus kept constantly and accurately in engagement with the rotating grinding wheel.

It will be observed that adjustment of the grinding device relatively to the blade may be effected by the adjusting rod 10, or by the guide screw 49, or a slight adjustment may be effected by permitting a springing action between the plates of the carriage by slightly loosening the means which normally secure these plates together.

Various slight changes might be made in the details of construction of my invention without departing from the spirit thereof or limiting its scope and hence I do not wish to restrict myself to the precise details herein set forth.

Having fully described my invention what I claim as new and desire to secure by Letters-Patent, is:—

1. In a sharpening machine, the combination with a table, and a carriage mounted thereon, of grinding means mounted on said carriage, an electric motor also mounted on said carriage and connected with said grinding means for operating the same, and work holding means adjustably mounted on said table relatively to the carriage.

2. In a sharpening machine, the combination with a support, of a carriage mounted thereon and comprising upper and lower plates adjustably connected together, whereby one plate may be angularly adjusted relatively to the other, grinding means mounted on the upper plate of the carriage, and work holding means mounted on said support in a plane in front of the grinding means.

3. In a sharpening machine, the combination with a support, of a carriage mounted on said support and comprising upper and lower plates, grinding means mounted on the upper plate, an adjusting device movably connected with the lower plate and means connecting said adjusting device with the upper plate, whereby the upper plate of the carriage and the grinding means thereon may be angularly adjusted relatively to the lower plate of said carriage, and work holding means mounted on said support in a plane in front of said carriage.

4. In a sharpening machine, the combination with a support, of a carriage mounted on said support and comprising upper and lower plates, work holding means mounted on the support in a plane in front of said carriage, grinding means mounted on said carriage, means pivotally connecting the upper plate of the carriage with the lower plate whereby the angularity of the grinding means may be adjusted, and means for moving the upper plate on the lower plate for adjusting the grinding means in a direction toward the work.

5. In a sharpening machine, the combination with a support, of a carriage mounted on said support, grinding means mounted on the carriage, said carriage comprising lower and upper plates having openings, a pivotal mounting for the upper plate, and an adjusting rod connected with said pivotal mounting and with the upper and lower

plates, whereby the upper plate may be turned to adjust the angularity of the grinding means and also adjusted relatively to the work, and means for clamping the upper plate to the lower plate.

6. In a sharpening machine, the combination with a support, of a carriage mounted thereon and comprising an upper plate having a straight slot and a lower plate having an opening and also a curved slot, a pin pivotally mounted in the lower plate and passing through the straight slot of the upper plate, a nut on said pin, a part depending from the upper plate and passing through the opening of the lower plate, a block under the lower plate, a clamping device connected with said block and passing through the curved slot of said lower plate, and an adjusting screw swiveled to the depending part on the upper plate and passing through the pivot pin and block connected with the lower plate and having threaded connection with one of said parts, and grinding means mounted on the upper plate of the carriage.

7. In a sharpening machine, the combination with a support, of a carriage mounted thereon, grinding means mounted on said carriage, said carriage comprising an upper slotted plate and a lower plate having an opening and a curved slot, a pin pivotally mounted in the lower plate and having a head under the latter, said pin being threaded and passing through the slot of the upper plate, a clamping nut on said pin, a block depending from the upper plate and depending through the opening in the lower plate, a block disposed under the lower plate, a clamping device engaging said last mentioned block and passing through the curved slot of the lower plate, and an adjusting rod mounted in said last-mentioned block, having swivel connection with the block of the upper plate and having threaded connection with the head of said pivot pin.

8. In a sharpening machine, the combination with grinding means, of work holding means comprising parts having inverted conical openings to receive the shaft or journals of the blade structure of a mowing machine, whereby bearings are provided in the lower portions of said parts for said shaft or journals, screws passing through the upper portions of said parts and adapted to engage said shaft or journals and retain the same accurately on the bearings in the lower portions of the conical openings in said parts, and means for effecting relative adjustments of the carriage and work holding means and for moving one of them relatively to the other to effect the sharpening of a blade.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

CHARLES F. BROWN

Witnesses:
HENRY R. BAKER,
CHAS. C. SMITH.