5 Sheets—Sheet 1.

I. A. KILMER.

WIRE STRAIGHTENING AND CUTTING MACHINE.

No. 192,437. Patented June 26, 1877.

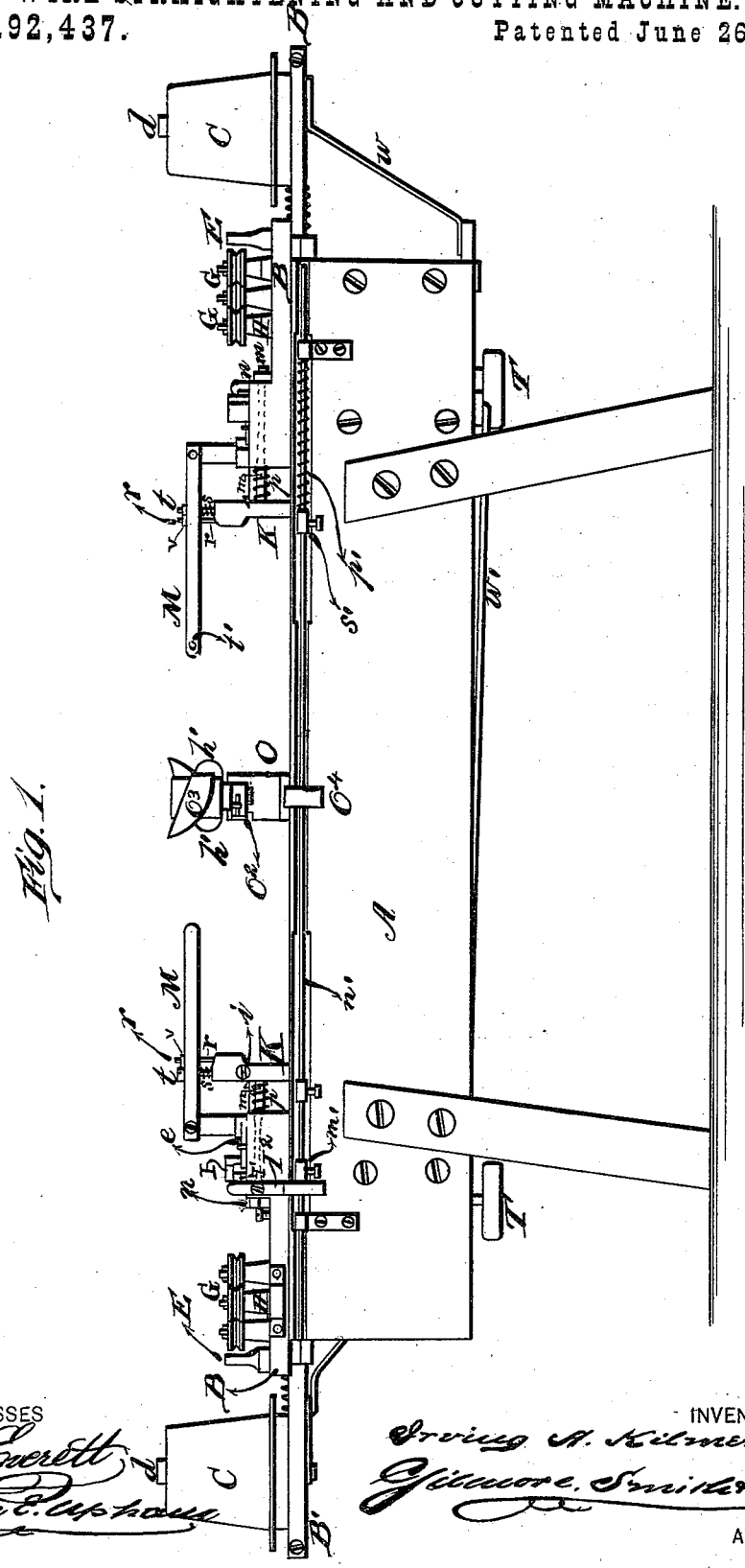

Fig. 1.

WITNESSES

Robert Everett

George C. Upshaw

INVENTOR.

Irving A. Kilmer.

Gifford, Smith & Co.

ATTORNEYS.

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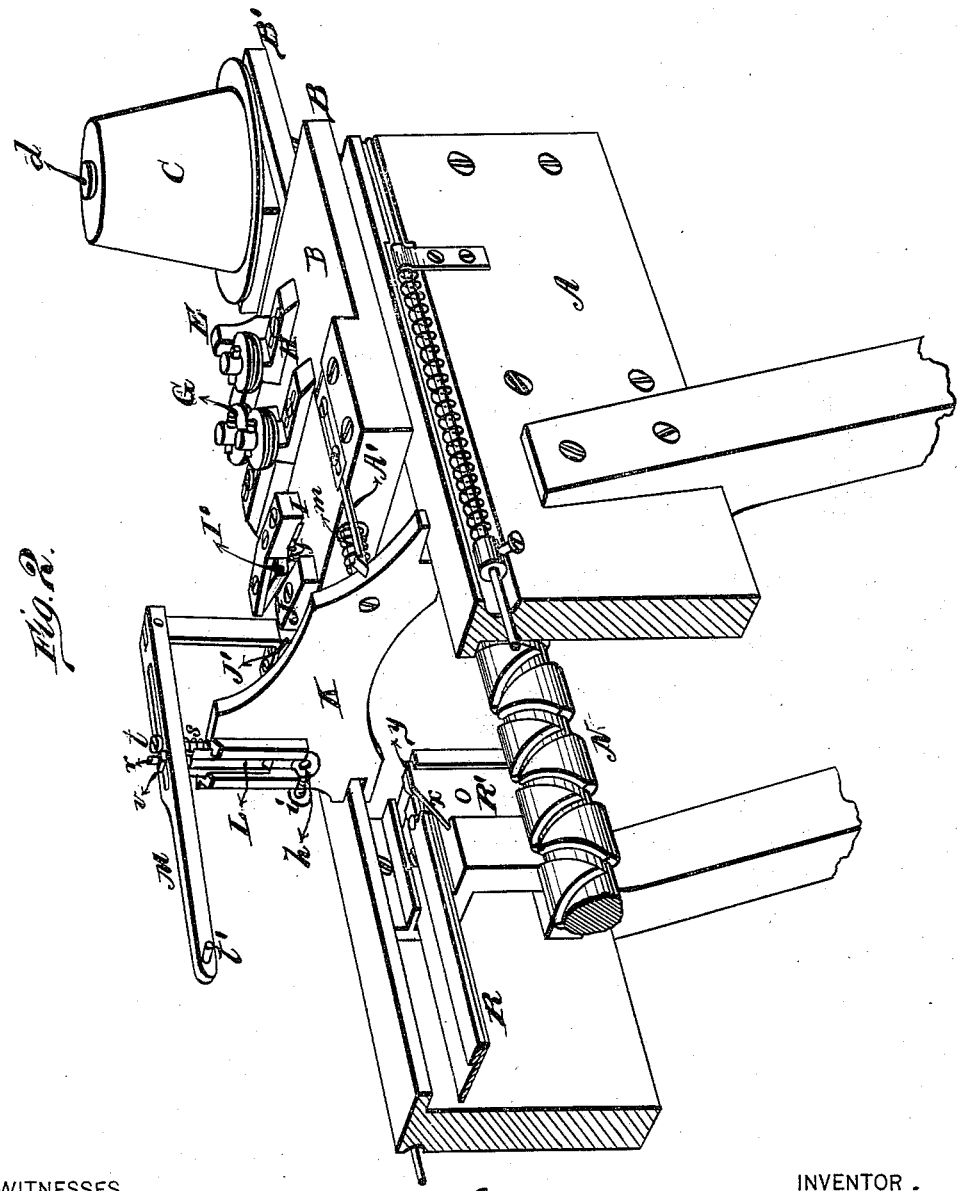

Fig. 2.

WITNESSES

Robert Everett

George E. Upham

INVENTOR.

Irving A. Kilmer.

Gilmore, Smith & Co.

ATTORNEYS.

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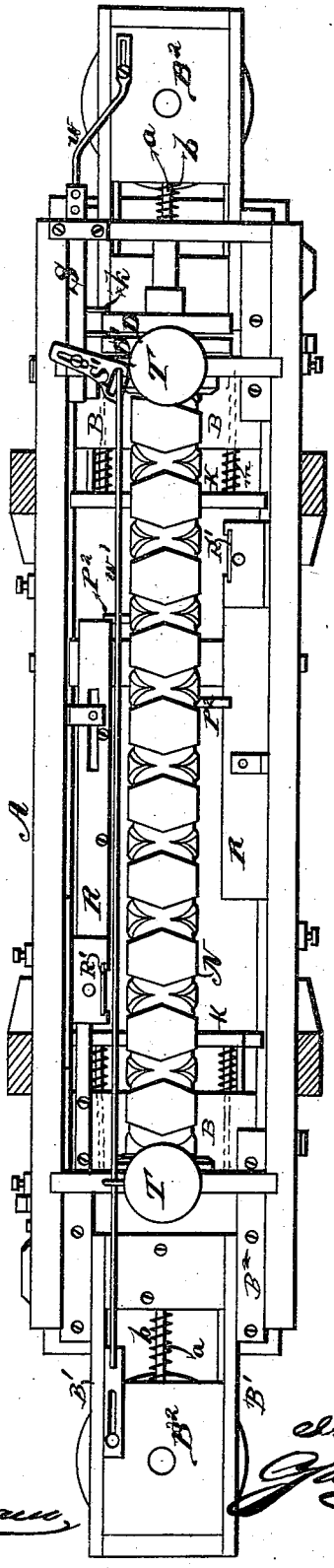

Fig. 3.

WITNESSES

Robert Everett

George E. Upham

INVENTOR.

Irving A. Kilmer.

Gilmore, Smith & Co.

ATTORNEYS.

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I. A. KILMER.

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Fig. 8.

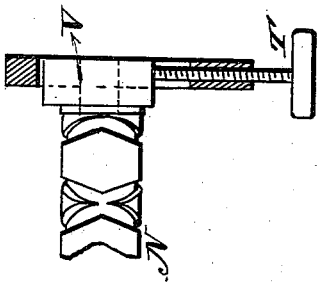

Fig. 9.

Fig. 10.

Fig. 7.

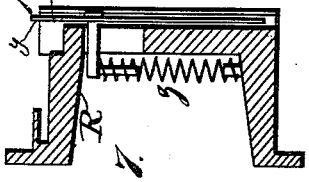

Fig. 4.

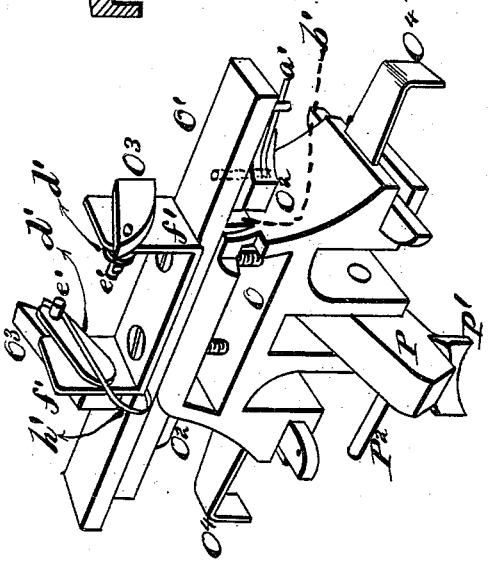

Fig. 6.

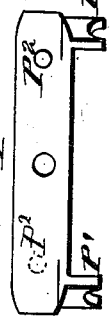

Fig. 5.

WITNESSES

Robert Everett

George B. Upham

INVENTOR.

Irving A. Kilmer.

Munn & Co.

ATTORNEYS.

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I. A. KILMER.

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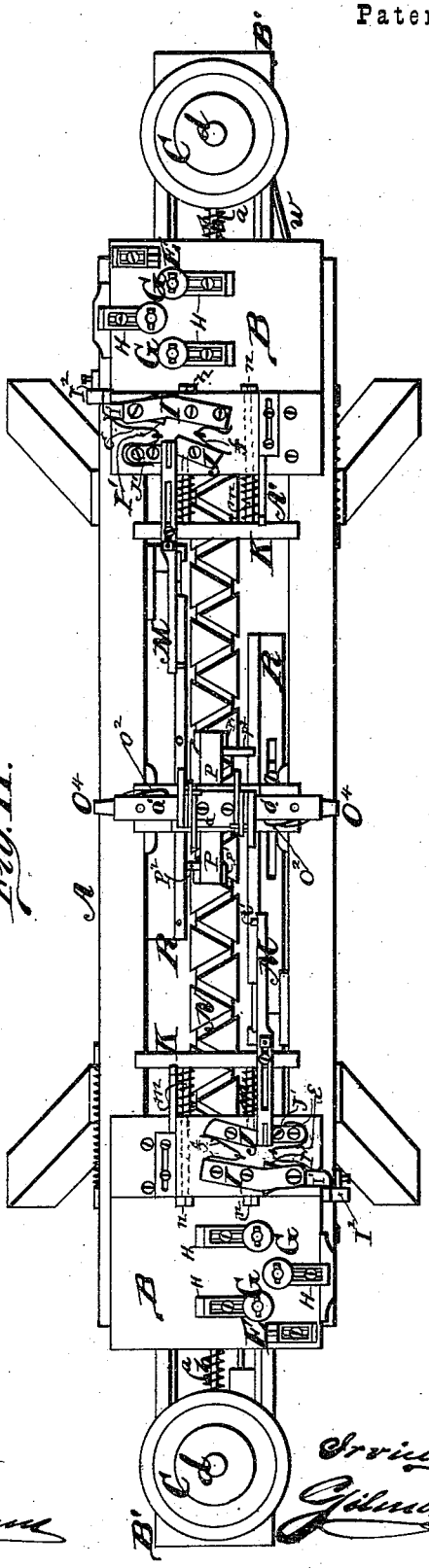

Fig. 11.

WITNESSES

Robert Everett

George E. Upham

INVENTOR.

Irving A. Kilmer.

Gilmore & Smith & Co.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

IRVING A. KILMER, OF COBLESKILL, NEW YORK, ASSIGNOR OF ONE-HALF HIS RIGHT TO AUGUSTUS KILMER, OF SAME PLACE.

IMPROVEMENT IN WIRE STRAIGHTENING AND CUTTING MACHINES.

Specification forming part of Letters Patent No. **192,437**, dated June 26, 1877; application filed May 19, 1877.

To all whom it may concern:

Be it known that I, IRVING A. KILMER, of Cobleskill, in the county of Schoharie and State of New York, have invented a new and valuable Improvement in Machines for Straightening and Cutting Wire into any Desired Length; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a side view of my wire-stretcher. Fig. 2 is a perspective sectional detail view. Fig. 3 is a plan view, and Figs. 4, 5, 6, 7, 8, 9, and 10 are details, of the same. Fig. 11 is a plan view of the machine.

The nature of my invention consists in the construction and arrangement of a machine for unwinding, straightening, and cutting off wires from two rolls or coils of wire, as will be hereinafter more fully set forth.

The annexed drawings, to which reference is made, fully illustrate my invention.

A represents the frame-work of my machine, constructed in any suitable manner to receive the various working parts, as hereinafter described.

At each end of the frame A is a platform, B, arranged to be moved inward and outward in suitable guides on the frame, and when properly adjusted said platforms are fastened to the frame by screws, bolts, or other suitable means.

The two platforms B B each carry a series of devices which are exactly alike, and hence a description of one will answer for both.

From the outer end of the platform B extends a guide, B^1, in which is a slide, B^2, movable upon a rod, *a*, and pressed outward by means of a spring, *b*, surrounding said rod, for the purpose of holding the wire-roll in the proper place, and allowing the same to move inward if the wire should get tangled or otherwise fail to unwind properly, and, by such movement of the slide, stop the motion of the machine by means of a belt-shifting apparatus hereinafter described.

From the slide B^2 extends a vertical round post, *d*, on which the reel C is placed to receive the wire-rod and turn on said post.

From the wire-rod on the reel C the wire passes first through an eye in an L-shaped arm, E, secured on the platform, and from thence between three grooved horizontal rollers, G G, mounted upon studs projecting from arms or castings H H, also secured on top of the platform B. The arms or castings E and H H are adjustable upon the platform, so that, by properly moving the same and fastening them rigidly when adjusted, more or less friction may be brought to bear on the wire, as required, in the unwinding of the same.

The wire then passes between a stationary jaw, I, and a pivoted jaw, I^1, which latter is actuated by a spring, *e*, in such a manner as to close on the wire and prevent its being pulled forward; but a lever, I^2, pivoted to the side of the frame A, is brought to bear against the outer end of said pivoted jaw I^1, to relieve the pressure thereof and allow the wire to be drawn forward until said lever is turned out of the way, or, rather, the stop holding it moved, when the spring *e* is brought into action and closes the jaw I^1, preventing any further forward movement of the wire.

In front of the jaws I I^1 are two other jaws, J J′, between which the wire also passes. The jaw J′ is stationary, and the jaw J is pivoted, and actuated by a spring, *f*, in such a manner that the wire can easily pass forward, while any backward pressure on the wire will at once close said jaw and prevent the wire from being pushed back.

From these jaws the wire passes through an eye or hollow or tubular die, *h*, fastened in a head, K, by a set-screw, *i*. This head slides upon suitable ways formed in the frame A, and is guided by means of rods *m m* projecting from the head through the platform B, with nuts *n n* upon their rear ends. Spiral springs *p p* surround the rods *m m* between the head K and the platform, for throwing the head forward, the distance or extent of such forward movement of the head being regulated by means of the nuts *n n* on the rear ends of the rods.

On the front of the head K, on both sides

whereby the collar m' is, of course, drawn out of the way, so that the lever I^2 will no longer form any impediment or stop against the closing of the jaw I^1 by its spring *e*. This jaw therefore closes on the wire and holds the same from any further forward movement. The end of the wire being firmly held by the jaw O^2 on the carriage, the wire is consequently straightened as far as the distance the carriage yet has to travel to complete its stroke. This distance, and consequently the straightening of the wire, is regulated by adjusting the collar s' back or forth on the rod n'. As the carriage completes its stroke a spring-hook, A′, attached to the platform B, slides under and takes hold of a lug, r', on the under side of the jaw O^2. When the movement of the carriage is now reversed, as before, this spring-hook pulls open the jaw O^2 and allows the end of the wire to drop down below said jaw. It will be undrstood that while the carriage is at this end of the machine the jaw O^2 on the other side of the carriage takes hold of the end of the wire from the other roll, and as the carriage now returns this latter wire is pulled along in the same manner as described for the first wire.

During the forward movement of the carriage, and before it reaches the head K, the cam-dog O^3 on the carriage strikes a pin, t', projecting from the forward end of the lever M, so as to depress said lever, whereby the cutter L is made to descend and cut off the first wire, which then falls down at the side of the machine. As the carriage continues its movement the second wire is pulled along, straightened, and released, while the wire from the first roll is again taken hold of, and so on alternately, first on one side and then on the other.

In case the device described for reversing the motion of the carriage should at any time fail to act properly, I have provided a slotted metal bar, C′, on the under side of each platform B, the front end of said bar being beveled, so that when the raised end of the bar P strikes the same, said bar will necessarily be tilted independent of the spring-tilting device, and thus secure the reversal of the carriage at the proper moment.

The platforms B B and guides R R being adjustable out and in on the frame A, the machine can be set to cut wires of any desired length.

Operation: One wire is passed from one—say the left-hand—reel through a guide and friction-rollers, all adjustable to regulate tension, and between the jaws of a one-way clutch, which is held open, (when closed this clutch prevents a forward movement of the wire,) and on through another one-way clutch, (this clutch prevents a backward movement of the wire,) and thence into a die under a cutter and in a sliding cross-head, and thence into a clutch in one end of a carriage adapted to reciprocate lengthwise of the machine. This carriage, being moved, draws the wire forward to the right till the carriage strikes the right-hand sliding cross-head, which it presses forward close against the right-hand table. Now, another wire, which has been led from the right-hand reel and put through duplicate guides, wheels, and clutches on the right-hand table and into a duplicate die in the right-hand sliding cross-head, is, by the repression of the cross-head by the carriage, made to project from the die with enough exposure that it may be and is seized by the duplicate clutch of the carriage. Also, when the carriage strikes the cross-head it closes the first clutch onto the first-mentioned wire, and so prevents that wire from moving forward, and, since the carriage clutches the advanced end of the same wire and advances to repress the sliding cross-head, this wire is straightened and (it may be) stretched between the two cluches.

The carriage now starting backward, a spring-hook on the right-hand table opens that clutch of the carriage which holds the advanced end of the first wire, and that end of that wire drops free, the wire remaining sustained in the die in the left-hand cross-head, and being kept from retrogression by the second clutch on the left-hand table. The carriage, continuing to recede toward the left, not only draws the second wire to the left, as before the first wire was drawn to the right, but also, by a cam on it striking a lever, actuates a cutter, which cuts from the first wire the straightened portion, which falls free from the machine, carriage moves on leftward, takes up the bight of the first wire, goes to the right with it, and on its way cuts a length from the second wire, and so on. Should either wire fail to unwind, the reel moves inwardly and shifts the driving-belt onto a loose pulley and stops the carriage.

It is found, in practice, that the application of the above-described devices to wire for the purpose of straightening it will also stretch it slightly.

What I claim as new, and desire to secure by Letters Patent, is—

1. A wire cutting and straightening machine, operating upon two rolls of wire at the same time by a reciprocating carriage, arranged to pull the wire from one roll while moving in the other direction, substantially as set forth.

2. In a machine for straightening and cutting wire, the combination of a reciprocating carriage and a continuously-rotating right-and-left screw-shaft for operating the same, substantially as herein set forth.

3. In a machine for straightening and cutting wire, a spring-slide carrying the reel for the wire-roll, and connected with the mechanism for throwing the machine in and out of gear, substantially as and for the purposes herein set forth.

4. The combination of the spring-slides B^2,

carrying the reels C, connecting-rods w w', lever S′, and slide S with fork K, substantially as and for the purposes herein set forth.

5. The combination of the stationary jaw I and pivoted jaw I^1 with spring e and the pivoted lever I^2, substantially as and for the purposes herein set forth.

6. The sliding head K, operated by the springs p p, and carrying the die h and cutter L, substantially as and for the purposes herein set forth.

7. The combination of the sliding head K, the sliding cutter L, with stem r and nut v, the slotted lever M, rod t, and spring s, substantially as and for the purposes herein set forth.

8. The combination, with the continuously-rotating right-and-left screw-shaft N, of the sliding carriage O and the centrally-hung arm or lever P, having a tooth or projection, P^1, at each end, substantially as and for the purposes herein set forth.

9. In combination with the shaft N, carriage O, and arm or lever P with teeth P^1, the projecting pins P^2 P^2, guides R R, and beveled spring-slides R′ R′, constructed and arranged to operate substantially as and for the purposes herein set forth.

10. The jaws O^2 O^2, with springs a' a', arranged in opposite directions on opposite sides of the carriage O, in combination with the shoulders b' b' on said carriage, substantially as and for the purposes herein set forth.

11. The combination, with the carriage O, of the cam-dogs O^3, springs h', and the pins t' on the cutter-levers M, substantially as and for the purposes herein set forth.

12. In combination with the spring-jaw I^1 and pivoted lever I^2, the rod n', with spring p' and adjustable collars m' s', and the arm O^4 on the carriage O, substantially as and for the purposes herein set forth.

13. The spring-hook A′, in combination with the jaw O^2, for the purposes described.

14. The slotted metal bars C, arranged under the platforms B, to operate on the tilting arm or lever P, for the purposes herein set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

IRVING A. KILMER.

Witnesses:
ELMER E. KILMER,
DAVID H. RICHARD.