(No Model.) 3 Sheets—Sheet 1.

R. W. HUNTON.

MACHINE FOR GRINDING EDGES OF FLAT BARS, PLATES, &c.

No. 557,680. Patented Apr. 7, 1896.

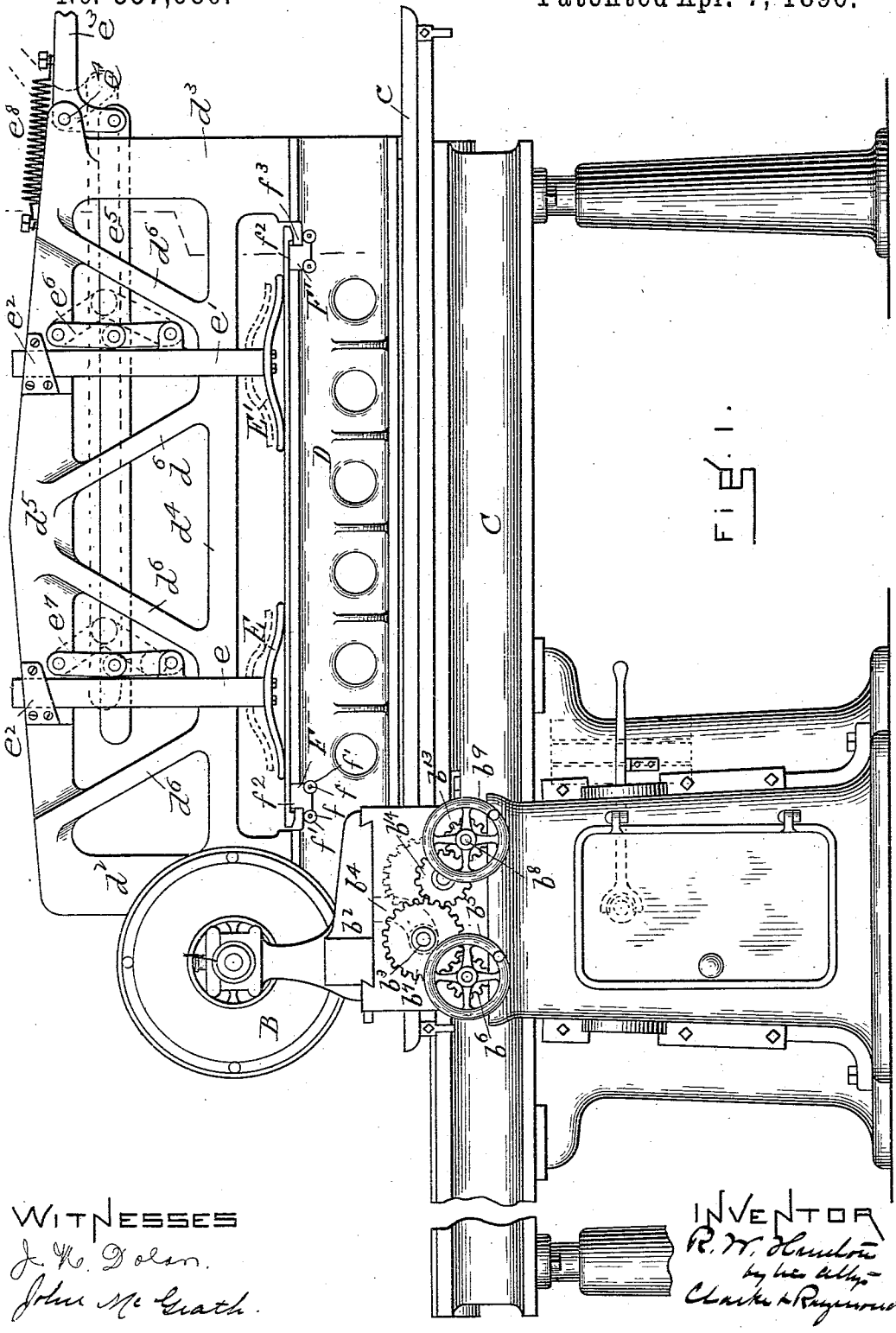

Fig. 1.

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(No Model.) 3 Sheets—Sheet 2.

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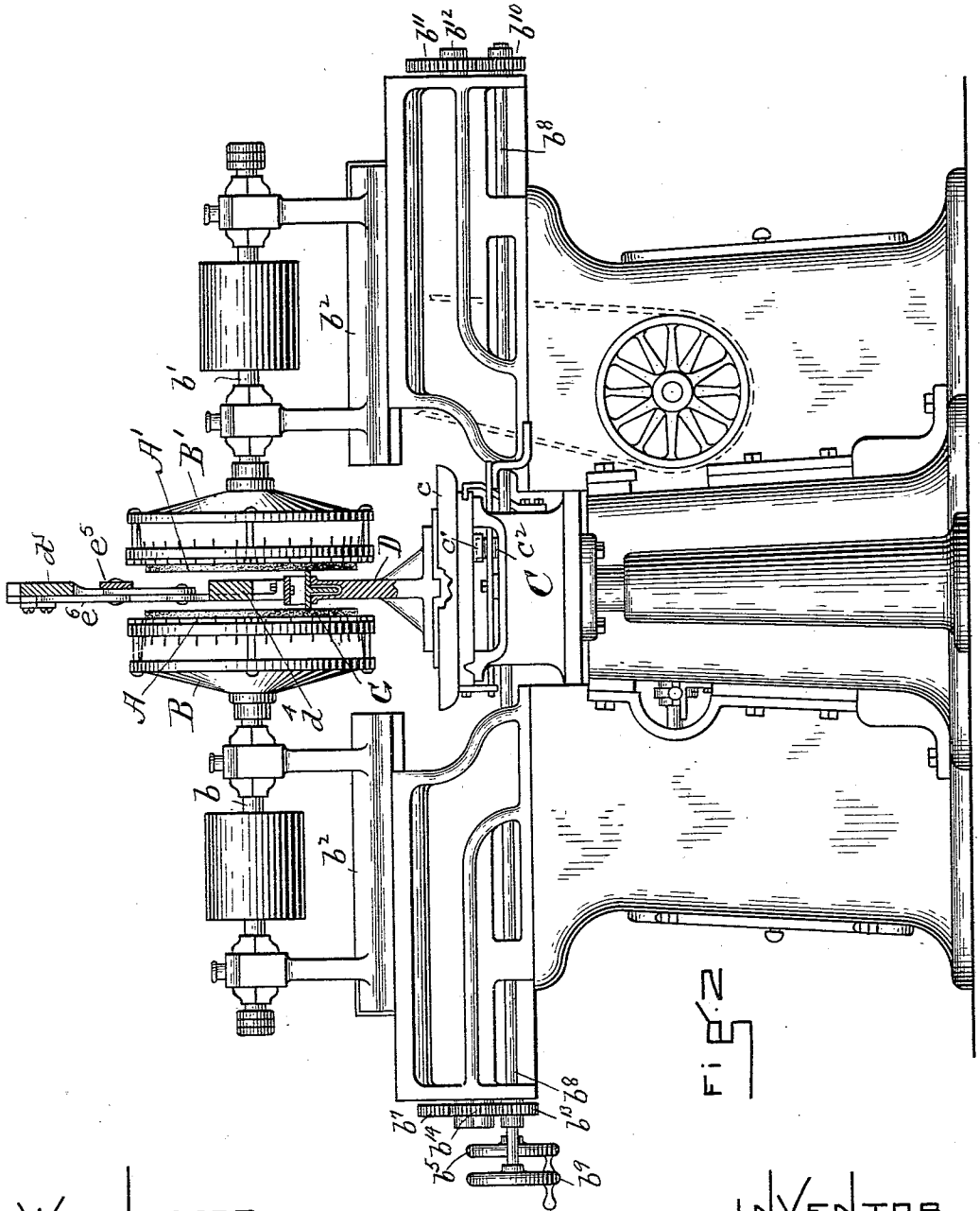

FIG. 2.

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(No Model.) 3 Sheets—Sheet 3.

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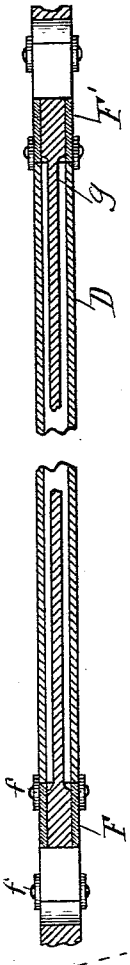
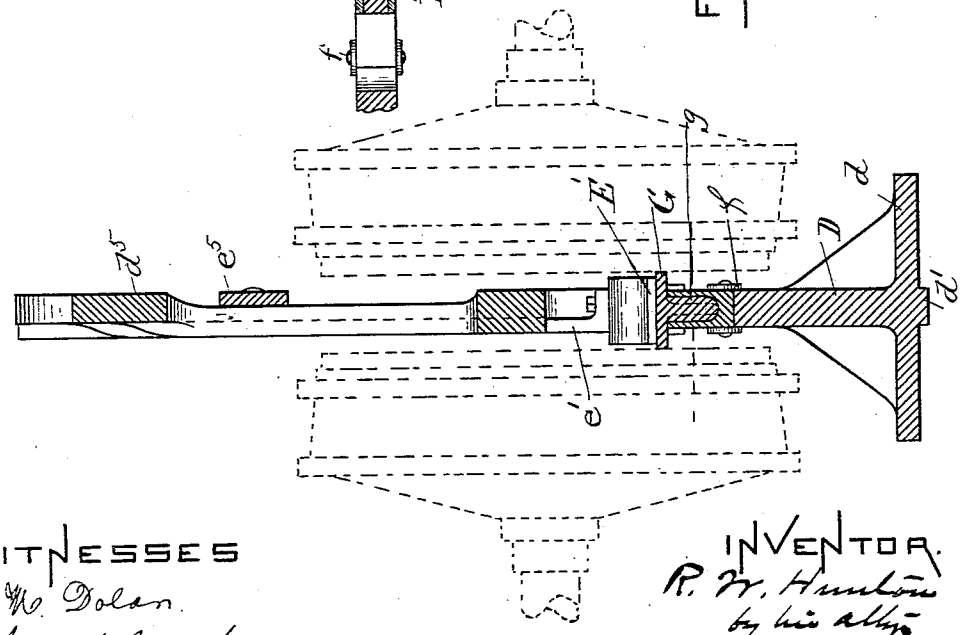


Fig. 4.

Fig. 5.



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UNITED STATES PATENT OFFICE.

ROBERT W. HUNTON, OF NEWTON, MASSACHUSETTS, ASSIGNOR TO THE PETTEE MACHINE WORKS, OF SAME PLACE.

MACHINE FOR GRINDING EDGES OF FLAT BARS, PLATES, &c.

SPECIFICATION forming part of Letters Patent No. 557,680, dated April 7, 1896.

Application filed August 1, 1894. Serial No. 519,185. (No model.)

To all whom it may concern:

Be it known that I, ROBERT W. HUNTON, a citizen of the United States, residing at Newton, (Upper Falls,) in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Machines for Grinding the Edges of Flat Bars, Plates, &c., of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The invention relates to a machine for grinding the edges of bars, plates, &c., and it is represented in the drawings as organized to simultaneously grind both edges, and as adapted to the grinding of the edges of the flats of rotary carding-engines; but I would here say that so far as the principal features of the invention are concerned it may be used for the grinding of one or both edges, preferably the latter, and of any form of bar or plate.

The invention comprises the grinding wheels or disks set opposite each other upon carriages, which provide them with horizontal adjustment toward and from each other, and a bed upon which is mounted a slide or carriage and a work-clamp of peculiar construction, both of which are adapted to be moved between the grinding-wheels in presenting the article to be ground to them.

The invention further relates to various details of construction and organization and especially to means for the simultaneous movement toward and from each other of both grinding-wheels, and to the construction of the flat plate or bar holding clamp, all of which will hereinafter be fully specified.

In the drawings, Figure 1 is a view in front elevation of a machine having the features of my invention. Fig. 2 is a view in end elevation thereof. Figs. 3 and 4 are detail views enlarged, representing especially the construction of the plate-holder and clamp and the relation which they bear to the grinding rolls or disks.

In the drawings, A A′ are the grinding rolls or disks. They are of the kind known as "face-grinders," and they are held by their holders B B′, respectively. (See Fig. 2.) They are arranged at the opposing ends of the shafts b b', each of which is supported upon a carriage b^2, and they are run by separate pulleys and belts. These slides are both adapted to be simultaneously adjusted toward and from each other and to be separately so adjusted by the following mechanism—namely, the slide b^2 by the screw-shaft b^3, working through a nut in the arm b^4 extending downward from the slide. (See Fig. 1.) This screw-shaft is turned by the hand-wheel b^5, the pinion b^6 on its shaft or spindle, and the gear b^7 from the outer end of the shaft b^3.

The other carriage is adjusted from the same side of the machine by the long shaft b^8, which extends the entire width of the machine (see Fig. 2) and has at its front end the hand-wheel b^9 and at its rear end the pinion b^{10}, which meshes into the gear b^{11} on a screw-shaft b^{12}, which engages a nut in an arm depending from said carriage. These hand-wheels and the connecting mechanism provide means by which each slide and grinder is independently adjustable. By means of the pinion b^{13} (see Fig. 1) and intermediate gear b^{14}, which meshes with the gear b^7 of the screw-shaft b^3, the two screw-shafts b^{12} b^3 are connected, so that the turning of either of the hand-wheels b^5 b^9 will cause the carriages and the grinding-disks to be simultaneously moved toward or from each other when desired.

The plate or flat holder and feeder comprise the following devices located upon the bed C of the machine, which extends lengthwise and between the two side sections which furnish the ways for the carriages b^2. Upon this bed C is the long platen or slide c. It is given a reciprocating movement by means of a rack c' and gear c^3, the driving-gear being reversed at the end of the feed movement of the platen in each direction in the way common to planing-machines. The platen supports a stand D, which is longer than the plate or flat to be ground, and extends lengthwise the platen, and has the broad base d to rest upon the platen and the interlocking downward projection d'. This stand is bolted to the platen, and each end d^2 d^3 is carried upward to form in connection with the longitudinal bars d^4 d^5 and braces d^6 a frame for supporting the holders or pressers E E′ and their operating devices.

Between the lower parts of the ends d^2 d^3 are the supports for the plate, flat, or article to be ground, and in the drawings these supports are represented at F F′ (see Figs. 1 and 4) and as consisting of steel holders clamped to the stand D by screws f and clamping-nuts f' or riveted thereto and having the surfaces f^2, upon which the flat at each end rests, and the recess f^3, which receives the rib. (See Fig. 3, where G represents the flat and g its rib contained in the recess f^3 of the holder.)

The flat or plate is held in position upon the stand or supports F F′ by means of the pressers E E′. These are preferably made of flat spring metal bowed upward at the center where attached to their operating arms or slides and bearing at their ends upon the upper surface of the flat or plate. They are bolted or otherwise attached to the lower ends of the arms or slides which are lettered e e', respectively. These slides at their upper ends extend through the guides e^2, and they are given a vertical movement by means of the lever e^3, pivoted at e^4 and operating a slide e^5, which is connected by the toggles e^6 e^7, respectively, with the slides e' e.

The toggles are pivoted at their centers to the slide e^5, at their upper ends to the frame, and at their lower ends to the presser-slides, and their pivot-points are so arranged that they can be moved slightly by or past their centers, so as to automatically lock the pressers upon the plate or flat in their lowest position.

In use the flat or plate is mounted upon the stand or supports and clamped thereto by the downward movement of the lever e^3, which moves the toggle-slide e^5, straightens the toggles, and forces the pressers E E′ downward upon the upper surface of the plate or flat, the spring-feet E E′ yielding to any inequality or variation in the thickness thereof and being automatically locked thereon by the movement of the central pivots of the toggles slightly beyond their vertical center. (See Fig. 1.)

To release the plate or flat from the stand or holder, the lever e^3 is moved upward, and its spring e^8 serves to hold it and the pressers in their elevated position.

In operation, the plate or flat having been secured to the holder and the grinding disks or rolls having been adjusted, the holder is caused to travel back and forth between the grinders, and the grinders are set up or adjusted from time to time, as may be required.

I would say that the holder may be used in connection with a single grinding-roll; but as a rule I prefer to use it in connection with both.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a machine of the character specified, the combination of the edge-grinders A A′, the traveling stand D adapted to be fed between the grinders having a narrow bed for supporting a plate, bar or flat and one or more pressers carried by said stand movable toward and from its bed and adapted to clamp the said plate, bar or flat thereon by pressure on its surface in a direction parallel to its longest dimension, as and for the purposes described.

2. The combination of the grinders A A′, the traveling stand D adapted to be fed between the rolls as specified and having a narrow bed for the support of the article to be ground and a narrow frame for carrying one or more pressers, with said presser or pressers E E′, a toggle for operating each presser and means for moving the toggle past its center to clamp and lock the presser upon the article to be ground, as and for the purposes described.

3. In a machine of the character specified, the stand D having a narrow surface or bed for the support of the article, the edge or edges of which are to be ground, a narrow upwardly-extending support or frame for supporting the pressers and their actuating mechanism, the said pressers having yielding feet or sections E E′, their operating-toggle connected with the framework and with the slides carrying the pressers and a toggle-operating bar or link and lever, as and for the purposes described.

4. In a machine of the character specified, the combination of the stand with its frame and the pressers E, E′, having the arms e, e', the guides e^2, the toggle-links e^6, e^7, the slide e^5 and the lever e^3 pivoted at e^4, as and for the purposes described.

5. The combination in a machine of the character specified, of the grinders A A′, their slides, the slide-adjusting devices, each actuated by a separate hand-wheel, and intermediate devices whereby, by the movement of either hand-wheel, the two grinders are simultaneously moved toward or from each other, as and for the purposes described.

6. The combination of the slide c with the flat-holders F fastened to the slide by screws and clamping-nuts as specified, and having recesses for receiving the rib of the flat, with the clamps E E′, as and for the purposes described.

7. In a machine of the character specified the combination of the reciprocating slide C, the stand D having a frame as described, the pressers E, E′, carried by the frame, the grinders A, A′, and means for simultaneously adjusting them, as and for the purposes described.

8. In a machine of the character specified, the combination of the grinders A, A′, the holders B, B′, the slides b^2, the shafts b^3, b^8, the pinions b^6, b^{13}, the gears b^7, b^{14}, and the hand-wheels b^5, b^9, as and for the purposes described.

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Witnesses:
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