

L. G. CLAUDE & C. BALL.  
Horseshoe-Machine.

No. 219,620.

Patented Sept. 16, 1879.

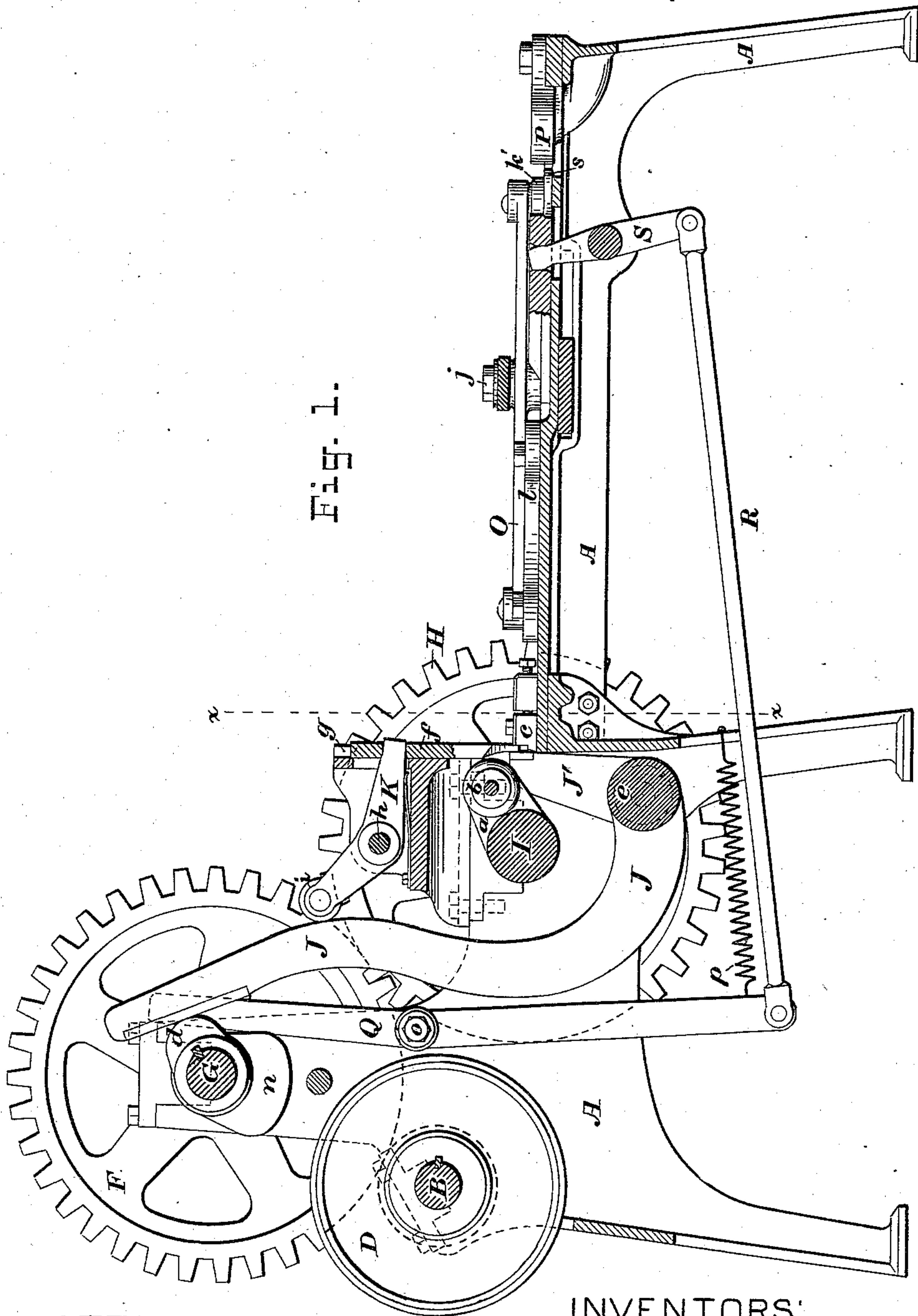


Fig. 1.

ATTEST:

*Walter W. Scott*  
*Henry A. Dirkes*

INVENTORS:

*Louis G. Claude, and*  
*Charles Ball,*

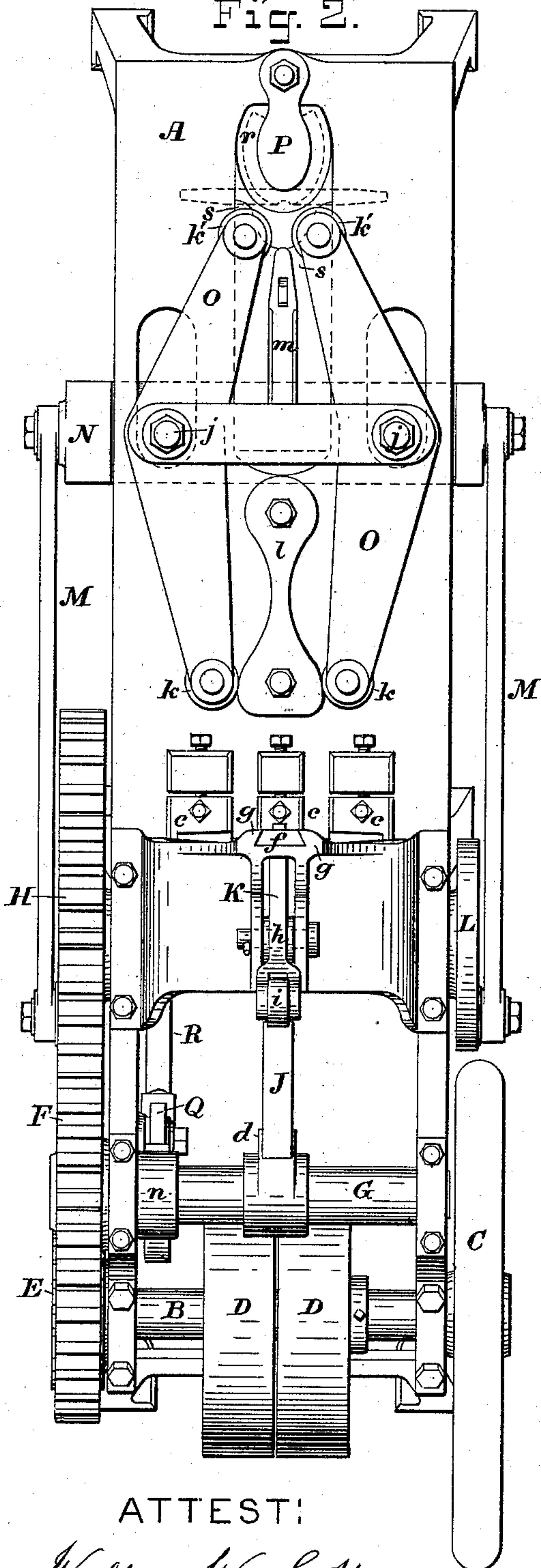
*By their Attorneys,*

*Burke, Fraser & Bennett*

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Fig. 2.



ATTEST:

*Walter W. Scott*  
*Henry A. Drake*

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Fig. 3.

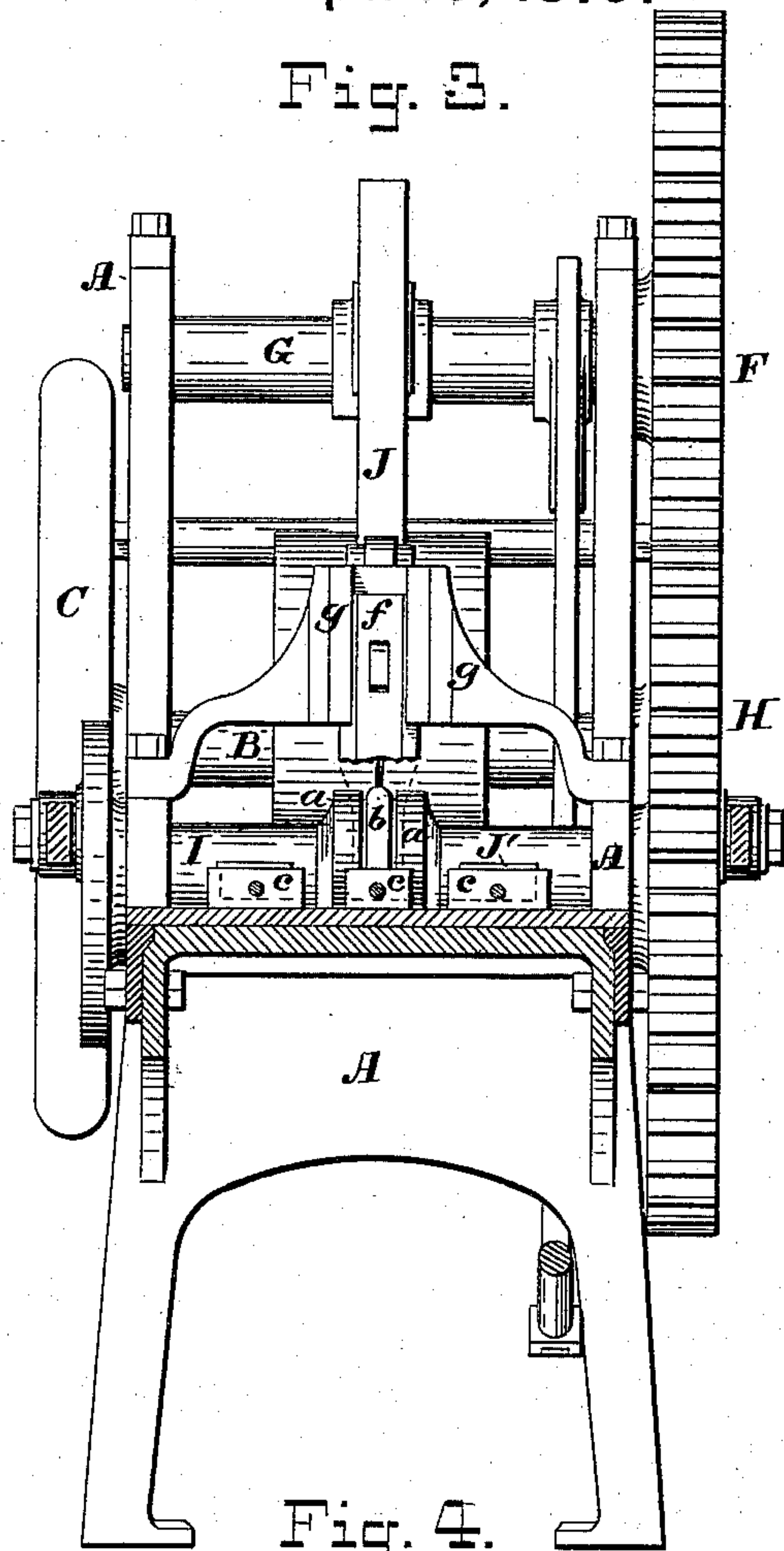
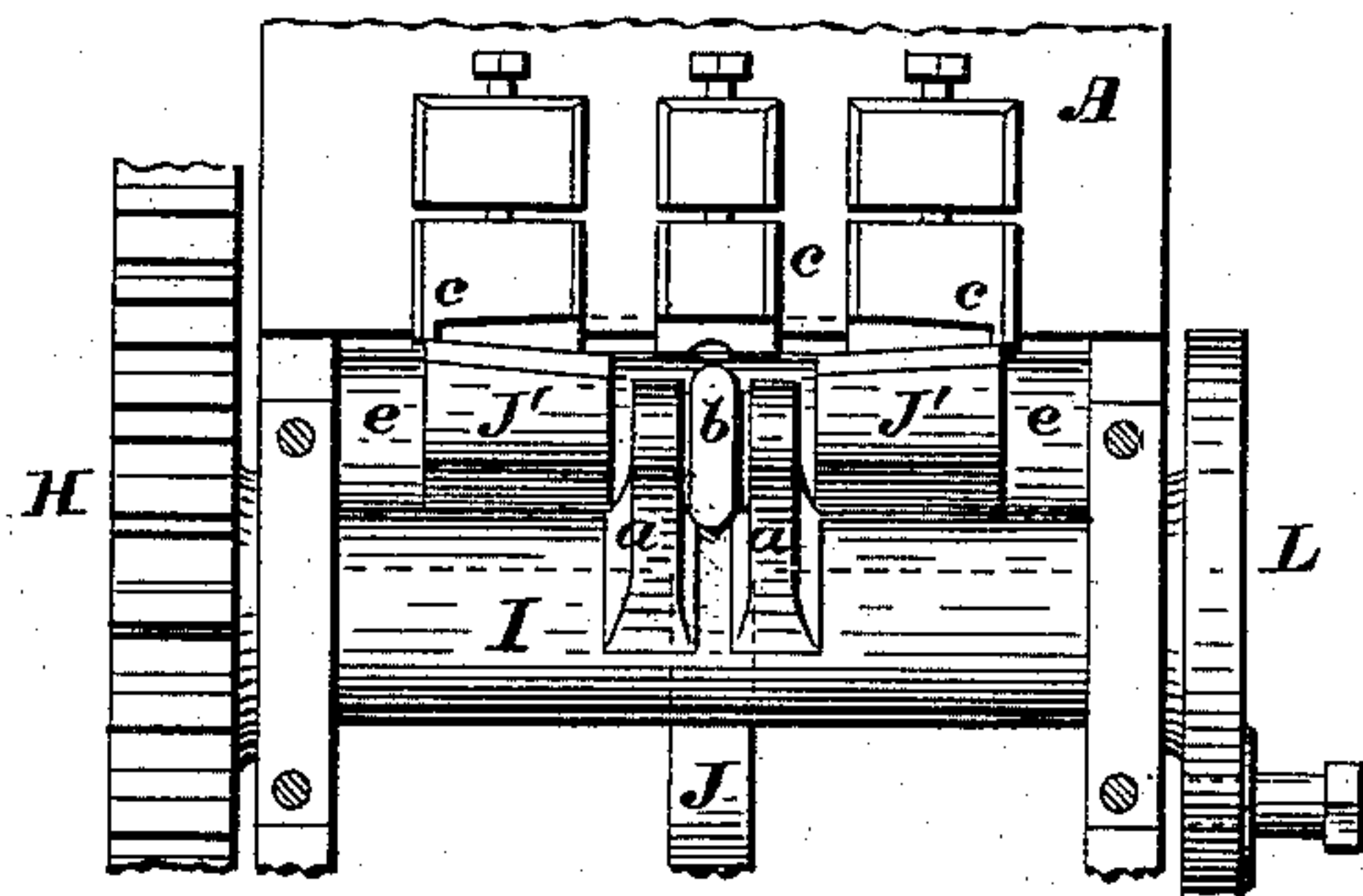


Fig. 4.



INVENTORS:

*Louis C. Claude, and*  
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*By Their Attorneys,*

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# UNITED STATES PATENT OFFICE.

LOUIS G. CLAUDE, OF NEW YORK, AND CHARLES BALL, OF GREEN POINT,  
N. Y., ASSIGNORS TO GEORGE H. RUSSELL, OF NEWARK, N. J.

## IMPROVEMENT IN HORSESHOE-MACHINES.

Specification forming part of Letters Patent No. **219,620**, dated September 16, 1879; application filed May 6, 1879.

*To all whom it may concern:*

Be it known that we, LOUIS G. CLAUDE, of the city, county, and State of New York, and CHARLES BALL, of Green Point, in the county of Kings and State of New York, have jointly invented an Improved Horseshoe-Machine, of which the following is a specification.

This machine is especially adapted to the manufacture of horseshoes having clips rolled or struck up from the solid metal of the toe-calk and shoe; but it may be employed in the manufacture of shoes of all kinds.

In the drawings, which serve to illustrate our invention, Figure 1 is a vertical longitudinal mid-section of the machine. Fig. 2 is a plan of the same. Fig. 3 is a vertical transverse section, taken in the plane of the line *x* in Fig. 1. Fig. 4 is a detail plan view, showing the mechanism for squeezing the heels of the shoe.

A represents a suitable supporting table or frame for the operative mechanism; and B is a driving-shaft, provided with suitable bearings in the same. On this shaft are mounted a fly-wheel, C, tight and loose pulleys D, and a pinion, E. This pinion is arranged to mesh with a spur-wheel, F, mounted on a shaft, G. The spur-wheel F intermeshes with another spur-wheel, H, mounted on a shaft, I, which rotates in bearings on or forming a part of the frame A.

On the shaft I are fixed two short arms, *a*, between which is mounted a swaging-roller, *b*, which acts as the shaft rotates to roll or strike up the clip on the shoe-blank, as will be more fully hereinafter described.

On the bed of the table are fixed adjustable blocks or supports *c c*, provided with rabbeted ledges, on which the blank rests while the clip is being formed. To gripe and steady the blank while it is being operated upon, and to squeeze the heels so as to give them the proper form, we employ the following-described mechanism: On the shaft G is fixed a cam, *d*, which takes under the upper free extremity of a lever, J, attached to and forming a part of a rock-shaft, *e*. This shaft also bears two squeezing-jaws, J' J', which stand upright in front of and adjacent to the ledges which support the blank. As the shaft G rotates the cam *d* takes under

the lever J, as shown in Fig. 1, and this causes the jaws J' to move up and squeeze the heels of the blank and press it firmly against the faces of the blocks *c c*. The jaws are provided with beveled dies or faces adapted to give the proper shape to the heels, and the faces of the end blocks *c c* may also be beveled correspondingly.

Operating simultaneously with the above-described mechanism is a vertically-moving clamping-piece, *f*, arranged to play in guides *g g*. This piece is driven down upon the center of the blank by means of a lever, K, pivoted or fulcrumed at *h*. One extremity of this lever plays in a slot in the piece *f*, or is otherwise connected with it, and the other extremity bears a friction-roller, *i*, which bears upon the back of the lever J.

The cam *d* is so arranged with reference to the travel of the swaging-roller *b* that the blank is held firmly and steadily in place while the clip is being formed, and is then released, so that it may be removed with the tongs of the operator. After the heels are squeezed and the clip is formed on the blank it is removed to the bending-form, where it is given the proper curve by means of the mechanism which we will now describe.

To the spur-wheel H and a crank-wheel, L, on the opposite end of the shaft I are attached two connecting-rods or pitmen, M M, which connect at their other ends with a slide, N. This slide plays in guides or ways in the table or support A as the shaft I is rotated, and bears two lever-formers, O O. These are pivoted to the slide N at *j j*, and bear friction-rollers *k k*, which engage the curved flanks of a guide-plate, *l*, and rollers *k' k'* to act upon and bend the blank.

P is the form, which is so shaped as to give the proper curve to the blank in bending it.

To hold the blank firmly against the form while it is being bent, we provide a sliding clamp, *m*, which is operated as follows: On the shaft G is fixed a cam, *n*, which, when the said shaft rotates, takes under the upper extremity of a lever, Q, pivoted at *o*. The lower end of this lever is connected by a rod, R, with the pendent extremity of a lever, S, which turns on trunnions having bearings in the frame or



support below the slide *m*. The upper end of the lever takes into a mortise or slot in the said slide *m*, as shown in Fig. 1.

So far as described the operation of the machine is as follows: The machine is set in motion by applying power to the shaft B, and the operator places a heated blank on the supporting-ledges of the adjustable blocks *c c*. The jaws *J' J'* advance and squeeze the heels, and at the same time the sliding piece *f* descends upon it at the center. While these are holding and steadying it the swaging-roller *b* sweeps around and strikes up the clip. As soon as the clip is formed the jaws *J'* withdraw, and a spring under the lever K retracts the piece *f*, thus leaving the blank free to be removed. The removal of the blank to the bending device serves to free it from the scales which form on it by oxidation; otherwise the bending might be accomplished without changing its position. We find, however, that if the blank is not removed after squeezing the heels and forming the clip, so that the scales may be shaken off, the finished shoe will be rough and unsightly.

After the clip is formed, as above described, the blank is placed, while still hot, crosswise in front of the form P, as indicated by dotted lines in Fig. 2, the opportunity being chosen when the slides *m* and N are retracted, as in said figure. The slide *m* advances first, and the workman so arranges the blank that the tip of the said slide will engage the recess formed by displacement of the metal in striking up the clip.

As soon as the slide has securely clamped the blank between its tip and the form P the forming-levers advance, and the rollers *k' k'* bend the blank around the form.

The levers O O and slide *m* are now retracted, the latter by means of the spring *p*, or some equivalent device, and the finished shoe drops to the ground through an opening, *r*, in the table-bed around the form P.

To support the blank while it is being bent, we prolong the base of the sliding clamp *m*, so as to form two forks or branches, *s s*, which pass on either side of the form P under the

blank. These withdraw along with the slide, and permit the finished shoe to fall.

Having thus described our invention, we wish it understood that we do not confine ourselves to the precise construction and arrangement of the mechanical devices herein shown, as they may be varied some without materially departing from our invention—as, for instance, the cam *d* may be so constructed as to retract as well as advance the sliding plate *m*, without the necessity of employing a spring, *p*, and the levers S and K may be connected to the slides *m* and *f* by links in lieu of the means shown.

What we do claim is—

1. In a horseshoe-machine, the combination of the clamping-piece or slide *f*, the squeezing-jaws *J' J'*, and the mechanism for forming the clip, all arranged substantially as shown and described.

2. In a horseshoe-machine, the combination of the slide *f*, the adjustable blocks *c c*, provided with beveled faces, and the squeezing-jaws *J' J'*, provided with beveled faces or dies, to compress and bevel the heels of the shoe, all arranged to operate substantially as set forth.

3. In a horseshoe-machine, the combination of a rotating shaft provided with a cam, *d*, the levers J K, the jaws *J' J'*, the clamping-piece *f*, and the rotating shaft I, bearing a swaging-roller, *b*, for forming the clip, all arranged to operate together substantially as described.

4. In a horseshoe-machine, the sliding clamp *m*, having prolongations *s s*, to support the shoe while it is being bent, in combination with a form, P, having an opening around it for the finished shoe to drop through, substantially as set forth.

In witness whereof we have hereunto signed our names in the presence of two subscribing witnesses.

LOUIS G. CLAUDE.  
CHARLES BALL.

Witnesses:

HENRY CONNETT,  
ARTHUR C. FRASER.