

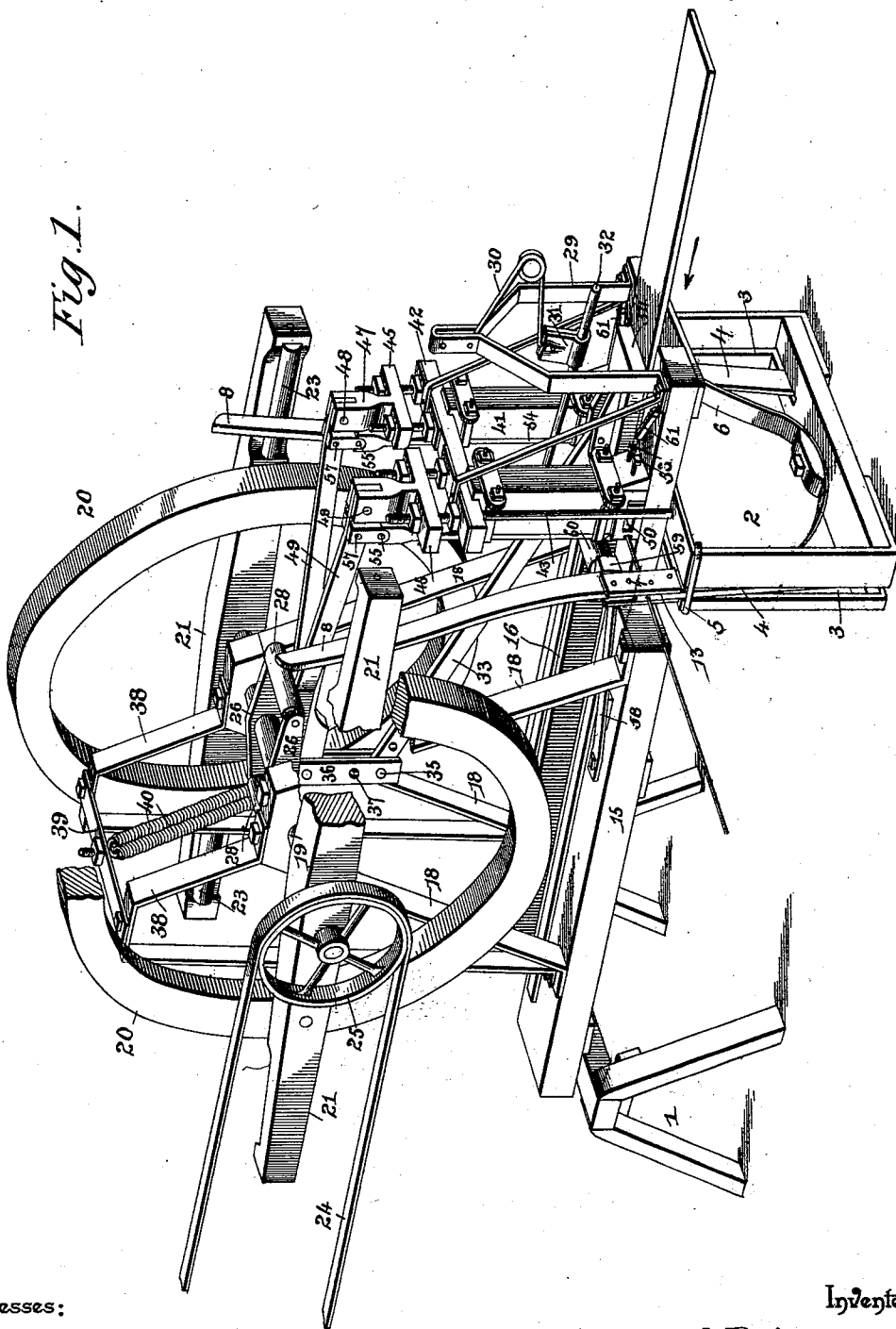
(No Model.)

3 Sheets—Sheet 1.

N. A. PAINE.  
PICKET BARBING MACHINE.

No. 507,687.

Patented Oct. 31, 1893.



Witnesses:

Inventor

*Jas. H. McLaughlin*

*Nathan A. Paine*

By his Attorneys,

*W. S. Duwall.*

*C. A. Snow & Co.*

(No Model.)

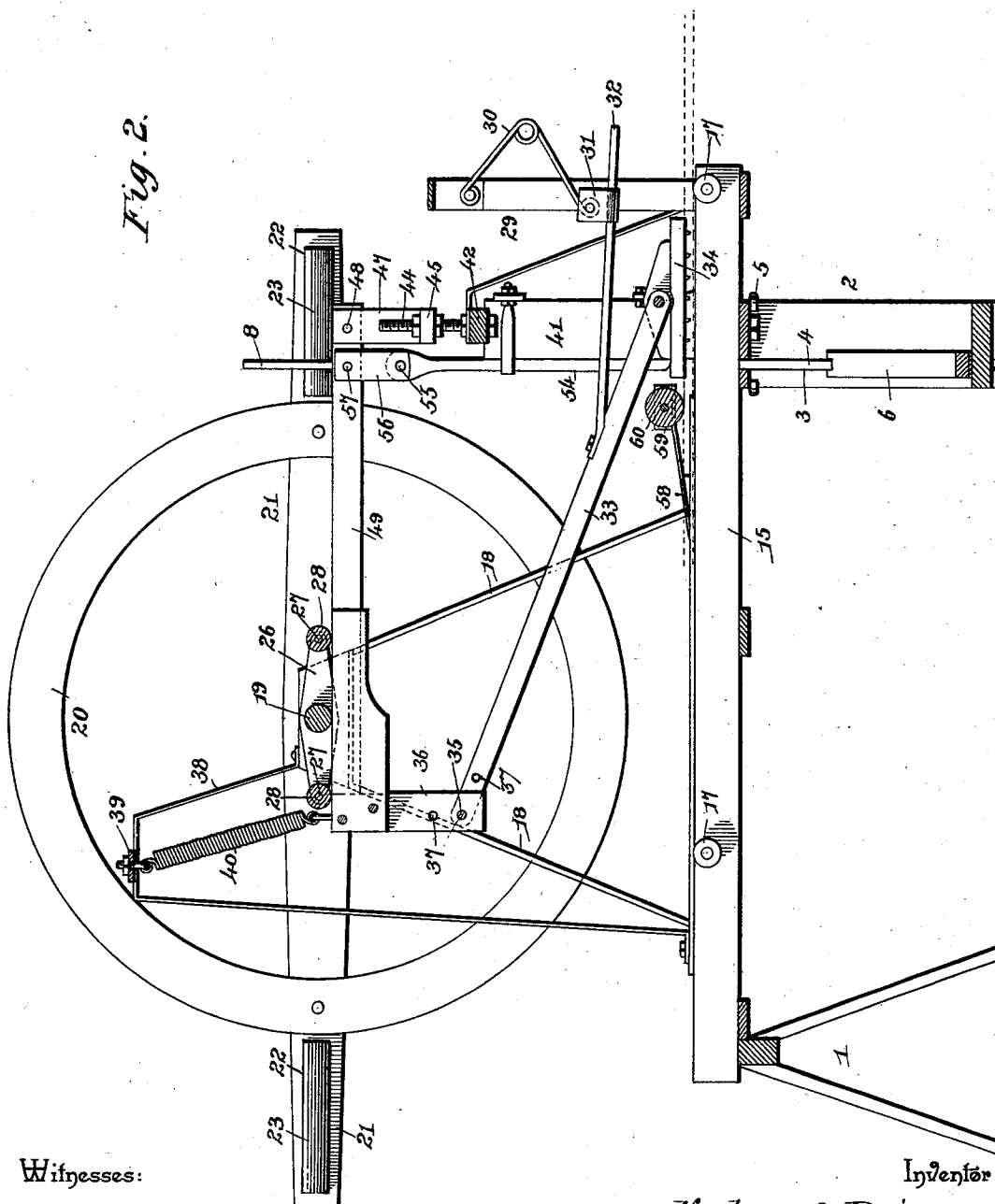
3 Sheets—Sheet 2.

N. A. PAINE.  
PICKET BARBING MACHINE.

No. 507,687.

Patented Oct. 31, 1893.

Fig. 2.



Witnesses:

Inventor

*Jas. H. McArthur*

*Nathan A. Paine*

*By his Attorneys,*

*W. S. Duwall.*

*C. A. Snow & Co.*

(No Model.)

3 Sheets—Sheet 3.

N. A. PAINE.  
PICKET BARBING MACHINE.

No. 507,687.

Patented Oct. 31, 1893.

Fig. 4.

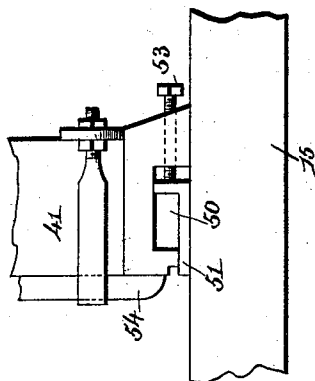


Fig. 6.

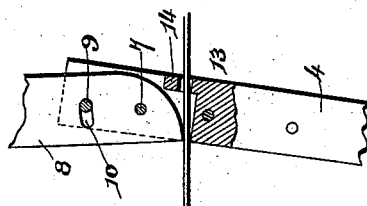


Fig. 5.

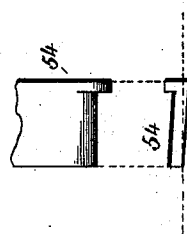
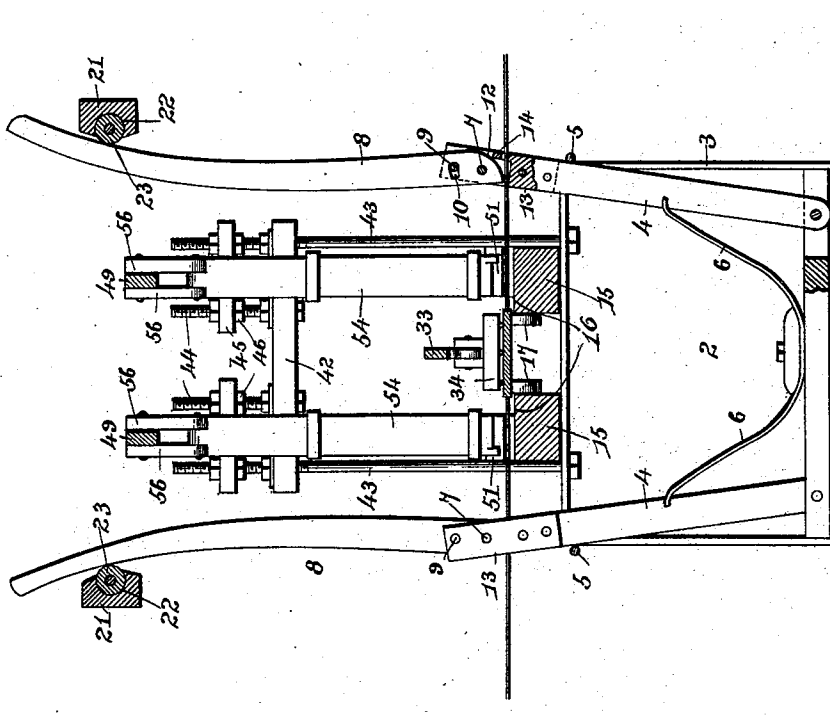


Fig. 3.



Witnesses:

Jas. K. McArthur

W. S. Duwall.

Inventor

Nathan A. Paine

By his Attorneys,

C. A. Snow & Co.

# UNITED STATES PATENT OFFICE.

NATHAN A. PAINE, OF CEDAR FALLS, IOWA, ASSIGNOR OF ONE-HALF TO  
JAMES E. PAINE, OF GANDY, NEBRASKA.

## PICKET-BARBING MACHINE.

SPECIFICATION forming part of Letters Patent No. 507,687, dated October 31, 1893.

Application filed April 14, 1893. Serial No. 470,362. (No model.)

*To all whom it may concern:*

Be it known that I, NATHAN A. PAINE, a citizen of the United States, residing at Cedar Falls, in the county of Black Hawk and State of Iowa, have invented a new and useful Barb-  
ing-Machine, of which the following is a specification.

The objects of this invention are to produce a machine adapted to receive fence-rails; automatically feed the same therethrough, moving them at intervals and adapting it to cut and form barbs, and drive the same into one or both edges of the rails thus fed, the barbs being set at regular and predetermined intervals along the edges of the rails, whereby the latter may be employed in the construction of barbed fences.

With these and various other objects in view the invention consists in certain features of construction hereinafter specified and particularly pointed out in the claims.

Referring to the drawing:—Figure 1 is a perspective view of a rail-barbing machine embodying my invention. Fig. 2 is a longitudinal sectional view. Fig. 3 is a transverse sectional view through the front portion thereof. Fig. 4 is a detail in side elevation of the lower end of one of the standards. Fig. 5 is a front elevation and bottom view of one of the chisels or cutters. Fig. 6 is a detail in side elevation and partial section of one of the barb-inserting arms and its lever.

Like numerals of reference indicate like parts in all the figures of the drawings.

In practicing my invention I employ a suitable rear support, in this instance in the shape of a carpenter's or joiner's horse, the same being indicated as 1, and in front of the horse locate a rectangular frame 2, the same having its opposite ends provided with slots 3, pivoted in the lower ends of which are vibratory levers 4. Bands 5 encircle the upper corners of the frame and limit the outward movements of the vibratory levers, which outward movements are caused by an interposed curved spring 6 secured to the base of the frame and at its terminals bearing against the levers. The upper ends of the levers are bifurcated, and pivoted upon bolts 7 are curved arms 8, the upper ends of the arms being outwardly disposed as shown (see Fig. 3). Above the pivots of the arms

bolts 9 pass through curved slots 10 formed in the arms, said bolts extending through the bifurcations and serving to limit the pivotal movements of the arms upon the levers. The lower ends of the arms are curved at their outer corners or rounded, as indicated at 12, and designed at their inner corners to bind upon the upper ends of the levers to which they are pivoted when said arms are thrown inward. The levers have their upper outer corners provided with extensions 13, and the same are perforated or provided with eyes 14 designed to receive the stock-wires from which the barbs are produced and upon which the cam or curved ends of the arms will bind when the upper ends thereof are forced inward, all for a purpose hereinafter apparent.

Supported upon the front and rear supports is a pair of side sills 15, the same being longitudinally disposed and arranged parallel, and said side sills are spaced apart and have their upper inner corners formed with ways 16 and their inner faces with loose frictional rollers 17 whose peripheries travel in the same plane with the ways.

Supported upon the sills 15 between the front and rear supports is a pair of vertical standards 18 having bearings in their upper sides and receiving a transverse power-shaft 19. Upon the power-shaft 19 beyond the standards is mounted and adapted to move therewith a pair of wheels 20, and said wheels are each radially crossed by an arm or bar whose extremities project beyond the peripheries of the wheels and are designed to contact with the upper curved ends of the cam-levers heretofore described. These bars have their inner faces adjacent to their ends provided with recesses 22, and axially journaled therein are loose frictional rolls 23 which travel against the outer edges of the cam-levers and serve to throw the same inward during the revolutions of the wheels. The shaft receives its motion, in the present instance, through the medium of a belt 24 leading from any suitable motor and passing about a pulley 25 mounted on the shaft 19 beyond one of the wheels 20. A pair of cross-arms 26 is arranged upon the shaft 19, and are connected at their extremities by transverse arms 27 upon which loose frictional rollers 28 are mounted.

Upon the front ends of the sills 15 an inverted U-shaped standard 29 is secured, and from the same depends a V-shaped spring 30 to the lower end of which is attached a link or clip 31. This link or clip 31 loosely receives and supports a thrust-rod 32 whose rear end is secured to a push-bar 33. The front end of the push-bar is loosely connected to a block or head 34, whose under side is provided with teeth as shown. The rear end of the push-bar is pivoted by a pin 35 to a depending link or head 36, the link or head being bifurcated to receive the rear end of the push-bar and provided with a series of perforations 37 as is also the push-bar, whereby as will be obvious by removing the pin and reinserting the same in the various perforations various adjustments may be secured. An extension 38 rises from each of the standards in which the shaft 19 is journaled, and are connected at their upper ends by a cross-piece 39, from the center of which a pair of coiled springs 40 depend, the same having their lower ends connected to the link or head 36, whereby said link or head and the rear end of the push-bar, when not otherwise influenced, are elevated.

In rear of the standard 29 there is securely bolted to the opposite sills a pair of vertical standards 41, the same being connected by a cross-head 42 at their upper ends, the ends of the cross-head extending beyond the standards and perforated in vertical alignment with corresponding perforations formed in the front support of the machine. Vertically threaded rods 43 pass through these perforations and are nutted above the cross-head, said rods extending some distance beyond their nuts. Inner threaded rods 44 rise from the cross-head at the inner sides of the standards, and these pairs of rods receive cross-pieces 45 above and below which nuts 46 are applied to the said rods, whereby the cross-pieces may be raised and lowered and held in any of their adjusted positions.

Bearing-ears 47 rise from each of the cross-pieces 45 and in the same is pivoted as at 48 a pair of levers 49. These levers converge toward their rear ends and are rigidly secured to each other and to the upper end of the link or head 36 and are arranged directly under the loose rolls connecting the cross-arms of the main shaft, whereby, being in the path of said rolls or rollers they are struck and depressed by each roller successively as it passes thereover, to be immediately re-elevated by the coiled springs 40 after said rolls have passed over the levers.

The standards 41 are provided at their lower ends with horizontal recesses 50 and in the same pairs of steel cutting-plates 51 are mounted for movement, said movement being secured through the medium of pairs of adjusting-bolts 53 which extend through the front walls of the recess and are loosely connected to the cutting-plates. At the rear side of each of the standards 41 there is located a

reciprocating chisel 54, the same having a lower diagonal cutting edge adapted to operate against the cutting-plate. The upper end of the chisel has pivoted thereto as at 55 a pair of links 56 which in turn are pivoted at their upper ends as at 57 to the converging levers that are operated upon by the loose rollers 28 of the shaft 19.

A pair of spring-arms 58 is secured to the sills 15 in rear of the standards 41, and journaled as at 59 in said spring-arms immediately in rear of the standards and extending transverse the sills is a roller 60. A pair of inwardly disposed checking-arms 61 is located upon the sills 15 between the standards 29 and the standards 41 and are employed to prevent the possibility of the board or rail moving backward, when the feed-devices move over the board to re-engage therewith for the purpose of subsequently drawing the board into the machine. These checking-arms are formed of spring-metal secured at their outer ends to the frame-work of the machine at each side of the way or feed-opening and are normally pressed into the path of the board so that the presence of the board causes them to spread. They are inclined in the same direction as the movement of the board when being fed into the machine, and hence resist, in a manner heretofore described, any backward movement of said board.

In preparing the machine for operation the leading ends of two wire strands of sufficient gage are first passed through the perforations in the vibratory levers and extended beyond the same under the cam levers and under the chisels to the inner sides of the standards 41. The machine is now operated so that the chisels are given a vertical reciprocation, and as they descend their edges being diagonally disposed produce a diagonal cut upon the ends of the wires so that the leading ends of the wires are beveled or pointed. The board or rail to which the barbs are to be applied is now slid into the front end of the machine on the loose frictional rollers 17 and ways and under the spring-pressed roller 60, the latter serving to maintain the board or rail upon the ways and in direct transverse alignment with the leading ends of the wires and hence opposite the recesses in the standards 41. As the machine continues its movement the ends of the arms 21 are brought against the outer sides of the cam levers causing them to move a sufficient distance inward to first clamp or bind at their lower cam ends upon the wires, and continuing their movements the said arms are squeezed together or pressed inward so that the beveled ends of the wires are forced into the edges of the rail or board. When this has been accomplished the cam arms are from under the influence of their operating bars or arms 21 and are swung outward by the spring 6 in the lower front support of the frame. As they swing outward they release their bite upon the wires and move outward over the same. Immediately

thereafter the chisels descend and again form a beveled or diagonal cut upon each wire, thus producing the barb. Following this the push-bar passes over the board or rail which is prevented from moving backward by the checking-arms 61 heretofore mentioned, and said push-bar having forced its head a certain distance over the board or rail now retracts said head, and the latter having teeth on its under side engages with the board or rail and draws the same to the rear to the same extent that the push bar is operated or drawn. By this time the opposite ends of the arms 21 have arrived against the cam levers and the operation is repeated. The result of the operation is that the board or rail is fed out from the opposite end of the machine having a uniformly disposed and regularly spaced apart series of beveled barbs at opposite sides thereof.

The spring 30 serves to lift the advanced end of the push-bar, when it is not otherwise influenced, so as to cause the same to readily ride over the rail or bar when said bar is moving to the front for a re-engagement with the rail or board and therefore not actuated or influenced by said rail or board; and on the other hand permits the head of the bar to become depressed by the mechanism before described into engagement with the bar or rail so that when said bar moves to the rear the board is drawn into the machine the length of the movement of the push-bar. By regulating the point of connection between the push-bar and the link or head 36 the movement of the bar may be regulated, and thus the barbs be set at different distances apart.

Various changes in the details of construction of my invention will readily suggest themselves to persons conversant with this class of machines, and I therefore do not limit my invention to such details as are herein shown and described, but hold that I may vary the same to any degree and extent within the knowledge of the skilled mechanic.

Having described my invention, what I claim is—

1. In a machine of the class described, the combination with a rail-support, a vibratory wire-carrier arranged at one side of the rail-support, and means for vibrating said carrier, of a cut-off for the wire arranged between the wire-carrier and the rail-support, and means for operating the same, substantially as specified.

2. In a machine of the class described, the combination with a rail-support, a vibratory wire-carrier at one side thereof, and means for actuating the carrier, of a wire cut-off arranged between the wire-carrier and the rail-support, said cut-off having a diagonal cutting edge, and means for operating the cut-off, substantially as specified.

3. In a machine of the class described, the combination with a rail-support, a vibratory wire-carrier arranged at one side thereof, and means for operating said carrier, of a cut-off

for the wire, means for operating the cut-off, and feed-mechanism for the rail, these mechanisms and means mentioned being timed so as to operate successively, substantially as specified.

4. In a machine of the class described, the combination with a rail-support, a reciprocating wire cut-off arranged at one side thereof, and means for operating the cut-off, of a vibratory lever arranged at one side of the cut-off and provided at its upper end with bifurcations, and an eye for receiving the wire, a curved lever pivoted between the bifurcations and having a lower cam end for binding on the lever in front of the eye, means for pressing the upper end of the lever inward before the operation of the cut-off, and for returning said lever after such operation, substantially as specified.

5. In a machine of the class described, the combination with a rail-support, a reciprocating wire cut-off at one side thereof, and means for operating the cut-off, of a lever pivoted and adapted to vibrate at one side of the cut-off, said lever having its upper end bifurcated and provided at its outer edge with an extension having an eye for receiving the wire, an arm pivoted between the bifurcations and having a lower cam end and an upper curved end, a spring for normally pressing the lever outward, a wheel, a shaft for the wheel, means for rotating the shaft, and projections on the wheel for contacting with the upper curved end of the arm, substantially as specified.

6. In a machine of the class described, the combination with a rail-support, a vibratory wire feed arranged at one side thereof, and means for operating said feed, of a standard located between the rail-support and the wire feed, said standard having its lower end recessed, a cutter-plate arranged adjustably in the recess, means for adjusting the plate, a reciprocating chisel mounted upon the standard over the plate, and means for reciprocating said chisel, substantially as specified.

7. In a machine of the class described, the combination with a rail-support, a reciprocating cutter arranged at one side thereof, and means for operating the same, of a wire feed-device arranged at one side of the cutter, means for operating the feed-device, a reciprocating bar having a toothed head arranged over the rail-support and adapted to engage the rail, means for reciprocating the bar, and devices for checking the rearward movement of the rail, substantially as specified.

8. In a machine of the class described, the combination with a rail-supporting base or frame, standards arranged thereon, bearings in the standards, a shaft journaled in the bearings, a wheel mounted on the shaft, projections extending from the wheel, cross-arms arranged on the shaft between the bearings, rollers connecting the ends of the cross-bars, extensions for the standards, a cross-piece connecting the extensions, a spring depending therefrom, and a head or link suspended

by the spring, of a standard arranged in front of the shaft, a reciprocating chisel supported thereby, a lever fulcrumed on the standard pivoted to the chisel and at its rear connected to the head and arranged in the path of the rollers, and wire feed-devices arranged at one side of the chisel, substantially as specified.

9. In a machine of the class described, the combination with a rail-supporting frame or base, a shaft journaled in the rear and above the same, a wheel on the shaft, projections carried by the wheel, a suspended spring in rear of the shaft, a bifurcated head supported by the spring, a standard in front of the shaft, and a lever fulcrumed on the standard and at its rear end connected to the head, a reciprocating wire-cutting chisel connected with the standard and pivotally connected to the lever, cross-arms arranged on the shaft, and rollers connecting the cross-bars and adapted to contact with said lever and depress the same, of a push-bar pivoted to the lower end of the head, a toothed head connected to the push-bar and adapted to engage the rail, and wire feed-devices arranged at one side of the chisel and adapted to be actuated by the wheel of the shaft, substantially as specified.

10. In a machine of the class described, the combination with the rail-support, the cut-off arranged at one side thereof, means for operating the cut-off, a wire feed arranged at one side of the cut-off, and means for operating the feed, of a standard arranged over the rail-support, a V-shaped spring depending therefrom, a clip carried by the spring, a push-rod mounted in the clip, a push-bar carrying a feed-head connected to the push-rod, and means for reciprocating the push-bar, substantially as specified.

11. In a machine of the class described, the combination with the rail-support, the cut-off at the side thereof, means for operating the cut-off, the lever pivoted below the support and to one side of the cut-off and provided with an upper bifurcated end having an extension provided with an eye, a curved arm pivoted between the bifurcations and having a lower wire binding end, of a shaft journaled in rear of the same, a wheel mounted on the shaft, means for operating the shaft, and a cross-arm extending radially across the wheel and beyond the same, said cross-arm having its ends recessed and provided with loose rollers, substantially as specified.

12. In a machine of the class described, the combination with the opposite sills arranged parallel and provided with guides at their inner edges, interposed rollers flush with the guides, spring-arms secured to the sills and having a roller journaled at their front ends and extending over the guides, of wire cutting and feeding devices at one side of the guides, and a push-bar having a head extending over the guide, and means for operating said push-bar, substantially as specified.

13. In a machine of the class described, the combination with the opposite sills having a rail guide, the opposite standards arranged on the sills, the cross-head for the standards arranged on the guides, the threaded rods extending through the cross-head, the cross-pieces arranged on the rods, nuts above and below the cross-pieces, bearing ears carried by the cross-pieces, levers pivoted between the bearing ears and converged and connected at their rear ends, means for raising and lowering the levers, chisels mounted in the standards and connected to the levers, of opposite wire guides arranged at the sides of the standards, and means for operating the same, substantially as specified.

14. In a machine of the class described, the combination with the opposite sills having guides, the rear support, the front rectangular frame arranged under the guides and having opposite slots, the vibratory wire guide, and feeding levers pivoted in the slots, a bowed spring secured to the bottom of the frame and bearing against the levers, devices for intermittently forcing the levers inward, of standards arranged upon the opposite sills, vertically reciprocating cutters carried thereby, and means for operating said cutters, substantially as specified.

15. In a machine of the class described, the combination with a frame having a rail-guide, standards arranged at opposite sides of the guide, each provided with a recess at its bottom, a cutting-plate arranged in the recess, vertically reciprocating wire-cutters having diagonal edges arranged upon the standards above the plates, and means for operating said cutters, of opposite wire guides, and means for vibrating the same, substantially as specified.

16. In a machine of the class described, the wire carrying and feeding device, consisting of the lever having its upper end bifurcated and provided with an eye for receiving the wire, an arm pivoted between the bifurcations, a spring for the lever, a wheel, and projections on the wheel for contacting with the arm, substantially as described.

17. In a machine of the class described, the combination with the rail-support, of a reciprocating bar having a toothed head arranged over the same and adapted to engage the rail, and move longitudinally thereover, means for reciprocating the bar, in the direction indicated and devices for checking the rearward movement of the rail, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

NATHAN A. PAINE.

Witnesses:

CARL CLARK,  
DUTEE S. PAINE.