

(No Model.)

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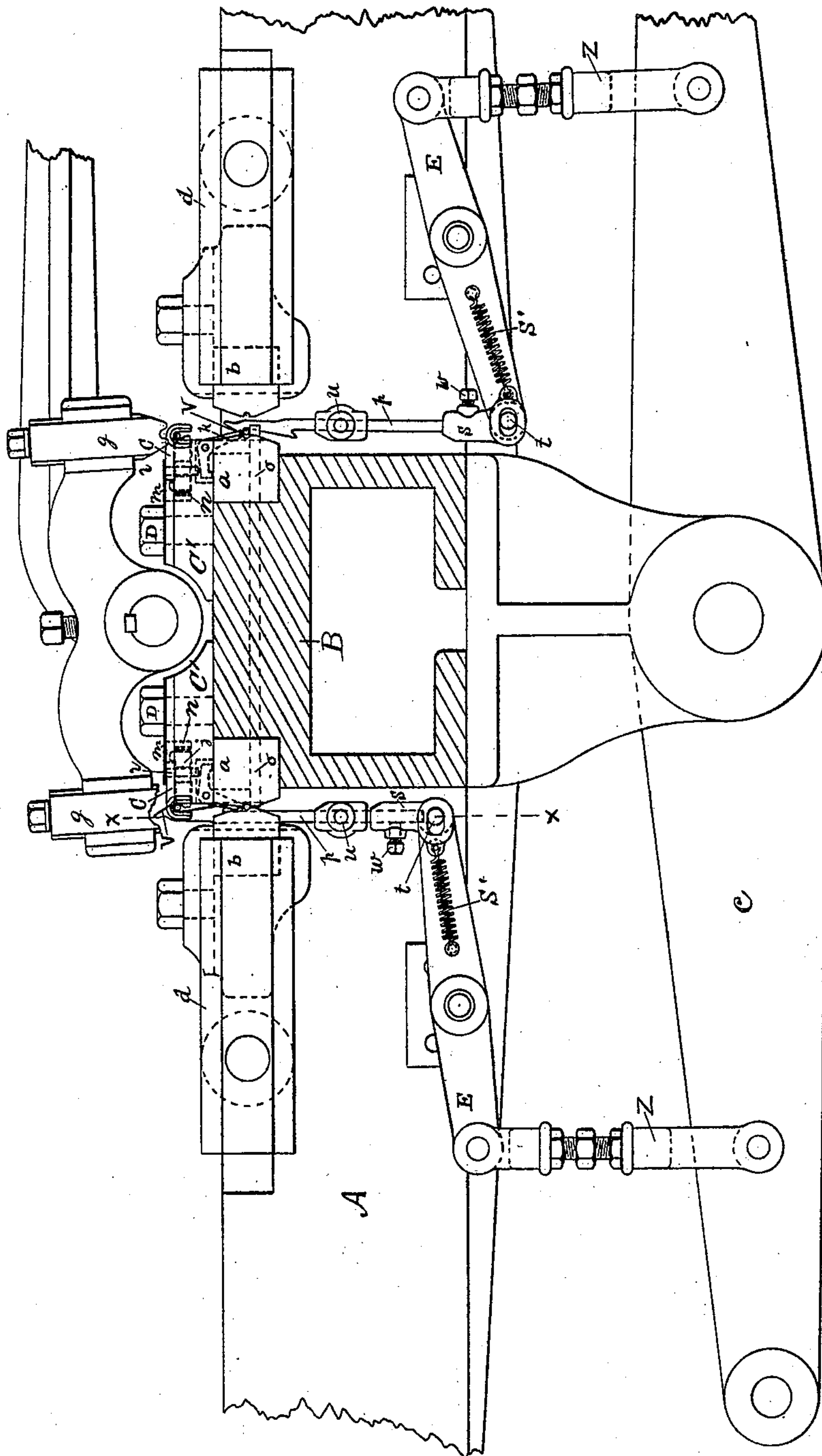
E. B. PARKHURST.

WIRE NAIL MACHINE.

No. 397,022.

Patented Jan. 29, 1889.

Fig. 1.



Witnesses.
Matthew Clark.
Robert Wallaes.

Inventor.
Edward B. Parkhurst
by Wm. A. Macleod
his atty

(No Model.)

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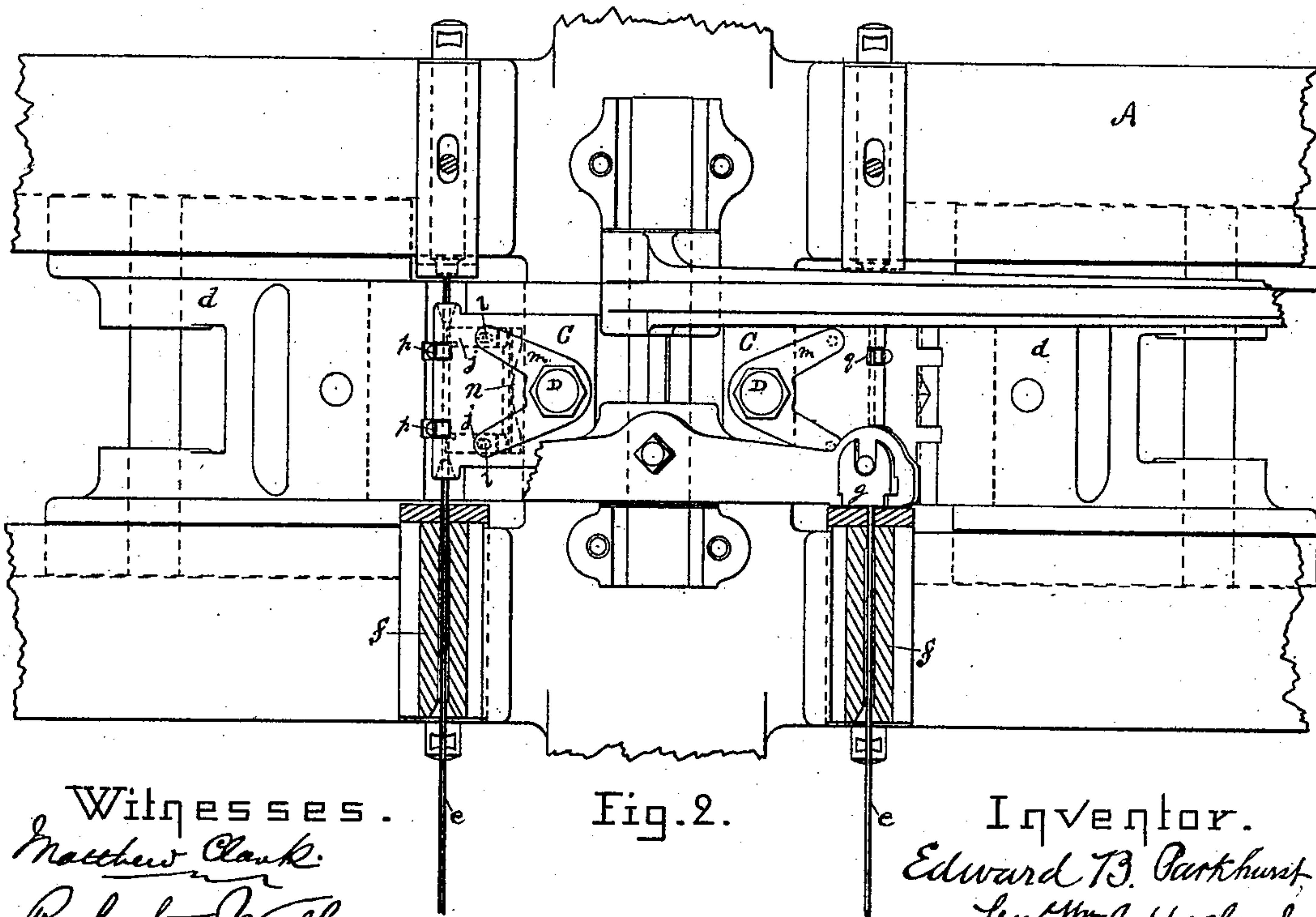
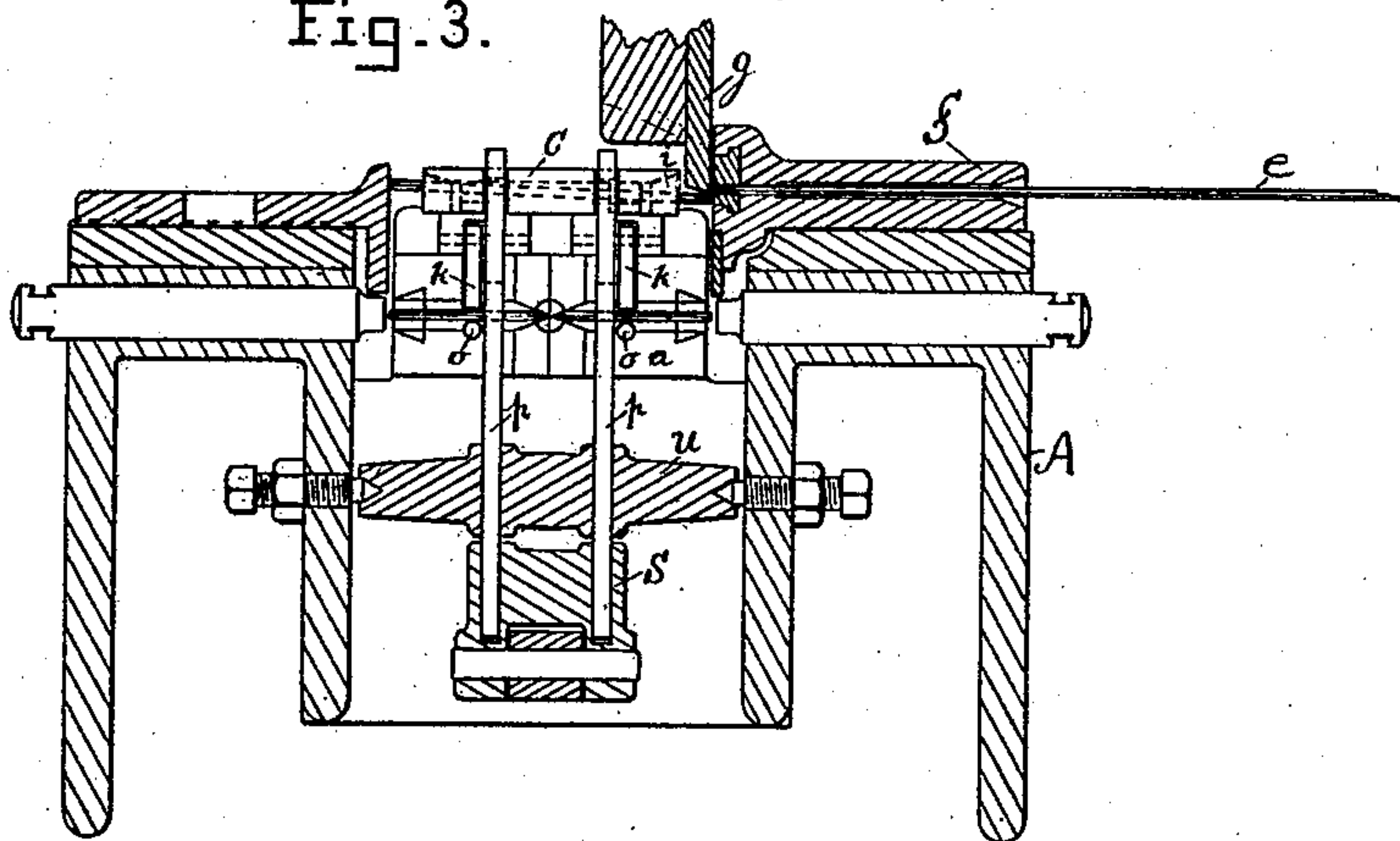
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Fig. 3.



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Fig. 2.

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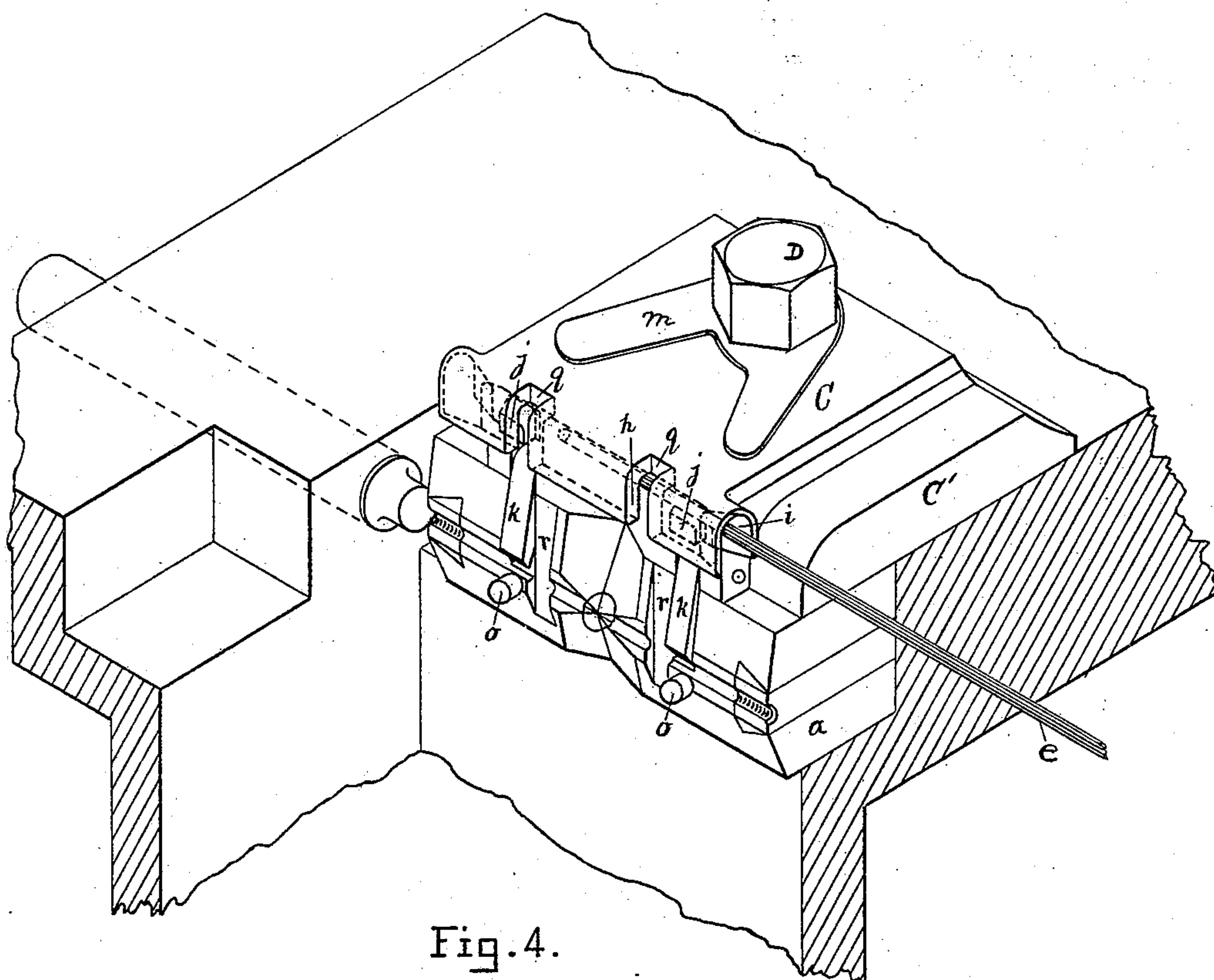


Fig. 4.

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UNITED STATES PATENT OFFICE.

EDWARD B. PARKHURST, OF WOBURN, MASSACHUSETTS.

WIRE-NAIL MACHINE.

SPECIFICATION forming part of Letters Patent No. 397,022, dated January 29, 1889.

Application filed December 20, 1886. Serial No. 222,060. (No model.)

To all whom it may concern:

Be it known that I, EDWARD B. PARKHURST, of Woburn, county of Middlesex, State of Massachusetts, have invented certain new and useful Improvements in Wire-Nail Machines, of which the following is a specification, reference being had to the drawings accompanying and forming a part hereof, in which—

10 Figure 1 is a side elevation of part of a wire-nail machine, showing the essential operating parts with my improvements applied. Fig. 2 is a top view of the same, partially broken away. Fig. 3 is a section on line *x x*, Fig. 1. 15 Fig. 4 is a perspective of one of the nail-dies, showing its operative face, as also the mechanism for holding the section of wire while it is being operated upon.

My invention is designed to be applied to 20 wire-nail machines of the kind shown and described in Letters Patent to N. C. Lewis, No. 328,236, dated October 13, 1885, and in the accompanying drawings I have shown it as applied to such a machine, showing only such 25 parts of the said Lewis machine as I deemed necessary to a clear understanding of the operation of my devices. In the following description I shall confine myself to my invention, referring only to the parts of said Lewis 30 machine when necessary to an understanding of my devices.

In wire-nail machines such as are shown and described in said patent to Lewis great speed of operation is desirable and may be 35 easily attained, provided the sections of wire are fed into the nail-dies and the formed nails cleared therefrom with certainty and speed. In the said Lewis machine, however, gravity is depended upon, and the section of 40 wire after being cut is allowed to drop into position between the dies, and the formed nails are allowed to drop from the die by gravity. With a set of dies designed to operate with sufficient speed to make four hundred or more nails per minute it will be 45 readily seen that gravity could not be depended upon to effect the feeding operation; and my invention consists in feeding and clearing mechanism arranged to be operated 50 positively, which takes the section of wire as soon as it has been severed, moves it into exact position between the nail-dies, and holds

it there while the dies are operated to form the nail, and after the nail is formed acts to clear it from the dies, all as hereinafter set 55 forth.

I will describe my invention, using letters of reference to the accompanying drawings.

A represents the frame of the machine. On the central portion of this frame (shown in 60 section at B, Fig. 1) are secured the dies *a*, one at either side of this central portion, B, of the frame. As each of these dies is one of a set, one set being at one end of the machine and the other at the opposite end, and both 65 being identical in construction and operation, I will describe only one set of the dies and my improvement applied thereto. In the drawings, Figs. 1 and 2, I deemed it best to show my improvement as applied to both ends 70 of the machine, in order that the operation as a whole might be more clearly understood.

The die *a* is stationary and acts in conjunction with the movable part of die *b*, which is set in a sliding block or head, *d*, arranged to 75 slide in grooves in the frame and to be reciprocated by a toggle or other suitable mechanism, as shown in the Lewis machine.

The length of wire *e* from which the nails are made is fed through a guide, *f*, which is 80 provided at its inner end with a stationary cutter which acts in conjunction with a movable cutter, *g*, Fig. 3, to sever a section of wire sufficient in length to form two nails. As already described, this section in the Lewis machine is allowed to drop into position between 85 the dies. I have arranged directly over the dies a plate, C, Fig. 4, bolted, as shown, to a block, C', which rests on the frame over the stationary die. The plate C is provided at 90 the end nearest the face of the die with a downwardly-projecting lip or flange, *h*, behind which a space is left for the reception of the wire when it is fed forward, as shown in Fig. 4. This space is provided with a flaring 95 mouth, *i*, which acts to receive and guide the wire when it is fed into the same. The space behind the flange *h* is open downwardly toward the dies, and to prevent the wire from falling or getting out of line when it is cut 100 two spring-impelled bolts, *j*, are set in holes in the block C' and in contact rearwardly with spring *n*, Fig. 2, which acts to press them forward against the flange *h*. The upper for-

ward edges of these bolts *j* are beveled, so that when the section of wire is seized and drawn downward toward the dies the bolts will wedge back against the pressure of spring *n* and allow the wire to pass. Below these bolts are set the arms *k*, which are part of bell-crank levers, (shown in Fig. 1,) pivoted at the center or elbow, as there shown, in recesses cut to receive them partly in the face of the die *a* and partly in the under side of the block *C'*. The rearwardly-projecting arms of the levers *k* are in contact with pins *l*, set vertically in the block *C'* and plate *C*, (see Fig. 1,) and pressed downward by the leaf-spring *m*, which rests on top of the plate *C* and is held in place by bolt *D*, which holds the plate *C* in place on the frame. This arrangement of parts allows the arm *k* to be pressed backward flush with the face of the die against the resistance of spring *m*. When the section of wire is being pulled downward into position to be operated upon by the dies, it comes against the arms *k*, pressing them in, and when it has passed the lower ends of the arms the arms snap outwardly directly over the wire, thus holding it in place and preventing any upward movement of it which might result from the return movement of the arms *p* or from any other cause. The wire when in this position directly opposite the face of the dies is supported from beneath by the rods *o*, which lie in holes cut through the dies and through the part *B* of the frame, one end of the rod serving for one set of dies and the other end serving for the other set of dies at the opposite end of the machine, as will be understood by reference to Fig. 1. The section of wire when brought down into position between the dies rests on the projecting ends of rods *o o* and between these rods and the arms *k*. The advance of the movable die to form the nail moves the rods *o o* inwardly until their ends are flush with the face of the die, causing the opposite ends of the rods to project beyond the face of the stationary die at the opposite end of the machine, so that the ends of the rods *o* act alternately to support the wire at opposite ends of the machine. After the nail has been formed and the dies begin to separate the ends of the rods are not moved outwardly to receive the next piece of wire until the clearing device has operated to clear the formed nail from the dies.

The mechanism which receives and holds the section of wire after it has been cut having been described, it now remains to refer to the device which operates to move the wire from the position in which it is cut to the dies and then to move the formed nail clear of the dies. This mechanism consists of two movable arms for each pair of dies, each of said arms being provided with two notches or hooks adapted to receive the wire. These arms *p* are set vertically, their upper ends being received in notches *q*, cut in the flange *h* of the block *C*, as also in the notches *r*, cut

vertically across the face of the fixed die *a*. (See Fig. 4.) The lower ends of the arms *p* are set in sockets in the block *s*, Fig. 3, which is pivoted to one end of the lever *E*, the pivot in the end of the lever *E* being received in a slot, *t*, Fig. 1, in the block. The arms *p* slide vertically in slots in the pivoted guide or rocker shaft *u*, which is mounted between downwardly-projecting portions of the frame *A*, (see Fig. 3,) so as to permit of its oscillation. A spring, *s'*, Fig. 1, secured at one end to the block *s* and at the other to a point on lever *E*, acts to hold the block *s* toward the pivot of lever *E*, and consequently to throw the upper hooked ends of the arms toward the fixed die *a*, thus throwing the upper hook of the arm over the section of wire which has been cut off. The upper ends of the arms *p* are beveled and shaped as shown at *v*, Fig. 1, so that as the arms are slid upwardly to seize the wire this beveled upper end, *v*, will come in contact with the wire and will prevent the arm from catching in its upward movement and enable it to ride over the wire against the tension of the spring *s'*, which, as soon as the hook has passed the wire, will act to throw the upper end of the arm against the wire, carrying the hook over the wire and in position to pull the wire down between the dies when the arms are given their downward movement. The check-screws *w*, Fig. 1, set in the blocks *s*, serve to hold the arms *p* securely in the blocks and permit of the adjustment of the arms relatively to the position of the wire, which is to be moved downward to the dies. The lower notches on the arms *p* strike the formed nail as soon as the dies are opened, and insure its movement out of the dies before the succeeding section of wire is placed between them. The vertical reciprocation of the arms *p* is readily effected by connecting the outer end of the lever *E* with the large lever *c*, which actuates the nail-dies by means of a pivoted link, *z*, which may be provided with a right and left hand screw, as shown in Fig. 1, for the purpose of adjusting its length, and thus adjusting the movement of the arms *p*.

The operation of my device is as follows: The continuous wire is fed forward into position directly over the dies. A section sufficient to fill the dies once and form two nails is then cut off. This section is held securely until the arms *p* move upward and seize it in the hooks at their upper ends. While the arms are moving upward, the dies are coming together to form the nails. As soon as the dies begin to open, the arms *p* move downward, carrying a section of wire with them, forcing back the bolts *j* and arms *k*, which snap over the wire as it passes, and depositing it on the projecting ends of the rods *o*, the lower notches in the arms *p* having previously cleared the preceding nails from the dies and the rods *o* having moved outward to receive the section of wire which the hooks are bringing down into position. While these

movements are taking place at one end of the machine, exactly the reverse movements are taking place at the opposite end, which is actuated, as will be seen, by the opposite end
5 of the centrally-pivoted large lever *c*.

What I claim is—

1. A wire-nail machine having a positively-acting device, as arms *p*, provided with suitable operating mechanism, whereby the section of wire is seized in the position in which
10 it is cut and moved into position to be acted upon by the dies, substantially as shown and described.

2. In a wire-nail machine in which a section
15 of wire of proper length is cut at one point and formed into nails at another, a pair of positively-reciprocated arms having suitable operating mechanism and provided with notches for the reception of the nail-wire, in
20 combination with a device, as the flange *h* and spring-impelled bolts *j*, for holding the section securely in the position in which it is cut until it is seized and carried downward by the hooks on arms *p*, substantially as set
25 forth.

3. In a wire-nail machine, the combination, with the nail-forming dies, of the vertically-moving arms *p*, sliding in holes in the rocker-shaft *u* and beveled, as at *v*, at their upper
30 ends, and secured by sliding pivot and spring *s'* to their actuating-lever *E*, whereby as said arms are moved upward in line with the wire which is next to be fed to the dies the upper end will move backward out of line of the wire
35 and allow the hook to pass above it, all as set forth.

4. In a wire-nail machine, the combination, with the nail-dies, of a vertically-moving notched arm and its operating mechanism, the
40 notch in said arm moving across the face of

the dies in line with the nail and clearing it therefrom, substantially as set forth.

5. In a wire-nail machine, the combination, with the nail-dies, of the rods *o* and spring-actuated arms *k*, set in recesses in the face of
45 one of the dies, for the purposes and substantially as shown and described.

6. In a wire-nail machine, the plate *C*, provided at its front edge over the face of the fixed die with a downwardly-open recess to
50 receive the length of wire as it is fed into the machine, in combination with the spring-actuated bolts *j*, whereby the section of wire is held substantially in the position in which it is cut until seized by the mechanism by
55 which it is carried in the dies, substantially as set forth.

7. In a wire-nail machine, the combination, with the nail-dies, of the hooked feeding-arms and their actuating mechanism, the rods *o*,
60 arms *k*, bolts *j*, and flanges *h*, substantially as shown and described.

8. In a wire-nail machine, the combination, with the nail-dies, of the vertically-moving positively-actuated hooked feeding-arms *p*,
65 adjustably secured to their actuating-levers by blocks *s* and check-screws *w*, whereby the height of movement of the arms *p* may be regulated, for the purposes and substantially
70 as set forth.

9. In a wire-nail machine, the combination, with the nail-dies, of reciprocating feeding-arms, as *p*, their actuating-levers *E* and *c*, and the adjustable connecting-rod *z*, whereby the
75 throw of said feeding-arms may be accurately adjusted, all as set forth.

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