

R. GROSDIDIER.
HORSESHOE CLIP FORMING MACHINE.
APPLICATION FILED SEPT. 16, 1907.

981,999.

Patented Jan. 17, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

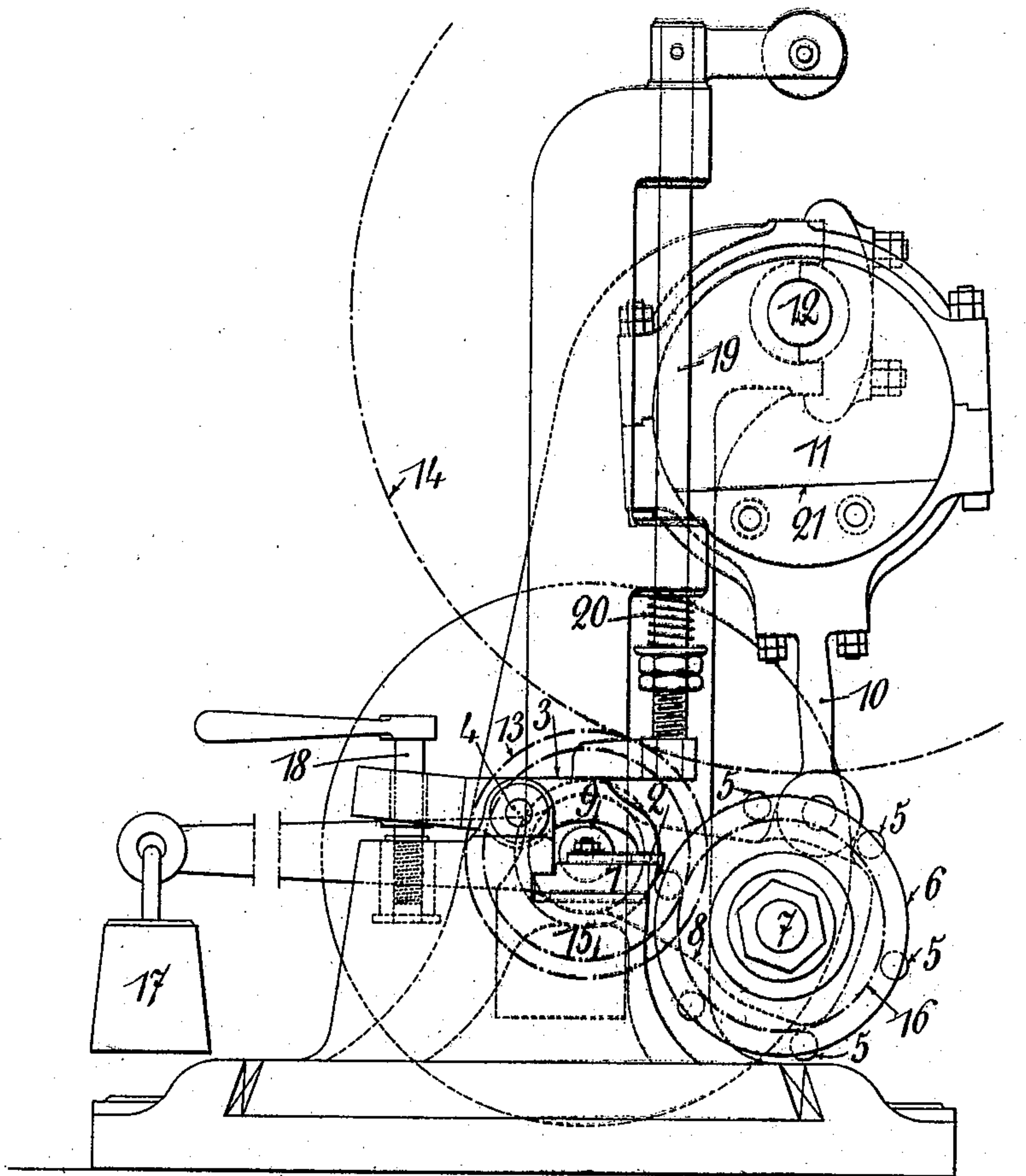
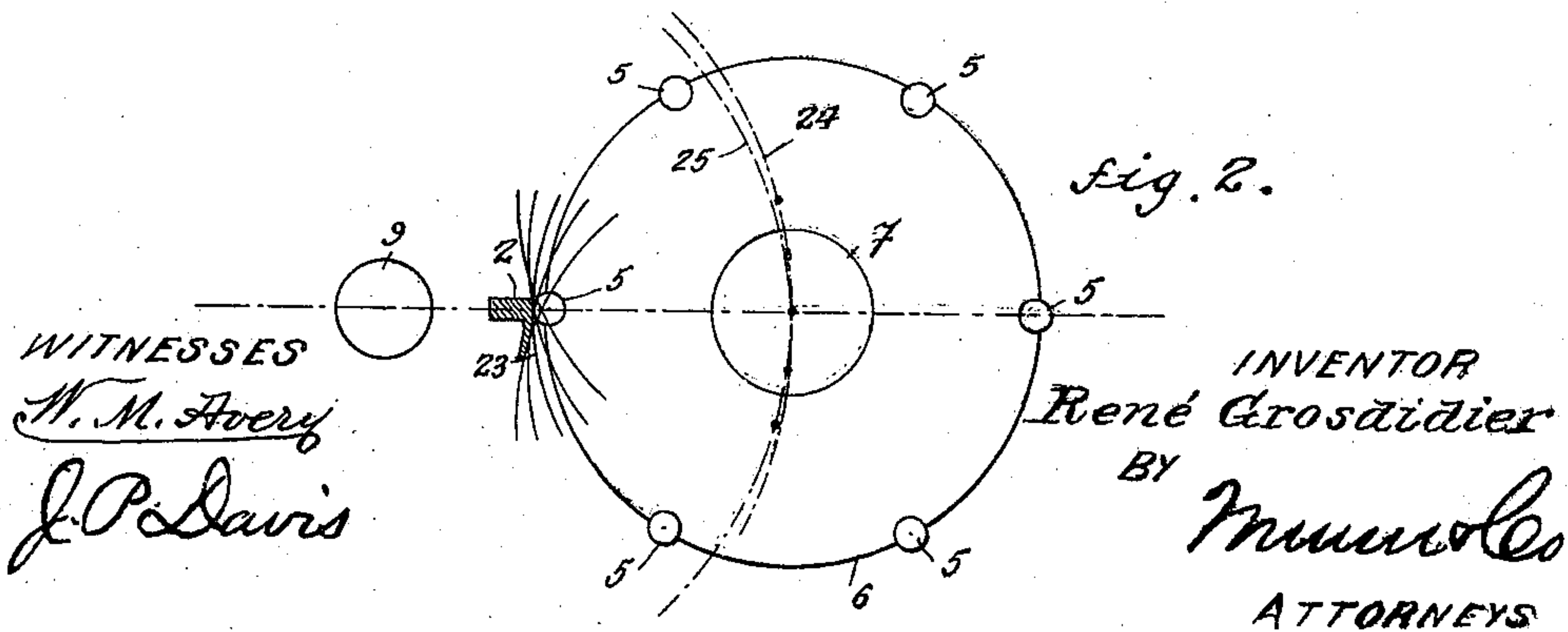


Fig. 2.



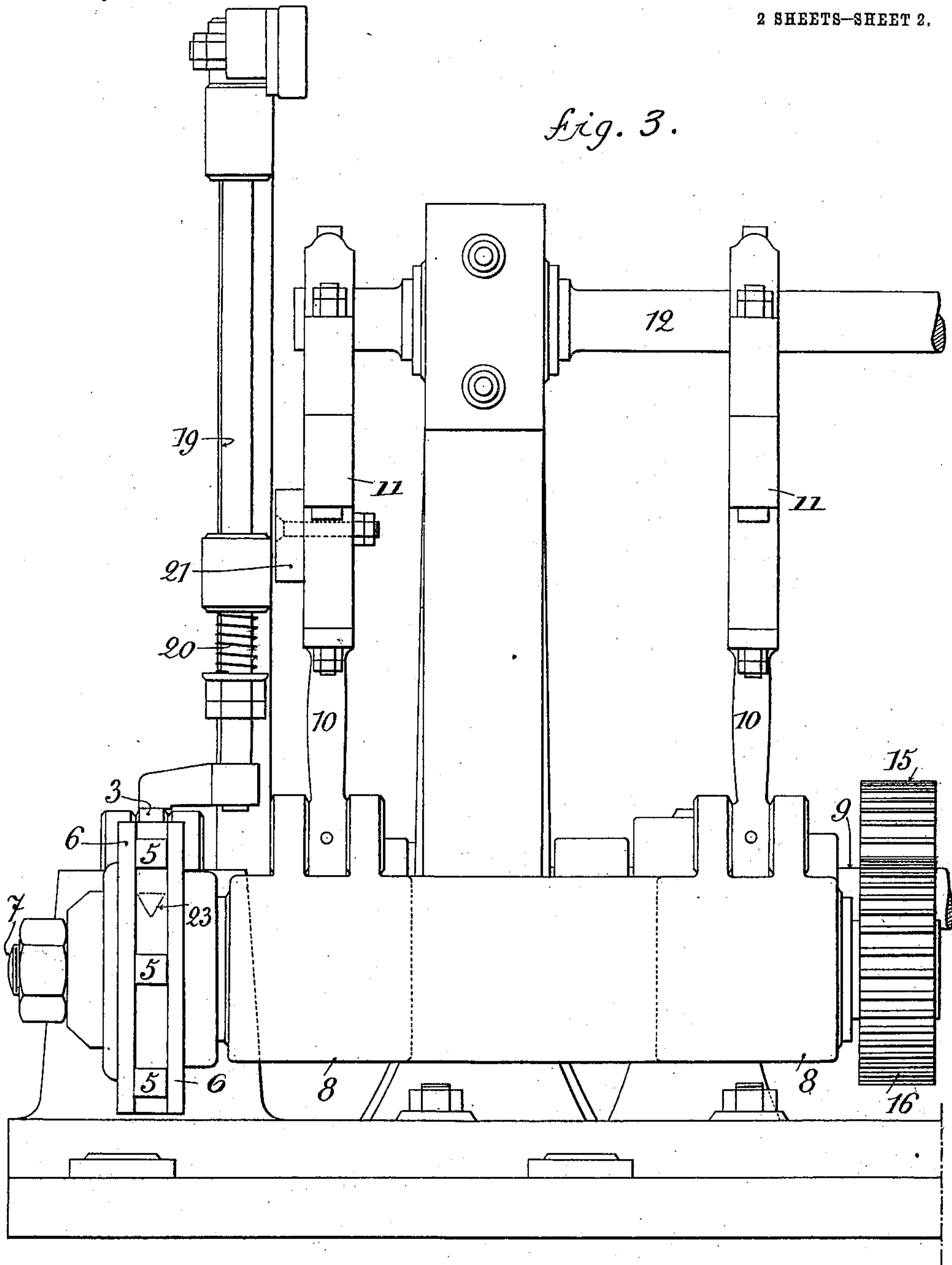
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2 SHEETS—SHEET 2.

Fig. 3.



WITNESSES

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RENÉ GROSDIDIER, OF COMMERCE, FRANCE.

HORSESHOE-CLIP-FORMING MACHINE.

981,999.

Specification of Letters Patent.

Patented Jan. 17, 1911.

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To all whom it may concern:

Be it known that I, RENÉ GROSDIDIER, a citizen of the Republic of France, administrator of the Société Anonyme des Forges & Aciéries de Commerce, residing at Commerce, Meuse, in the Republic of France, have invented certain new and useful Improvements in Horseshoe-Clip-Forming Machines, of which the following is a specification.

This invention relates to improvements in horse-shoe clip or welt forming machines, and the improvement consists essentially in subjecting the portion of the horse-shoe which is to be raised in forming the clip or welt, the said portion being previously heated, to a series of blows which follow each other in quick succession and are applied by means of cams or rollers moving at a great speed, while the direction in which the blows are dealt is gradually varied as in the case where the blows are dealt by hand. To carry out this work in a practical manner, the cams or rollers dealing the blows are mounted on a rotary element which revolves at a great speed and the said element is arranged on a pivoted support which moves in a predetermined curve with respect to the stationary horse-shoe. With these means, hammering, rolling, and attracting operations are produced, repeated, and modified at each blow of the cams or rollers, so that the clip or welt is formed on the horse-shoe very quickly and very regularly. The use of the machine can be applied at any stage of the manufacture of the horse-shoe, that is whether the latter is still straight or curved into shape, or whether it is only outlined or nearly finished.

One embodiment of this invention is shown in the accompanying drawing in which:

Figure 1 is a diagram in elevation, Fig. 2 shows the gradual formation of the clip or welt, and Fig. 3 is a part elevation of the machine, as seen from the side where the hammering rotary member is located.

The machine shown in the drawing comprises an anvil 1, on which the horse-shoe 2 to be provided with a clip can be held fast by means of a lever 3, swinging around a stud 4.

The cams 5 which hammer the shoe are mounted between two rotary plates 6, secured to a shaft 7 which is carried by a

frame 8, swinging around a shaft 9. The swinging motion is imparted to the said frame by means of one or of two eccentric rods 10 and of one or two eccentrics 11, secured on a shaft 12. The shaft 9, receiving from any suitable source of power rotation through suitable gearing, transmits it to the shaft 12 at a speed which is reduced through the medium of a pinion 13 and of a toothed wheel 14; the said shaft 9 also transmits rotation at high speed to the shaft 7 of the plates 6 by means of the pinions 15 and 16. A balance-weight 17 keeps the frame 8 in equilibrium.

The lever 3 which holds the shoes fast on the anvil may be operated either by hand through the medium of a screw 18 or mechanically by means of a device which comprises a rod 19 having a presser foot resting on the lever 3, a spring 20 pressing the said rod strongly downward, and a cam 21, secured to one of the eccentrics 11 and which raises periodically the rod 19.

When the frame 8 is at the end of its upward stroke, the cam 21 holds the rod 19 in its raised position so that the lever 3 is released; at that moment, the horse-shoe already provided with a clip can be replaced by a fresh one. On account of the continuous rotation of the shaft 12, the cam 21 then allows the rod 19 to move down again under the action of the spring 20, and the fresh shoe is thus held against an adjustable support on the anvil. At the same time, the eccentrics move the frame 8, downward; the shaft 7 then moves downward around the shaft 9, and the cams 5 revolve at a rapid rate. The said cams then come and deliver blows successively on the horse-shoe 2, beginning at the upper edge of the latter (see Fig. 2) beating gradually the metal downward, to form at last the clip or welt 23 when the frame 8 reaches the end of its downward stroke. The eccentrics raise the frame 8 and the cam 21 again moves the rod 19 upward to allow of the removal of the shoe 2, and so on. In the construction shown the anvil has a convex surface at the place where the clip is formed.

In the embodiment shown in the drawings, the plates carrying the cams are displaced according to a trajectory 24 forming the arc of a circle, but it will be understood that this trajectory can be given any other shape whether straight or curved as re-

quired; for instance that shown at 25, in Fig. 2. Such a shape can be carried out mechanically without any trouble by those versed in the art.

5 The machine may be modified in its general fittings while keeping the principle of its mode of operation; the shape and the number of the hammering cams or rollers may be varied, for instance, the cams may
10 be fixed to or integral with a plate or the rollers may be loosely mounted on studs carried by two plates or the like. The number of the cams or the like may be such that the number of blows dealt per minute will
15 amount to several thousands.

Claims:

1. A machine for forming the clip of horse-shoes, comprising a fixed support, means for holding a roughly made horse-
20 shoe on the said support and always in the same position, a movable shaft, a rotary member on the said shaft having hammering cams or rollers at its periphery, means for moving the movable shaft in maintain-
25 ing it parallel to the direction of the middle part of the roughly formed horse-shoe and in imparting to the center of the rotary member a reciprocatory motion substantially transversal to the plane of the roughly
30 shaped horse-shoe, and means whereby the rotary member may be made to revolve continuously.

2. The horse shoe clip forming machine, comprising a fixed support for the shoe, a
35 swinging frame, a rotary element journaled in the said frame, hammering cams or rollers at the periphery of the said element, and means whereby the said frame may be swung

and the said element may be revolved simultaneously.

3. The horse-shoe clip forming machine, comprising a fixed support for the shoe, a swinging frame, a rotary element journaled in the said frame, hammering cams or rollers at the periphery of the said element,
40 means whereby the said rotary element may be revolved and the said frame may be swung simultaneously, a spring pressure element adapted to hold the horse-shoe fast on the said support, and means operatively
45 connected with the means for swinging the frame and adapted to raise the said spring pressure element when the said frame reaches one end of its stroke, substantially as described and shown.

4. A machine for forming the clips on horse-shoe comprising a fixed support for the shoe, a shaft parallel to the said support, a frame swingable on the said shaft, a shaft
50 mounted in the movable end of the said frame, a rotary cylindrical member on the said shaft, striking cams at the periphery of the said member, means whereby the frame is caused to swing, and means for causing
55 said member to revolve, the edge of the support near which the striking cams pass being provided with a convex surface at the place where the cams force the iron backward.

In testimony, that I claim the foregoing
as my invention, I have signed my name in
presence of two subscribing witnesses.

RENÉ GROSDIDIER.

Witnesses:

CAMILLE BLÉTRY,
MAURICE ROUX.