

No. 637,621.

Patented Nov. 21, 1899.

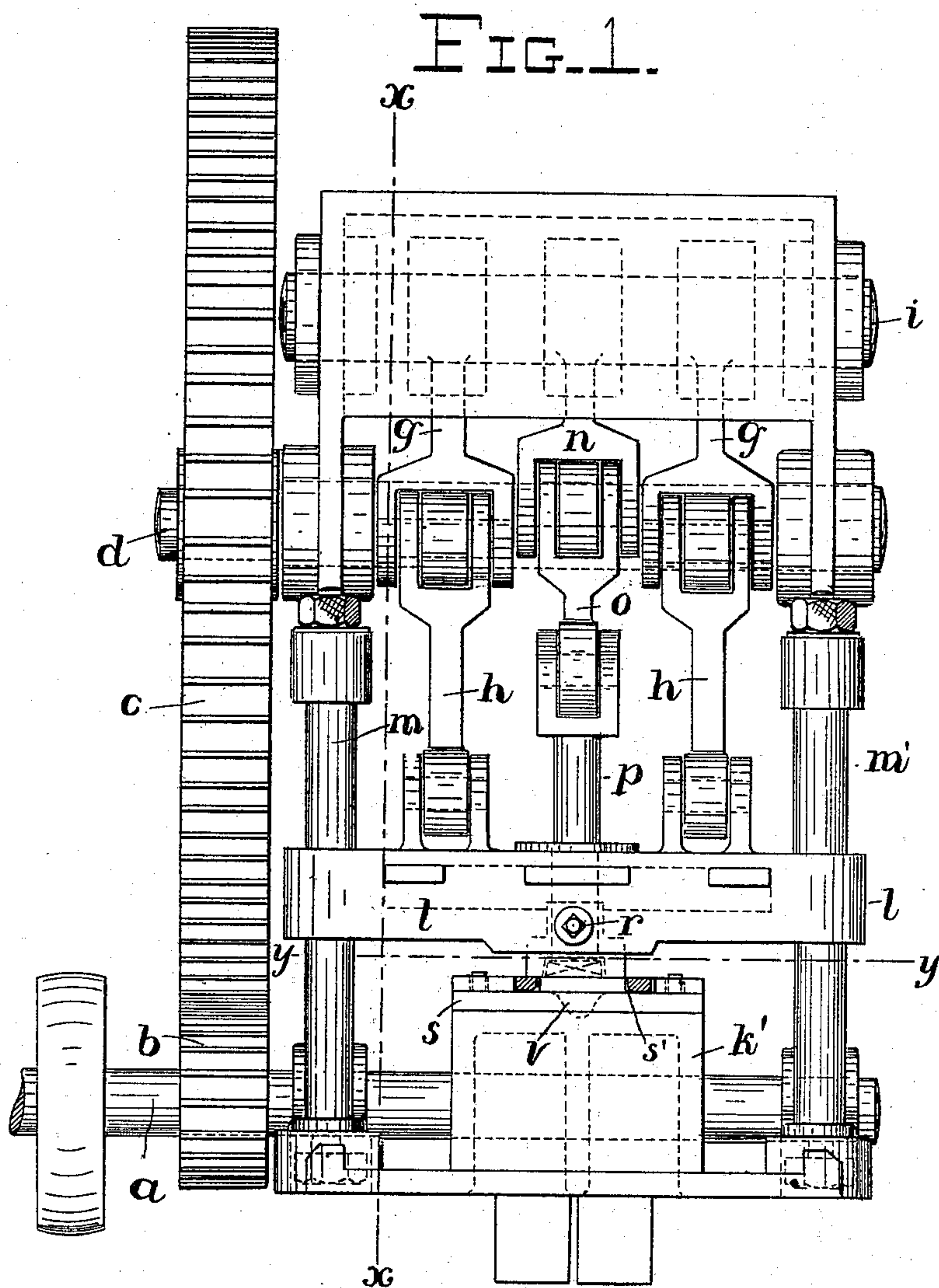
O. KNIEP.

MACHINE FOR FINISHING HORSESHOES.

(Application filed Feb. 28, 1898.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses

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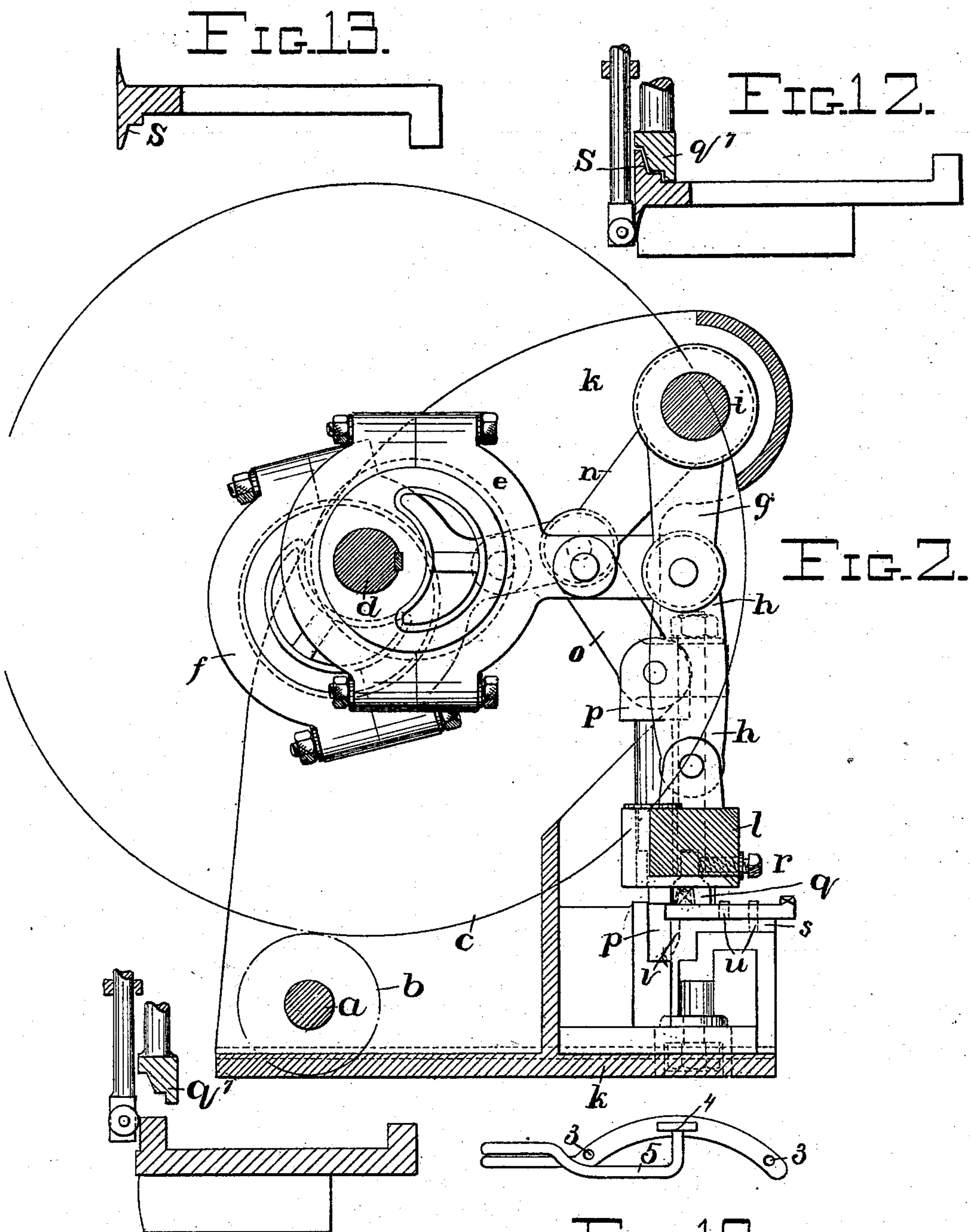
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Witnesses

FIG. 11.

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FIG. 10.

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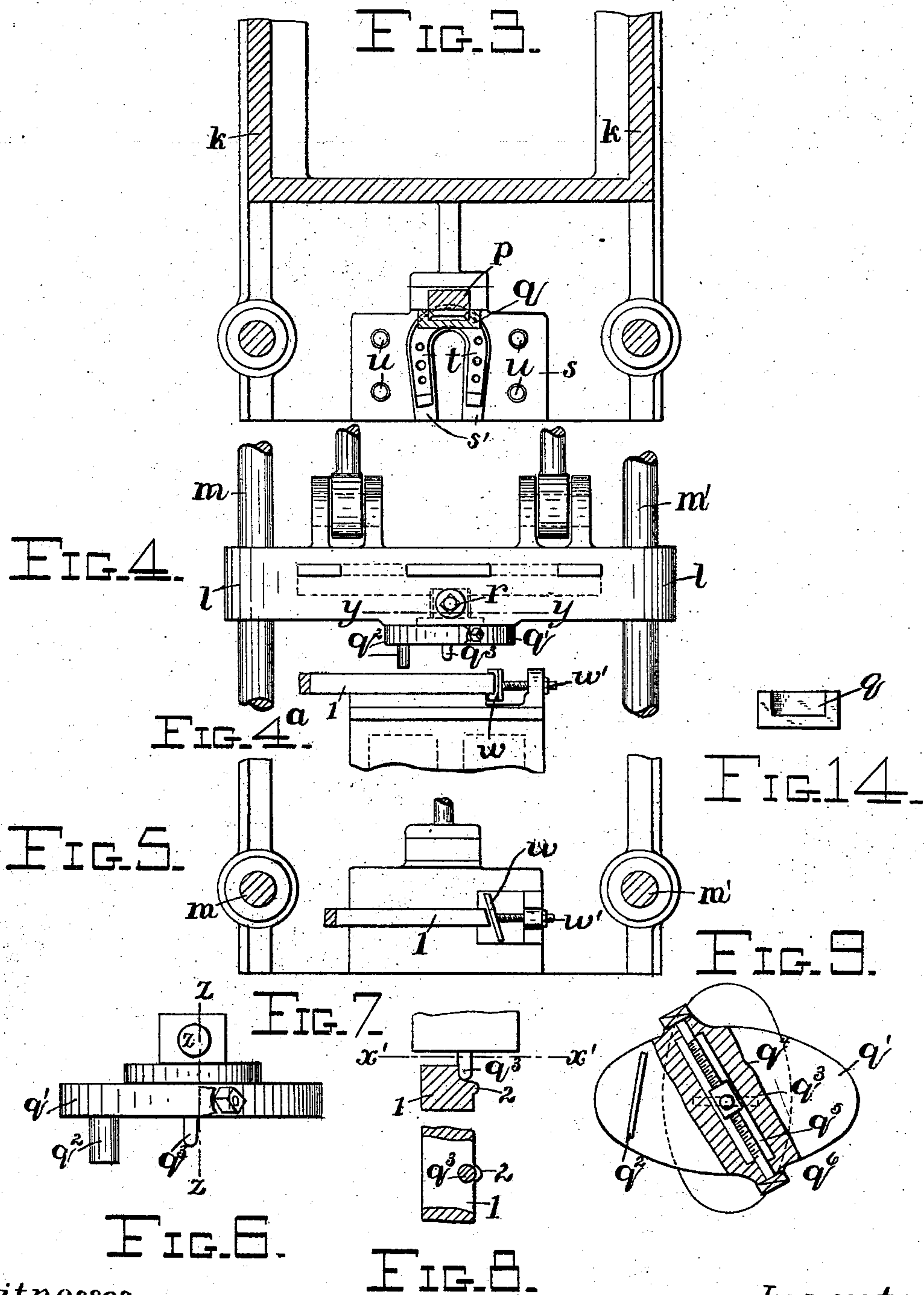
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# UNITED STATES PATENT OFFICE.

OTTO KNIEP, OF SCHÖNEBECK, GERMANY.

## MACHINE FOR FINISHING HORSESHOES.

SPECIFICATION forming part of Letters Patent No. 637,621, dated November 21, 1899.

Application filed February 28, 1898, Serial No. 672,119. (No model.)

*To all whom it may concern:*

Be it known that I, OTTO KNIEP, a subject of the King of Prussia, German Emperor, residing at Schönebeck, in the Kingdom of Prussia, Germany, have invented certain new and useful Improvements in Machines for Finishing Horseshoes, of which the following is a specification.

My invention relates to a press for finishing horseshoes by preparing and attaching toe-calks thereto and forming the clips thereon, which press, however, is intended to be used only on the ordinary horseshoe-blanks as commonly prepared—that is to say, bent around into the shape in which they are intended to be used, but not provided with toe-calks and clips.

My invention consists in the construction and combination of parts, as hereinafter described and claimed.

In the accompanying drawings, Figure 1 is an end elevation of my improved press. Fig. 2 is a vertical section on the line  $xx$  of Fig. 1. Fig. 3 is a cross-section on the line  $yy$  of Fig. 1. Fig. 4 is a partial front elevation of the press as shown in Figs. 1, 2, and 3, differing from it, however, in having means for the formation of the blanks for toe-calks instead of dies for forming the toe-calks and clips. Fig. 4<sup>a</sup> is a detail side view showing the coöperating parts for cutting and shaping bars into toe-calks. Fig. 5 is a plan view of the parts shown in Fig. 4<sup>a</sup>. Fig. 6 is a side view showing the die of Figs. 4 and 5 detached. Fig. 7 is a detail view taken on the line  $zz$  of Fig. 6 and showing the action of the finger  $q^3$  on the bar. Fig. 8 is a section on the line  $x'x'$  of Fig. 7. Fig. 9 is a section on the line  $yy$  of Fig. 4. Fig. 10 shows an implement for use in attaching the blank for the toe-calk to the horseshoe. Fig. 11 is a modified form of the former and stamp for forming sharp edges on the toe-calk. Fig. 12 shows a sectional view of the same after the operation of the press and showing the horseshoe fully formed. Fig. 13 is a cross-section of the horseshoe provided with a sharp edge, and Fig. 14 represents a plan view of the bottom or face of the die.

$a$  represents the driving-shaft, mounted in the frame  $k$ , which shaft, as shown, is provided with a pulley, to which motion may be communicated from any desirable source of

power. In small presses this pulley may be replaced by a crank and handle and the press driven by hand. The shaft  $a$  carries a gear-wheel  $b$ , which meshes with a larger gear-wheel  $c$ , mounted on the counter-shaft  $d$ . This counter-shaft carries two eccentrics  $e$  and an eccentric  $f$ . Each of the eccentrics  $e$  acts on a knuckle-joint  $g h$ . The arms  $g$  are pivoted on a shaft  $i$ , which acts as a fulcrum, and the arms  $h$  are pivotally connected to a cross-head  $l$ , which is guided by vertical columns  $m m'$ , which are rigidly mounted on the frame  $k$  of the machine. The eccentric  $f$  actuates a knuckle-joint  $n o$ , the arm  $n$  of which is pivoted upon the shaft  $i$  and the arm  $o$  of which is pivoted to a stamp  $p$ , which passes through the cross-head  $l$  and is guided thereby.

On the under side of the cross-head  $l$  is a U-shaped die  $q$ , which is secured in said cross-head by means of a set-screw  $r$ , (see Figs. 1 and 2,) the opening of the U-shaped portion being opposite the stamp  $p$ , as shown in Fig. 3. The stamp  $p$  and the die  $q$  form the upper and movable part of the press. The lower stationary part of the press consists of a plate  $s$ , supported on the frame  $k$  and provided with a cavity  $s'$  of a size and shape suitable to accommodate the particular horseshoe  $t$  operated upon. The plate  $s$  is held in position upon the lower part  $k'$  of the frame by means of, for example, four dowels  $u$ , and the arrangement of the parts being such that the stamp  $p$  and die  $q$  will come directly over the toe of the horseshoe. The plate  $s$  is provided with a cavity  $v$ , (see Figs. 1 and 2,) which is just large enough to accommodate the clip when formed. The machine must be provided with as many plates  $s$  as there are different sizes of horseshoes to be operated upon.

The operation of the device so far described is as follows: A horseshoe  $t$  is placed in the cavity  $s'$  and the toe-calk placed thereon by means of the implement shown in Fig. 10 and hereinafter described. The machine is then put in operation, it being noted that either the shoe or calk, or both, should be heated. The movement of the counter-shaft  $d$  forces down the cross-head  $l$  and holds the shoe firmly in position, with the die  $q$  holding the toe-calk in position and pressing it down against the shoe. The plunger  $p$  is then



forced down. The U-shaped die  $q$  presses the calk against the shoe and welds it thereto, while the plunger  $p$  swages down the front part of the calk and drives it into the cavity  $v$ , thus forming the clip, so that at one downward movement of the press the toe-calk is welded to the shoe and the clip formed.

Instead of the former  $q$  a former  $q'$  may be inserted in the cross-head  $l$  and held in place by the set-screw  $r$ . This former is shown in Fig. 4, and in an enlarged form and detached in Fig. 6. It is provided with a knife  $q^2$  and a finger  $q^3$ . This finger  $q^3$  is adjustable by means of a set-screw  $q^6$  in an inclined slot  $q^5$  in the head  $q^4$  of the former  $q'$ . The knife  $q^2$  acts in connection with the jaw  $w$ , (see Fig. 5,) which is adjustably secured on the lower part of the frame by means of a set-screw  $w'$ . The knife  $q^2$  and the jaw  $w$  form two sides of a parallelogram, the other sides of which are the sides of the long bar 1, which is to be cut into toe-calks. While the knife  $q^2$  is cutting off the bar 1 the finger  $q^3$ , as shown in Figs. 7 and 8, swages down one side of the bar and forms a projection 2 to secure the blank to the shoe.

In Fig. 10 is shown in plan an implement which is to be used in securing the blanks for the toe-calks to the shoe in the following manner: The two rear dowels  $u$  are passed through holes 3 3 in the implement, a rectangular hole 4 receives the blank, and the movable arm 5 holds it securely in position. If it is desired to give the toe-calk a sharp edge  $S$ , (see Fig. 13,) the modifications shown in Figs. 11 and 12 are used. In this case instead of the former  $q$  a former  $q^7$  is used, provided with angles and an inclined face, as shown in Fig. 11. A downward movement of this former, together with the stamp  $p$ , produces the shoe shown in Fig. 13.

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

1. In a machine for making horseshoes, a

stationary portion or anvil, comprising a plate provided with a recess for the horseshoe and a cavity for the horseshoe-clip, a movable portion consisting of a cross-head, and means for moving said cross-head and stamp up and down so that as the die is forming the calk, the stamp will at the same time form the clip, substantially as described.

2. In a machine for making horseshoes, a supporting-frame, a plate on said frame provided with a recess for holding said horseshoe and with a cavity for the clip of said shoe, a cross-head provided with a die for forming the calk on said shoe, a stamp working in said die for forming the clip on the toe of said shoe, knuckle-joints for operating said cross-head and stamp, a shaft, eccentrics mounted on said shaft but oppositely situated in relation to each other and means for rotating said shaft, so that as the die is forming the calk, the said stamp will form the clip, substantially as described.

3. In a machine for making horseshoes, the combination of a frame, guiding-columns thereon, three shafts—a driving-shaft, a counter-shaft and a pivot-shaft—mounted in said frame, gearing on said driving and counter shaft, eccentrics on said counter-shaft, a cross-head guided by said columns, knuckle-joints connected to said eccentrics, counter-shaft and cross-head, a stamp working in said cross-head, a forming-die secured to said cross-head, and an eccentric and knuckle-joint for driving said stamp up and down, but at different times from the movement of the cross-head, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

OTTO KNIEP.

Witnesses:

HEINRICH BEENEN,  
PAUL MÜLLER.