

No. 744,640.

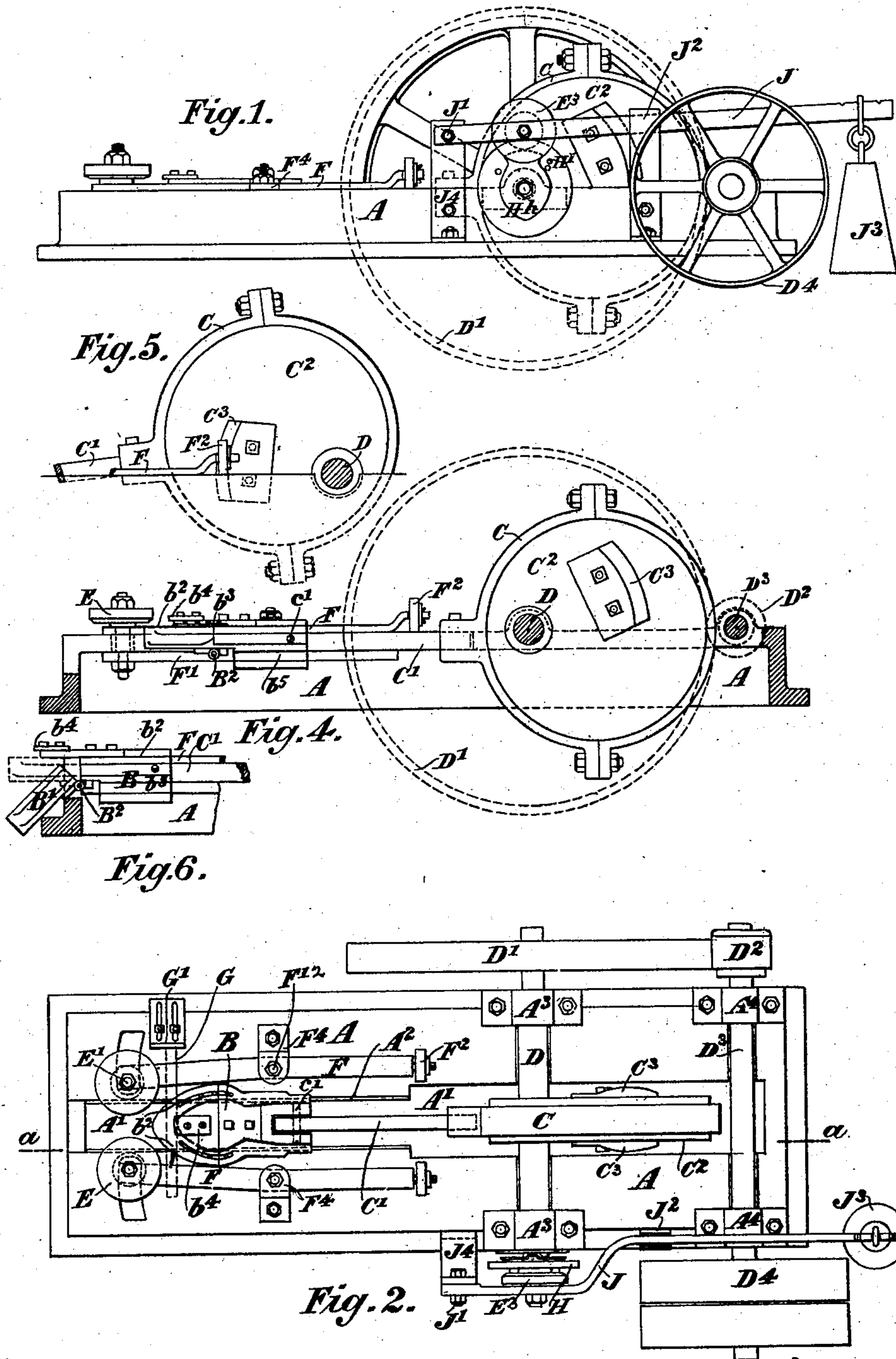
PATENTED NOV. 17, 1903.

W. STELLNER.
MACHINE FOR MAKING HORSESHOES.

APPLICATION FILED OCT. 9, 1901.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses

Geo. C. Truch.
Emily R. Peck

Inventor
Wm. Stellner.

per Hubert E. Peck
att'y

No. 744,640.

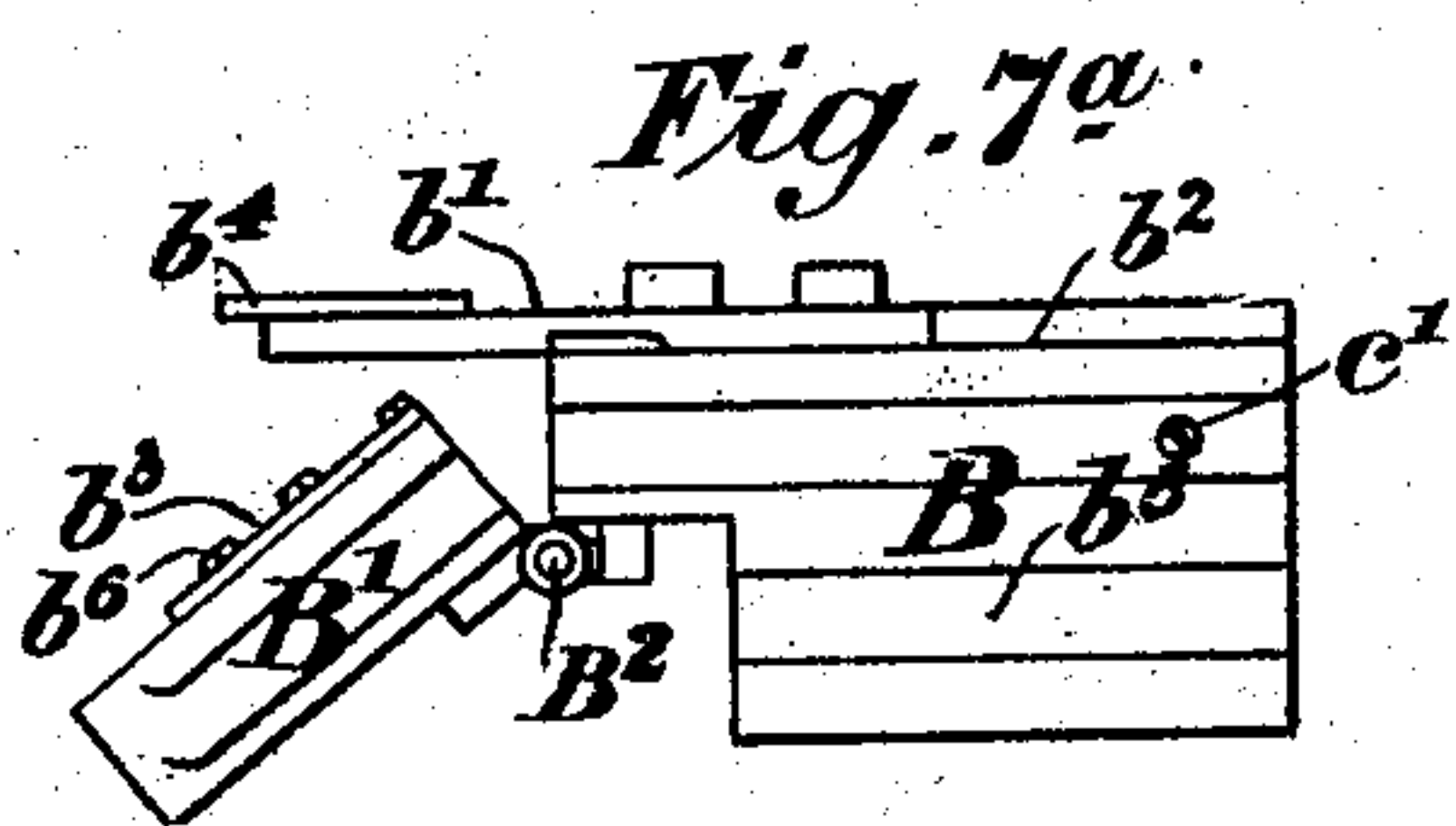
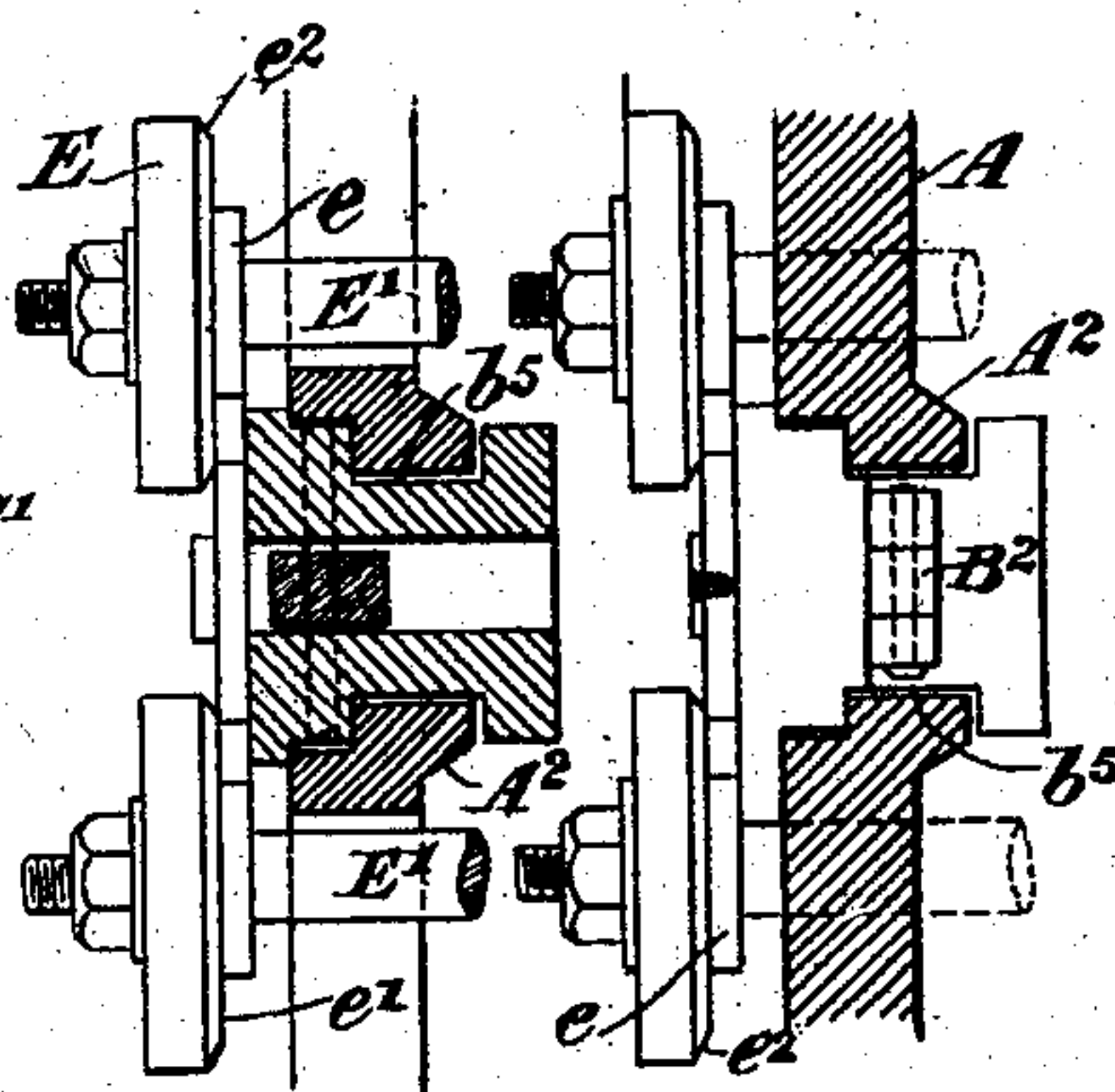
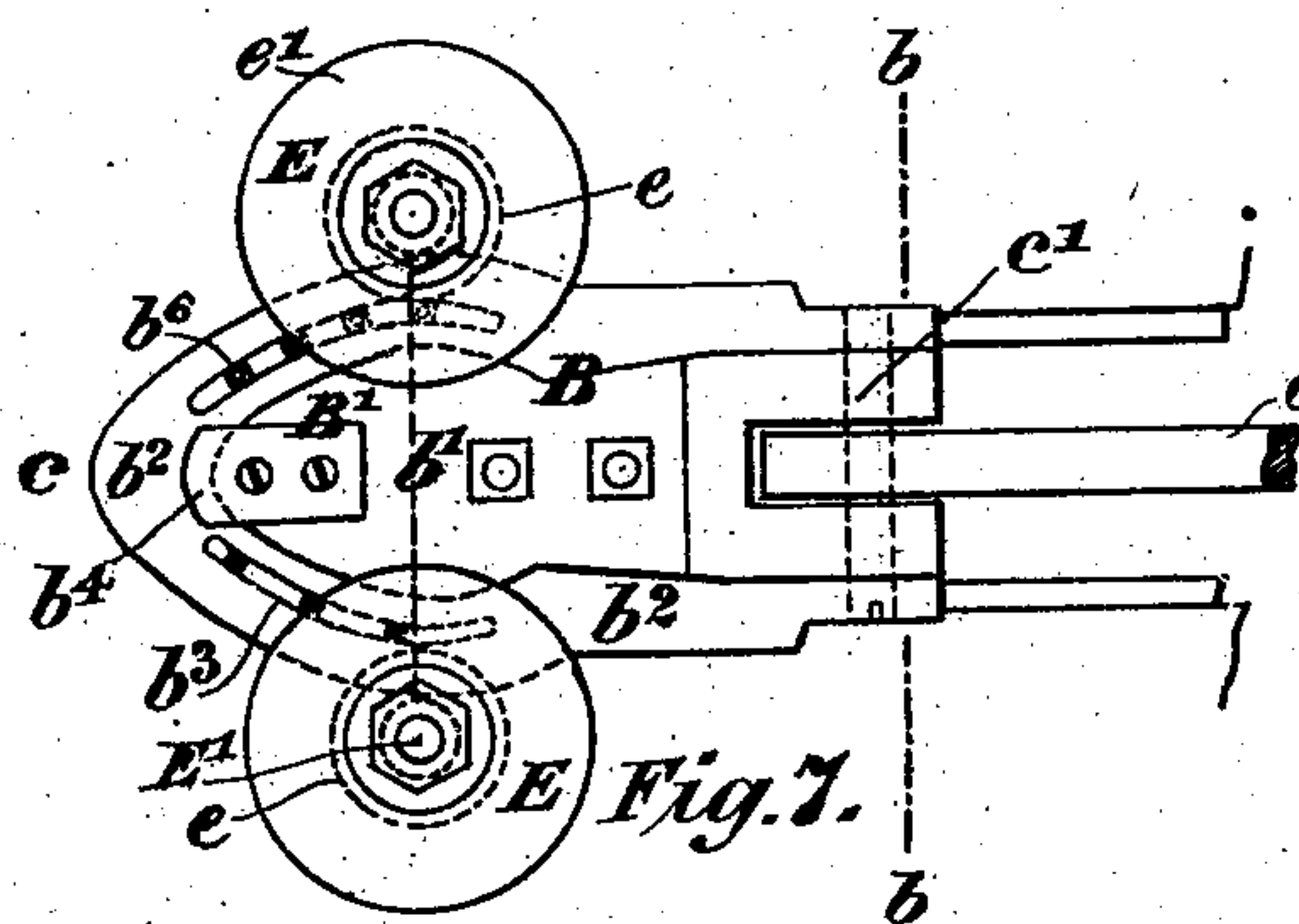
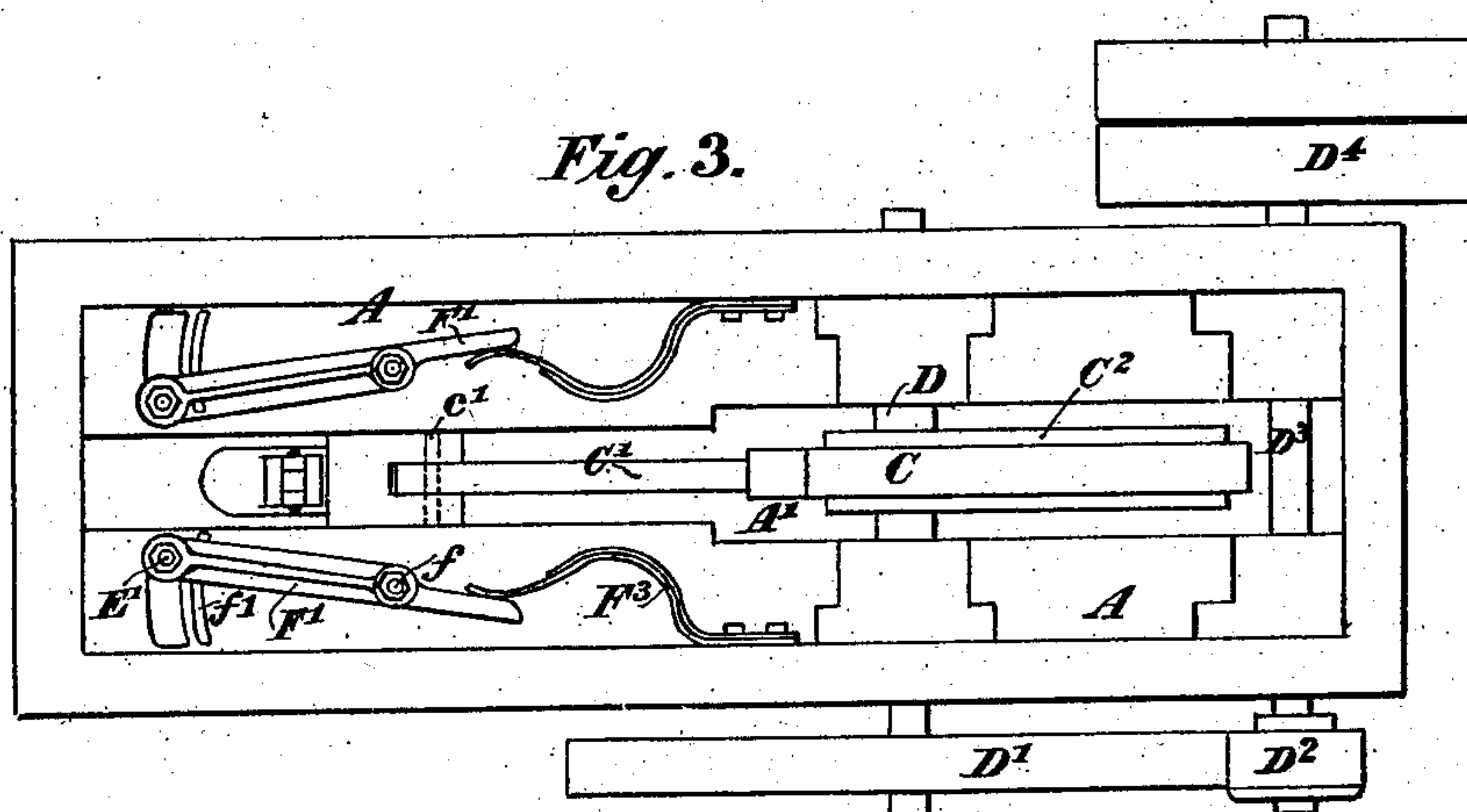
PATENTED NOV. 17, 1903.

W. STELLNER.
MACHINE FOR MAKING HORSESHOES.

APPLICATION FILED OCT. 9, 1901.

NO MODEL.

2 SHEETS—SHEET 2.



Witnesses.

Geo. C. Frech,
Emily R. Peck

Inventor
Wm. Stellner.

per Hubert E. Peck
atty

UNITED STATES PATENT OFFICE.

WILLIAM STELLNER, OF CARLTON, VICTORIA, AUSTRALIA, ASSIGNOR TO
SAMUEL GEORGE DICKSON, OF MELBOURNE, VICTORIA, AUSTRALIA.

MACHINE FOR MAKING HORSESHOES.

SPECIFICATION forming part of Letters Patent No. 744,640, dated November 17, 1903.

Application filed October 9, 1901. Serial No. 78,106. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM STELLNER, engineer, a subject of the King of Great Britain and Ireland, residing at No. 116 Canning street, Carlton, in the British State of Victoria, Commonwealth of Australia, have invented a new and useful Improved Machine for Use in the Manufacture of Horseshoes and the Like, of which the following is a specification.

This invention consists of an improved machine which has been designed mainly for use in the manufacture of horseshoes. In it a heated bar or rod of iron, steel, or other metal of the proper length and sectional area is bent to the requisite shape and section about a sliding die or former by flanged compression-rolls; also, the curved creases and nail-head countersinks may be formed in the under face of horseshoes. Said sliding die works in a suitable guide in a bed-plate and has a reciprocating motion imparted to it by an eccentric, while the flanged compression-rolls are acted on by spring and cam operated levers, the cams being on the eccentric and the horseshoe when finished being delivered over the end of bed-plate by reason of the peculiar hinged formation of the die upon its reaching the end of its stroke. The machine can be also fitted, if desired, with a pair of rotary dies, which may either be used to prepare "blanks" for the above-mentioned sliding die and compression-rolls when they are to be used only for forming the creases in the under face of horseshoe or the rotary dies may be used for making horseshoes of a smaller size, a similar flange compression-roll being employed in both instances. In this machine both sets of dies are worked simultaneously.

The invention will now be described, aided by a reference to the accompanying sheets of drawings, in which similar letters are used throughout to denote corresponding parts.

Figure 1 is a side elevation of the machine; Fig. 2, a top plan; and Fig. 3 an under side plan, of same, while Fig. 4 is a longitudinal sectional view taken on line *a a*, Fig. 2. Fig. 5 is a detail side view of the eccentric, showing the cam in contact with the side-lever friction-roller. Fig. 6 is a detail sectional view showing the sliding former-die at end of its stroke with its front hinged part down or in its delivery position; Fig. 7, a plan showing the sliding former-die and flange-rolls by themselves, and Fig. 7^a a side view of the sliding former-die by itself with its hinged front piece down. Figs. 8 and 9 are sectional views, the former taken on line *b b*, Fig. 7, and the latter from the nose or front end *c*, Fig. 7, both views showing the former-die block as fitted in guides in the bed-plate. It will be noticed that Figs. 7 to 9 are drawn to a larger scale than the other figures for the sake of clearness.

A is a bed-plate provided with a central longitudinal gap or slot *A'*, the left-hand end of which has projecting guides *A²* to fit recesses *b⁵*, formed in the sides of the sliding former or die block *B B'*, which is connected at *c'* by rod *C'* with the eccentric-strap *C* of the eccentric *C²*, secured on shaft *D*, carried in bearings *A³* on said bed-plate. Shaft *D* has a spur-wheel *D'* keyed on it which gears with a pinion *D²* on another shaft *D³*, also carried in bearings *A⁴* on bed-plate *A*, while at other end of shaft *D³* are the driving-pulleys *D⁴*.

If so preferred, a crank may be employed in place of the eccentric *C C²* above described. The sliding former or die block *B* has an upper central piece *b'* secured to it, the shape and size of which are similar to that which the internal edge of the horseshoe is to take, while the block has around the piece *b'* a similarly-shaped marginal flange *b²*, which forms a bed for the metal bar to rest upon while being worked to the requisite size and shape, also to form the creases or curved recesses in under surface of the horseshoe. Projections or ribs *b³* are formed on the surface *b²* of the former-die *B*, and further shallow studs *b⁶* are provided to form the countersinks for the nail-holes. The outer edge and top surface of the horseshoe are formed by the flange compression-rolls *E*, the smaller diameter *e* of each of which bends the bar upon the die-piece *b'*, while the flange *e'* of said rolls *E* rolls the metal to the proper thickness and for which purpose the outer edge of

tion-roller. Fig. 6 is a detail sectional view showing the sliding former-die at end of its stroke with its front hinged part down or in its delivery position; Fig. 7, a plan showing the sliding former-die and flange-rolls by themselves, and Fig. 7^a a side view of the sliding former-die by itself with its hinged front piece down. Figs. 8 and 9 are sectional views, the former taken on line *b b*, Fig. 7, and the latter from the nose or front end *c*, Fig. 7, both views showing the former-die block as fitted in guides in the bed-plate. It will be noticed that Figs. 7 to 9 are drawn to a larger scale than the other figures for the sake of clearness.

the flange of each roll is chamfered or beveled off at e^2 , as shown in Figs. 8 and 9. The flanged compression-rolls E are centered on studs E' , carried by upper levers F and lower levers F' . Die-block B has its front part B' hinged to the back part at B^2 in order that when the end of the outstroke is reached it will fall over end of bed-plate, as shown in Fig. 6, and so automatically deliver the finished horseshoe.

The upper part b' of the former-die may either be made solid with the slide-block or be fixed upon it, and at its fore end it has a projecting finger b^4 , which holds the bar to be shaped in position. The dotted lines (marked G) indicate the position that the straight bar to be operated on is placed, it being set in proper transverse position by aid of the adjustable fence G' . (Shown in Fig. 2.) The levers F are centered at F^{12} on studs carried by the bed-plate and by upper brackets F^4 , while at other ends of the levers are friction-rollers F^2 , which travel on upper surface of bed-plate, the said friction-rollers being acted on during a portion of each revolution of the eccentric by cams C^3 , one on each side of the eccentric, and it is by said cams acting on the levers that the flanged compression-rolls E are pressed hard upon the heel portions of the horseshoe and die.

In this machine by varying the height from the flange b^2 to top of die B B' horseshoes of a tapering thickness may be produced.

The lower levers F' are centered on studs f , projecting from under surface of bed-plate, and the back ends of said levers are acted on by springs F^3 , which are also secured to the bed-plate and are designed to press the compression-rolls E, through the medium of the levers and the pins E' , against the former or die block B B' . Under the levers F' at f' ball or antifriction-roller races may be arranged to lessen the friction while the levers are in operation.

The rotary former-die H, hereinbefore referred to, is affixed on end of shaft D, while the flanged compression-roll E^3 is carried by a stud on a lever J, centered at J' on a bracket J^4 , secured to bed-plate A and working in a vertical guide J^2 , also secured to bed-plate, said lever being acted on by a weight J^3 . The flanged compression-roll E^3 used with rotary die H is identical with those marked E, already described, and hence needs no further description, while the said rotary die H has also a part h on it to form the internal shape of horseshoe; but in this case a pin H' is provided to hold the starting end of the bar G, which is to be formed into a horseshoe by the rotation under pressure of roll E^3 , upon the rotary die H. To eject the finished horseshoe, sliding pins h' are provided, which pass through holes in flange of die H, the outer ends of said pins being secured to a carrier h^2 , which is acted on by a spring h^3 , and said carrier just prior to the die completing its revolution contacts with the fixed projection

h^4 , borne by the bed-plate, and so projects the pins from their holes, and thus forcing the horseshoe from the die.

From the foregoing description it will be readily understood that the bar G to be operated on by the sliding block B B' is pressed forward against the flanged compression-rolls E, which are forced toward one another by pressure derived from the springs F^3 , until such time as the cams C^3 contact with friction-rollers F^2 , and such increased pressure upon the rolls E completing the back or heel part of the horseshoe the die B' then continues its travel forward to the end of its stroke and allows the hinged fore part B' to pass beyond the end of its guide on bed-plate, when it falls, as shown in Fig. 6, and so delivers the horseshoe.

The blank-bar G (shown in dotted lines in Fig. 2) is placed while in an intensely-heated condition on the nose of the former-die B, and as the die moves forward said blank is acted upon simultaneously by the swaging-rollers E, the portions e thereof bending the blank horizontally to the shape of the vertical edges of the die B, while the beveled flanged portions of said rollers swage or crush the intensely-heated blank down on the ledge or bed b^2 of the die B and onto the ribs and projections b^3 and b^6 .

It will also be obvious that articles of other or somewhat similar shape to horseshoes may be formed in this machine by furnishing it with dies and rolls of the requisite shape and sectional form.

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

1. In a machine for the purpose specified a sliding former or die having an upper die-piece b' , flange-piece b^2 , finger b^4 and crease-forming projections b^3 b^6 combined with the flanged compression-rolls E substantially as described and shown.

2. In combination, a reciprocating die having the forming-bed provided with raised shaping portions, and the swaging-rolls between which the die is adapted to move, said rolls formed with the vertical portions e , and the beveled flanges overhanging said bed of the die.

3. In a machine for the purpose specified the combination of a sliding former or die B B' , flanged compression-rolls E, levers F, friction-rollers F^2 , pins E' , levers F' , pins f , springs F^3 , connecting-rod C' , eccentric C C^2 , cams C^3 and bed-plate A substantially as described and shown.

4. In a horseshoe-machine, the combination, of a movable former or die and forming devices including a yieldingly-held movable carrier and a flanged beveled compression-roll carried by said carrier and cooperating with said die to roll down and shape the horseshoe thereon, substantially as described.

5. In a horseshoe-machine, the combination, of a movable recessed die or former,

means for positively moving the same, and forming devices including a rotary flanged and beveled compression-roll overlapping and cooperating with said former and means 5 yieldingly holding the roll to the former, substantially as described.

6. In a horseshoe-machine, the combination, of a reciprocating die or former having the bed on which the horseshoe rests, and the 10 front lip projecting over the bed and over the toe of the horseshoe, and the cooperating yieldingly-held swaging-rolls having the beveled flanges overhanging said bed, substantially as described.

15 7. In combination, in a horseshoe-machine, a slotted bed, a reciprocating die or former movable in the slot and arranged to project beyond an end of the bed, said die having a swinging front end adapted to drop down at 20 the front end of the bed and drop the horseshoe from the die, and compression-rolls cooperating with the die, substantially as described.

25 8. In a horseshoe-machine, in combination, a reciprocating former or die, actuating mechanism therefor comprising a rotary member having cam-faces, compression-rolls cooper-

ating with the die and levers controlling said rolls and periodically actuated by said cam-faces, substantially as described. 30

9. In a horseshoe-machine, in combination, a reciprocating die or former, oppositely-arranged compression-rolls cooperating with said die, movable carriers for said compression-rolls, a spring device yieldingly holding 35 the compression-rolls to said die, and positively-operating means for periodically forcing the compression-rolls to said die, substantially as described.

10. In a horseshoe-machine, in combination, a reciprocating former or die, swinging levers, compression-rolls carried by the levers and cooperating with the die, springs yield- 40 ingly holding the rollers in the path of said die, a rotary cam device periodically acting 45 on said levers to force the same to the die, and actuating mechanism, substantially as described.

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

WILLIAM STELLNER.

Witnesses:

BEDLINGTON BODYCOMB,
W. J. S. THOMPSON.