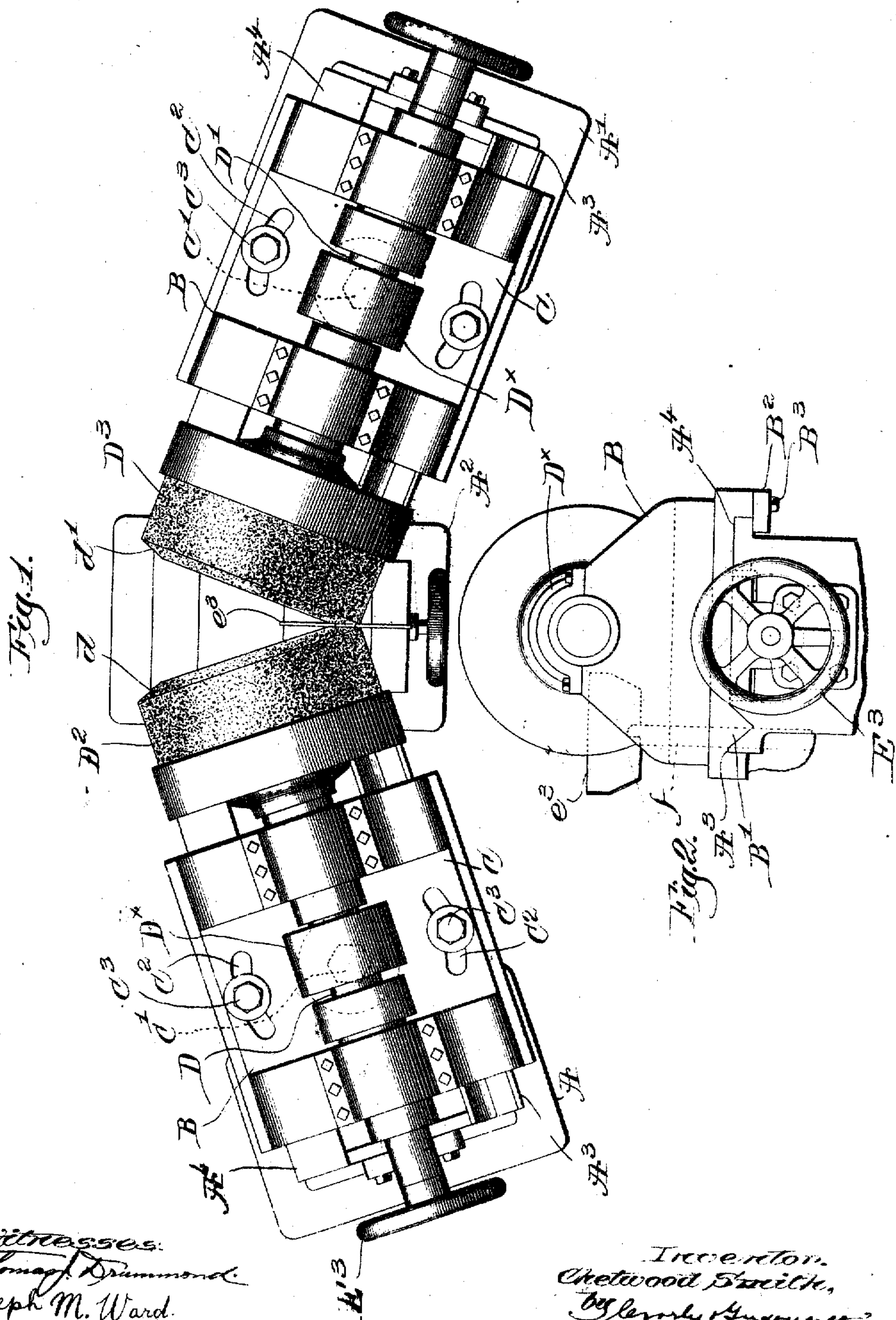


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GRINDING MACHINE.
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930,626.

Patented Aug. 10, 1909.
2 SHEETS—SHEET 1.



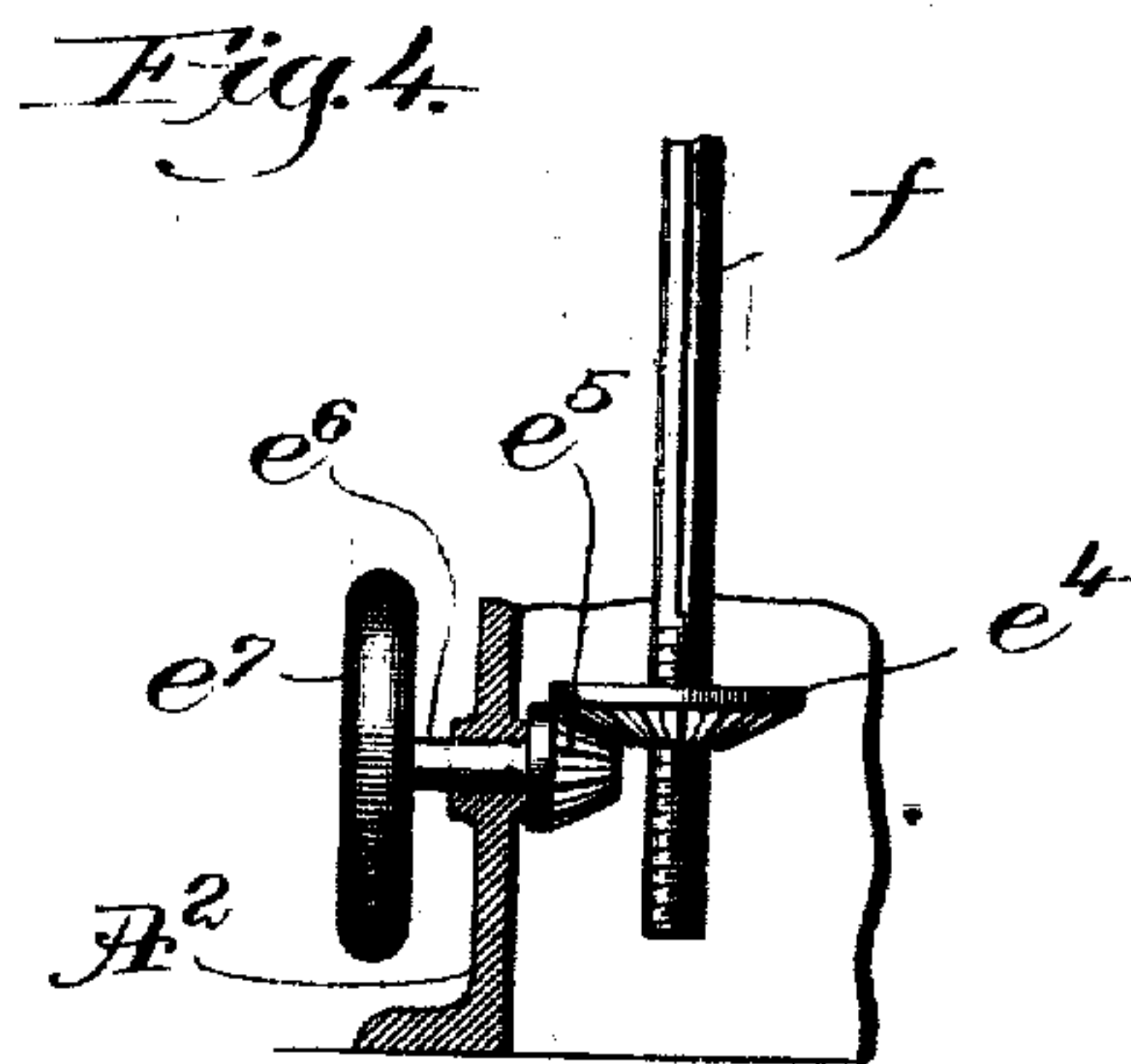
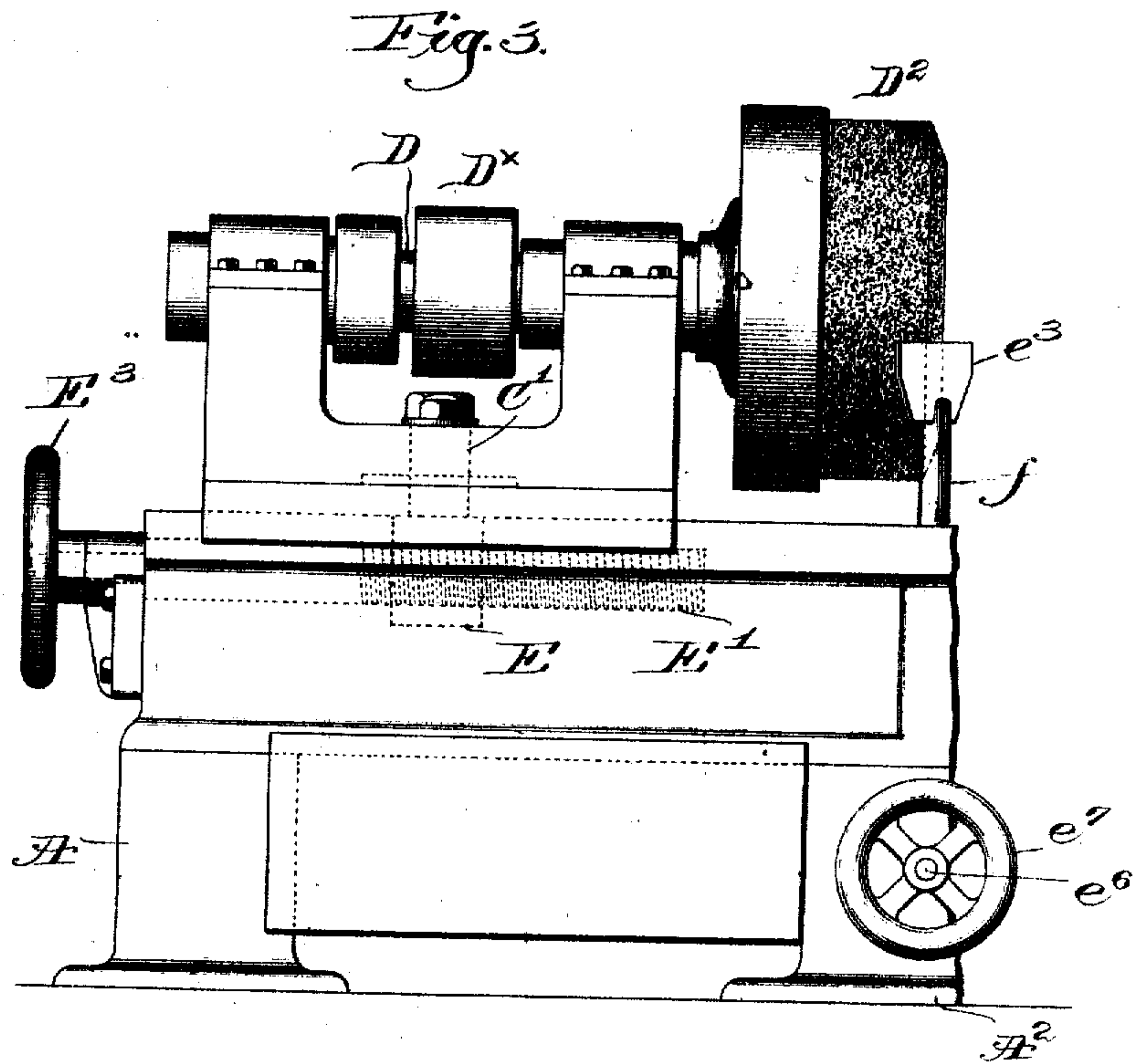
Witnesses:
Thomas Drummond.
Joseph M. Ward.

Inventor.
C. Smith.
By Henry H. H. H.

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Witnesses:
Thomas Drummond
Joseph M. Ward.

Inventor:
Chetwood Smith,
by Henry S. Young, Atty.

UNITED STATES PATENT OFFICE.

CHETWOOD SMITH, OF WORCESTER, MASSACHUSETTS.

GRINDING-MACHINE.

No. 930,626.

Specification of Letters Patent.

Patented Aug. 10, 1909.

Application filed February 11, 1907. Serial No. 356,717.

To all whom it may concern:

Be it known that I, CHETWOOD SMITH, a citizen of the United States, residing in Worcester, county of Worcester, and State of Massachusetts, have invented an Improvement in Grinding-Machines, of which the following description, in connection with the accompanying drawing, is a specification, like letters on the drawing representing like parts.

This invention has for its object the production of a novel machine, on which to simultaneously grind metal bars on both sides, instead of grinding said bars first on one and then on the other side, as commonly done, the grinding being effected by my invention on a constant curve irrespective of the grinding wheels.

Prior to my invention, I am aware that grinding wheels carried by shafts having a common center of rotation have been employed for grinding parts of articles, the articles being thrust into the space between the faces of revolving wheels or flanges.

In my study for the production of a grinding machine by which to reduce the thickness of bars and surfaces by grinding both sides of a metal bar at one operation, especially bars to be used for the blades of skates or in the formation of any tools where the sides are to be tapered or ground on a curve, I have discovered for successful and practical work that the axes of the grinding wheels should stand at an angle one to the other to intersect. I have illustrated the grinding wheels in my invention as of cup shape and beveled at their acting edges, to present frusto-conical grinding faces, the axes of the wheels being set at such an angle that the adjacent portions of the grinding faces are substantially parallel when the wheels are employed to grind the blade being acted upon. The blade being acted upon is supported at its lower edge by a suitable rest which is made vertically adjustable.

Figure 1 is a plan view of my novel grinding machine; Fig. 2 is a partial end view of the machine; Fig. 3 is an elevation of the left hand half of the machine shown in Fig. 1, and Fig. 4 is a detail showing means for adjusting the work rest.

The frame of the machine, as I have herein chosen to illustrate the same, comprises a base part or way A, A' extended from a central or connecting base A², the parts A, A'

being provided at their upper sides with a grooved way A³ and with a guiding flange A⁴, each part sustaining a longitudinally adjustable carriage B having at one side a rib B' to coact with the grooved way A³ and at its other side a lip B² connected therewith by a screw B³, said lip engaging the under side of said flange A⁴.

The upper side of each carriage B sustains the foot of a bearing stand C having uprights provided with bearings to receive one of the shafts D, D' to the inner ends of which are connected in usual manner grinders shown as cup wheels D², D³. The foot of each stand is fitted over a stud C' rising from one of said carriages, and each of said stands has, as shown, curved slots C² to receive guiding bolts C³ carried by said carriages, so that the bearing stands C may be turned more or less about said stud C' to vary the angular position of the shafts D, D' with relation to each other, as may be desired, according to the particular shape of the article to be ground, the adjustment of the shafts by turning the stands placing the beveled or frusto-conical grinding faces d, d' of the cup-shaped grinding wheels at the proper distance apart, said faces, when in action, being substantially parallel one to the other at the grinding point, see Fig. 1.

Each carriage at its under side below the stud C' has a threaded boss E that is entered by the threaded part of a screw E' shown as sustained by the stationary base part, the screw having a hand wheel E³ by which it may be rotated whenever it is desired to adjust the carriage, bearing stand, and shaft longitudinally of the base frame to adapt the grinding faces of the grinding wheels to the thickness of the stock being ground or to compensate for wear of the grinders in use. Such adjustment of the wheels longitudinally of their axes does not change in any way the relation of the frusto-conical grinding faces, as will be obvious, and it will be clear that no matter how much the grinding faces wear away the surface ground will have a constant curvature. That is, the curvature of the surface of the grinding face which contacts with the work will have a constant radius. The wearing back of the frusto-conical face of the grinding wheel is compensated for by setting up the wheel longitudinally of its axis.

Each shaft D, D' has a like belt pulley D⁴ 1

that receives a belt by which to rotate each shaft at the desired speed. Below the space in line with the acting edges of the grinders, I have provided a work rest e^3 on which may rest the edge of the stock or blade which is to be ground simultaneously at its opposite sides, while being fed between the opposed acting edges d , d' of the grinders. This work rest is carried by a rod f screw threaded to receive the threads at the interior of the hub of a toothed nut e^4 shown in Fig. 4 as having beveled teeth that are engaged by the teeth of a beveled pinion e^5 on the short shaft e^6 in the base of the machine, said shaft having a hand wheel e^7 the rotation of which raises or lowers the work rest according to the requirements of the stock being ground.

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

1. In a grinding machine, two grinding wheels, rotary shafts carrying the same, bearings to sustain the longitudinal axes of said shafts in angular position one with relation to the other, means to adjust longitudinally said bearings and the shafts carried thereby, and separate means to vary the angularity of the shafts, the means for effecting longitudinal adjustment being op-

erative independently of the means to vary the angularity.

2. In a grinding machine, two rotatable grinders having their axes intersecting and having frusto-conical grinding faces, and means operative while the grinders are operating to move the grinders toward each other longitudinally of their axes to take up wear of the grinding faces, the latter grinding opposite sides of the work with a constant curvature irrespective of wear of the grinding faces.

3. In a grinding machine, two rotatable grinders having their axes intersecting and having frusto-conical grinding faces, means to vary the angularity of the axes of said grinders, and separate means operative while the grinders are operating to move them toward each other longitudinally of their axes, the grinding faces operating to grind opposite sides of the work with a constant curvature irrespective of wear of the said grinding faces.

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

CHETWOOD SMITH.

Witnesses:

GEO. W. GREGORY,
MARGARET A. DUNN.