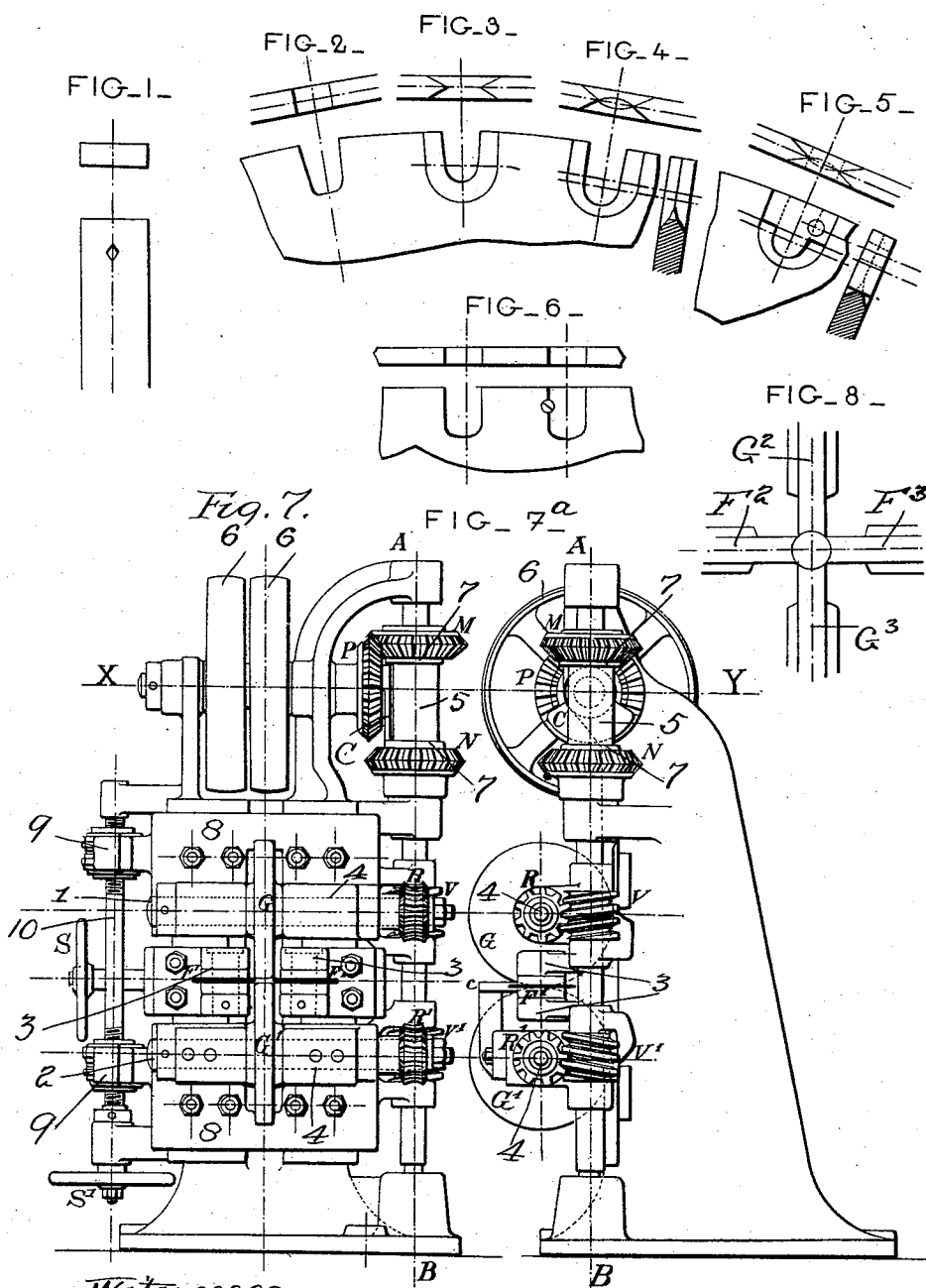


(No Model.)

F. J. G. FROMHOLT.
MACHINE FOR SETTING DIAMONDS IN SAWS.

No. 537,027.

Patented Apr. 9, 1895.



Witnesses,
Georg Laurent
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UNITED STATES PATENT OFFICE.

FÉLIX JULES GRÉGOIRE FROMHOLT, OF PARIS, FRANCE.

MACHINE FOR SETTING DIAMONDS IN SAWS.

SPECIFICATION forming part of Letters Patent No. 537,027, dated April 9, 1895.

Application filed January 15, 1894. Serial No. 496,951. (No model.) Patented in France November 25, 1891, No. 217,651.

To all whom it may concern.

Be it known that I, FÉLIX JULES GRÉGOIRE FROMHOLT, a citizen of the French Republic, residing in Paris, France, have invented certain new and useful Improvements in Machines for Setting Diamonds, of which the following is a specification.

The invention has been patented in France November 25, 1891, No. 217,651.

My invention relates to the mechanical setting of diamonds or other hard substances and it contemplates the adjustment and retention of a bar of metal in position, with the diamond seated in a recess therein, the metal in the vicinity of the diamond being in a heated condition and while in such position the metal of the bar is acted upon by a series of disks which successively feed the bar in the direction of and hold it against other disks which crowd the metal around the diamond, the first mentioned disk thereafter effecting the withdrawal of the bar.

My invention relates particularly to the machine for rolling or crowding the metal around the diamond and consists in the combination of elements hereinafter set forth.

In the drawings Figure 1, is a view of the steel piece or tooth piece having a cavity to receive the diamond. Figs. 2, 3, 4, 5 and 6 are detail views of the saw or grinding disk with the recesses formed therein to receive the diamond tooth. Figs. 7 and 7^a are views of the machine. Fig. 8, shows an arrangement of rollers for operating upon a round tooth blank instead of a flat piece.

The diamond is first rigidly inserted in a bar of steel Fig. 1, and this piece is heated to a bright red and then subjected to the apparatus of Figs. 7 and 7^a. In suitable upper and lower bearings 1 2 of the frame are journaled the upper and lower shafts 4 carrying the disks G G' arranged one above the other in the same vertical plane with their peripheries adjacent. These peripheries are of such width that these will when the metal piece of Fig. 1 with the diamond, is held in proper position act upon the same with considerable friction and serve to displace a certain amount thereof. Projecting from the front of the frame at either side of the disks G G' and adjacent to the bight or pinch thereof are two

small bearings 3 in which are loosely mounted vertical shafts with horizontal disks F F'.

The ends of the shafts 4 have worm pinions R R' engaging worms V V' rigid on a vertical shaft A journaled in the frame. On the upper part of the shaft is a sliding sleeve 5 carrying bevel pinions M N in reversed position and adapted to alternately engage a pinion P on the horizontal shaft X journaled in the frames and having band pulleys 6 by which the power is derived. The sleeve with its pinions is raised and lowered to make said pinions M N engage the pinion P alternately by means of a cam C on the end of the shaft X and arranged to bear on the shoulders or collars 7 of the sleeve to move the same vertically and this alternate engagement of the pinions effects a rotary reciprocation of the shaft A and through the described connections to the pressure rollers G G' serving to reverse them and withdraw the tooth blank after it has been advanced and the hot metal crowded up around the diamond. The bearings 1 2 for the shafts 4 are on vertically adjustable plates or blocks 8 and these blocks have bosses 9 on one side engaging a screw threaded rod 10 operated by a hand wheel S' and through this arrangement the distance between the rollers G G' may be regulated to suit different thicknesses of tooth blanks. A like arrangement but horizontally disposed is provided for the bearings of the shafts of the disks F F', the hand wheel being shown at S.

The operation is as follows: The diamond is firmly seated in the blank or bar of steel and the same is so held that the disks F F' will clutch the edges of the same and guide it between the vertical disks G G' which exert a pressure on the bar serving to move it. In this position the diamond will be unimpaired while the portions of the disks G G' contacting with the metal will crowd it around the diamond and serve to hold the latter securely. The edges of the disks F F' bear as stated against the edges of the tooth blanks as they pass between the disks G G' and these edges of the disk are V shaped so that V shaped grooves will be formed in the edges of the blanks so that the diamond tooth when completed may be inserted in a recess in the saw which has V shaped edges to correspond.

This pressure of the disks F F' also serves to crowd the metal toward the center of the plate and thus about the diamond. When this crowding action has been completed the cam
 5 C will now operate through the shifting sleeve and pinions to reverse the rotation of the several disks and they will act against the bar to retract the same and remove it from operative contact with the disks G G'. It will be
 10 found that the diamond is now not only firmly clamped by the crowded metal but that the cooling of the metal will serve to effect a contraction around the diamond thus more securely holding the same. After this operation the diamond may be suitably flushed—
 15 that is to say, the metal around the base of the projecting portion of the diamond can be dressed or filed down to secure a finished appearance. After the bar has cooled a section
 20 thereof carrying the diamond can be severed so as to form the stock for the diamond and be adapted for service as a removable tooth. Before however it will be suitable for the latter purpose it will be necessary to dress the
 25 tooth receiving recess in the saw blade with a view of securing a firm bearing. After the

tooth plate with the diamond is completed it is fitted to the recesses shown in Figs. 2, 3, 4, 5 and 6 formed in the sawing disk or stone. Fig. 8 shows an arrangement of disks G² G³ F² F³ adapted to round blanks. 30

I claim—

In combination in a diamond setting machine the disks G G' arranged to crowd the metal about the diamond, the guide disks F 35 F' for guiding the metal blank between the disks G G' the shaft A having geared connections for operating the disks G G', the pinion P with means for operating it and the means for transmitting the movement from the pinion P to the shaft A and for reversing said movement automatically consisting of the 40 sliding sleeve having the pinions M N and the cam C for sliding said sleeve to make the pinions contact alternately with the pinion P 45 substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

FÉLIX JULES GRÉGOIRE FROMHOLT.

Witnesses:

ROBT. M. HOOPER,
 GEORGES LAMENT.