(No Model.) 2 Sheets—Sheet 1.

O. LARSON & J. W. CARLSON.

DRILL SHARPENER.

No. 552,843. Patented Jan. 7, 1896.

Fig. 1.

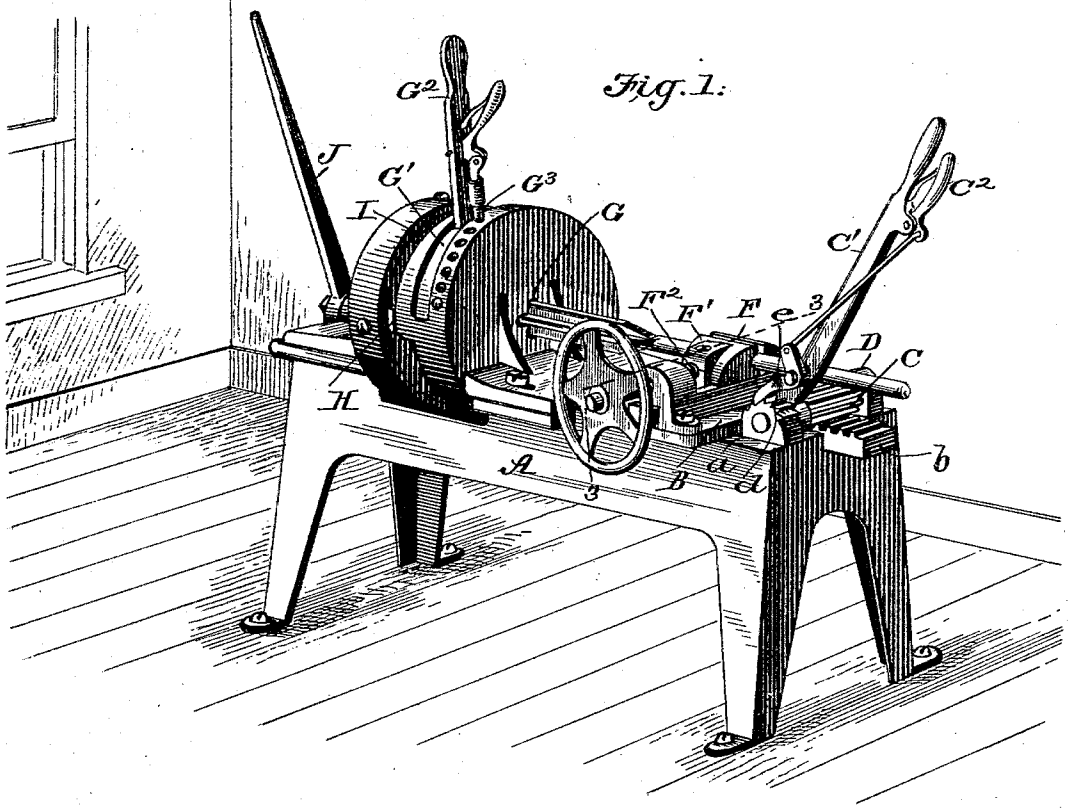
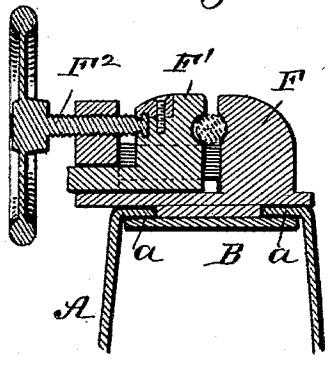


Fig. 3



WITNESSES:

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 5.

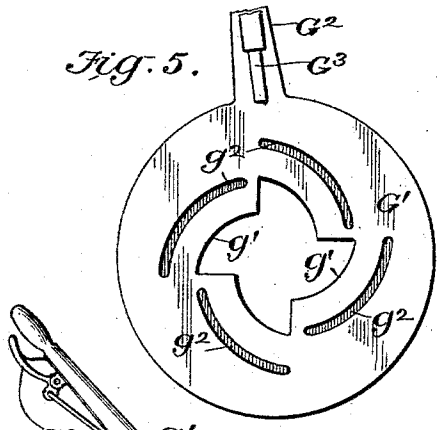


Fig. 9.

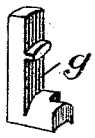


Fig. 2.

Fig. 4.

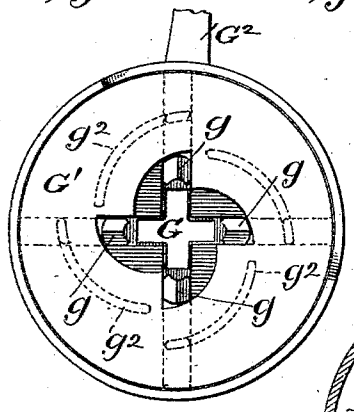


Fig 8

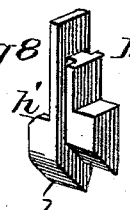


Fig. 6.

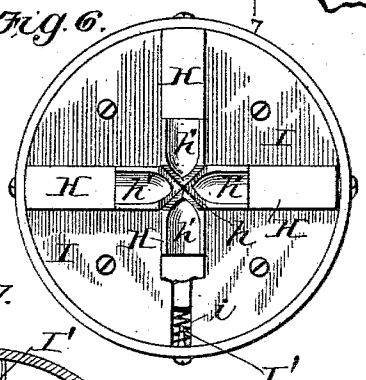
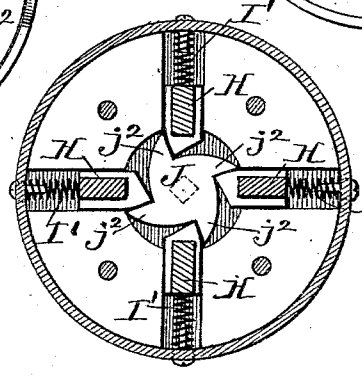


Fig. 7.



WITNESSES:

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UNITED STATES PATENT OFFICE.

OLE LARSON AND JOHN W. CARLSON, OF WARDNER, IDAHO; SAID CARLSON ASSIGNOR OF ONE-SIXTH OF HIS RIGHT TO SAID LARSON.

DRILL-SHARPENER.

SPECIFICATION forming part of Letters Patent No. 552,843, dated January 7, 1896.

Application filed September 10, 1895. Serial No. 562,087. (No model.)

To all whom it may concern:

Be it known that we, OLE LARSON and JOHN W. CARLSON, of Wardner, in the county of Shoshone and State of Idaho, have invented certain new and useful Improvements in Drill-Sharpeners, of which the following is a specification.

This invention is an improvement in drill-sharpening machines, and has for an object to provide a simple and easily adjusted and operated machine by which to efficiently sharpen the so-called "Burleigh" or "grooved" drills.

The invention consists in certain novel constructions and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the drawings, Figure 1 is a perspective view of our improved drill-sharpener. Fig. 2 is a central longitudinal section of same. Fig. 3 is a transverse section on the line 3 3, Fig. 1. Fig. 4 is a face view of the drill-guide and holding-plates. Fig. 5 is a view of the reverse side of the cam-grooves for releasing the drill-holding pieces. Fig. 6 is a face view of the plate for holding the bits. Fig. 7 is a sectional view on the line 7 7, Fig. 2. Fig. 8 is a detail view of one of the bits, and Fig. 9 is a detail of one of the holding-pieces.

The frame A is adapted to support the holding, guiding, and sharpening devices and is provided near one end with shears a, on which slides the base B of the holding device. This base B slides back and forth on the shears a and is provided with the rearwardly-projected rack-bar b meshed by the toothed pinion C journaled in supports D, one of which has a ratchet-segment d engaged by the pawl e of the lever C', which lever is fixed to and operates the segment C and has the hand portion C^2 for operating the pawl e so such pawl may be readily released. By this lever, rack-segment, and rack-bar b the holding devices may be moved back and forth upon the shears a, as will be readily understood. On the base-plate B is mounted the clamp for the drill, such clamp consisting of a fixed jaw F and a sliding jaw F' and a screw F^2 by which the sliding jaw may be set to clamp the drill-shank.

The drill-guide is arranged in front of the drill-holder and is provided with a central opening through which the drill is inserted, such opening G coinciding in shape with the cross-section of the drill and formed to readily receive the same. This guide also has holding-pieces g which are movable toward and from a common center and are operated in both directions by means of a plate G', which is provided with an opening to receive the holding-pieces, such opening having its walls at g' formed cam shape and engaging the holding-pieces g in such manner as to force such pieces inward when the plate is properly turned, and this plate has on its rear side grooves g^2 made cam shape and similar to and so disposed with relation to the cam-faces g' that such grooves g^2 will tend to move the pieces g outward, such pieces g having studs or projections operating in the grooves g^2. A handle G^2 projects from the plate and permits the same to be swung in one direction or the other, a detent G^3 serving to secure such handle and plate in one position or the other.

The sharpener proper includes a series of bits movable toward and from a common center and holding devices for said bits and means for operating the same. These bits H are preferably arranged correspondingly to the wings of the drill, and their sharpening operation is effected by moving them forcibly from their inner or meeting point outward. In the construction shown the bits center and meet in alignment with the guide-opening G, so that a drill passed through said opening and pressed firmly against the bits will be sharpened by forcing such bits outward to their outermost position, causing them to scrape across the points of the wings of the drills. These bits have portions fitting and engaging in slots i of a face-plate I and springs I' engage the bits and tend to force the same to their innermost position so that when at rest the bits will quickly assume such position in readiness for operation when a drill is inserted. To force such bits outward we provide a hand-lever J fixed to a shaft J', on which is secured an armed wheel J^2, the arms of which engage the portions of the bits in rear of the face-plate I and the arms j^2 of the wheel J^2 curve or incline as shown so that the wheel may be turned to force the bits outward, and that the tension of the springs I' operating to force the bits inward

will also turn the wheel J^2 to set the same and its operating-lever back to the starting-point.

In operation a drill such as shown may have its shank inserted and held in the jaws F F′, the head of the drill fitting in the opening G of the guide, and the holding-pieces *g* may be set in upon the wings of the drill, prior to which, however, such drill should have been forced by proper manipulation of the lever C′ to cause the point of the drill to bear firmly and tightly against the bits, the drill being held in such place by the detent-pawl *e* before described. Now by forcibly moving the bits outward, which can be accomplished by the lever devices before described, the drill will be sharpened. By moving the bits outward to sharpen the drill it will be seen that the portions scraped off during such sharpening operation will be delivered at the outer edges of the wings of the drill. In specifically describing the bits they may be said to have sharpening portions at *h* near their inner ends and recesses or pocket portions *h′* adjacent to and on the outer side of said sharpening portions, as shown in the drawings.

Having thus described our invention, what we claim is—

1. In a drill sharpener the combination of holding devices the bits and means by which to force such bits in a direction from center outward the bits being adapted to sharpen the tool on their outward movement, substantially as set forth.

2. In a drill sharpener the combination with the holding devices of the bit support the bits movable in said support toward and from a common center and adapted to sharpen the tool on their outward movement and means by which to actuate such bits forcibly outward substantially as set forth.

3. In an apparatus substantially as described the combination of the bit support, the bits movable therein toward and from a common center, and adapted to sharpen the tool on their outward movement, spring devices for actuating such bits inward and means by which to forcibly move the bits outward substantially as set forth.

4. In an apparatus substantially as described the combination of the framing the drill holder movable along the same the drill guide provided with an opening for the passage of the drill and also with holding pieces movable toward and from said opening and the sharpening bits substantially as set forth.

5. In an apparatus substantially as described the combination of the framing the drill holder movable along the same, a lever and detent by which said drill holder may be set to and held in any suitable position the drill guide having an opening for the passage of the drill and holding pieces movable toward and from such opening, the sharpening bits movable toward and from a common center and means by which to forcibly move such bits outward substantially as and for the purposes set forth.

6. In an apparatus substantially as described a sharpener comprising a plurality of bits meeting at a central point and movable outward therefrom and adapted to sharpen the tool on their outward movement substantially as set forth.

7. In an apparatus substantially as described the combination of the bits movable outward from an inner or central position, devices by which to press the drill bit endwise against the bits and means by which to move the bits forcibly outward substantially as set forth.

8. In an apparatus substantially as described the combination with the outwardly movable bits and their support, of the armed wheel engaging such bits and the handle lever connected with such armed wheel substantially as set forth.

9. In an apparatus substantially as described the combination with the guide of the face plate having an opening formed with cam walls and provided in its inner face with cam grooves and the holding pieces arranged for engagement by the cam walls of face plate opening and having pins or projections entering the grooves thereof substantially as and for the purposes set forth.

10. In an apparatus substantially as described the combination with a suitable support of the bits movable outward from an inner or central position, such bits having sharpening portions near their inner ends and recesses or pockets adjacent to and on the outer sides of said sharpening portions and means by which to move said bits outward substantially as and for the purposes set forth.

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