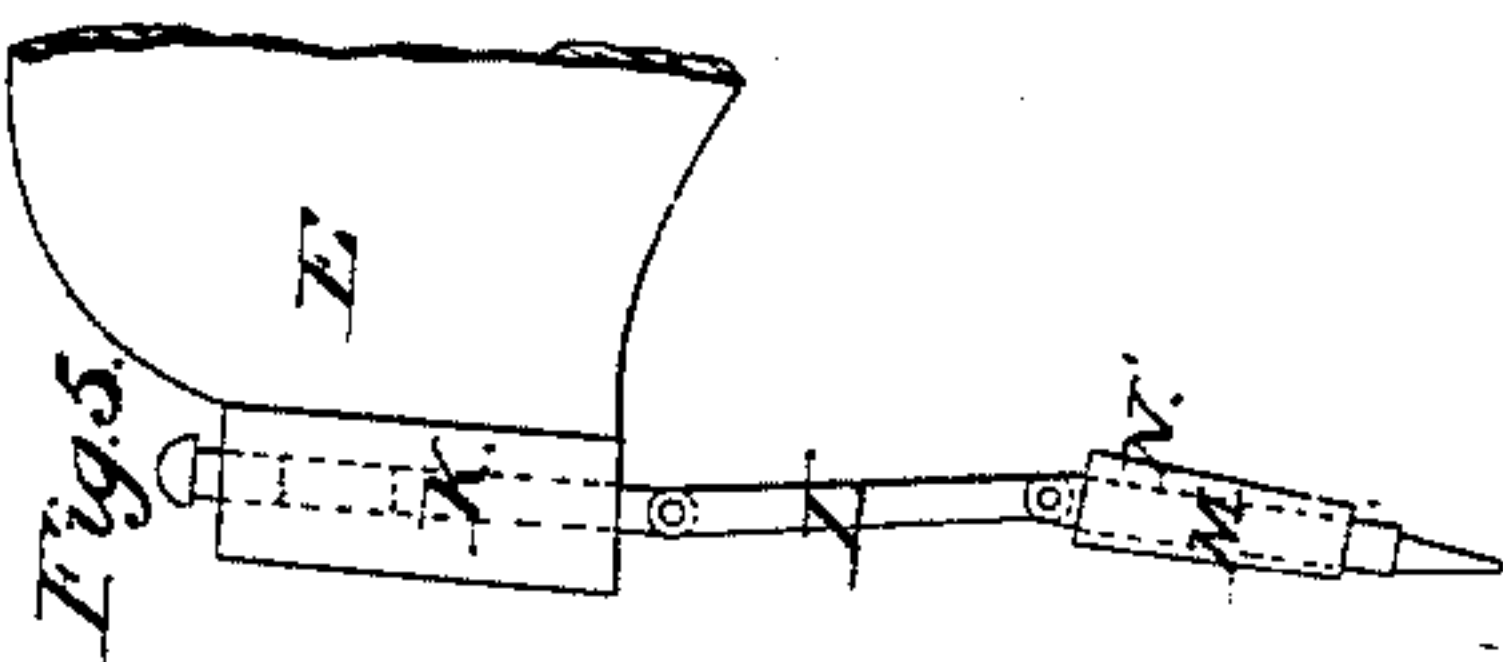
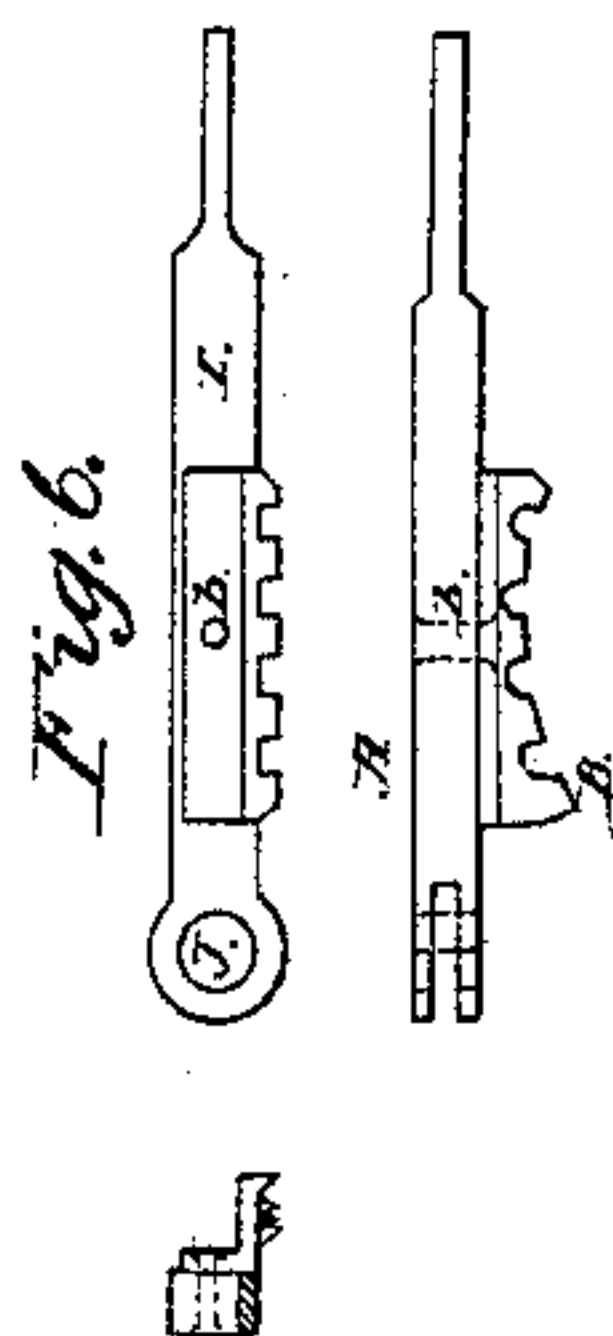
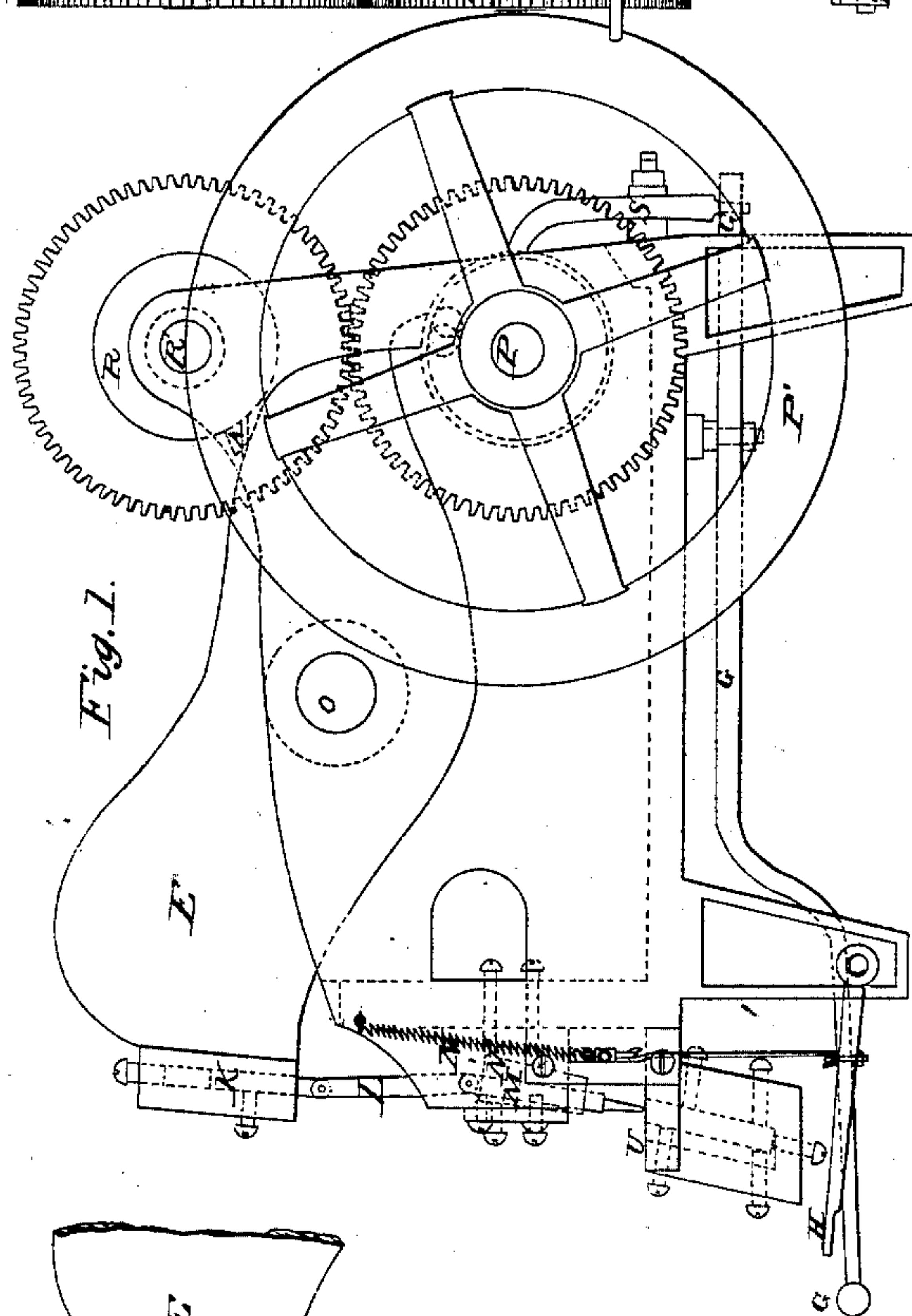
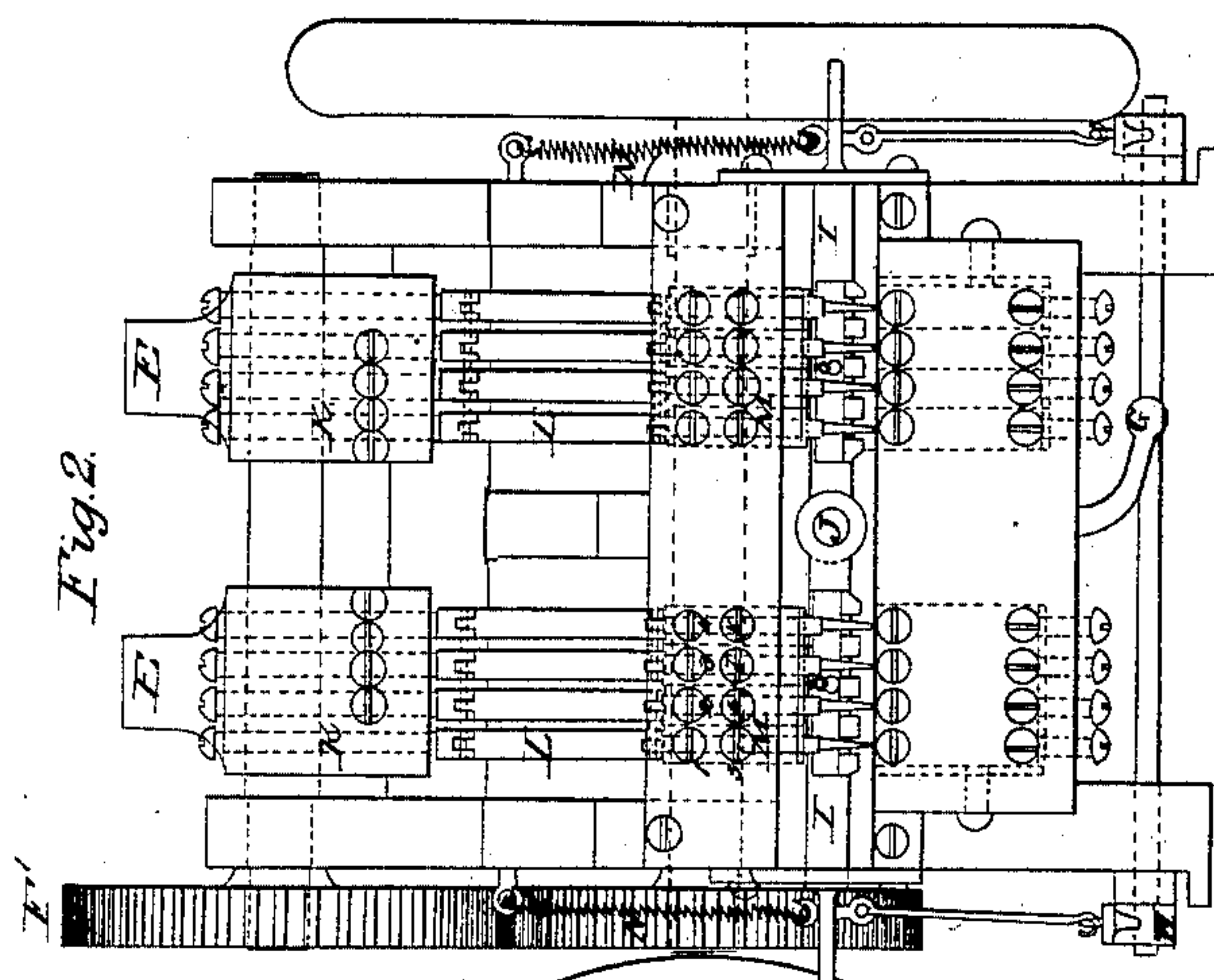


C. H. Perkins

Horseshoe Machine,

N^o 30,689.

Patented Nov. 20, 1860.



Witnesses:
W. H. Allen
J. H. Allen

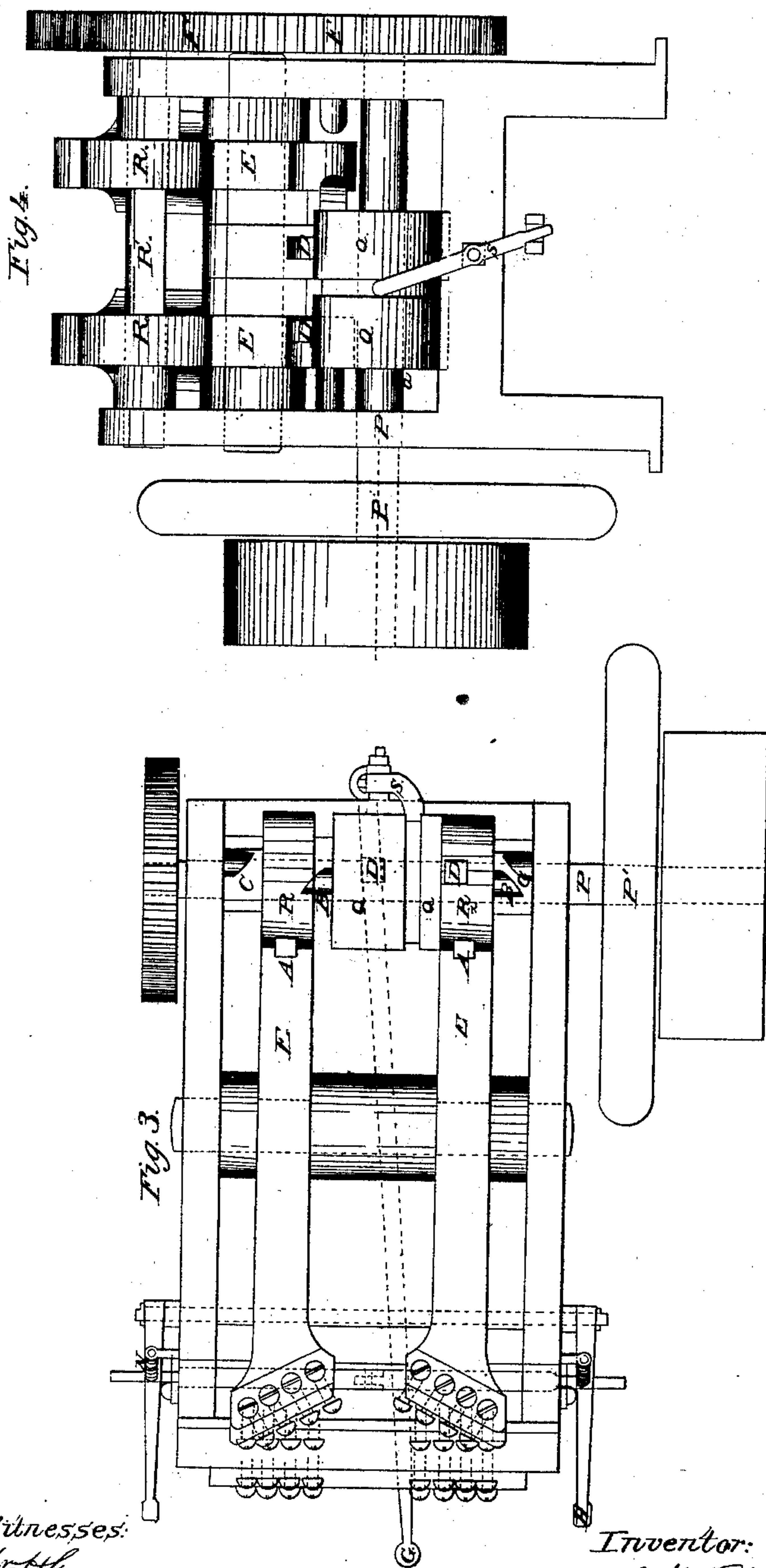
Inventor:
Charles H. Perkins

C. H. Perkins

Horseshoe Machine

N^o 30,689.

Patented Nov. 20, 1860.



Witnesses:
W. H. Young
J. A. Allen

Inventor:
Charles H. Perkins

UNITED STATES PATENT OFFICE.

CHARLES H. PERKINS, OF PROVIDENCE, RHODE ISLAND.

MACHINE FOR PUNCHING HORSESHOES.

Specification of Letters Patent No. 30,689, dated November 20, 1860.

To all whom it may concern:

Be it known that I, CHARLES H. PERKINS, formerly of Putnam, in the State of Connecticut, but now of the city and county of Providence, in the State of Rhode Island, have invented a new and useful Improvement in Machines for Punching Holes in Metal; and I do hereby declare that the following specification, taken in connection with the drawings making a part of the same, is a full, clear, and exact description thereof.

Figure 1 represents a side view. Fig. 2 represents a front view. Fig. 3 represents a top view. Fig. 4 represents a rear view. Figs. 5 and 6 are views of detailed parts to be referred to hereafter.

The same letters indicate the same parts in all the figures.

The machine represented in the drawings is particularly intended for punching nail holes in shoes for horses and oxen, but the same principles which characterize it may be employed in a machine for punching holes in any metallic article.

Since the introduction of horse shoes manufactured by machinery various attempts have been made to produce a machine which should perform the labor of punching the nail holes as well as those punched by hand. None of these attempts have however been successful, to my knowledge. The difficulty does not consist in penetrating the metal with the punching instrument, but in giving to the several holes of the series the exact degree of obliquity, which according to their relative positions in the side and toe of the shoe they should have in order to insure a right direction to the nails with which the shoe is to be secured to the hoof of the animal.

To produce a machine which at a single operation shall punch all the holes of the series in one side of a horse shoe and be capable of punching each hole at any desired angle to the plane of the surface of the shoe is the object of my invention.

In the accompanying drawings P (Fig. 1) is the main shaft to which a heavy balance wheel P' is attached. On this main shaft is placed a collar Q capable of sliding to and fro on the shaft, but prevented from turning around it by means of the spline *a*. On this collar are mounted two strong tappets D, D

for the purpose of actuating the punching levers E, E, presently to be described.

The toothed wheel F on the main shaft engaging with the toothed wheel F' (Fig. 4) communicates motion to the upper shaft R' arranged above the tails of the punching levers E, E and parallel with the main shaft. On this upper shaft R' are two stationary collars R, R each of which is provided with a tappet A, A so adjusted (Fig. 1) that at every revolution of the shaft R' each tappet will strike its corresponding punching lever and thereby elevate the punches presently to be described.

E, E are two punching levers capable of vibrating on a shaft O (Fig. 1). The rear end of each lever is as shown in this figure extended so far that it can be subjected to the action of the tappets A and D on the upper and lower shafts respectively. To the front end of each of these punching levers is attached as many punches as it is desired to make holes in the shoe.

In the machine shown in Figs. 1, 2, 3 and 4, as it is intended to punch only one side of the shoe at once, two punching levers are represented, though this arrangement is not necessary.

Sheet III, Figs. 1, 2, 3, 4, exhibits the arrangement of the parts of the machine, when all the holes on both sides of the shoe are to be punched at one operation, one punching lever alone being employed.

Each punch attached to the levers E E, Fig. 5, consists of three parts as follows: A head K (Fig. 5) held by clamp screws in an adjustable box in the end of the lever E, a connecting link or shackle L, and a punch M, passing through an adjustable guide block N', secured to the frame of the machine. It is obvious that by means of the clamp screws 1, 2, 3, 4, &c. (Fig. 2) by which the guide block of each punch is held any desired degree of obliquity can be given to the path of travel of each punch, and also as each punch is susceptible of independent adjustment the series can be arranged to punch a set of holes at one blow of the punching lever, each hole varying from the others in direction as the operator may desire.

As in the machine shown in Figs. 1, 2, 3, and 4 it is designed to punch the holes in one side of the shoe only at once and as

thereby the two punching levers must be used alternately the following provision is adopted to prevent both levers from descending at once and at the same time to bring either into action as desired: The collar Q on the main shaft having the tappets D D (Fig. 4) mounted on it, is as has already been stated a sliding collar. When the collar is moved so far to the left that the left hand tappet D will actuate its corresponding punching lever E the other tappet has no duty to perform. On the other hand when the right hand tappet D is, by reason of the collar having been moved along the shaft, in a position to actuate the right hand punching lever E, the left hand tappet D is not employed, and when the collar Q is placed mid-way between the bearings of the main shaft neither tappet can strike the lever which it is designed to operate. The position of the collar Q on the shaft is determined through the lever S by the position of the lever G (Fig. 1) at the front of the machine and within the control of the operator.

In order to hold the shoe firmly upon the table on which it is placed and to prevent it from rising with the punches as they are withdrawn I employ the following device: Two bars I, I one for each punching lever, pivoted at J (Fig. 2), are placed directly back of the punches. To each of these bars is attached a head of the same curvature as the crease of the shoe, which head is jointed to the bar (Figs. 2 and 6) at *b*; this head is provided with a series of prongs, between every two of which a punch can pass. A spiral spring N N causes the levers I, I, and consequently the pronged heads attached, to be raised above the table upon which the shoe to be punched is placed, while a lever H, operated by the foot, enables the workman at will to pull down one of the levers I I and press the prongs of the head into the crease of the shoe and thereby prevent the shoe from rising with the upward motion of the punches. The fact that the pronged head is jointed to the bar at *b* is of great consequence, as by this means the head can accommodate itself to any inequality of thickness in the side of the shoe and thus hold the shoe firmly to the table, inasmuch as in case the shoe by a change of position binds the punch, the punch will be in danger of being broken.

A single blow of the punching lever is all that is desired shall be made by the machine unless the operator desires to readjust the parts for a repetition of it. Accordingly from each side of the collar Q on the main shaft (Fig. 3) is extended an inclined plane or projecting cam B, B. From each side of the supporting frame of the machine are projected two similar stationary inclined

planes C, C, the beveled face of each of which is turned toward the beveled face of the inclined plane on the collar Q nearest to it. The length and arrangement of these inclined planes are such that when either punching lever has been acted upon by its appropriate tappet D (Fig. 1) and the collar Q being thus nearer to one side of the frame of the machine than to the other, one of the projecting cams B, B, will in the course of the revolution of the main shaft strike the inclined plane projecting from the side of the frame to which the collar is nearest and thereby force the collar so far along the main shaft as to prevent either tappet D, D, striking the tail of either punching lever E, E during the next revolution. The main shaft may continue to be revolved without operating either of the punching levers unless the operator desires otherwise.

The operation of the machine, regarded as a whole is as follows: The shoe formed and creased is placed on the platform U, Fig. 1, in front of the machine and under the series of punches which it is desired to bring into action. The treadle H and the pronged holder, Fig. 6, is forced down and accommodates its adjustable head to the surface of the shoe. The lever, G, is moved then to the right or to the left as the case may be and in consequence the collar Q is moved along the main shaft and one of the tappets D, D, brought into such a relation with one of the punching levers E, E, that as the shaft revolves it will strike the tail of the lever and force down with great rapidity the whole series of punches operated by the lever. The instant that the tappet D leaves the tail of the punching lever, the upper tappet A on the shaft R' begins to act on the punching lever in the opposite direction and thereby causes the punches to be instantaneously withdrawn. Thus the punches are made to act with great velocity and are permitted to remain in contact with the metal to be punched for so short a period of time that they do not in practice become heated enough to affect seriously their temper. So soon as the tappet, D, has left the tail of the punching lever the faces of the two inclined planes B and C already referred to come in contact and the main shaft thereby becomes disconnected from the punching levers. The shoe may then be placed under the other series of punches which are brought into operation by similar means.

What I claim as my invention and desire to secure by Letters Patent is—

1. The combination of a punching lever with a series of jointed punches each of which can be adjusted independently of the others so that a series of holes can be

punched in different directions of obliquity to the plane of the surface of the shoe or other object to be acted upon substantially as described.

5 2. The adjustable pronged holder (Fig. 6) for the purpose of securing the object to be punched firmly to the table and thereby

preventing the breaking of the punches as they are withdrawn.

CHARLES H. PERKINS.

Witnesses:

J. A. ALLEN,
WM. H. GREENE.