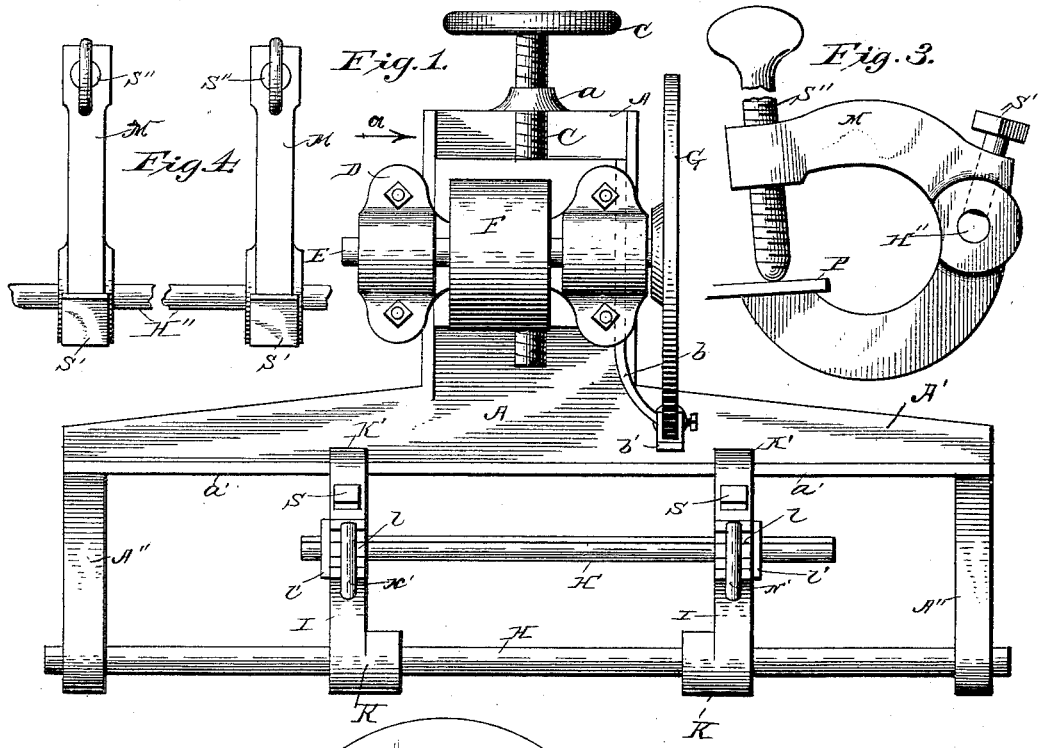
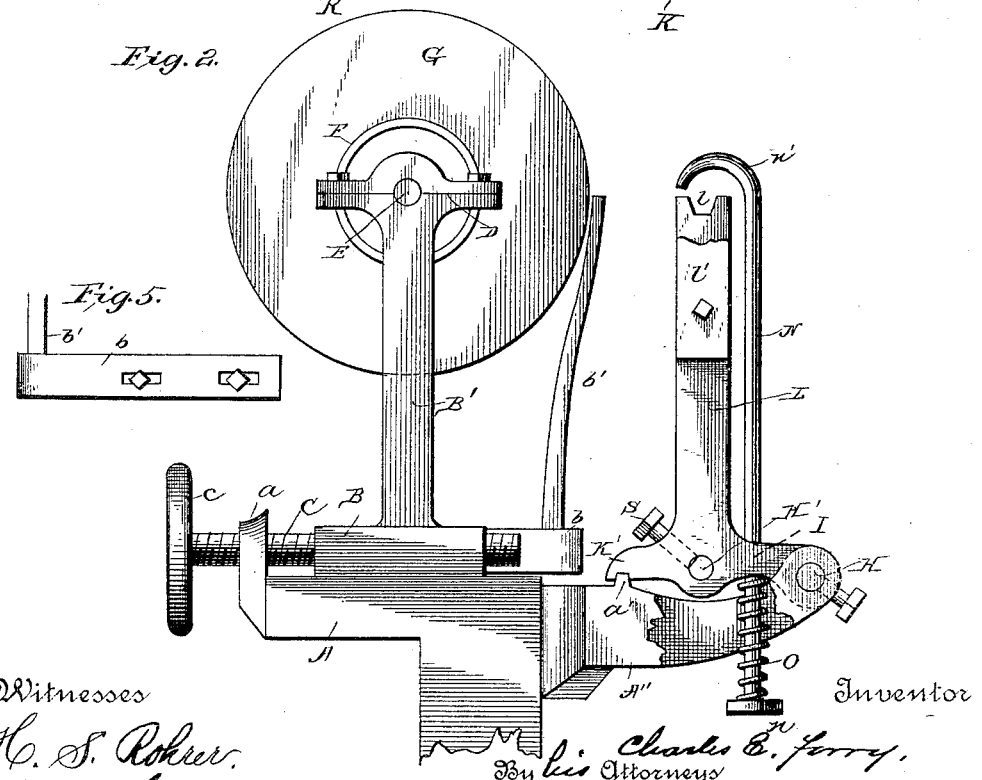
(No Model.)

C. E. FORRY.

MACHINE FOR GRINDING LAWN MOWER KNIVES.

No. 418,977. Patented Jan. 7, 1890.





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UNITED STATES PATENT OFFICE.

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MACHINE FOR GRINDING LAWN-MOWER KNIVES.

SPECIFICATION forming part of Letters Patent No. 418,977, dated January 7, 1890.

Application filed May 8, 1889. Serial No. 309,971. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. FORRY, a resident of Freeport, in the county of Stephenson and State of Illinois, have invented certain new and useful Improvements in Machines for Grinding Lawn-Mower Knives; 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 pertains to make and use the same.

My invention relates to improvements in machines for grinding lawn-mowers, and is fully described and explained in this specification, and shown in the accompanying drawings, in which—

Figure 1 is a top plan of a machine embodying my invention. Fig. 2 is a side elevation thereof, looking in the direction indicated by the arrow *a* in Fig. 1. Fig. 3 is a top plan of a clamping device adapted to hold in place the straight knife of a lawn-mower while in process of grinding. Fig. 4 is an end view of the same. Fig. 5 is an elevation illustrating the adjustment of the knife-rest.

In the views, A is a base or bed of suitable size and strength to support an adjustable emery-wheel, and is provided with a suitable standard or with means for attaching it to a bench.

Upon the base A rests a block B, adapted to slide freely in suitable guides and susceptible of adjustment by means of a screw C, passing through a boss *a* on the base and through the block B, and provided with a hand-wheel *c* for its operation. Upon the block B is rigidly formed an upright standard B′, which is bifurcated at the top and provided with two bearings D D, in which is journaled a shaft E. On this shaft, between the bearings D D, is mounted a pulley F, by means of which power may be applied to the shaft, and an emery-wheel G is mounted on one end of the shaft and rotates therewith. On one end of the block B is adjustably secured a bar *b*, having an enlargement at its free end, in which is fastened a rest *b*′, whose upper end lies in close proximity to the edge of the emery-wheel and at a point very nearly in the horizontal plane of the shaft E.

The mechanism thus far described evidently constitutes an emery-wheel mounted in the ordinary manner on a base adjustable in a line parallel with the plane of the wheel, together with a suitable rest moving with the block which supports the emery-wheel, and also adjustable with reference thereto in order to compensate for wear of the wheel or for the use of wheels of different size.

On the front of the base or bed A is a transverse extension A′, at right angles to the plane of the emery-wheel, and at the end of this extension are integrally-formed arms A″, which support a rod H, parallel with the shaft E of the emery-wheel and also parallel with a track *a*′, formed on the extension A′. On the rod H and the track *a*′ rest two bars I I, one end of each of said bars being provided with a bearing K, which slides freely on the rod H, while its opposite end K′ has on its lower face a groove conforming to the cross-section of the track *a*′. The bars I I are connected by a rod H′ passing through them, and they are fastened upon said rod at any desired distance from each other by means of set-screws S. Upon the upper surface of each of the bars I is formed an upwardly-extending standard L, having in its upper end a notch *l*, whose direction is parallel with the rod H′, and each of said standards L has upon its outer face a preferably detachable plate *l*′, extending to the upper end of the standard and adapted to close the outer end of the corresponding notch *l*. A rod N passes vertically through each of the bars I at a point near the standard L, and is provided at its lower end with a head *n*, and at its upper end with a hook *n*′, adapted to lie across the notch *l* of the standard, as shown in Figs. 1 and 2. A spring O, interposed between the head *n* of each of said rods and the lower face of the bar I, tends to press the rod downward and draw the hook *n*′ against the upper end of the standard, or against any rod lying in the notch in the top of the standard.

When it is desired to grind the spiral

knives upon the reel of a lawn-mower, it is only necessary to take the reel from the mower, place the ends of the reel-shaft in the notches of the standards L, adjust the standards upon the rod H′ until the plates *l′* are in contact with the ends of the reel-shaft, and bring the hooks *n′* of the rods N into position above the reel-shaft, so that the force of the springs O holds the reel-shaft securely in the notches. The emery-wheel being then adjusted by means of the screw C until it comes in contact with the edge of one of the spiral blades, and the edge of the blade being supported by the rest *b′*, the emery-wheel may be set in motion, when the movement of the standards L L and bars I I along the rod H and track *a′* will bring all the points of the edge of the knife successively in contact with the edge of the emery-wheel, and the edge of the knife will be so ground that each point thereon shall be equidistant from the axis of the reel-shaft. This same process may be repeated with each of the knives until all are ground, when all the cutting-edges of the knives will lie in the surface of a cylinder whose axis is the axis of the reel-shaft. As the bars I are secured together by the rod H′ and set-screws S, they may be rotated together about the rod H away from the emery-wheel, for the more convenient inspection of the work or for its insertion and removal.

For grinding the straight or stationary knives of the mower I use the device illustrated in Figs. 3 and 4, in which H″ is a shaft on which are fastened, by means of set-screws S′, two similar clamps M, adapted to receive a knife P. The knife being secured in this frame by means of two set-screws S″, the shaft H″ is secured in the notches *l′* of the standards L and the free edge of the blade placed upon the rest *b′*, when the movement of the knife-carrying device along the rod H and track *a′* will grind the knife to a straight edge.

By the use of the simple device for holding the straight knife the machine hereinbefore described may thus be used for grinding perfectly either the spiral knives or the straight knives of a lawn-mower, and the adjustments, which are extremely simple, adapted to be used for grinding the knives of machines of all ordinary sizes.

So far as I know the machine is wholly novel, and its utility is evident to any one familiar with the difficulties encountered in attempting to grind the knives of a lawn-mower with any machine not specially adapted for the purpose.

It is evident that while it is necessary that the emery-wheel and the knife-support shall be adjustable with reference to each other, it is immaterial which of the parts is made stationary and which adjustable.

Having now described and explained my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a suitable base and an emery-wheel adjustably mounted thereon, of the rod H′ and the track *a′*, both parallel to the emery-wheel shaft and supported from the base, and a carriage for a mower-reel mounted upon said rod and track to slide upon both and rotate about the former, substantially as set forth.

2. The combination, with the base A, the block B, adjustable thereon, and the emery-wheel G, mounted on the block, of the bar *b*, adjustably attached to the block B, the knife-rest *b′*, supported by the bar *b*, guides transverse to the plane of the emery-wheel, and a carriage sliding on said guides and provided with standards notched to receive the reel-shaft of the lawn-mower, substantially as and for the purpose set forth.

3. The combination, with the base A, the adjustable block B, and the emery-wheel G, mounted thereon, of the guides H *a′*, transverse to the plane of the emery-wheel, the bars I I, sliding on said guides and adjustably connected by the rod H′, the standards L L, formed on the rods I I and notched at their upper ends to receive a shaft, and the spring-actuated hooks N N, adapted to secure the shaft in place when resting in the notches of said standards, substantially as and for the purpose set forth.

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

CHARLES E. FORRY.

Witnesses:
JAMES H. STEARNS,
HALLIE C. ELLIS.