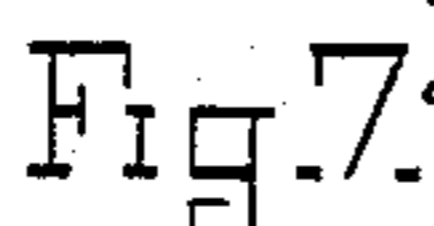
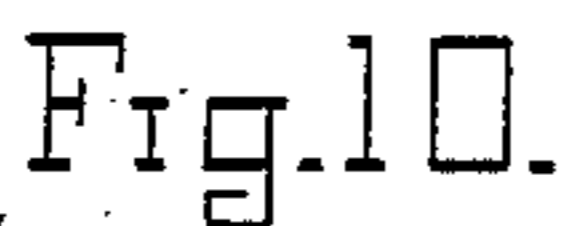
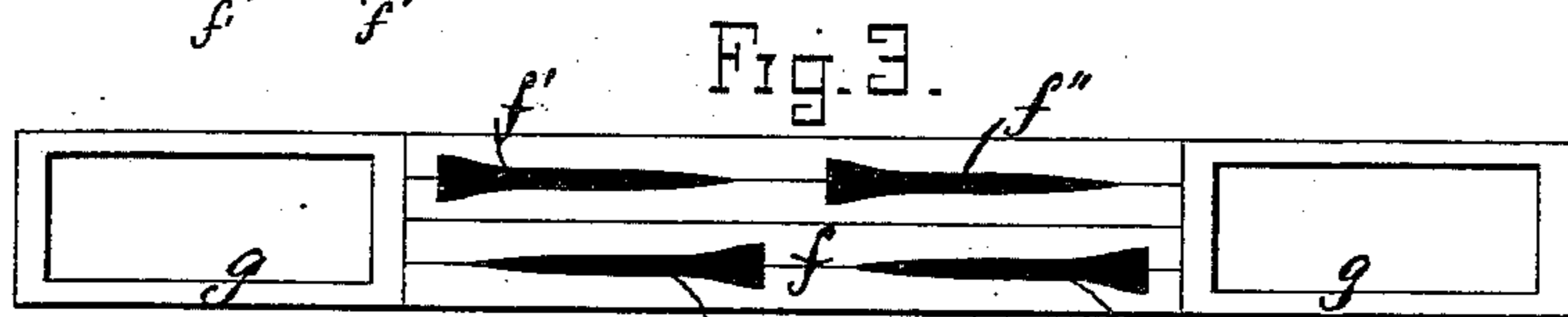
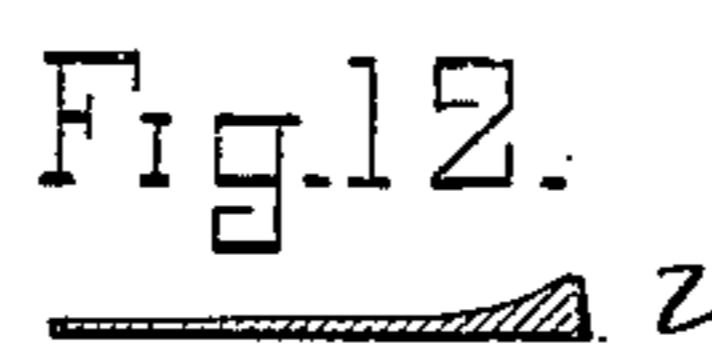
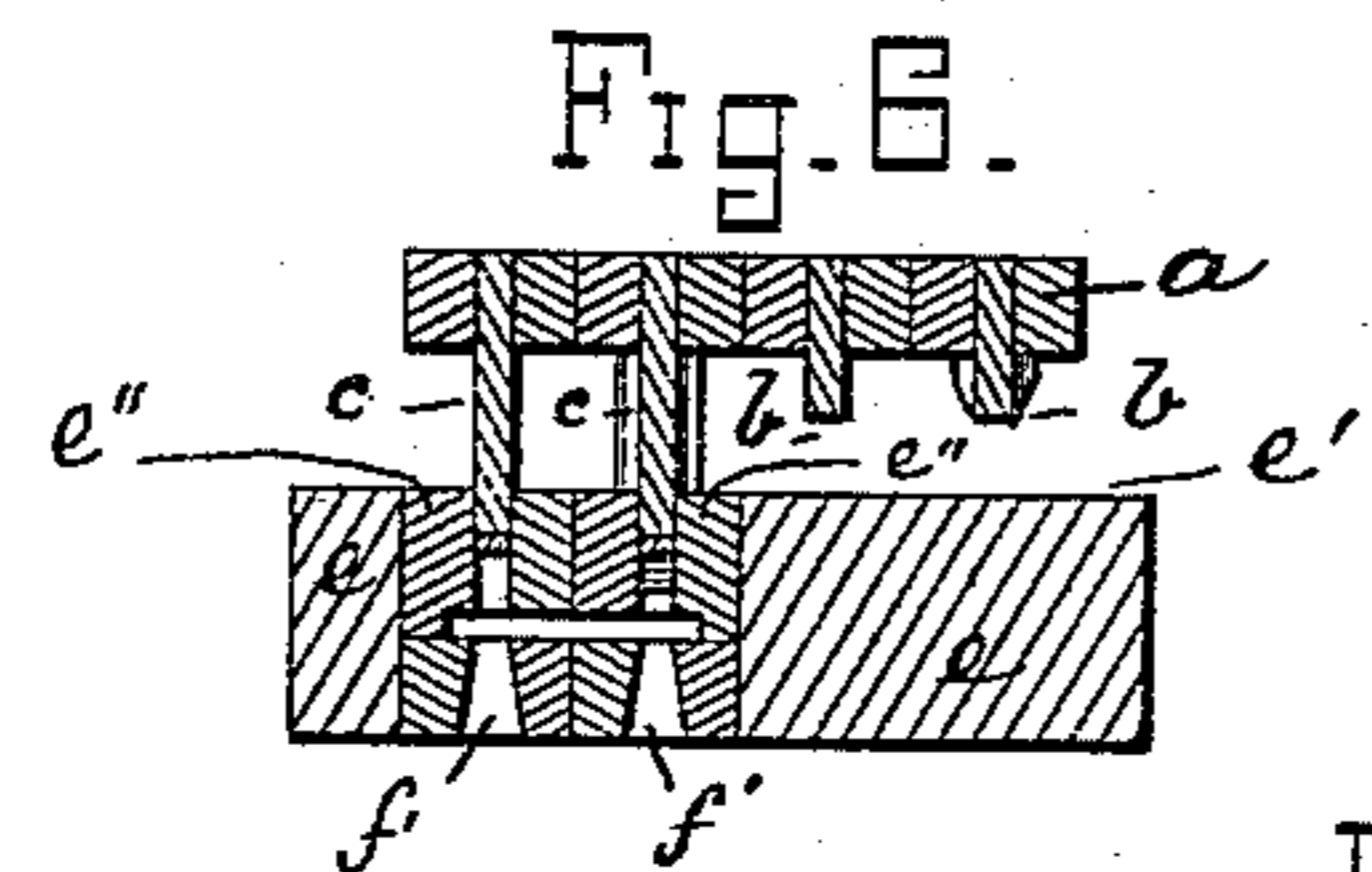
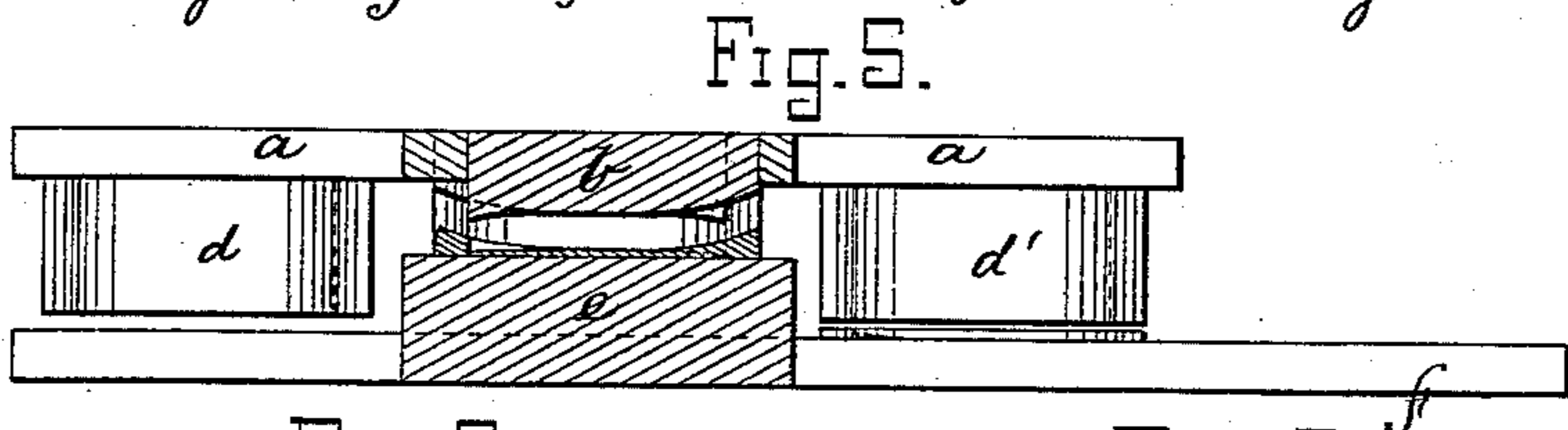
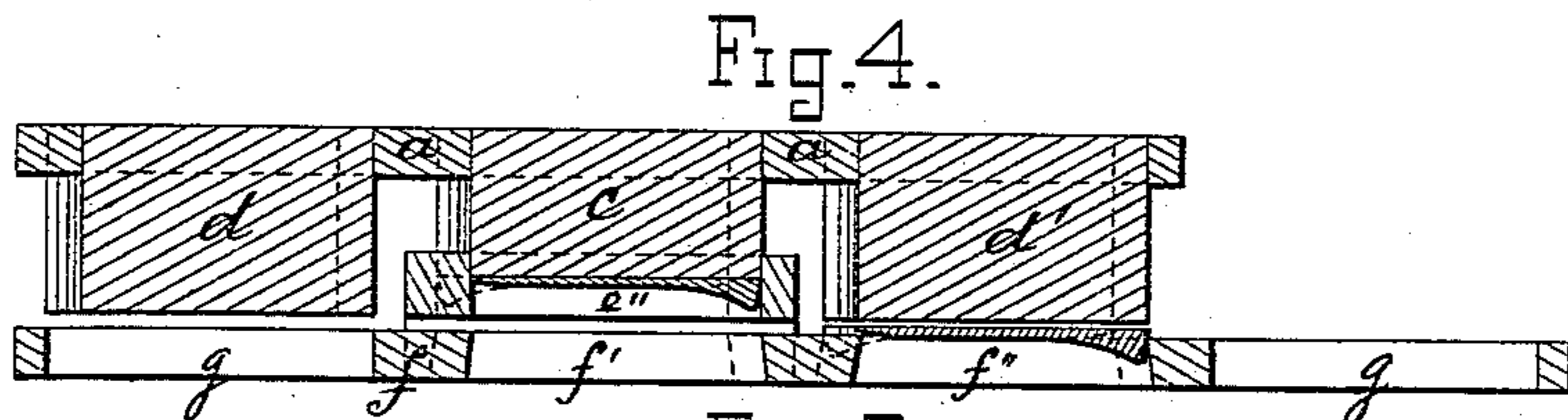
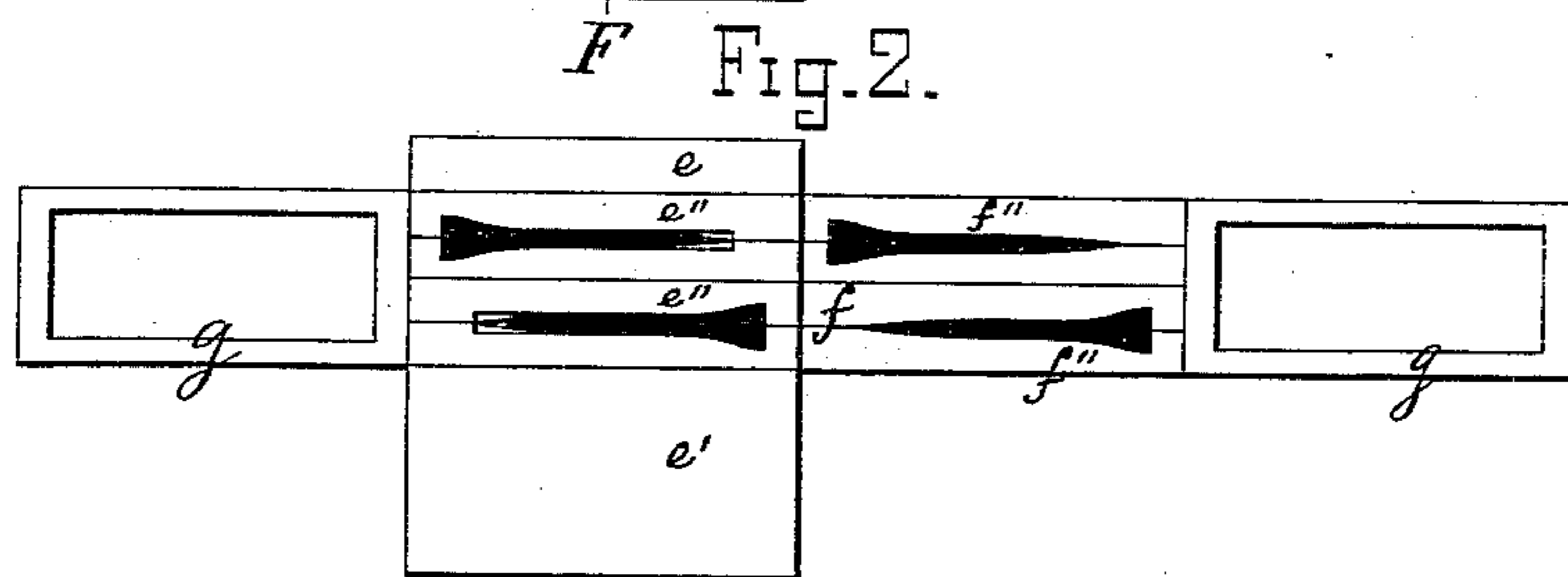
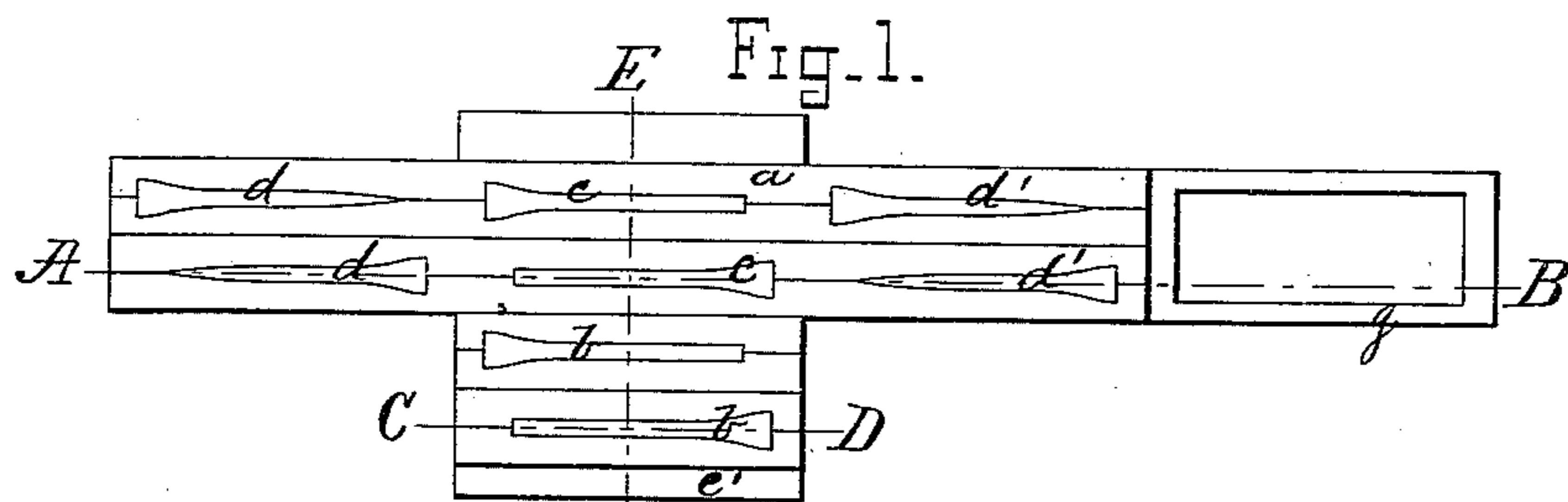


I. C. TATE.
Machine for Punching Horseshoe-Nails.

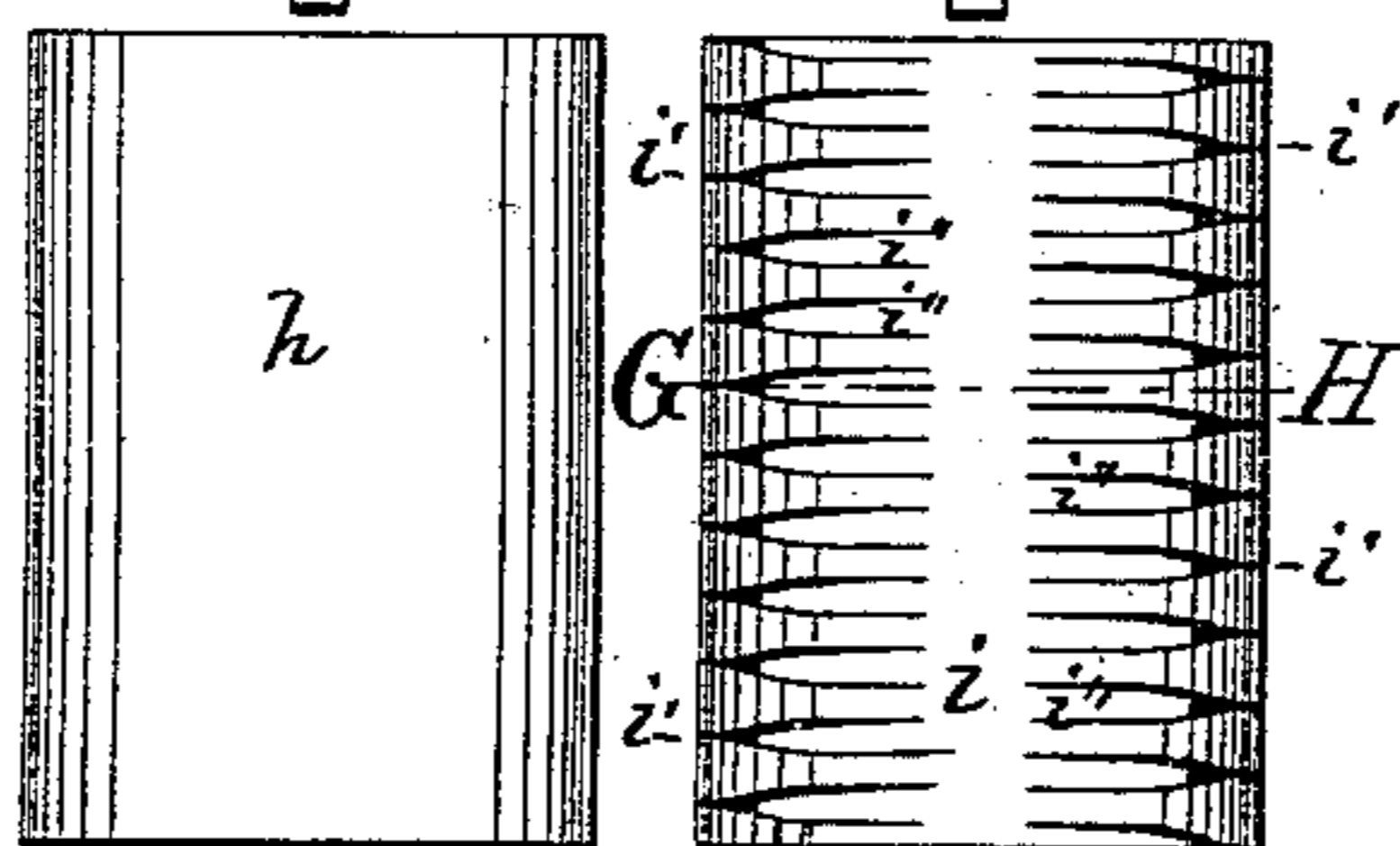
No. 226,208.

Patented April 6, 1880.



Witnesses:

Henry Chadbourne.
J. Allen.



Inventor:

Isaac C. Tate.
by
Alban Andrieu
his atty.

UNITED STATES PATENT OFFICE.

ISAAC C. TATE, OF NEW LONDON, CONNECTICUT.

MACHINE FOR PUNCHING HORSESHOE-NAILS.

SPECIFICATION forming part of Letters Patent No. 226,208, dated April 6, 1880.

Application filed January 12, 1880.

To all whom it may concern:

Be it known that I, ISAAC C. TATE, a citizen of the United States, residing at New London, in the county of New London and State of Connecticut, have invented certain new and useful Improvements in Machines for Punching Horseshoe-Nails; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Heretofore iron for horseshoe-nails has been rolled with the edges thick and central part thin, so that the nails could be cut out with punch and die, heads and points, from said bar; but after such cutting it has been necessary to remove the rough scale-marks of the iron and taper, temper, and finish each nail separately. Iron has also been rolled while hot with indentations corresponding to the face form of the nails, which indented portions were subsequently punched out; but by this latter method the nails were left soft, and required to be subsequently tempered and finished.

The tempering of horseshoe-nails is accomplished by compressing and condensing the metal by punch and die or by hammering or rolling, and requires the employment of costly machinery. When the nail is subjected to this operation the temper is unequal, because the metal at the edges yields more readily than at the center, having lateral support; and it also impairs the form of the nail, which can only be restored by trimming.

To obviate the defects of the method as above described, I patented an invention, as fully described in Letters Patent No. 189,586, granted to me on the 17th of April, 1877, in the practical operation of which a considerable waste is occasioned; and to reduce this waste is the object of my present invention, for which purpose it is carried out as follows: I use a vertically-movable punch-holder, which is to be attached to the vertically-movable gate or head of a suitable punching-machine, which punch-holder is provided, first, with a pair of plating and tempering dies, in the rear of which is arranged a pair of male nail-blank punches,

on each side of which, and in a line with said punches, is arranged a pair of nail-pointing-finishing punches, combined with a stationary bed-plate, a part of which directly beneath the tempering and tapering dies is smooth and plain. The other part, directly beneath the male nail-blank punches, is provided with a pair of stationary female nail-blank dies. In the bed, beneath the said stationary female nail-blank dies, I arrange a laterally-sliding die-holder, provided with a double pair of female pointing-finishing dies, into which the male nail-blank punches force the nail-blanks in such a manner as to leave the heads of the nail-blanks within the pointing-finishing dies and the clinch or point parts of the nail-blanks on the top of the said dies. The sliding die-holder is then moved laterally until its pointing-finishing dies, which have the blanks within them, come directly under the pointing-finishing punches, where it remains stationary long enough to allow the corresponding set of pointing-finishing punches in the vertically-movable punch-holder to descend and cut out the finished nails, which drop through the said dies. In this position of the sliding die-holder its other pair of pointing-finishing dies are directly beneath the stationary female nail-blank dies in the bed-die, and have received a successive pair of nail-blanks in the same manner as above described. The punch-holder with its punches now ascends to allow the sliding die-holder to move laterally until it brings the female pointing-finishing dies with their nail-blanks directly beneath the opposite set of the pointing-finishing punches, where the same operation is performed, and so on.

The sliding die-holder is to be moved laterally by any suitable positive and intermediate mechanism from any moving part of the punching-machine.

If so required, suitable springs or equivalent devices may be arranged in connection with the female pointing-finishing dies to retain the nail-blanks in their proper positions during the operation.

If desired, the plating-punches may be operated in a vertical double-headed punching-press holder separate from the blank-punches, but operated by the same shaft in connection

with well-known feeding and guiding mechanism.

In the accompanying drawings, Figure 1 represents a plan view of the invention. Fig. 2 represents a plan view, showing the punch-holder removed. Fig. 3 is a plan view of the sliding die-holder. Fig. 4 is a longitudinal section on the line A B, shown in Fig. 1. Fig. 5 is a section on the line C D, shown in Fig. 1. Fig. 6 is a cross-section on the line E F, also shown in Fig. 1. Fig. 7 represents a plan view of the double-ribbed nail-plate. Fig. 8 is a plan view of the same, showing the form of blanks and waste on the points between the heads. Fig. 9 is a cross-section on the line G H, shown in Fig. 8. Fig. 10 is a plan view of the nail-blank, the dark spaces on which represent the clipping or waste in pointing. Fig. 11 is a plan view of the finished nail, and Fig. 12 is a longitudinal section of a pointed and finished nail.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

a is the punch-holder, provided with the tempering and tapering dies *b b* and male nail-blank punches *c c*, as and for the purpose described. *d d d' d'* are the pointing-finishing punches arranged on two opposite sides of and in a line with the male nail-blank punches *c c*, as and for the purpose set forth. *e* is the bed-die, having smooth upper part, *e'*, directly beneath the tempering and tapering dies *b b*, and *e'' e''* are female nail-blank dies, located directly underneath the male nail-blank punches *c c*, as and for the purpose specified. *f* is the sliding die-holder, provided with the female pointing-finishing dies *f' f' f'' f''*, arranged in pairs in a manner and for the purpose as set forth, and shown in the accompanying drawings. *g g* are suitable extensions on the sliding die-holder *f*, to which power for imparting a reciprocating motion to the die-holder is to be applied, for the purpose set forth.

h in Fig. 7 represents the double-ribbed nail-plate before impressions are made on it.

i in Fig. 8 represents the nail-plate as it is to be stamped and punched, and the black spaces *i' i'* represent the waste at the points of the nails.

i'' i'' in Figs. 8 and 9 represent the depressions made in the nail-plate by the tempering and tapering dies, as and for the purpose set forth.

In Fig. 10, *k* represents the nail-blank after it is punched by the male nail-blank punches *c c* and before it is pointed and clipped by the pointing-finishing punches *d d d' d'*. The black spaces *k' k'* in said Fig. 10 represent the clipping at the point by the pointing-finishing punches *d d d' d'*.

l in Figs. 11 and 12 represent the finished nail.

What I wish to secure by Letters Patent, and claim, is—

1. In a machine for punching horseshoe-nails, the punch-holder *a* and its central male nail-blank punches, *c c*, in combination with the female nail-blank dies *e'' e''* and the female slide-carrying dies *f' f'*, as and for the purpose set forth.

2. In a machine for punching horseshoe-nails, the punch-holder *a*, with its central male nail-blank punches, *c c*, pointing-finishing punches *d d d' d'*, the bed-die *e*, with its female nail-blank dies *e'' e''*, and the sliding die-holder *f*, with its female pointing-finishing dies *f' f' f'' f''*, as and for the purpose described.

3. In a machine for punching horseshoe-nails, the punch-holder *a*, with its central male nail-blank punches, *c c*, pointing-finishing punches *d d d' d'*, and tapering and tempering dies *b b*, the bed-die *e*, with its female nail-blank dies *e'' e''*, and the sliding die-holder *f*, with its female pointing-finishing dies *f' f' f'' f''*, as and for the purpose described.

In testimony whereof I have affixed my signature in presence of two witnesses.

ISAAC C. TATE.

Witnesses:

ALBAN ANDRÉN,
HENRY CHADBURN.