

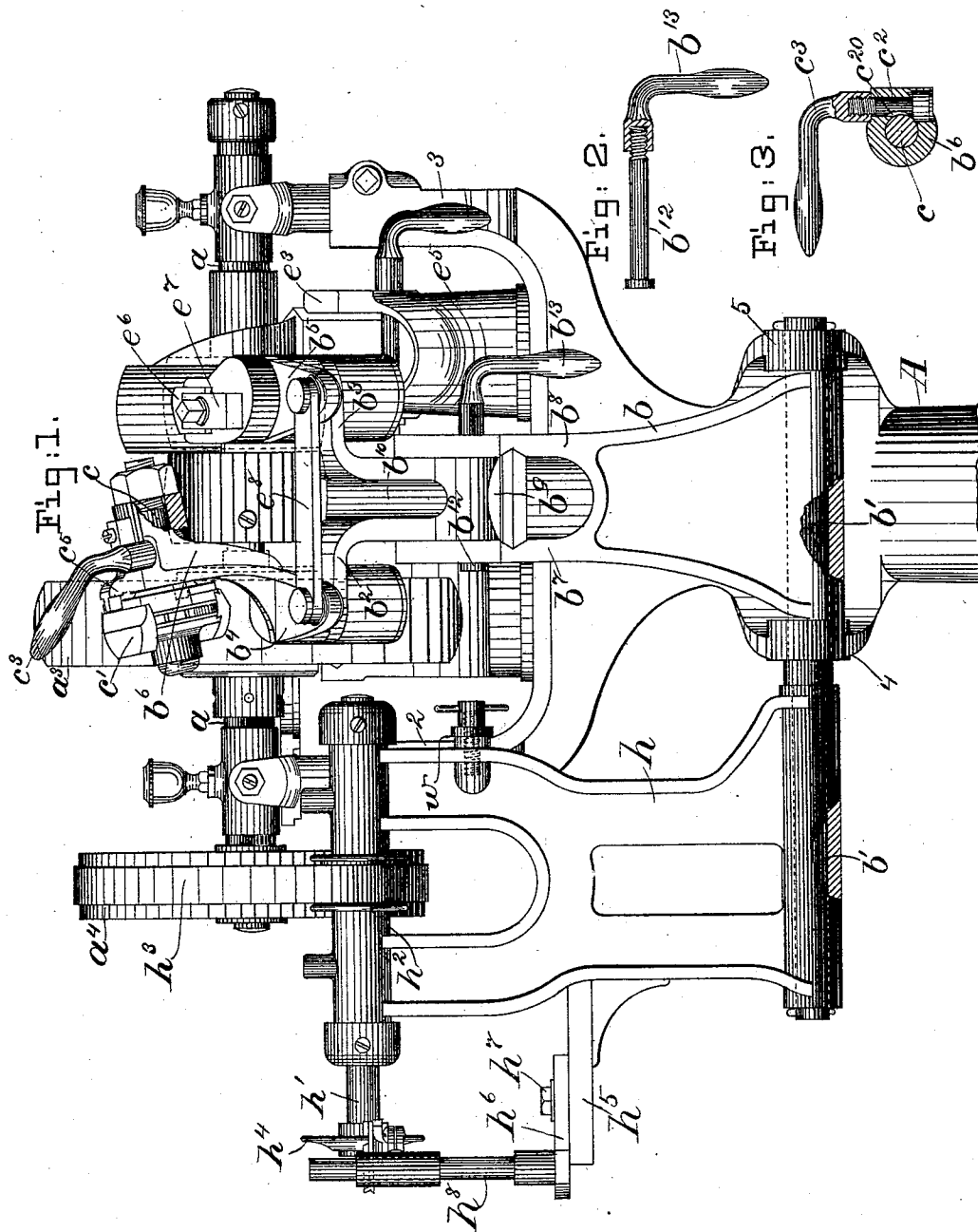
(No Model.)

3 Sheets--Sheet 1.

C. W. GLIDDEN & C. H. BENJAMIN.
GRINDING MACHINE.

No. 543,647.

Patented July 30, 1895.



Witnesses:

Oscar F. Hill.
Fred S. Grunwald.

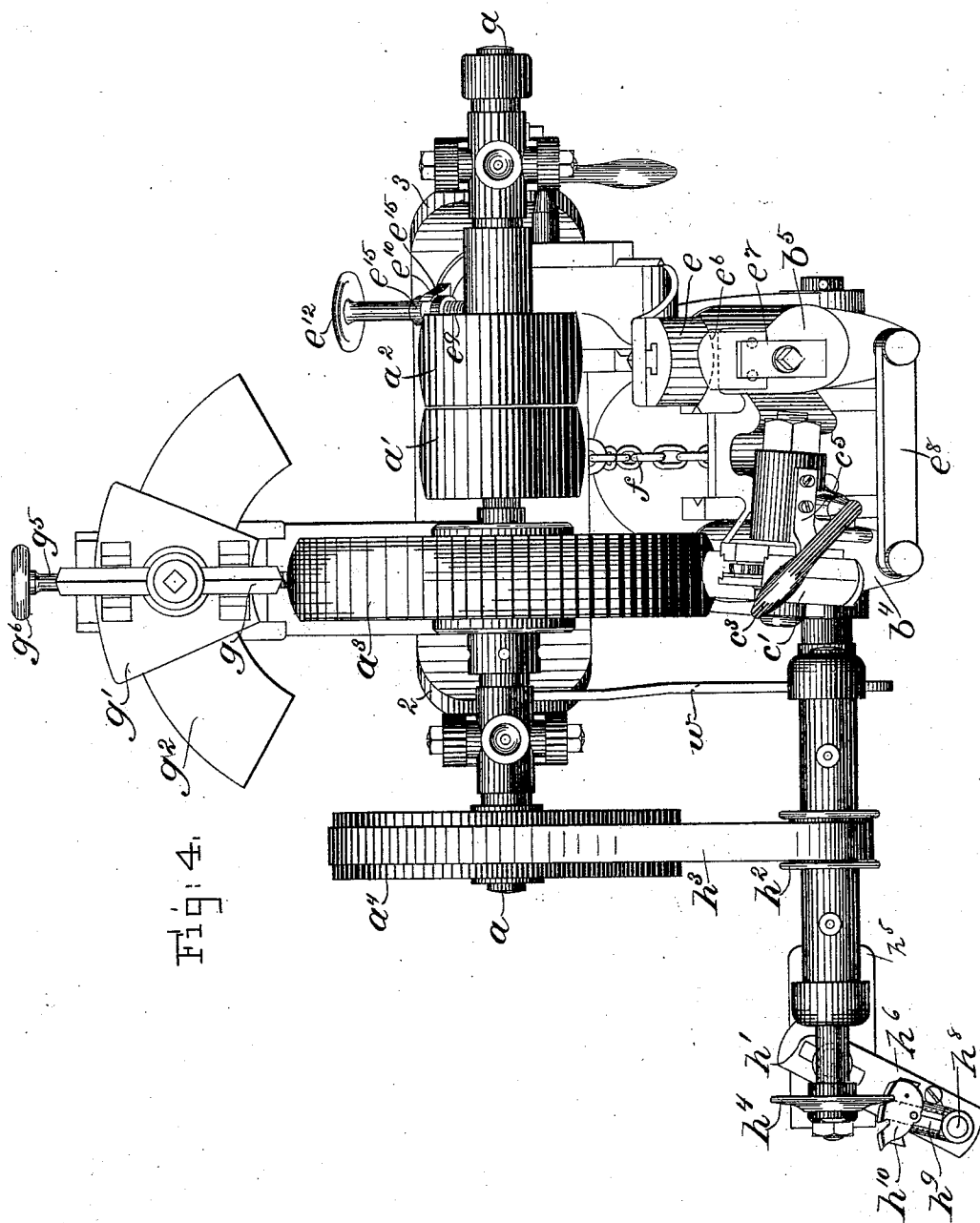
Inventors.

Charles W. Glidden
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By Leroy & Gregory Attys.

3 Sheets—Sheet 2.

No. 543,647.

Patented July 30, 1895.



Inventors,

Oscar F. Hill
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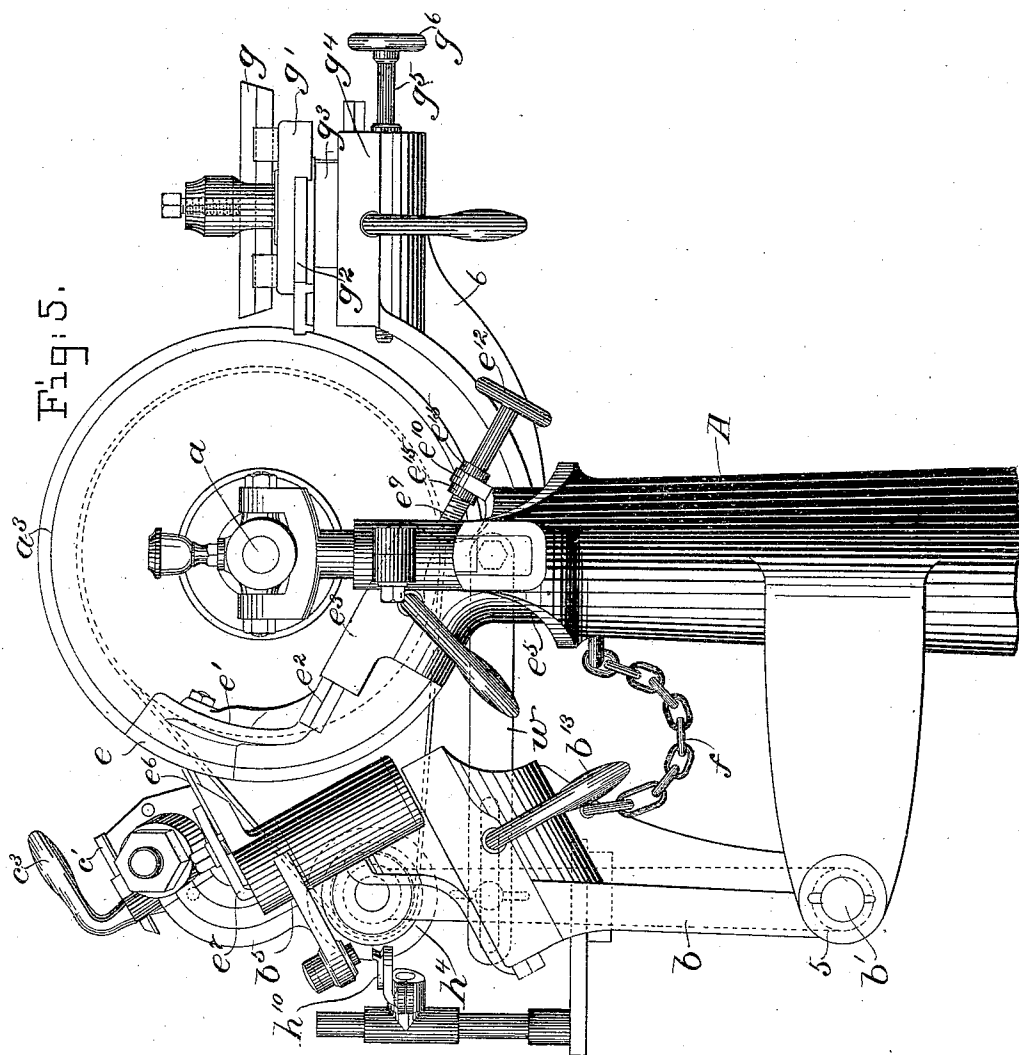
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C. W. GLIDDEN & C. H. BENJAMIN.
GRINDING MACHINE.

No. 543,647.

Patented July 30, 1895.



Witnesses:

Oscar F. Hill,

Fred S. Greenleaf.

Inventors.

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UNITED STATES PATENT OFFICE.

CHARLES W. GLIDDEN, OF LYNN, MASSACHUSETTS, AND CHARLES H. BENJAMIN, OF CLEVELAND, OHIO, ASSIGNORS TO JAMES W. BROOKS, TRUSTEE, OF CAMBRIDGE, MASSACHUSETTS.

GRINDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 543,647, dated July 30, 1895.

Application filed July 16, 1891. Serial No. 399,704. (No model.)

To all whom it may concern:

Be it known that we, CHARLES W. GLIDDEN, of Lynn, county of Essex, State of Massachusetts, and CHARLES H. BENJAMIN, of Cleveland, county of Cuyahoga, State of Ohio, have invented an Improvement in Grinding-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters and numerals on the drawings representing like parts.

Heel-trimming cutters as now commonly made are composed of a series of blades having curved cutting-edges corresponding in shape to the shape of the side edges of the heel to be trimmed. These blades act on the heel successively, and hence must be of the same shape in order to make the same shaped cut, that one will not undo what the preceding one has just done. These blades likewise need sharpening frequently, and it has been found to be a very difficult task to grind a series of blades alike.

This invention has for its object to construct a grinding-machine especially adapted for accomplishing this result, and it comprehends the employment of a grinding-wheel, a blade-carrying frame adapted to hold the blades and present them to the grinding-wheel to be sharpened, and two co-operating templets, the acting face of one of which is herein shown as made as a counterpart of the acting face of the grinding-wheel, and the acting face of the other of which is made as a counterpart of the blade to be sharpened. The templet corresponding to the grinding-wheel is shown as held in fixed position, yet made adjustable toward and from the axis of rotation of the grinding-wheel, and the templet corresponding to the blade is held in a frame connected with the blade-carrying frame, so as to be moved in either direction simultaneously. A truing-tool is provided for the grinding-wheel, which is designed to continuously maintain a grinding-surface corresponding with the surface of the stationary templet. Adjusting devices are provided for the parts.

Figure 1 shows in front elevation a grind-

ing-machine embodying our invention; Figs. 2 and 3, details of binding devices to be referred to; Fig. 4, a plan view of the machine shown in Fig. 1, and Fig. 5 a right-hand side view of the machine shown in Fig. 1.

The main framework, of any suitable construction supporting the operating parts, is erected on a column or stand A. The shaft *a*, having its bearings in arms 2 3 of the main framework, has secured to and mounted on it a fast and loose pulley *a'* *a*², a grinding-wheel *a*³, and a pulley *a*⁴. The periphery or acting face of the grinding-wheel *a*³ is made convex.

A stand *b*, loosely mounted on a rod *b'*, supported in arms 4 5 of the main framework, has at its upper end two guide portions *b*⁷ *b*⁸, the inner adjacent faces of which are dovetailed to receive between them a foot-plate or base *b*⁹ of a yoke *b*¹⁰. A headed pin *b*¹², having a screw-threaded end, or it may be a screw, passes through the guide portions *b*⁷ *b*⁸ of the stand *b*, and a hand-piece *b*¹³, provided with a socketed end, internally screw-threaded to engage the screw-threaded end of the pin *b*¹² and adapted to bear against the outer side of the portion *b*⁸, is employed as a means for drawing the guide portions *b*⁷ *b*⁸, slightly toward each other to bind the foot-plate or base *b*⁹ firmly between them, such clamping device permitting adjustment of the yoke *b*¹⁰. The yoke *b*¹⁰ supports at its upper end, and on each arm *b*² *b*³ thereof a pivoted frame *b*⁴ *b*⁵.

The pivoted frame *b*⁴ is made as a plate, having on it a standard *b*⁶, provided with a hole through it transversely at its upper end, through or into which the shaft *c* of a heel-trimming cutter *c'* is placed.

As a means of holding the shaft *c* and heel-trimming cutter borne by it in fixed position, that one or another blade thereof may be presented to and acted upon by the grinding-wheel, we have herein shown a screw *c*², (see Fig. 3,) passing through a hole in the support *b*⁶, which crosses and cuts into the hole containing the shaft *c*, and the shank of said screw is cut away, as at *c*²⁰, and adapted to bear against the shaft *c* more or less as the screw is moved

longitudinally, and a hand-piece c^3 , having an internally-screw-threaded socket at its end, engages the end of the screw c^2 and also bears against the standard b^6 , so that by turning the said hand-piece the screw c^2 will be moved longitudinally to firmly hold or release the shaft c , according to the direction the hand-piece is turned. A dog c^5 is secured to the top of the standard b^6 , which is designed to engage the heel-trimming cutter to assist in holding it in position.

The blades of the heel-trimming cutter are in line with the grinding-wheel, as represented in Fig. 1, and by moving the blade-carrying frame b^4 on its pivot the blade to be sharpened and having a convex cutting-edge is carried across a portion of the convex grinding-face of the wheel a^3 .

As a means of guiding the blade to be sharpened, so that the several blades of the heel-trimming cutter shall present a similar cutting-edge that they may act in succession upon a heel and make the same cut, we have provided a templet e , (see Figs. 4 and 5,) shown as a block having a curved convex face lying concentric with the convex grinding-face of the wheel a^3 , said block being attached by a bolt and nut to a standard e' formed integral with or attached to a foot-plate or base e^2 , which occupies a position between the arms e^3 e^4 of a yoke e^5 erected on the main framework, a headed pin, like b^{12} , passing through said arms, and a hand-piece, like b^{13} , being provided for drawing the arms slightly together and thereby binding the foot-plate or base e^2 firmly between them. The foot-plate or base e^2 has on its under side a lug or ear, through which passes a screw-rod e^3 , having secured to it or formed integral with it two annular projections e^{15} , which receive between them a lug or ear e^{10} on the standard e^5 , a hand-wheel e^{12} being provided for rotating said screw-rod e^3 . The templet e is moved toward and from the center or axis of rotation of the grinding-wheel by means of this adjusting device. Another templet e^6 is provided which bears against the templet e , said templet e^6 having a curved edge conforming to the shape which it is desired to give to the cutting-edge of the blade to be sharpened. The templet e^6 is held in position by a clamp e^7 secured to the pivoted frame b^5 on the arm b^3 .

The pivoted blade-carrying frame b^4 and the pivoted templet-carrying frame b^5 are connected by a rod or bar e^8 , so that they shall move simultaneously, or as the blade-carrying frame is swung across a portion of the grinding-face of the wheel a^3 the templet e^6 will be carried across a portion of the face of the templet e , so that the cutting-edge given to the blade by grinding will conform to the shape of the templet e^6 . A chain f connects the yoke b with the column A to limit its movement away from the grinding-wheel.

It is essential that the convexity of the pe-

riphery of the grinding-wheel a^3 shall remain the same at all times and that it shall conform to the convexity of the templet e , and hence we provide a truing device for said grinding-wheel, which, as herein shown, consists of a truing-tool g , held in fixed position by a set-screw or otherwise in a block g' , which is dovetailed and moves on a semicircular bed g^2 , attached to a block g^3 , located between the guide portions g^4 g^4 , formed integral with or attached to an arm 6 on the main framework, being held in place between said portions by a clamping device similar to that shown in Fig. 2 and made adjustable longitudinally by means of a screw-rod g^5 , rotated by a hand-wheel g^6 .

The truing-tool g acts upon the grinding-face of the wheel a^3 at a single point, but as it is moved on the semicircular bed g^3 it acts upon all parts of said periphery from side to side as the grinding-wheel is revolved.

A suitable bearing-frame h is mounted loosely on the rod b' , which frame affords a proper bearing for a shaft h' , carrying a pulley h^2 , over which passes a belt h^3 , which also passes over the pulley a^4 on the main shaft a . A rod or bar w is connected to the main frame at one end and to the frame h at the other end, by means of which said frame h is held in fixed position with the belt tight. A grinding-wheel h^4 is secured to the shaft h' . A bracket h^5 is formed integral with or secured to the frame h , upon which is placed a plate h^6 , held in proper position by a set-nut h^7 , a post h^8 rising from said plate and carrying a plate h^9 , which serves as a holder for a rand-cutting tool h^{10} .

The grinding-wheel h^4 is made quite narrow to enter between the teeth of the rand-cutting tool to sharpen them.

We do not desire to limit our invention to the employment of all the parts herein shown, as good results may be produced when some are omitted; also, we desire it to be understood that many ways may be devised for carrying out this invention, the essential feature being the employment of two co-operating templets in combination with a grinding-wheel and blade-holder, one of said templets being a counterpart in shape of the acting face of the grinding-wheel and the other being a counterpart in shape of the blade to be sharpened.

We claim—

1. In a grinding machine, a grinding wheel, and a templet corresponding thereto in shape as described, combined with a blade carrying frame, and another templet corresponding to the blade as described, and an adjustable yoke supporting both said blade carrying frame, and last named templet, substantially as described.

2. In a grinding machine, a grinding wheel, and templet made as a counterpart of it, shaped as described, combined with a pivoted

blade carrying frame and templet made as a counterpart of the blade to be sharpened, a pivoted frame for said templet, and a rod or bar connecting said frames, whereby they may
5 be moved simultaneously, substantially as described.

names to this specification in the presence of two subscribing witnesses.

CHARLES W. GLIDDEN.

CHARLES H. BENJAMIN.

Witnesses:

H. P. FAIRFIELD,

W. EUSTIS BARKER.

In testimony whereof we have signed our