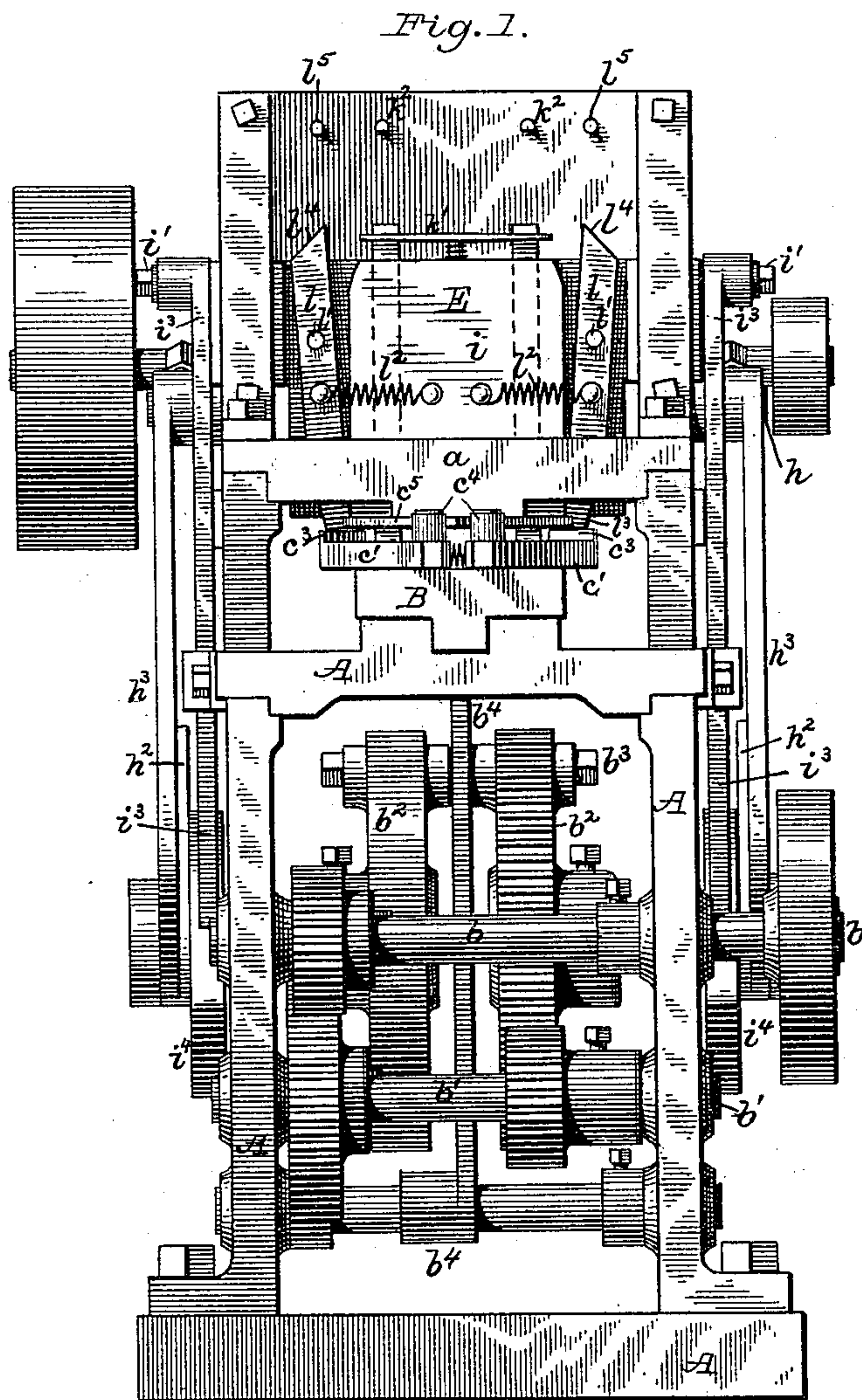


3 Sheets—Sheet 1.

No. 338,871.

Patented Mar. 30, 1886.



Attest:  
Philip F. Larner.  
Howell Barth

Inventor:  
Charles H. Perkins.  
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(No Model.)

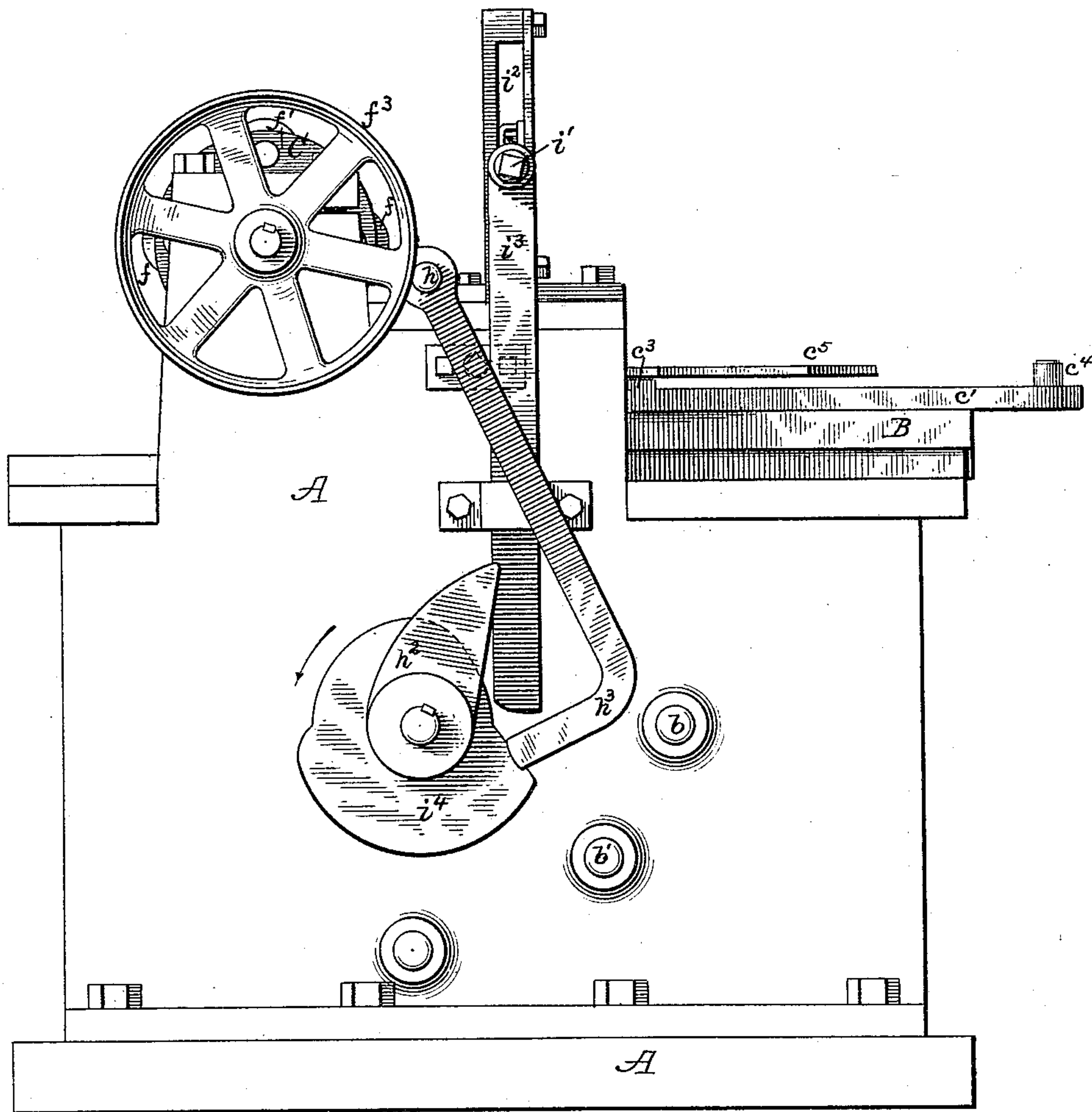
3 Sheets—Sheet 2.

C. H. PERKINS.  
HORSESHOE MACHINE.

No. 338,871.

Patented Mar. 30, 1886.

*Fig. 2.*



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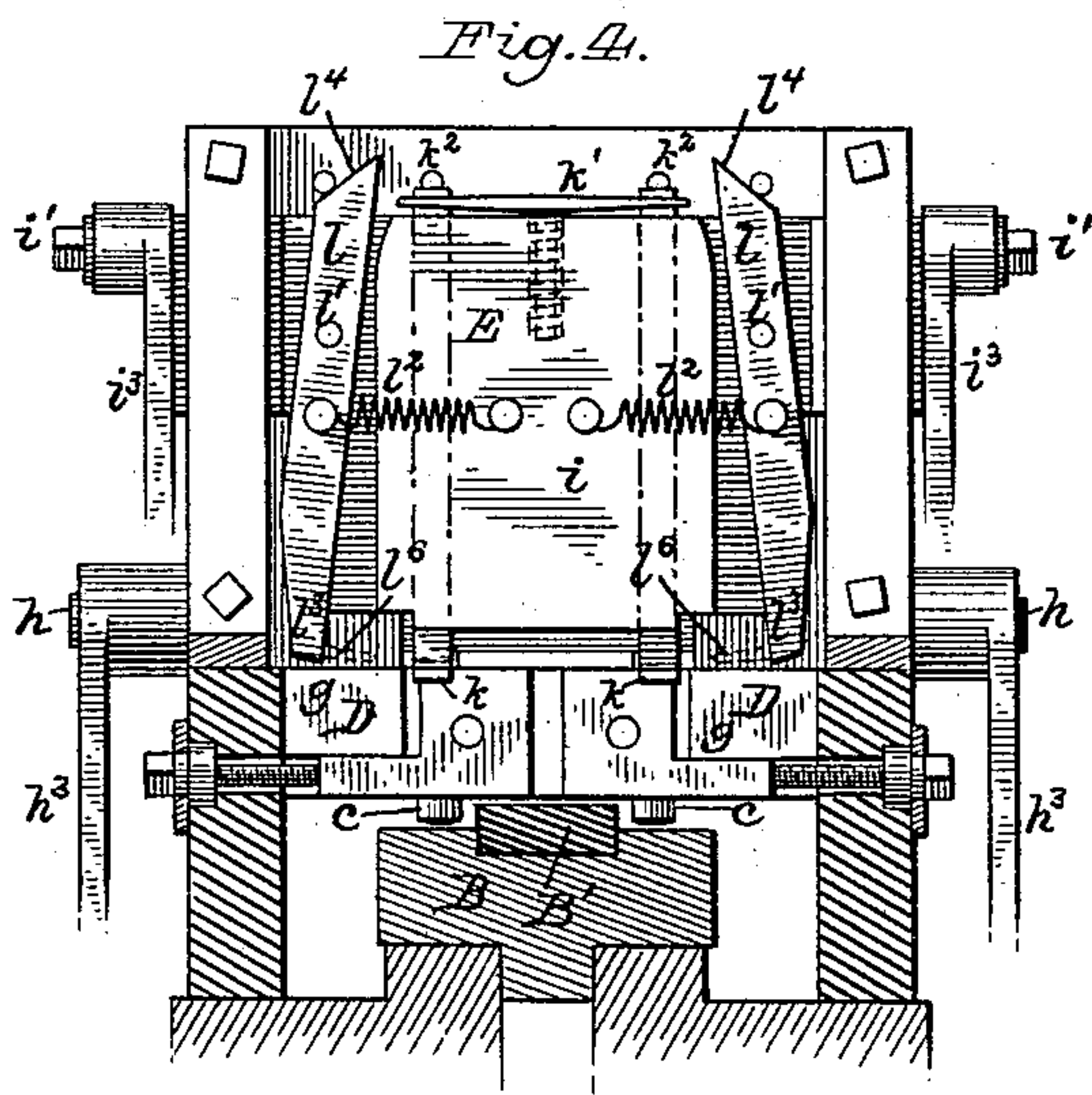
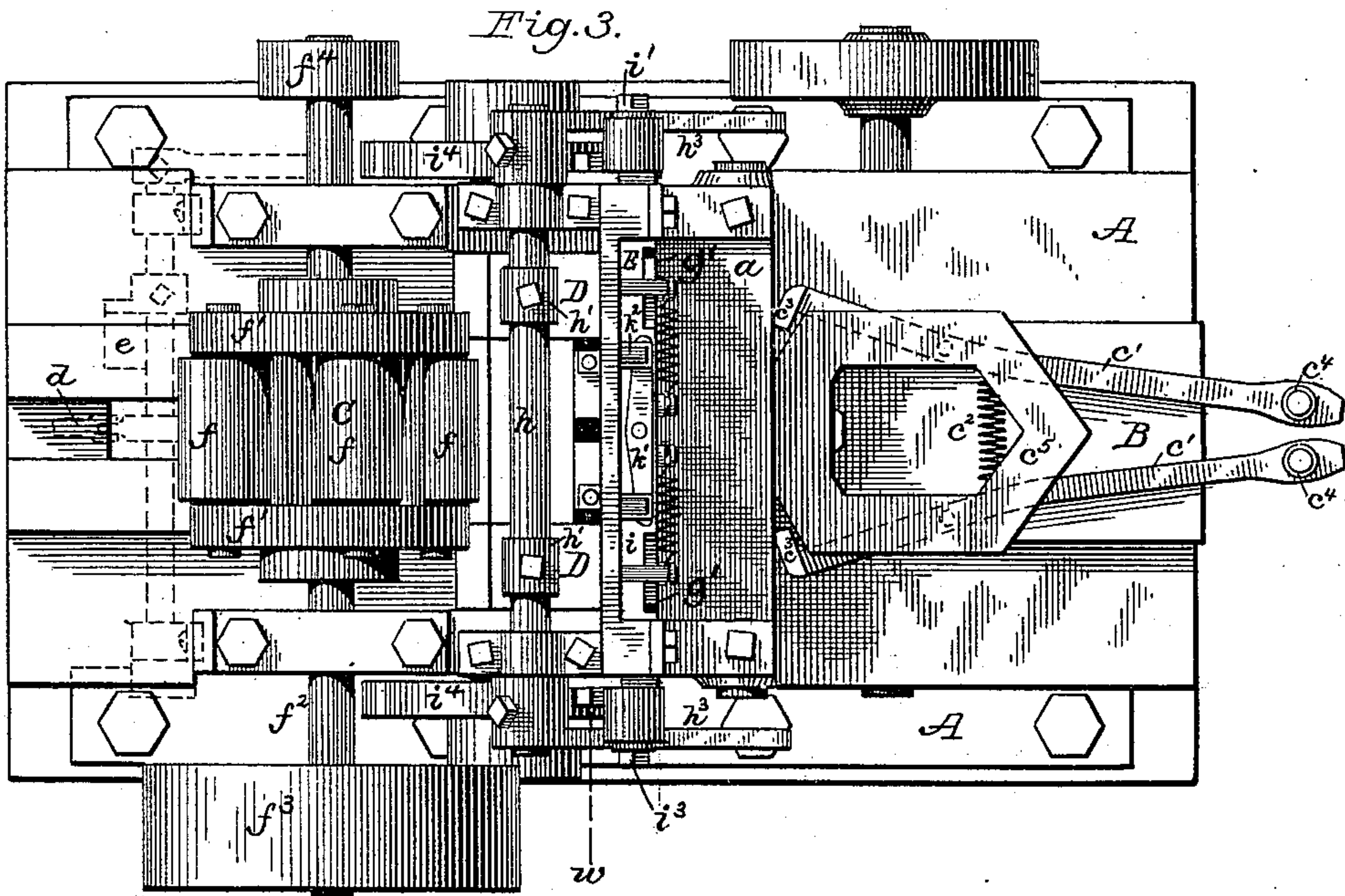
(No Model.)

3 Sheets—Sheet 3.

C. H. PERKINS.  
HORSESHOE MACHINE.

No. 338,871.

Patented Mar. 30, 1886.



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# UNITED STATES PATENT OFFICE.

CHARLES H. PERKINS, OF PROVIDENCE, RHODE ISLAND.

## HORSESHOE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 338,871, dated March 30, 1886.

Application filed January 25, 1886. Serial No. 189,633. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES H. PERKINS, of the city and county of Providence, in the State of Rhode Island, have invented certain  
5 new and useful Improvements in Horeshoe-Machines; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part of the same, is a clear, true, and complete  
10 description of the several features of my invention.

In a cotemporaneous application for Letters Patent I have illustrated and described several forms of horseshoe-machines embody-  
15 ing features of invention which have been broadly claimed in said application. My present application relates to certain specific features embodied in one form of said machines, and after a description thereof in detail the  
20 features deemed novel will be specified in the several clauses of the claims hereinafter annexed.

Referring to the three sheets of drawings, Figure 1 is a front elevation of said machine.  
25 Fig. 2 is a side view thereof applicable in essential matters to both sides of the machine. Fig. 3 is a top or plan view of the machine. Fig. 4 is a front view of the upper portion of the machine and a lateral vertical section of  
30 an underlying portion thereof on line *w*, Fig. 3.

The frame A may be widely varied in form, due attention being given to providing a feeding-table, *a*, and proper guides and bearings  
35 for the movable parts, and proper supports for such other portions of the machine as co-operate passively with said moving parts.

The sliding die-bed B is operated by mechanism below said bed, as follows: A lower driving-shaft, *b*, geared to a counter-shaft, *b'*, in  
40 turn geared to one of two crank-disks, *b''*, coupled together by a wrist-pin, *b'''*, passing through a slotted lever, *b''''*, mounted at its foot to a rock-shaft and coupled at its upper end  
45 to the bed by a link. (Not shown.) On said sliding die-bed there is a forming-die, B', having a contour corresponding to the interior line of a finished horseshoe, and is shown only in section in Fig. 4, it being in the usual form.  
50 This forming-die, as usual, co-operates with the

pendent studs *c*, Fig. 4, in making the initial bend, said studs being adjustable with reference to said forming-die. The finishing bend, or contracting the heels of the shoe, is performed by the pivoted horizontal jaw-levers  
55 *c'*, which are coupled in the rear of their pivots by the retractile springs *c''*, so as to normally maintain their working-jaws *c'''* in an open or widely-separated condition. Said jaws are pivotally mounted upon and are carried by the  
60 sliding bed, and at their rear ends they are provided with vertical studs *c''''*, having friction-rollers. These lever-jaws are closed, for operating upon a blank, by the contact of the  
65 studs *c''''* on said levers, with the rear tapered end of a stationary cam-plate, *c'''''*, projecting rearward from a portion of the frame of the machine adjacent to the table *a* and over and  
70 parallel with the upper surface of the bed, as clearly shown in Figs. 2 and 3. Said jaws are opened by the spring after the studs *c''''* have passed the straight sides of the cam-plate *c'''''*,  
the front end of which has inclined surfaces, as clearly shown in Fig. 3.

The release of a shoe from the forming-die  
75 is accomplished by means of a pawl, *d*, and a vibrating clearer, *e*. (Indicated in dotted lines at the rear portion of the machine, Fig. 3.)

The forming-die, the studs, and the lever-jaws constitute the bending mechanism, but  
80 said jaws, after bending, serve as clamps.

The hammer C may be varied in form; but the best results will accrue from the use of the rotary hammer shown, which embodies the  
85 rollers *f* between disks *f'*, mounted upon a shaft, *f''*, provided with a driving-pulley, *f'''*, and a second pulley, *f''''*, by which power is communicated to the lower driving-shaft, *b*.

The swaging-dies D are in the form of sliding blocks, in guides above the bed and partially over it, and have their working-faces  
90 at *g*, which co-operate with surfaces *g'* at the rear lower edge of the table *a*. These dies are vibrated to and fro by means of a rock-shaft, *h*, having pendent fingers *h'* extending into  
95 holes in said blocks, and said rock-shaft is semi-rotated by means of a cam, *h''*, which engages with a pendent lever-arm, *h'''*, on said rock-shaft, so that the swaging movement is effected by the cam; but the return move-  
100



ment of the dies is caused by gravity, the weight of the lower end of the levers  $h^3$  enabling them to swing into their normal positions (shown in Fig. 2) when released by their cams.

5 Above, and located across the sliding bed, is a blank-carrier, E, which is fitted to vertical guides in an upper portion of the frame of the machine, so that it may be vertically reciprocated in a line at right angles to the plane of  
10 the sliding bed. This carrier embodies a block or plate,  $i$ , pendent from lateral studs  $i^1$ , which extend through slots  $i^2$  in the frame and are pivoted to vertical sliding bars  $i^3$ , which, at their lower ends, are engaged by the cam  $i^4$ .  
15 The form of said cam is such that at proper intervals the block is fully elevated, then partially dropped, and then fully dropped, and it is there held just clear of the bed by the studs at the lower ends of the slots until the  
20 next complete upward movement. This carrier-block is enabled to support a blank by means of two brackets,  $k$ , each at the lower end of a sliding rod, freely guided in vertical slots or holes in the block, and supported at  
25 their upper ends upon a spring-supported plate,  $k'$ . As will be readily seen, said plate  $k'$  is centrally mounted on top of a sliding rod encircled by a spiral expansive spring, said rod and spring being partially housed in a  
30 vertical recess or hole in the top of the carrier-block. In a vertical portion of the frame are two stationary projecting pins or studs,  $k^2$ , so that when the carrier-block is fully lifted said bracket-rods are abutted against said studs  
35 and the power of the plate-spring overcome, thus arresting but practically lowering the brackets, so as to receive a blank, and then when the carrier next descends the blank is lightly gripped between said brackets and the  
40 lower edge of the carrier-block.

The centering or gaging of the blank, so as to accurately present it first to the swaging-dies and then to the bending mechanism, is accomplished by means of the vertical gaging-fingers  $l$ , which are pivoted at  $l'$  to the carrier-block, and have springs  $l^2$  for normally drawing their lower or working ends,  $l^3$ , toward  
45 each other when engaging with the two ends of a blank. The opening of said gaging-fingers is only of consequence when they are to receive a blank, or, in other words, when the carrier-block is in its highest position, as shown in Fig. 4. Each finger, at its upper end, is angular, as at  $l^4$ , and said angular ends are abutted  
50 by the projecting stationary studs or pins  $l^5$  during the terminal upward movement of the carrier, so as to force the upper ends of said fingers toward each other, and cause a corresponding outward movement of their lower  
60 ends.

In other forms of carrier I have provided the gaging-fingers, at their coincident lower ends, with projecting pins or studs, as indicated in dotted lines at  $l^6$ , Fig. 4, and these  
65 may be here used, if desired, to serve as sup-

ports for the blank, either separately or as mere auxiliaries to the brackets  $k$ , and if these latter be dispensed with then said finger studs will serve as their equivalents.

The operation of this machine should be readily understood by persons skilled in the art from the description thus far given; but I will further explain that a straight blank is placed on the table  $a$  and delivered by hand to the blank-carrier, which then descends, meantime accurately centering the blank.  
70 When it has placed the two ends of the blank opposite the swaging-dies, said carrier rests until said dies have operated and retired, then the carrier descends still further, until the  
80 blank is placed in line with the forming-die. The brackets  $k$  are well backed by the studs  $c$ , so that ample resistance is afforded while the initial bend is being made. The forming-die having advanced beyond said studs, the  
85 lever-jaws are then moved inward toward the forming-die, and complete the finishing bend. The bed, still advancing, then slowly presents the shoe to the action of the hammer, the lever-jaws acting as clamps for properly holding the  
90 shoe, and after passing the hammer the shoe is cleared and dropped from the machine by suitable mechanism, which does not pertain to this application, although the same has  
95 been hereinbefore referred to, and is illustrated in dotted lines in Fig. 3.

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

1. In a horseshoe-machine, the combination, substantially as hereinbefore described, of the  
100 sliding bed and the bending mechanism, the swaging-dies above said bed, the vertically-reciprocating blank-carrier, and the hammer.

2. In a horseshoe-machine, the combination, substantially as hereinbefore described, of the  
105 sliding die-bed, its forming-die, the studs and jaws co-operating therewith, the swaging-dies above said bed, a vertically-reciprocating blank-carrier, and a rotating cam for controlling said carrier by first fully lifting it for receiving a blank, then dropping it for presenting the blank to the swaging-dies, and then dropping it still further for presenting it to the forming-die on said bed, and thereafter rising to its full height.  
115

3. In a horseshoe-machine, the combination, substantially as hereinbefore described, of the sliding bed, the forming-die on said bed, the studs co-operating with said die for initially bending a blank, lever-jaws mounted upon  
120 and moving with said bed and co-operating with said forming-die in making the finishing bend in forming a shoe, a stationary cam-plate located centrally above said bed for closing said jaws, and a spring for opening them.  
125

4. The combination, substantially as hereinbefore described, of the vertically-reciprocating blank-carrier, the pivoted gaging-fingers inclined at their upper ends, their springs, and the stationary studs which engage with  
130



the inclined ends of said finger during the upward movement of the carrier and cause said ends to move toward each other and thereby cause their lower ends to move outwardly for the reception of a blank.

5 5. The combination, substantially as hereinbefore described, of the vertically-recipro-

cating carrier-block, and the blank-supporting brackets co-operating with said block for affording a blank holder and carrier.

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Witnesses:

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