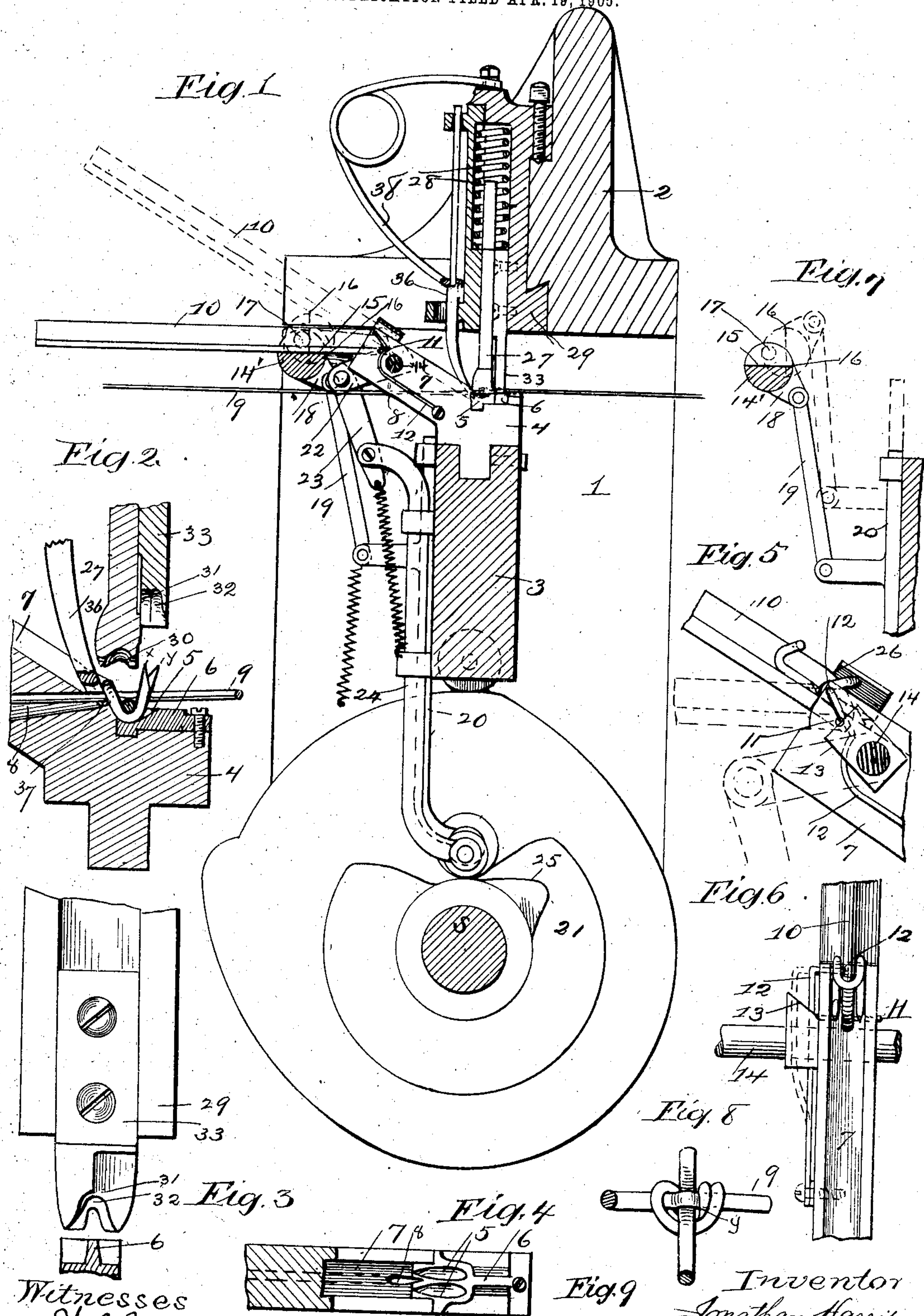


No. 834,297.

PATENTED OCT. 30, 1906.

J. HARRIS.
WIRE FENCE MAKING MACHINE.

APPLICATION FILED APR. 18, 1905.



Witnesses
W. S. Grant
E. C. Threard

Fig. 9
Inventor
Jonathan Harris,
by Wm. M. Monroe
Attorney

UNITED STATES PATENT OFFICE.

JONATHAN HARRIS, OF CLEVELAND, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO BUCKEYE FENCE MACHINE COMPANY, OF ASHTABULA, OHIO.

WIRE-FENCE-MAKING MACHINE.

No. 834,297.

Specification of Letters Patent.

Patented Oct. 30, 1906.

Application filed April 19, 1905. Serial No. 256,478.

To all whom it may concern:

Be it known that I, JONATHAN HARRIS, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, State of Ohio, have invented certain new and useful Improvements in Wire-Fence-Making Machines, of which I hereby declare the following to be a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

The objects of the invention are to provide improved forms of dies and a staple-feeding device of novel and efficient character for the automatic wire-fence-making machine described in my application for Letters Patent of the United States bearing Serial No. 228,526, filed October 15, 1904.

In the present application one complete set of dies and one staple-feeding device are employed to exemplify all the devices of that character in the machine, since all are exact duplicates.

The specific objects are to provide means for feeding the staples from which the dies are formed singly, and to prevent the application of more than one staple at a time thereto, and in the dies to provide means for temporarily retaining the staple under pressure therein until the die which bends the free extremities of the staple over one of the crossing fence-wires can complete its work.

The invention consists in the various forms of the dies and die-operating mechanism with the feed mechanism and details of construction and combination and arrangement of parts, as hereinafter described, shown in the accompanying drawings, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical transverse section of main operating-shaft of the machine, the vertically-reciprocating cross-head on which the lower dies are mounted, and the upper cross-bar on which the upper dies are mounted, showing also a side elevation of one of the blades for storing staples and from which they are fed by gravity. Fig. 2 is a transverse section of upper and lower dies, showing a portion of the trough which carries the staples to the dies. The staple is also seen in position in the lower dies ready for the impact of the upper dies. Fig. 3 is an elevation of the inner face of the stationary upper die, showing the

wedge shape of the lower die over which the upper die saddles to bend the extremities of the staple about the stay-wire. Fig. 4 is a plan view of the lower die. Fig. 5 is a side elevation of the upper end of the staple-trough and lower pivoted end of the staple-blade on which the staples are stored. Fig. 6 is a plan view of the same, showing trigger mechanism for releasing one staple at a time; and Fig. 7 is a detail view of the device for lowering the staple-blade to prevent the delivery of more than one staple at a time to the feed-trough. Fig. 8 is a perspective view of one of the staples fastened upon the crossing-wires. Fig. 9 is a detail view of the staple.

In the views, 1 is the frame of the machine. 2 is the upper cross-bar secured thereto.

3 is the vertically-reciprocating cross-head, upon which are secured the die and trough-base 4, upon which are secured the doubly-grooved die 5 and wedge-die 6, and integral with the base is the inclined feed-trough 7, which is perforated at 8 for the passage of the line-wire 9.

The staples in the form shown in Fig. 9 are first stored upon an inverted-T-shaped metal blade 10, which is pivoted upon the upper end of the trough at 11 and thence pass one at a time to the trough and thence to the dies.

The mechanism which is arranged to feed one staple only at a time to the trough is seen to consist of the wire spring at 12, one end of which is forced transversely across the line of passage of the staples by means of the cam 13 upon a rod 14. This wire serves as a detent to hold one staple back in the trough until the blade 10, carrying the remaining staples, is lowered to the horizontal position, when of course the staples thereon can no longer fall by gravity into the trough. At this moment the cam 13 is turned to release the spring, which flies out of the path of the staple in the trough, and hence permits it to fall into the lower die, as shown in Fig. 2. The blade then rises again, and the spring 12 is again passed in front of the staples, so that the staple next to the spring lies in the trough ready to fall as soon as released.

The operating mechanism for the blade is seen to consist of the rock-bar 14', having a flat surface 15, upon which the blade rests when down, and an edge 16, on which the blade rests when up. The bar 14' is oscillated on pivotal points 17 in the frame by means

of rock-arm 18, link 19, sliding bar 20, and cam-wheel 21 in the main shaft S. The mechanism which operates the cam-rod 14 and compresses the spring 12 is seen to consist of rock-arm and link 22 and 23, sliding bar 24, and cam 25 on the main shaft. The lower end of the blade 10 is curved at 26, so that the last staple will fall into the trough, where it is held until the spring-detent is released. The upper die is divided. One portion 27 is vertically yieldable and is under heavy pressure from a spring 28 above in the die-head 29. This die is recessed at 30 to receive the looped end of the staple, as shown in Fig. 2, and holds it firmly in place as the lower die rises, and the ends of the staple come into contact with the transverse grooves 31 and 32 in the bending-die 33, which is rigidly secured in the die-head and is immovable.

The ends of the staple are oppositely beveled off at x and y , so that they can readily pass one another. The upper bending-die is doubly and transversely grooved to engage these ends and bend them down about the line-wire 9, one groove engaging one end and the other groove the other end and forcing the ends past one another, while the line-wire is supported upon the wedge-shaped portion of the lower die.

The lower die is provided with longitudinal grooves 5, which receive the curved sides of the staple, while the yielding upper die 27 engages the looped portion of the staple.

A spring-pressed sliding keeper 36 is provided with a forked point 37, which as the lower die rises engages the rear of the staple and keeps it in position while the lower die rises. A spring 38 serves to maintain the contact of the keeper with the die.

Having described the invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine for making wire fence, the combination with yielding and stationary upper dies, and vertically-reciprocating lower dies, of a staple-feeding trough adjacent to the lower dies, a staple-carrying blade pivoted to the outer end of the said trough, having staples thereon, a spring-detent in the trough at the upper end, and means for lowering said blade and for thereafter releasing said detent to permit one staple to fall into the lower die, substantially as described.

2. The combination with lower dies, and a rigid inclined trough adjacent thereto, of a staple-storage blade pivoted to the upper end of the trough, a spring-detent arranged to resist the passage of staples in the trough, means for lowering the blade with its load of staples, and means for controlling the movements of the detent to intercept the staples and to release the remaining staple when the blade is lowered, substantially as described.

3. In a device for the purpose described—in

combination, a vertically-reciprocating lower die, comprising a longitudinally and doubly grooved portion and adjacent vertical wedge-shaped portion, and upper dies comprising a vertically-yielding primary recessed portion, and a stationary bending-die provided with a transversely and doubly grooved portion, substantially as and for the purpose described.

4. In a device for the purpose described, in combination, an upper die comprising a vertically-yielding portion provided with a single recess in its lower face and a fixed portion provided with a transversely and doubly grooved lower face, a lower vertically-reciprocating die provided with a doubly-grooved upper surface underneath the yielding upper die, and with a wedge-shaped portion underneath the fixed upper die, an inclined trough leading to the lower grooved die, over the grooved portion of which lower die the fence-wires intersect, a staple-feeding and storing device, a releasable detent for the staples, and means for lowering the staple-storing device previous to releasing the said detent, substantially as described.

5. In means for attaching staples to intersecting fence-wires, the combination with the upper and lower dies between which the fence-wires intersect and adjacent to the intersecting points thereof, and a device for feeding staples one at a time to said dies, comprising, an inclined trough, a staple-storage blade pivoted to the outer end of said trough, a spring-detent in the upper end of the trough adapted to retain the lower staple, means for releasing said detent, and means for lowering the storage-blade with the staples thereon previous to releasing said detent, whereby one staple only will be delivered at a time to the dies, substantially as described.

6. The combination with the lower dies of a staple-attaching device for wire fencing, of a trough leading to said dies, a staple-storage blade pivoted to the upper end thereof, a spring-detent at the upper end of said trough, adapted to retain a staple discharged into said trough from said blade, means for releasing said detent, consisting of a rotatable cam adjacent thereto, and means for lowering said blade to prevent the staples thereon from passing into said trough when the detent is released, and for elevating the blade to provide another staple for the trough, substantially as described.

7. In a machine for the purpose described, an upper die one portion of which is yielding and the other portion fixed, a vertically-reciprocating lower die, a transverse bar in which said lower die is fixed, a main shaft and cam thereon engaging said transverse bar, and a staple-feed device comprising a trough communicating with the lower die at its lower end, a staple-storage blade pivoted

to said trough and discharging therein, a detent in the upper end of the trough adapted to retain a staple from the said blade, means for withdrawing said detent to release said staple and for replacing the same, means for lowering said blade to prevent the discharge of the staples thereon until said detent is replaced, and cams upon said main shaft, and mechanism controlled thereby for operating said blade and detent, substantially as described.

8. In a device for the purpose described, the combination with a vertically-reciprocating lower die, and operating main shaft and cam therefor, of a staple-feed device, consisting of an inclined trough and staple-storage

blade pivoted thereto, a rock-bar adapted to raise and lower said blade at predetermined intervals, a spring-detent in said trough, a shaft and cam thereon adapted to control the movements of said detent, cams upon said main shaft, and intermediate mechanism adapted to control the movements of said rock-bar and detent-controlling cam, substantially as described.

In testimony whereof I hereunto set my hand this 5th day of April, 1905.

JONATHAN HARRIS.

Witnesses:

WM. M. MONROE,
GEO. S. COLE.