(No Model.) 2 Sheets—Sheet 1.

M. COLLINS.

MACHINE FOR MAKING CAR COUPLING PINS.

No. 330,207. Patented Nov. 10, 1885.

Fig. 1.

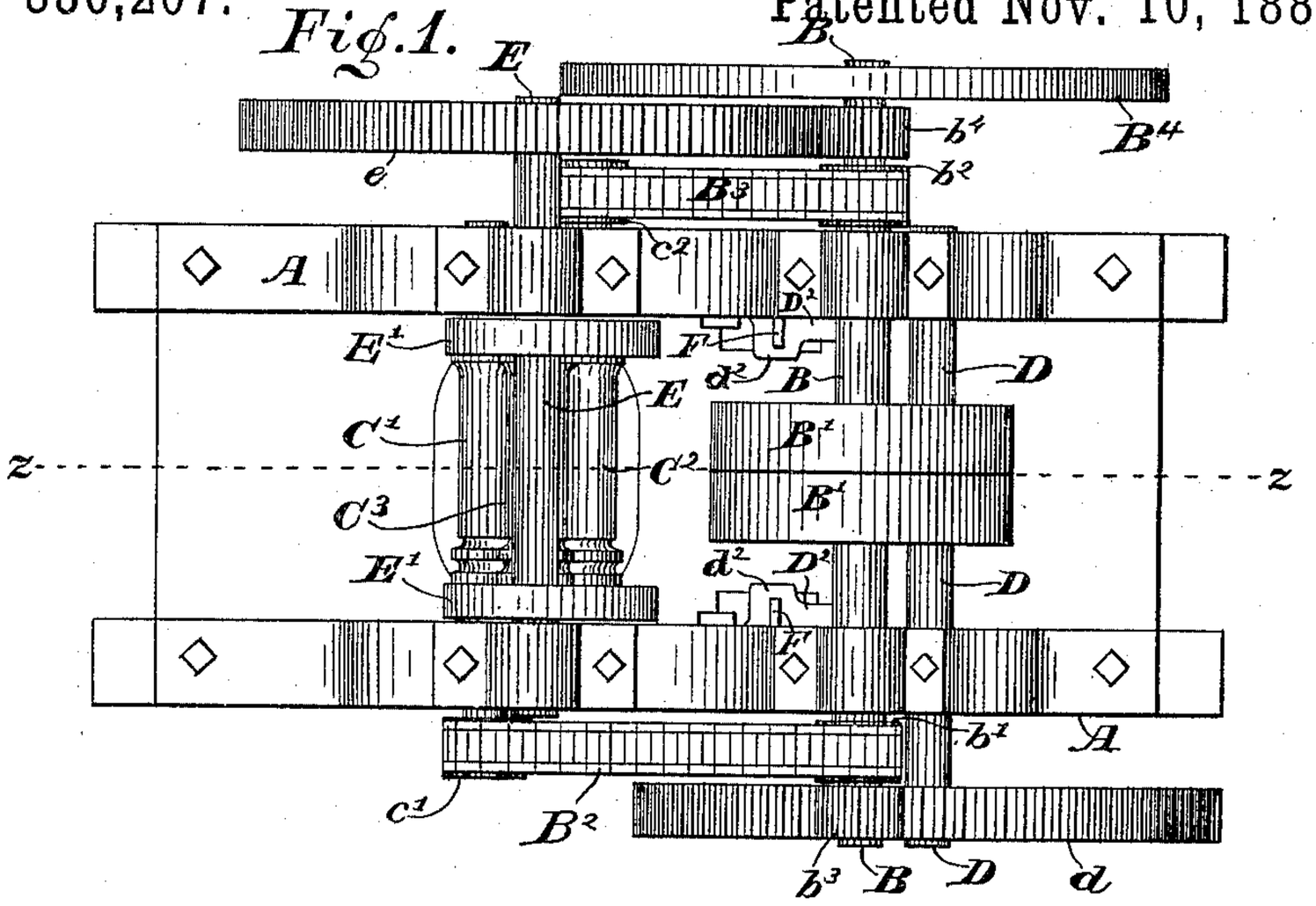
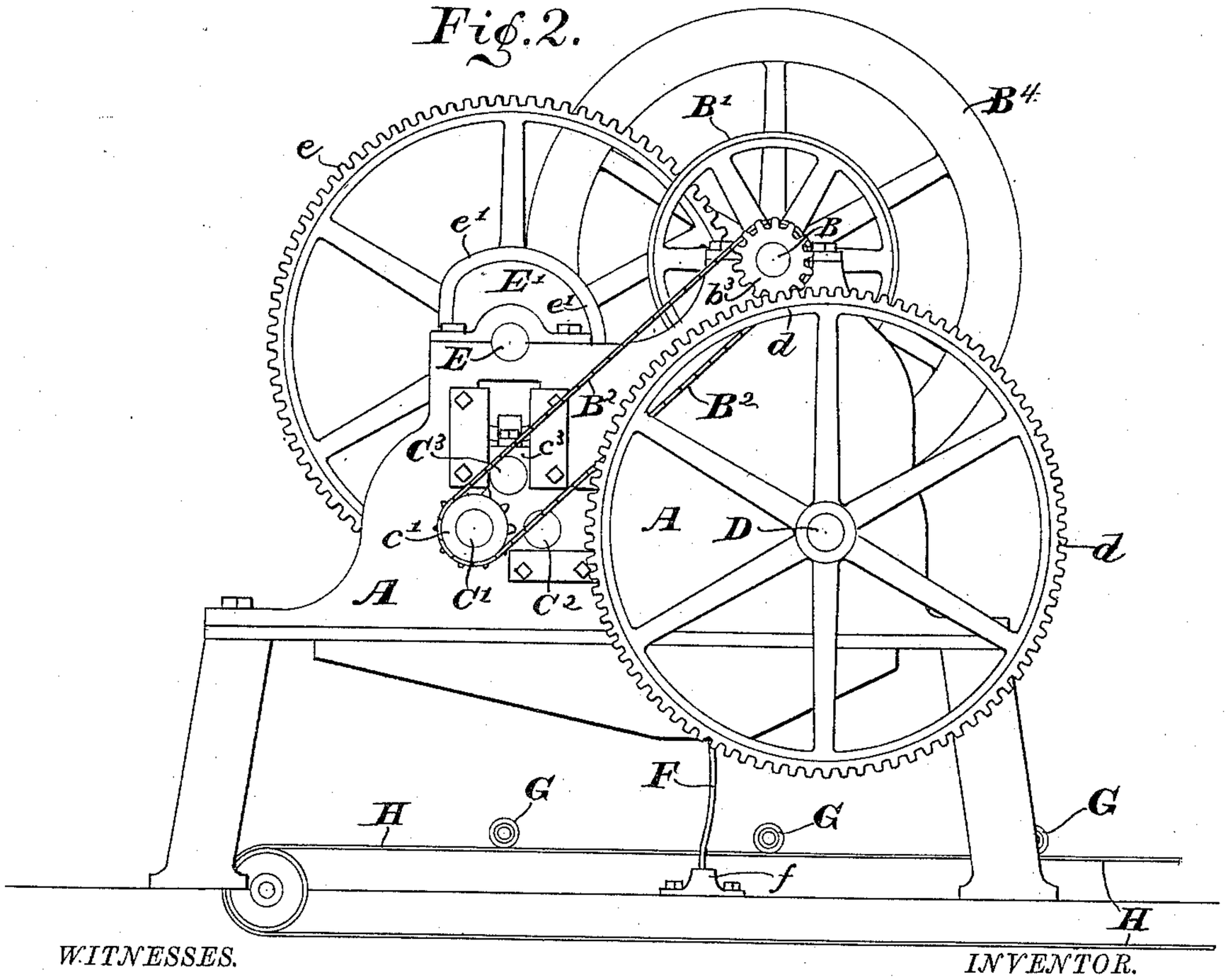


Fig. 2.



WITNESSES.

Chas. S. Leonard.

E. W. Bradford.

INVENTOR.

Major Collins,

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ATTORNEY.

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Fig. 3.

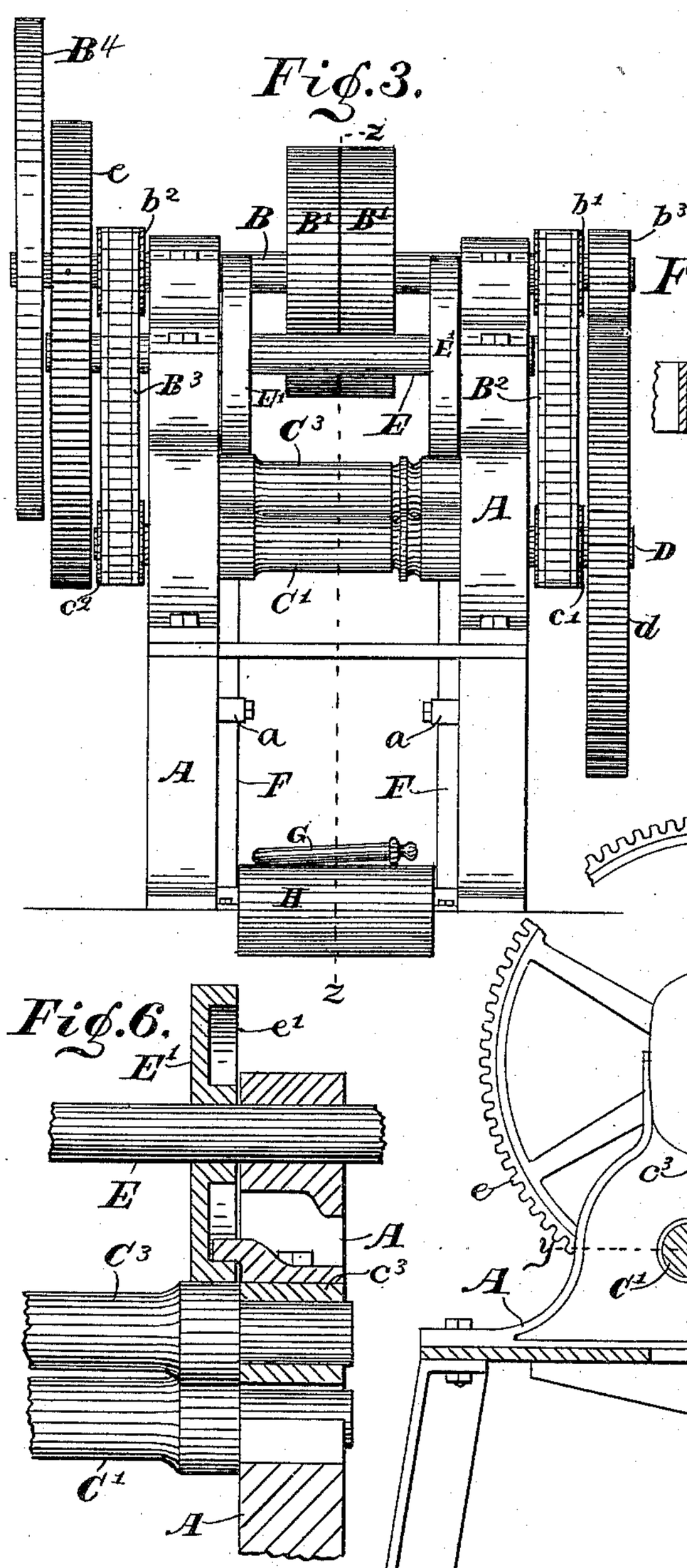


Fig. 7.

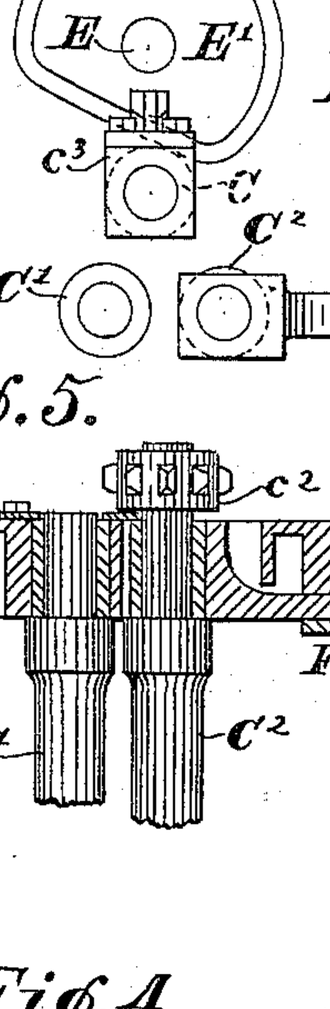
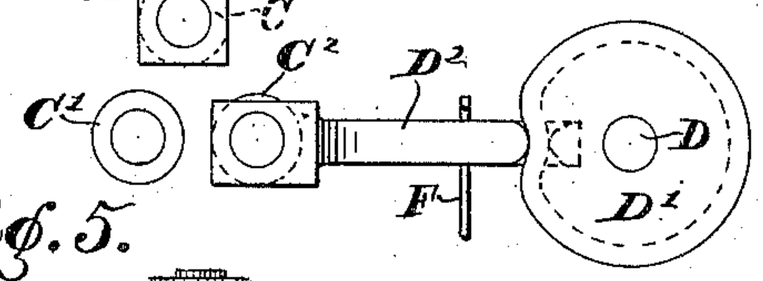


Fig. 5.



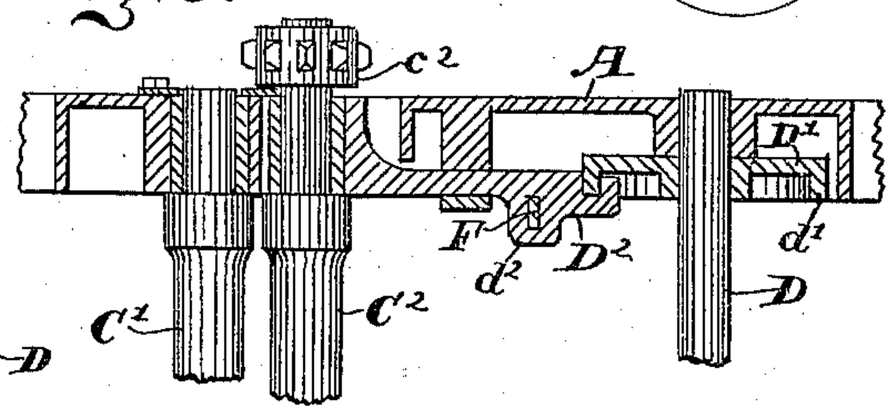


Fig. 4.

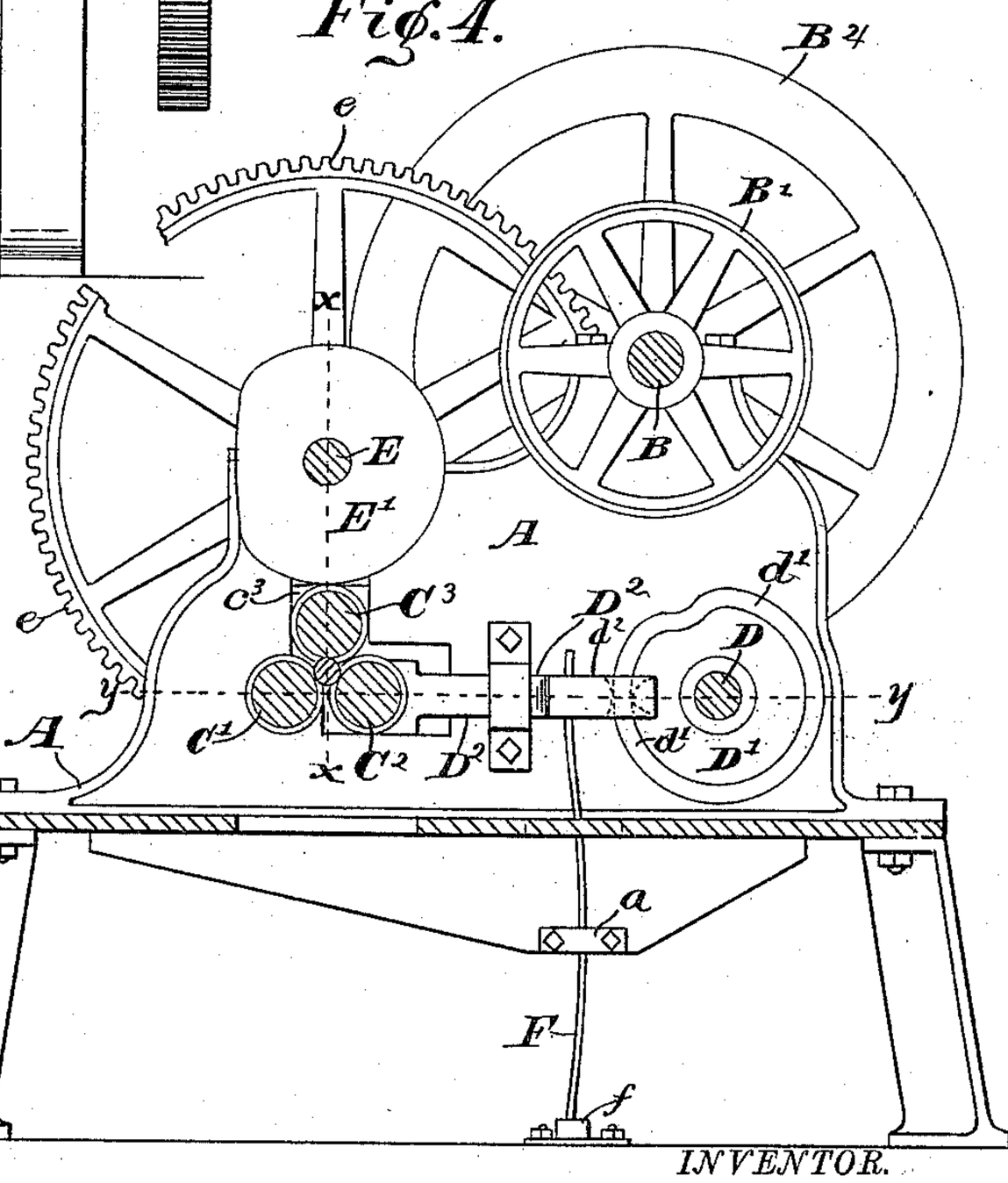


Fig. 6.

WITNESSES.

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UNITED STATES PATENT OFFICE.

MAJOR COLLINS, OF BRAZIL, ASSIGNOR OF ONE-HALF TO DELOSS W. MINSHALL, OF TERRE HAUTE, INDIANA.

MACHINE FOR MAKING CAR-COUPLING PINS.

SPECIFICATION forming part of Letters Patent No. 330,207, dated November 10, 1885.

Application filed December 27, 1883. Serial No. 115,747. (No model.)

To all whom it may concern:

Be it known that I, MAJOR COLLINS, of the city of Brazil, county of Clay, and State of Indiana, have invented certain new and useful Improvements in Machines for Making Car-Coupling Pins, of which the following is a specification.

The object of my said invention is to produce a machine whereby coupling-pins can be formed complete from blanks by rolling without further attention on the part of the operator than to see that the blanks are properly supplied thereto. This object is accomplished by combining three rolls with appropriate grooves and mechanism which will automatically part the rolls as a pin is finished, as will be hereinafter more particularly described.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar parts, Figure 1 is a top or plan view of my improved machine; Fig. 2, a side elevation thereof; Fig. 3, an end elevation, as seen from the left of Figs. 1 and 2; Fig. 4, a longitudinal section looking toward the fly-wheel from the dotted line *z z;* Fig. 5, a horizontal section on the dotted line *y y;* Fig. 6, a vertical section on the dotted line *x x;* and Fig. 7, a view similar to a portion of Fig. 4, but showing the rolls drawn apart by the cams in the position they occupy after a finished pin has been discharged, and just before they are ready to receive another blank.

In said drawings, the portions marked A represent the frame-work of the machine; B, the main or driving shaft; C′ C² C³, the operating-rolls; D E, shafts on which are cams which operate to move certain of said rolls to or from each other; F, springs, which aid or supplement the cams on the shaft D; G, the finished pins, and H a carrier for conveying said pins away from the machine. The frame A is suitably constructed to support the mechanism, and contains suitable bearings therefor. The main shaft B carries the belt-pulleys B′, (preferably both tight and loose,) by which the machine is driven, a fly-wheel, B⁴, the chain-wheels *b′ b²*, by which through chain-belts the rolls C′ C² are driven, and gear-wheels *b³ b⁴*, by which through other gear-wheels the cam-shafts D E are driven. The several rolls, C′ C² C³, are arranged so that when in operation their axes are at the points of a substantially equilateral triangle. One of these, C′, should be fixed in position, but the others, C² and C³, are arranged to be movable, in order to admit the blank and discharge the finished pin, as will be more particularly described in connection with the mechanism whereby these movements are effected. The roll C′ is driven by a chain-belt, B², which runs from the sprocket-wheel *b′* on the shaft B to the similar sprocket-wheel, *c′*, on the roll-shaft, and the roll C² is similarly driven by the chain-belt B³.

The shaft D is driven from the shaft B by the spur-gears *b³* and *d* at a speed much less than that of the said shaft B, preferably about one-seventh as fast. It has mounted thereon the cams D′, which are connected by means of the bars D² with the shaft of the roll C², said roll being journaled in bearings in said bars. The revolutions of this shaft are so timed that when the pin in process of manufacture is completed the depression in the cams on said shaft will come around, so as to draw the bars D² or permit them to be forced toward said shaft, parting the roll C² from the roll C′, and thus permitting the finished pin to drop out from said rolls and be removed from the machine. These cams are constructed in the form of disks, having annular flanges *d′* on one side, and the bars D² have notches which fit over said flanges, and thus are adapted to be moved back and forth as said cams revolve, and the depressions in said annular flanges pass through said notches.

The shaft E is driven in much the same manner as is the shaft D from the main shaft B by the spur-gears *b⁴* and *e*. It has mounted thereon the cams E′, having annular flanges *e′*, which engage with notches in the sliding bearings *c³*, in which the roll C³ is journaled. These cams are flat upon one side, and the remaining portion is preferably struck on a true circle, the center of which is a little to one side of the center of the shaft, and the roll is thus forced down slowly during the operation of the machine from the time of the commencement of the operation of the rolls on the pin until it is completed. When the flat side of the flange is in engagement with the bearings

c^3, the roll C^3 is lifted entirely away from the others, (see Fig. 7,) and the introduction of another blank permitted. It will be noticed that the flat sides of the cams E′ are much longer than the depressions in the sides of the cams D′, and thus while the latter simply draw back the roll C^2 to permit the finished pin to drop through and then return said roll immediately to position, the former hold the roll C^3 away from the other rolls long enough after the roll C^2 is returned to position to permit a new blank to be introduced into the machine. After the blank is in position between the rolls these cams E′, by reason of the gradual increase of radius, force the roll down farther and farther, thus subjecting the pin to additional pressure at each revolution, and thus compressing and solidifying the iron and producing a pin that, when finished, is of very close texture, and consequently very hard and durable, the natural size being reduced usually about one-eighth of an inch during the process of rolling, or from one and one-half to about one and three-eighths inch in diameter. The advantage of this will be readily understood.

The rolls, as will be observed, are grooved to produce the proper form of head and to round off the point, and thus produce a superior and completely-finished pin from plain blanks by a single rolling. As before described, the rolls are driven considerably faster than the cams and the pin revolves several times at each revolution of the rolls, and therefore a single passage through the machine is sufficient. As the machine can be run at a high rate of speed the pins can be produced very rapidly.

The springs F may be employed either as aids to the cams in withdrawing the roll C^2 or may be made to serve that purpose alone, the cams in that case being simply used to push the rolls back into position and hold them there. In the latter case the notches in the bars D^2 would be dispensed with and the end of said bars made to bear against the periphery of the cams simply. These springs are mounted in a suitable base, *f*, and, passing through bearings *a* on the frame-work, engage with the said bars D^2 by entering suitable orifices in projections d^2 thereon. I however prefer to employ them as aids, as shown, they operating to prevent any lost motion in the operation of the cams, and thereby render said operation more prompt and efficient.

The pins G are not substantially different when finished from other well-made pins, except that they are harder and consequently more durable than those of ordinary manufacture.

The carrier H is arranged below the machine to receive the finished pins as they drop therefrom and carry them away to the place where it is desired that they shall be delivered.

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

1. In a machine for rolling pins, the combination, with the frame-work, of a set of rolls arranged substantially parallel to each other in said frame-work, one of which rolls is fixedly mounted, another of which is adapted to be vertically adjusted, and another of which is adapted to be adjusted laterally, a cam-shaft mounted in the top of the frame and having cams thereon which engage with notches in the bearings of said vertically-adjustable roll, a cam-shaft mounted at one end of said frame and having cams thereon which engage with notches in the bearings of said laterally-adjustable roll, and means for driving said cam-shafts, whereby said rolls are automatically adjusted when in operation, substantially as set forth.

2. In a machine for rolling pins, the combination of the frame-work, a set of rolls, C′ C^2 C^3, a shaft, D, cams D′ thereon, connecting-bars D^2, and means for driving the machine, one of said rolls, C^2, being journaled in bearings in the end of said bars D^2, and said bars D^2 being adapted to be operated by said cams D′ on the shaft D, substantially as described, and for the purposes specified.

3. The combination, in a machine for rolling pins, of the driving-shaft B, the rolls C′ C^2 C^3, the shaft D, mounted in the frame A and driven from the shaft B, and the cams D′, mounted on said shaft D, which are connected with the shaft of the roll C^2 by means of the bars D^2, said bars D^2 having bearings in which said roll C^2 is journaled, whereby said roll is adapted to be moved toward and from the other rolls at each revolution of said cams and the pin allowed to drop from between said rolls upon the carrier beneath, substantially as set forth.

4. The combination, in a machine for rolling pins, of the frame-work, the rolls C′ C^2 C^3, the shaft E, having cams E′ mounted thereon, said cams E′ being provided with annular flanges *e*′, which engage with sliding bearings c^3, in which the roll C^3 is mounted, and said sliding bearings c^3, whereby said roll C^3 is drawn up from the other rolls at each revolution of the cams E′ and a pin-blank allowed to be introduced between the rolls, substantially as set forth.

5. In a machine for rolling pins, the combination of the roll C′, the shaft E, having cams E′ mounted thereon, and provided with annular flanges *e*′, which engage with the sliding bearings c^3, in which said roll C^3 is journaled, one side of said cams being formed flat and the remaining portion being a circle, the center of which is to one side of the center of the shaft, and appropriate mechanism for driving the machine, substantially as described, and for the purposes specified.

6. The combination of the roll C^3, mounted in vertically-adjustable bearings, the shaft E, and cams E′ mounted thereon, each of said cams having a rim, *e*′, which engages with a notch in the corresponding adjustable bearing, said cams being also formed with a gradually-increasing radius, whereby after they

have raised said roll they force it down gradually, substantially as described, and for the purposes specified.

7. The combination, in a machine for rolling pins, with the roll C^2, journaled in bearings in one end of the bars D^2, of the shaft D, having cams D′ mounted thereon which engage with the other end of the bars D^2, and the springs F, which engage with the bars D^2, and are adapted to force them against the cams D′, substantially as described, and for the purposes specified.

8. The combination, in a machine for rolling pins, with the roll C^2, journaled in bearings in one end of the bars D^2, of the shaft D, having cams D′ mounted thereon, said cams being provided with annular flanges d' on one side which fit into notches in the other end of said bars D^2, whereby the roll C^2 is adapted to be operated back and forth at each revolution of the cams, substantially as described, and for the purposes specified.

9. In a machine for rolling pins, the combination of the frame A, driving-shaft B, carrying the belt-pulleys B′, by which the machine is driven, and the chain-wheels b' b^2, by which through chain-belts the rolls C′ and C^2 are driven, the rolls C′ C^2 C^3, the shaft D, carrying the cams D′, which engage with the bars D^2, in which the roll C^2 is journaled, and the shaft E, carrying cams E′, which engage with the sliding bearings e^3, in which the roll C^3 is journaled, with appropriate gear for connecting said shafts with the main or driving shaft, substantially as set forth.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 22d day of December, A. D. 1883.

MAJOR COLLINS. [L. S.]

In presence of—
C. BRADFORD,
E. W. BRADFORD.