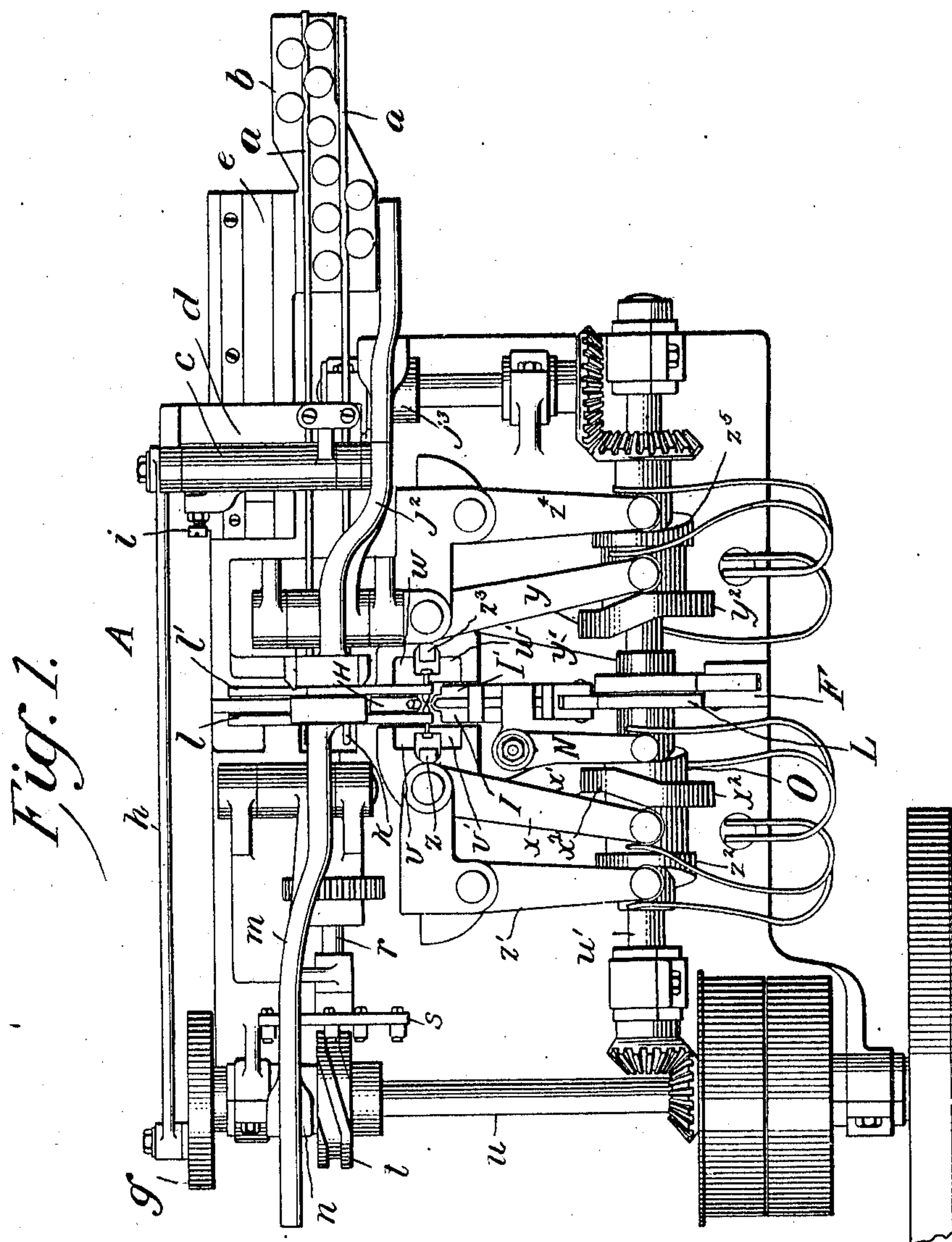


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APPLICATION FILED APR. 6, 1908.

988,596.

Patented Apr. 4, 1911.

3 SHEETS—SHEET 1.



Inventor

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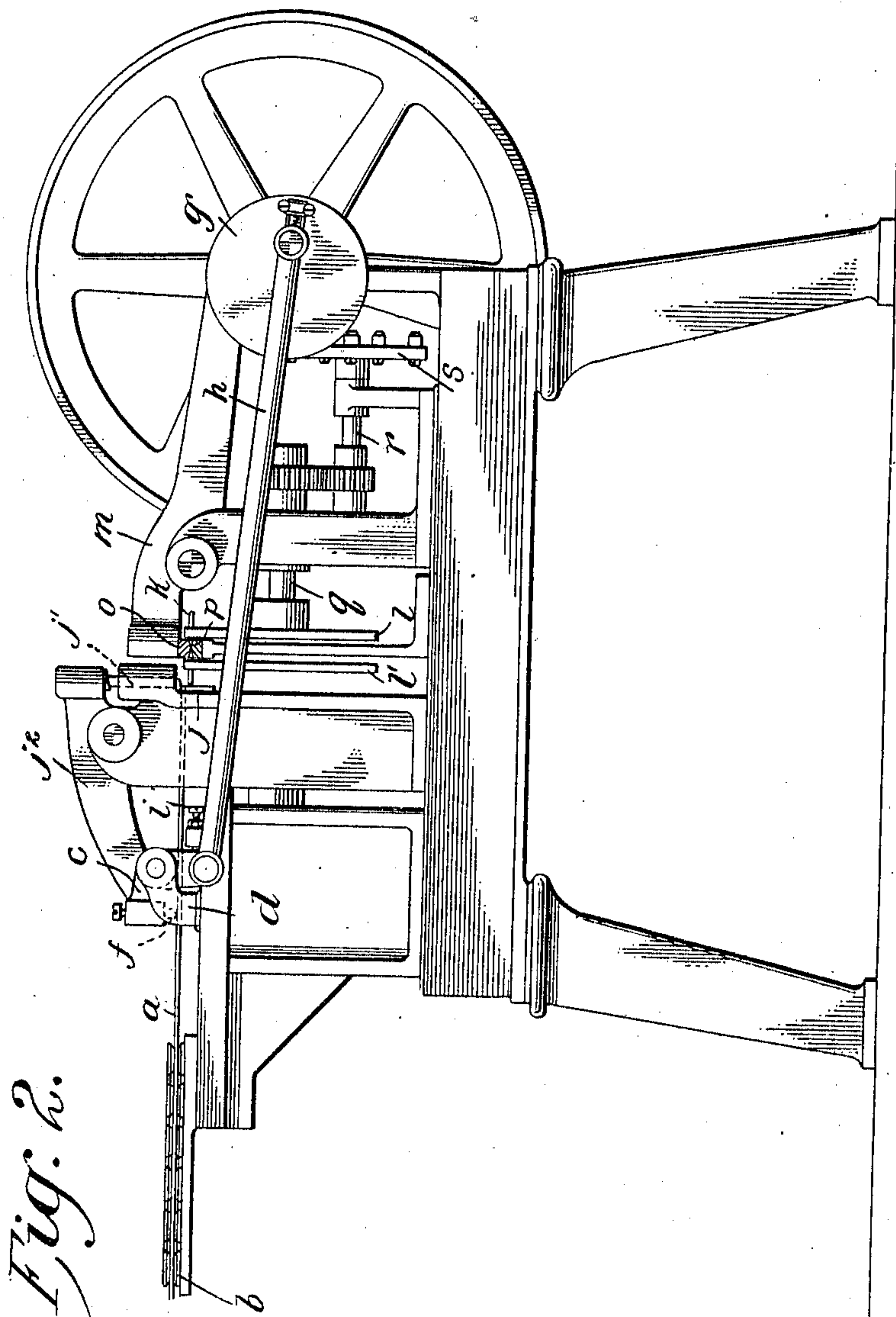


Fig. 2.

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Fig. 3.

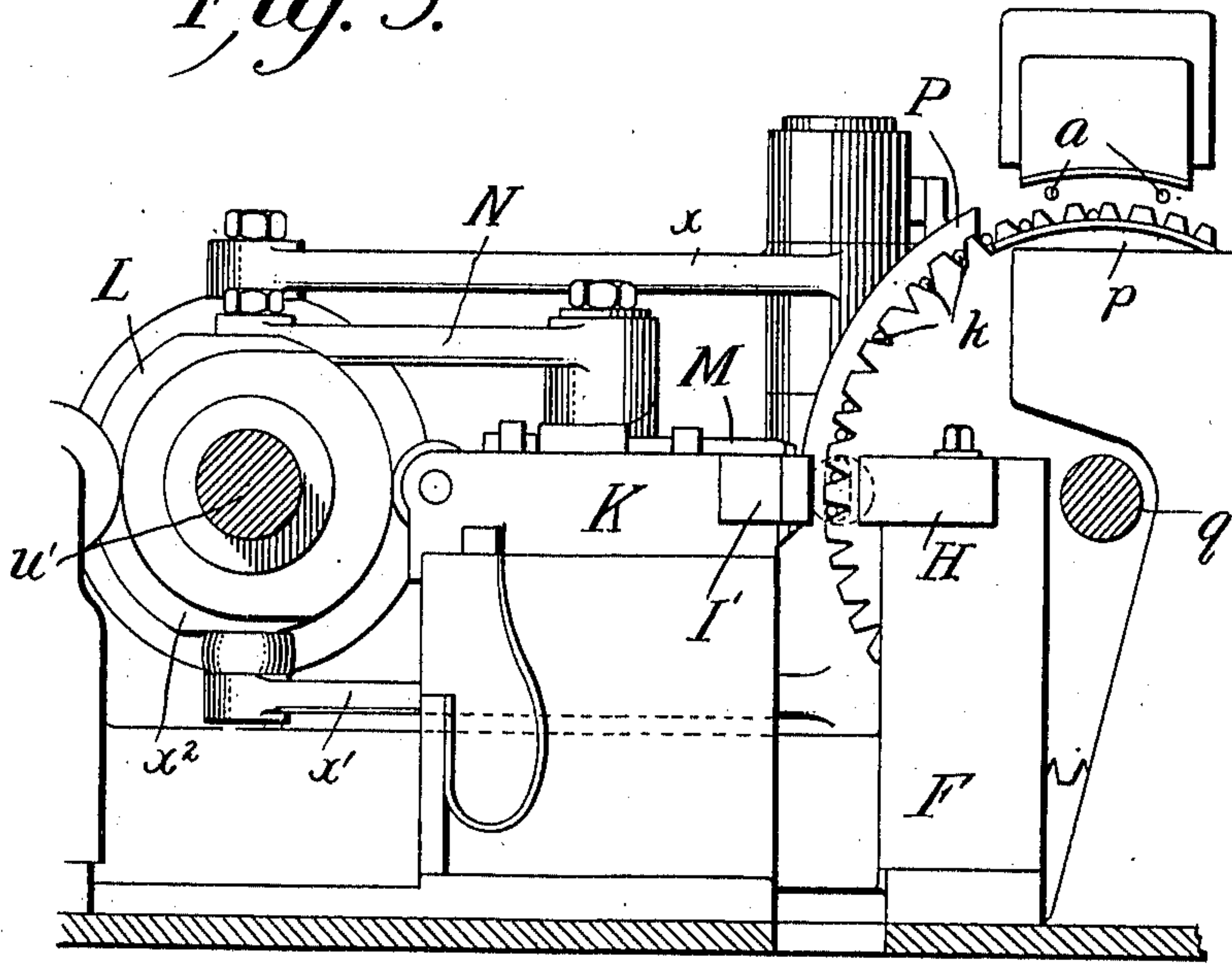
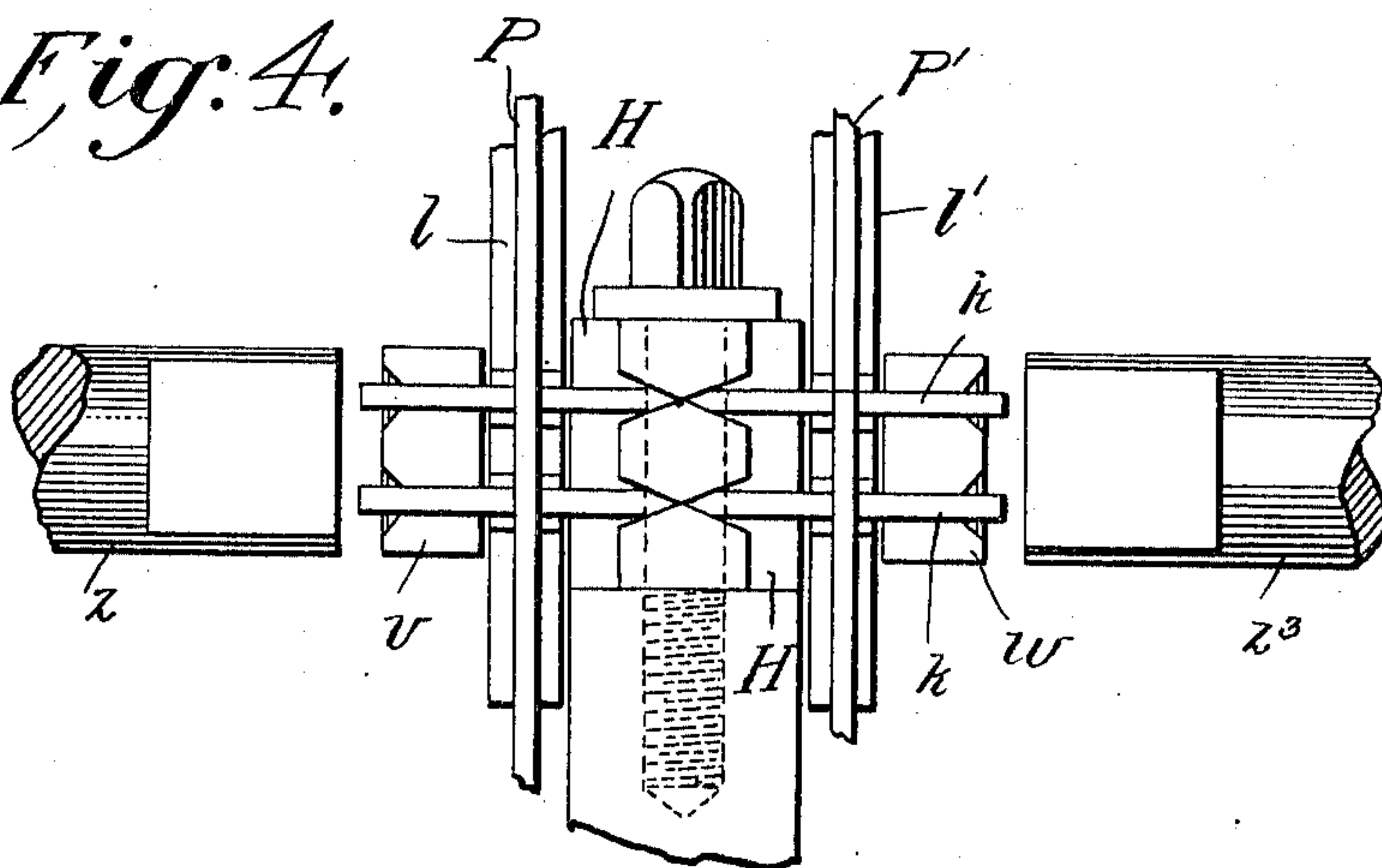


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM CHRISTIAN JOHAN SCHLIE, OF GLASGOW, SCOTLAND.

MACHINE FOR THE MANUFACTURE OF WIRE NAILS AND THE LIKE.

988,596.

Specification of Letters Patent.

Patented Apr. 4, 1911.

Application filed April 6, 1908. Serial No. 425,480.

To all whom it may concern:

Be it known that I, WILLIAM CHRISTIAN JOHAN SCHLIE, of 137 Sinclair Drive, Langside, Glasgow, Scotland, in the county of Lanark, engineer, have invented certain new and useful Improvements in Machines for the Manufacture of Wire Nails and the Like, of which the following is a specification.

10 This invention relates to improvements in nail machines which belong to that class which produce nails automatically from one, or a plurality of continuous wires and the primary object of this invention is the production of a simple type of machine in which the nails are made in two independent operations, namely, the one operation forms an indentation at two opposite points only on the wire which is to form the nail, and 15 the second completes the indentation already partially formed and cuts the wire to complete the nail, thereby giving more time to each operation with increased speed. Said arrangement causes the machine to produce 20 two, four, six, or more nails simultaneously and this added to the increased speed augments materially the capacity of the machine.

25 In order that my invention may be properly understood and readily carried into effect, I have hereunto appended five sheets of drawings, of which—

30 Figure 1 is a plan of the machine embodying my invention. Fig. 2 is a view in side elevation of the same showing the dies *o* and *p* in section. Fig. 3, is a fragmentary sectional view showing in particular the cam *L* together with the arrangement of the slides *K* and *F* with thin dies *I'* and *H* 35 relative to the cam *L* and the nail blank carrying wheel *l*. Fig. 4 is a view showing arrangement of dies for pointing and heading nails.

40 Referring to the drawings which illustrate the machine for making wire nails with its several parts and arrangements designed to make four nails simultaneously; the wires *a* are supplied to the machine from two reels through a common straightener *b*. 45 The feeding apparatus consists of a bell crank *c* which moves upon a shaft, which is fastened to a slide *d*, which again moves in a guideway *e*, Figs. 1 and 2. The one end of the bell crank *c* is supplied with two 50 knives or grippers *f*, the object of which is to form shallow indentations whereby the

wires *a* are gripped and moved along, also delivering the length of the nails which are subsequently cut as hereinafter referred to. The other end of the bell crank is in connection with an adjustable crank-plate or disk 60 *g* by the intermediary of a connecting rod *h*. The motion imparted by the connecting rod *h* to the bell crank *c* in the forward movement moves the wires *a*, and the knives or grippers *f* being pressed down on the top of the wires *a*, as already described, causes the wires *a* to follow with the slide *d*. The connecting rod *h* in its backward movement causes the knives or grippers *f* to lift from 65 the wires *a*, and the slide *d* moves back in the said operation, the motion of the bell crank *c* is limited by means of a check bolt *i* fixed on the slide *d*. The wires *a* move in between two knives *j* and *j'* acting in opposite direction after the manner of a plate shear. 70 The under knife *j* is stationary, and the top knife *j'* moves down against it by means of a lever *j''* and cam *j'''* by which means the wires *a* are cut and the blanks *k* are placed 75 in the circumference of a feeding wheel *l*, *l'*.

The length of the cut-wire blanks *k* is twice the length of the nails subsequently to be produced, plus twice the length of the metal necessary for forming the head. 80 After the wire blanks *k* are placed in the feeding wheel *l*, *l'*, a lever *m*, by means of cam *n*, presses a die *o* on top of the blanks *k* down against a stationary die *p*, and thereby forming an indentation in the center of the 85 blanks *k* without quite cutting them, as already described in the preliminary description of the specification. The dies *o* and *p* in their relative positions have a shape corresponding to two nail points with the 90 points against each other.

The feeding wheel *l*, *l'* is supplied with a number of notches or indentations preferably of V shape formed in the circumference to hold the blanks *k*, seen more particularly 100 in Fig. 3. The feeding wheel consists of two narrow wheels *l* and *l'*, which are mounted on a shaft *q* with a space between them, the space being sufficient to admit the pointing dies. The shaft *q* is connected to 105 shaft *r*, Fig. 2 by means of spur gears. On the end of said shaft is mounted a plate *s* with a number of rollers with parallel axes all arranged in a circle with the shaft *r* as a center. In front of the top roller on the 110 plate *s*, is placed a cam *t* mounted on the main shaft *u*. Said cam *t* has a groove in

the circumference to accommodate the rollers, and is so formed that when one roller goes out from the groove another goes in, thereby causing the feeding wheel l l^1 through the spur gears, to move one division for each revolution.

The width of the outward cheeks of the feeding wheel l , l^1 is less than the length of the wire blanks k so much so that it admits on each side of the wheel a pair of dies v and v^1 and w and w^1 which grip the blanks k and fasten them while the point and the nail heads are being made. The dies v and v^1 are fitted to two levers x x^1 , Figs. 1 and 3, which levers move about the same center, and get their movement from a cam x^2 . The levers x , x^1 are arranged so that lever x works above the shaft u^1 on the left hand side of cam x^2 and lever x^1 works below shaft u^1 but on the right hand side of cam x^2 . The dies w , w^1 are likewise fitted to two levers y , y^1 and moved from cam y^2 . All levers are pressed against the cams by suitable springs, as seen in Fig. 1.

The dies v , v^1 , and w , w^1 are provided with countersinks therein for forming the heads of the nails (see Fig. 4). While the dies v and v^1 hold the blank k , a die z receiving its movement from lever z^1 and cam z^2 , presses against the end of the blanks k to form the heads. In a similar manner, dies w , w^1 act upon the other end of the blanks k while a cam z^5 and lever z^4 give motion to die z^3 to form the heads on said other end of the blanks k (see Figs. 1 and 4). The first indentation of the wires a is effected where said wires are cut while the heads are made at that point at which the points are finished.

The finishing, pointing, and separating apparatus are arranged as follows:—

A slide F which receives its movement from a cam L carries a pointing die H . Opposite the die H are placed two corresponding dies I , I^1 on a slide K which also receives its movement from cam L . The said dies H and I , I^1 adapt themselves in their movement to the indentations already made, and at the end view has the same shape and angle as the nail point, see Fig. 4. In the slide K is placed a knife or die M which fits to the dies I , I^1 in the same manner as a punching apparatus and receives its movement from a lever N and cam O on the shaft u^1 . When the dies H and I , I^1 are pressed against the indentation already

made in the blanks k , the die M is moved forward and thereby cuts all the superfluous material away, and separates the nails from each other and leaves the points finished.

After the nails are finished, the dies v , v^1 , w , w^1 , H and I , I^1 now open, and when the feeding wheel l , l^1 moves again the nails fall out from the feeding wheel and through a hole in the bed of the machine into a box, not shown. In the edge of the feeding wheel l , l^1 is cut a groove, in which is placed guides P , P^1 to prevent the blanks k from falling out during the travel from cutting position to the finishing position, as seen in Figs. 3 and 4.

Claims.

1. In a nail-making machine, the combination of forming dies adapted to indent a double length nail blank intermediate its ends, and head-forming dies with means for feeding a double length nail blank into position to be operated on by said forming dies adapted to indent the nail blank, and intermittently operated means adapted to convey the double length blank from the indenting dies into position to be operated on by the head forming dies.

2. In a nail-making machine, the combination of receiving and conveying means for a double ended nail blank, with two separate sets of forming dies, one of said sets of dies adapted to indent a nail blank intermediate its ends, and the other set adapted to complete the separation of the nail blank, the receiving and conveying means adapted to transfer the nail blanks from one set of dies to the other.

3. In a nail-making machine, the combination with indenting dies, adapted to indent a double length nail blank intermediate its ends, of point forming dies, adapted to separate the nail blank intermediate its ends, means for feeding a double length nail blank into position to be operated on by said indenting dies, and intermittently operated means adapted to convey the double length blank from the indenting dies into position to be operated on by the pointing dies.

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

WILLIAM CHRISTIAN JOHAN SCHLIE.

Witnesses:

JOHN TRAIN LIDDLE,

JOHN LIDDLE.