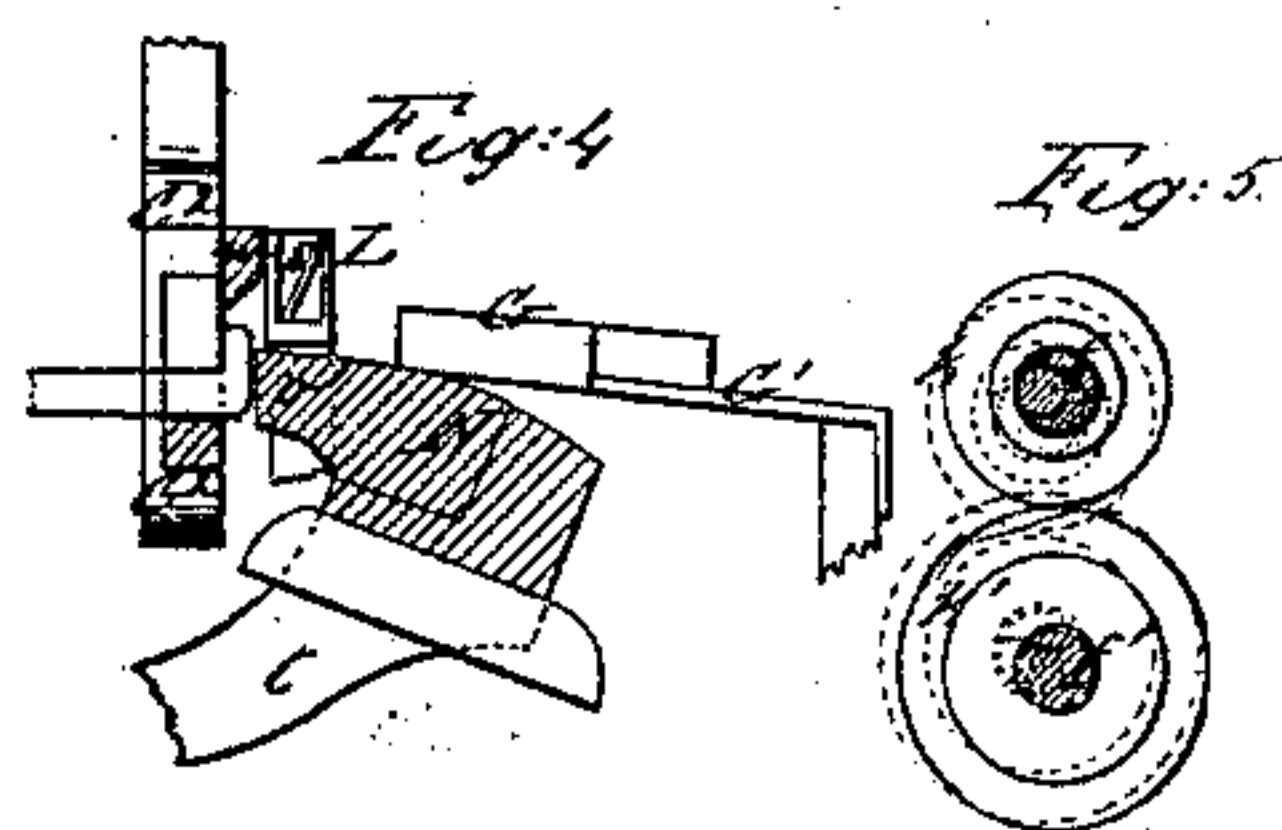
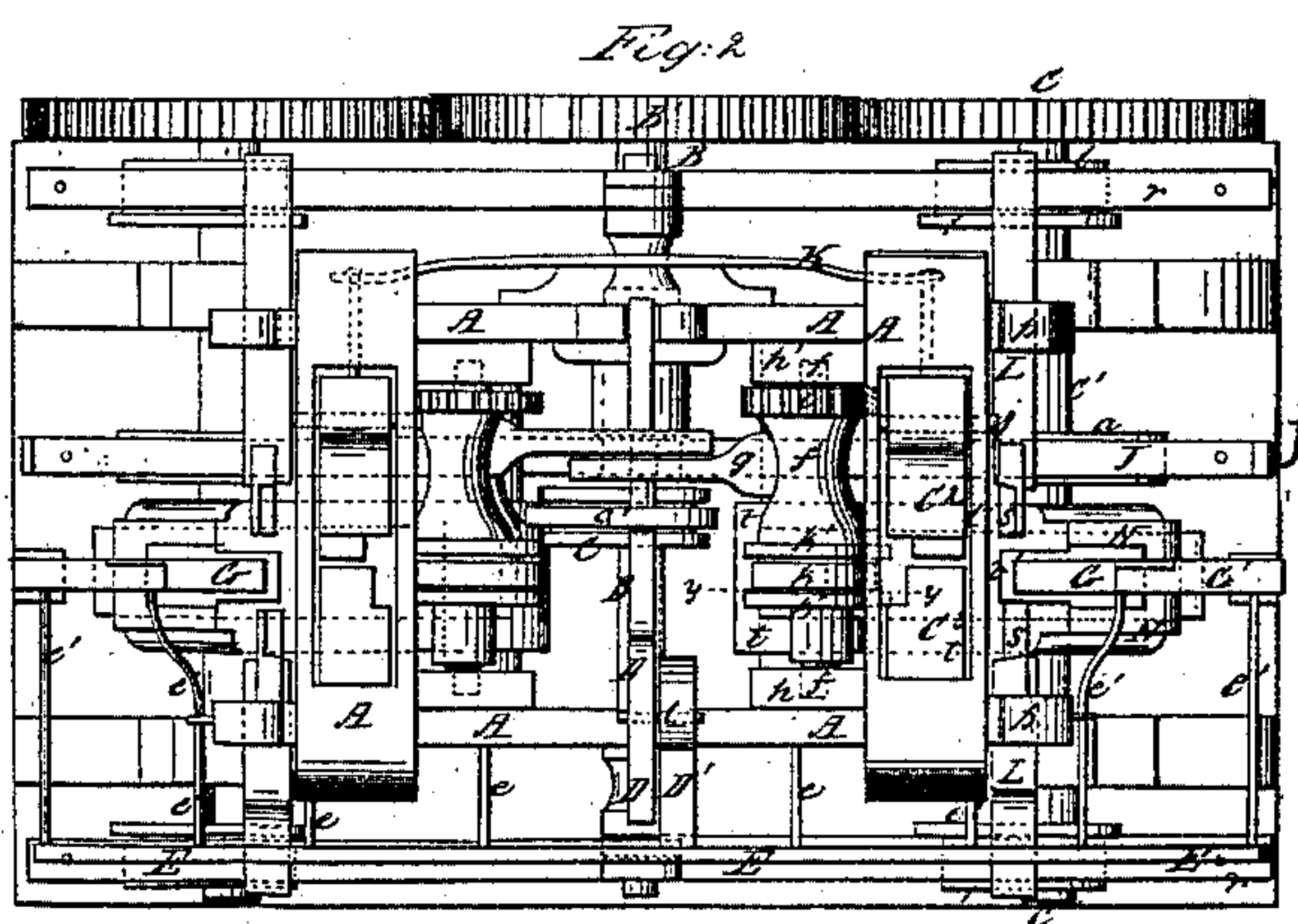
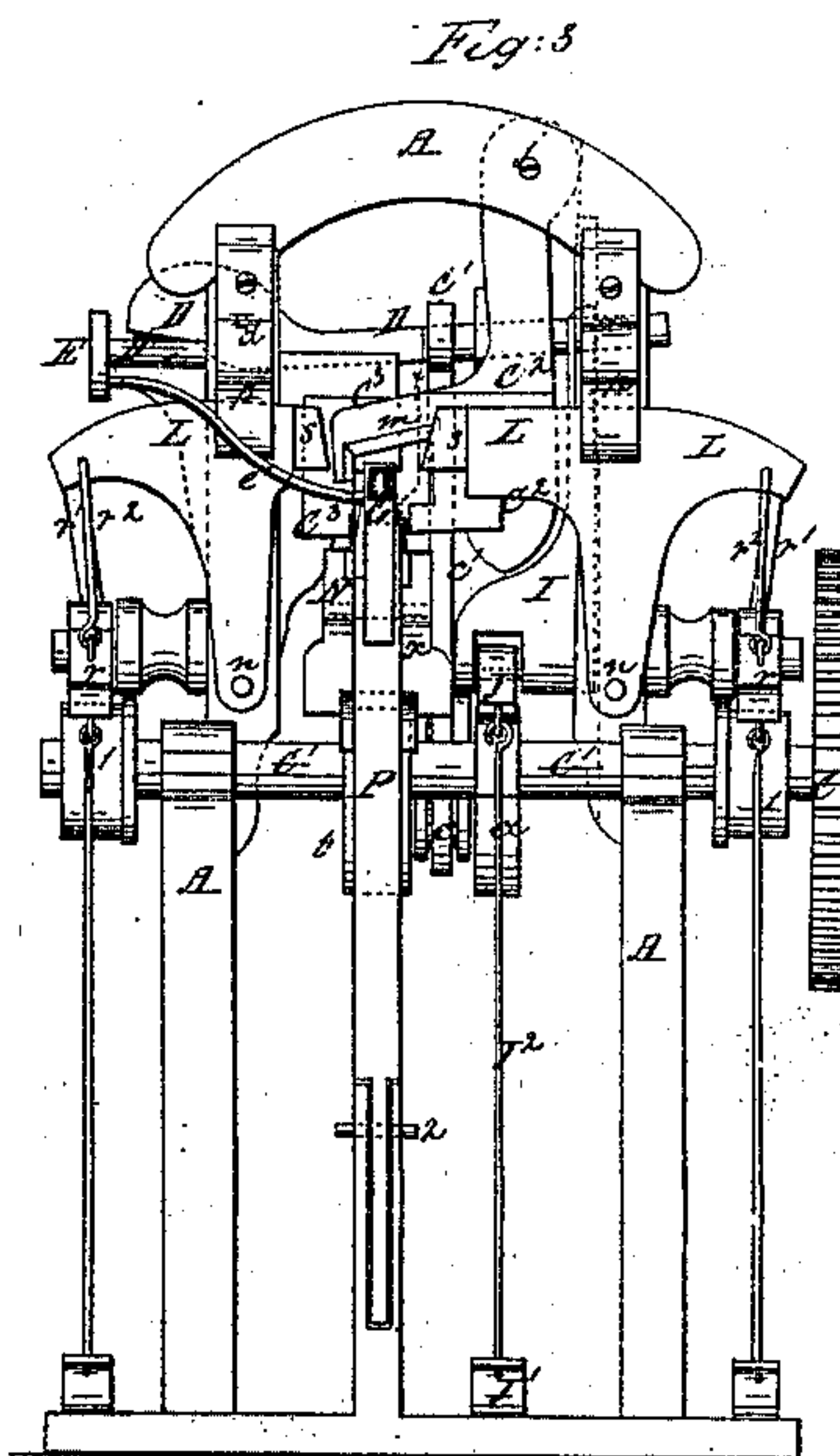
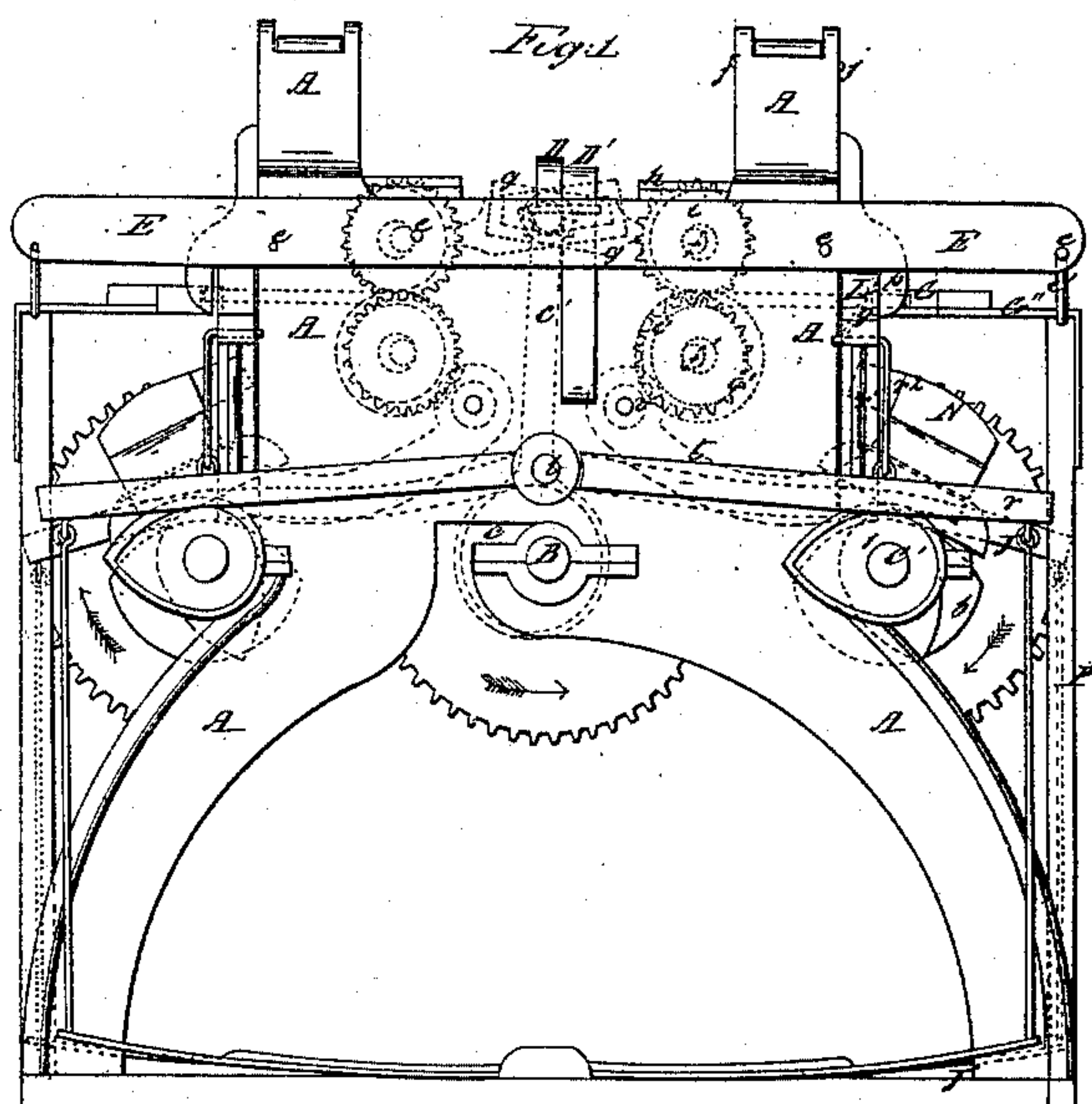


S. CAMERON.
SPIKE MACHINE.

No. 32,466.

Patented June 4, 1861.



Witnesses
J. W. Coombs
R. S. Spencer

Inventor
Samuel Cameron
per Munroe & Co
Attorneys

UNITED STATES PATENT OFFICE.

SAMUEL CAMERON, OF PITTSBURG, PENNSYLVANIA.

SPIKE-MACHINE.

Specification of Letters Patent No. 32,466, dated June 4, 1861.

To all whom it may concern:

Be it known that I, SAMUEL CAMERON, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Spike-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1, is a side elevation of one side of a double machine for making hook headed spikes. Fig. 2, is a top view of Fig. 1. Fig. 3, is an elevation of one end of the machine of Figs. 1, and 2. Fig. 4, is a longitudinal section through the heading tool and gripping jaws taken in the course of the vertical plane indicated by the red line x, x , Fig. 3. Fig. 5, is a section through the eccentric pointing rollers for pointing the spike taken in the vertical plane indicated by the red line y, y , Fig. 2.

Similar letters of reference indicate corresponding parts in the several figures.

My invention relates to certain novel improvements in manufacturing hook- or brad-headed spikes which consist, firstly in the employment of a rack arranged along one side of the machine, as will be hereinafter described, on which the rod, from which the spikes are made, is thrown as it leaves the common rolls, said rack being combined with shears which sever the rod in the middle so that the two halves can be fed to the machine from both ends thereof simultaneously while in a proper heated state for working into spikes.

To enable those skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

The machine which I am about to describe is so constructed that the several operations necessary to form the perfect spike, are conducted at both ends of the machine at the same time, there being virtually two machines combined in one frame. I will therefore describe the several parts for forming the spikes and the operation of these parts of one end of the machine only, as the parts on one end of the machine are duplicated on the opposite end for the purpose of facilitating the work while the iron is at a proper degree of heat.

A, represents a frame of a suitable height and strength for containing and supporting

the several parts which cut off the rods, and produce the perfect spikes.

B, is the main driving shaft which extends transversely across the lower part of the frame A, and B', is a spur wheel keyed to one end of main shaft B, outside of the frame A, the teeth of which engage with those of a corresponding wheel C, and give a motion to this wheel in the direction of the arrows represented in Figs. 1 and 5. Spur wheel C, is keyed to the end of a transverse cam shaft C', which is in the front end of the machine under the tool which forms the head on the spike. The cam a , on shaft C', operates the movable jaw C², of the gripping jaws, and the cam b , on this shaft C', which I shall term the lifting cam, operates upon the heading tool N, so as to lift it at the proper time, as will be hereinafter described.

The main shaft has an eccentric C, keyed to it midway between the two sides of the frame A, and this eccentric operates upon the transverse handle of shear jaw D. This handle D, has its fulcrum at d , in the back part of a stationary shear jaw D', against which jaw D, cuts, jaw D', is fixed to the top of one of the sides of frame A, as represented in Figs. 1, 2, and 3, of the drawings. These shears are situated about midway of the length of frame A, and project out beyond the side thereof: along the side from which the shears project a rack is arranged which is composed of horizontal bars e, e, e , the ends of which are secured to a wide horizontal bar E, extending the full length of the machine and also some distance from each end thereof. The two rods e', e' , at the ends of bar E, are bent downward and incline toward the guides G, G, at each end of the machines. This rack or fender is intended to receive the heated rods of iron as they come from the common reducing rollers, to guide the rods up to the shears D, D', and to receive the rods when cut by these shears. When the rods are thus cut they are drawn out and moved down the bars e', e' , on the spring plates G', G', of the guides G, G, whence they are pushed endwise through these guides, as will be hereinafter further explained. Thus it will be seen that the rack bars e, e, e, e', e' , receive both rods from which the spikes are to be formed and greatly facilitate the work of introducing these rods into the spike formers in each end

of the two machines while the rods are in a properly heated state.

The shear D, receives a cutting motion from the main shaft B, through the medium of connecting rod c' , and eccentric c , (before described) at each rotation of this main shaft. The movement of the shear rod D, imparts a rocking motion to a shaft f , through an arm g , having an eye on one end through which the shear rod passes. The shaft f , has its end bearings in stationary blocks h , h' , and on the end near block h' , a spur wheel i , is keyed which engages with a spur wheel i' , and transmits a rocking motion to shaft f' , arranged in a vertical plane below shaft f . These two transverse shafts f , f' , are parallel to each other and are rocked back and forth, a quarter revolution—or more or less, in opposite directions and in the directions indicated by the arrows in Fig. 5, of the drawings.

On one side of a vertical line drawn through the two shafts f , f' , are the cylindrical pointing rollers k , k' , which are placed loosely on the eccentric portions of their respective shafts as shown in Fig. 5. The roller k , is a plain narrow roller about as wide as the rod which it operates upon, and this roller works between the flanges of the lower roller k' . These two rollers k , k' , are kept in the proper places on their eccentric shafts f , f' , by means of loose collars to which they are secured, or of which they may form a part. The space between the peripheries of these rollers k , k' , when they are separated is in a horizontal line with the space between the gripping jaws C^2 , C^3 , and also with the end of guide G. When this guide is in a proper position for directing the rod between the jaws C^2 , C^3 , thus the rod from which the spike is to be formed will pass from the guide G, in a direct line to the rollers k , k' , and be received between these rollers. Rollers k , k' , are used to form the point on the spike by drawing out the end of the rod when it is passed between them; and for this purpose the eccentric shafts f , f' , force the rollers gradually together at a proper time and then separate them when the point has been formed on the spike, to allow the spike to drop out.

During the operation of the rollers k , k' , in reducing the end of the rod to a point, tapering on both sides of the spike, the rod is held firmly between two gripping jaws C^2 , C^3 , one of which is permanently fixed, while the other jaw is pivoted at j , to a crosspiece of frame A, as shown in Figs. 2 and 3 of the drawings. The gripping surfaces of the jaws are formed in the usual manner so as to grip and bind each side of the rod. The back part and lower end of the movable jaw C^2 , is curved, as shown in Fig. 2, and behind this jaw is a wedge shaped piece I, which works between verti-

cal guides. This wedge piece I, is pivoted to a lever J, which is itself pivoted to frame A, at l , Fig. 1. One end of this lever J, passes over the cam a , and is held down on the surface of this cam a , by a spring J' , and rod J^2 ; spring J' , is fastened to the floor or to the base of the machine as represented in Figs. 1, and 2. When the cam a , and lever J, force up the wedge I, the jaw C^2 , is made to grip and hold the rod firmly, and when the wedge I is depressed the spring K on one side of the machine draws the jaw C^2 back to its former position. The hooked guide piece m , which projects from the front face of movable jaw C^2 , and extends over on the face of the stationary jaw C^3 , has its lower edge beveled as shown in Fig. 2, of the drawings. This hooked piece m serves not only as a guide to assist in keeping the movable jaw C^3 in a proper relative position with the stationary jaw, but its beveled edge acts upon the spike to clear the point of the finished spike from the stationary jaw or die when the jaw C^2 opens to its full extent.

L, L, are two sector heads which are pivoted at n , n , to the front of the frame A. These heads L, L, work under guide blocks p , p , and receive their movement from cams 1, 1, on shaft C' , through the medium of side levers r , r , and the lifting and pulling down rods r' , r^2 . On the inner ends of these two sector heads L, L, are secured the inclined shear plates s , s , shown in Figs. 2, 3, and 4, of the drawings. These shears come together and cut the rod, from which the spikes are made into proper lengths after the jaws C^2 , C^3 , have gripped the rod. The inclination of the shears s , s , leaves beveled ends on the long rod, and also on the piece cut off from it; the shears s , s , are at such a distance from the face of the jaws C^2 , C^3 , that they do not cut the rod off close to the face of the jaws but leave a portion projecting, of sufficient length to form the head of the spike. The shears s , s , do not commence to cut until the rod from which the spikes are made is firmly gripped by jaws C^2 , C^3 , then these shears approach each other simultaneously.

N, is a vibrating heading die which is raised by the cam b , before described. This heading die N, forms the hooked head on that portion of the spike which is left projecting from the front face of the gripping jaws C^2 , C^3 . The head N, is formed on the front end of two curved arms t , t , Fig. 1, which are pivoted at v , to the sides of the frame A, and when the cam b , lifts the head N, its die point v' , upsets the metal and forms the head on the spike against the front surface of the jaws C^2 , C^3 , in a manner which is common to other spike machines. When the header N, has performed its work it is thrown back to the position represented in Figs. 1, 2, and 3. Fig. 4,

shows the position of the header when it is in operation. This header N, is depressed by the spring G', of a funnel shaped guide G, which is arranged above it and secured to a perpendicular post P. This funnel shaped guide G, may be formed by turning up the edges of a spring plate G', as represented in Figs. 1, 2, and 3. The mouth part of the funnel, G, being larger than the opposite end, and this end being just large enough to allow the spike bar to pass through. The plate G', being a strong piece of steel it depresses the heading tool N, after the cam b ceases to act upon it, so that this heading tool will be moved out of the way of the shears s, s, when the heads L, L, begin to approach each other. The perpendicular post P, is jointed by a rigid joint and by removing the joint pin z, Fig. 3, the upper portion of post P, with the guide G, may be moved back. The funnel guide G, is employed more particularly to receive the heated rod and to direct the end of this rod in a proper manner between jaws C², C³, to the pointing rollers k, k', as I have before described.

The operation of the entire machine is as follows: The hot rod which has been reduced to the proper size between ordinary rolls, is conducted directly from such rolls over the rack e, e, e, and across the shear jaw D', where it is cut in two by the downward movement of shear jaw D. The ends of the hot rods are drawn back over the rack e, e, e, until their ends are on the inclined

rack rods e', e', when the ends of the rods fall into the spring guides G, G. I will now leave the double operation and describe the operation of the parts of one end of frame. The hot rod when in front of the guide G, is immediately pushed forward between the jaws C², C³, until its end touches the pointing rollers k, k', when the jaw C², closes and grips the rod between them. The shears s, s, are now forced together and the rod is cut off leaving the proper length for making a spike between the gripping jaws as before described. When the shears recede the heading tool N, is forced up so as to bend over and form a head on one end of the gripped rod as shown in Fig. 4 of the drawings. During these operations the pointing rollers k, k', draw out the metal and form a tapering point on the spike as has been before described. The parts now release the finished spike, and it drops down between the arms t, t, of the heading tool N. The parts are now in a position to repeat the operation.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

The rack e, e, e, e', on which the hot bar is thrown as it comes from the reducing rolls combined and arranged relatively, with the shears D, D', substantially as herein set forth.

SAMUEL CAMERON.

Witnesses:

LEOPOLD BENNETT,
JOHN GRAHAM.