

(No Model.)

A. S. ALLEN.
DEVICE FOR FORMING WIRE BALE TIES.

No. 507,642.

Patented Oct. 31, 1893.

Fig. 1.

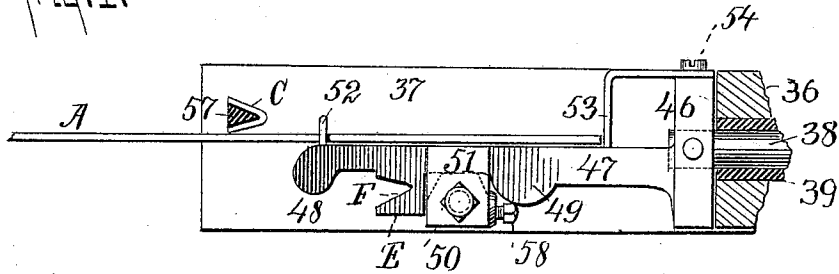


Fig. 2.

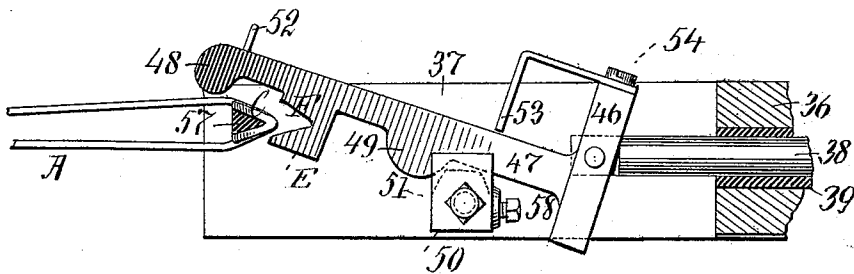


Fig. 3.

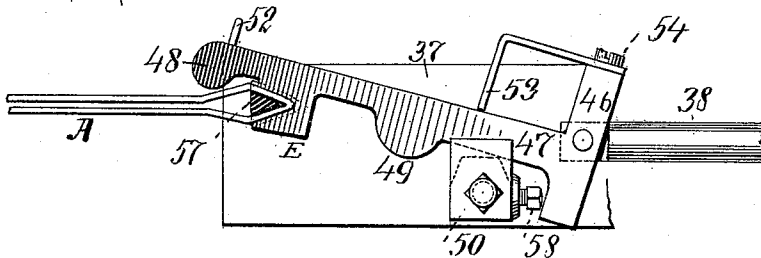


Fig. 4.

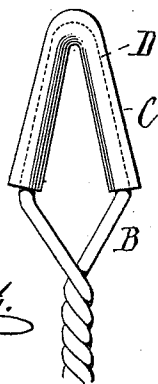
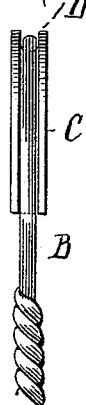


Fig. 5.



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DEVICE FOR FORMING WIRE BALE-TIES.

SPECIFICATION forming part of Letters Patent No. 507,642, dated October 31, 1893.

Application filed January 19, 1893. Serial No. 458,967. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER S. ALLEN, of Troy, Rensselaer county, New York, have invented a new and useful Improvement in
5 Machines for Manufacturing Wire Bale-Ties, of which the following is a specification.

In Letters Patent No. 466,563, granted to John Wool Griswold January 5, 1892, there is described a form of adjustable bale tie which
10 consists substantially in a wire band having at one end an eye formed by twisting the wire back upon itself, within which eye is received a V-shaped saddle of metal. In operation, the wire band is placed around the bale when said
15 bale is in the press, and the free end of the band is inserted through the saddle in the eye, and drawn tight. The running end of the band thus becomes jammed in the angle or V of the saddle, and the expansion of the bale,
20 when released from the press, causes the contraction of the eye and hence approximation of the arms of the saddle, whereby the running end of the band becomes still more tightly clamped and grasped.

In Letters Patent No. 418,456, granted December 31, 1889, to Frank B. Griswold, there is described a machine for producing, upon the end of a piece of wire, an eye by bending over the extremity of said wire and twisting
30 the said parts together.

My present invention consists in an improvement in and upon the machine described in said Patent No. 418,456, whereby said machine is enabled to make the device which is
35 set forth in said Patent No. 466,563.

In the accompanying drawings, Figures 1, 2 and 3 illustrate so much of the machine of Patent No. 418,456 as is modified by my invention and as is necessary for the performance thereof; it being understood that the rest of the machine is substantially the same as is illustrated in said Patent No. 418,456. Figs. 4 and 5 represent the device of Patent No. 466,563, which device, as already stated,
45 is made by the apparatus illustrated in Figs. 1, 2 and 3. In Fig. 1 is shown the position of the wire and the parts of the machine before the dog rises to bend the wire over the fixed pin. Fig. 2 shows the position of the
50 wire and the parts of the machine after the

dog has risen and bent the wire over the fixed pin. Fig. 3 shows the position of the wire and the parts of the machine after the dog has descended upon the wire to form the eye, and after the eye so formed, which embraces the saddle, has been received and squeezed in the V-shaped notch in the projection on the under side of the dog. Fig. 4 is a front view of the Griswold bale tie and Fig. 5 is a side view thereof.

Similar letters and figures of reference indicate like parts, and the literal references in my present application correspond to those which appear in said Letters Patent No. 418,456.

38 is a rod having a longitudinal to and fro motion in the manner described in said Letters Patent No. 418,456. The end of said rod 38 enters and is pivoted in a mortise in a vertical bar, 46, upon which bar, below the pivot, is secured the bending dog 47. This dog has a rounded downward projection at its extremity 48; and also upon said dog, on its under side, is the cam projection 49.

37 is a flat, projecting head supported upon a friction disk, 36, and carried by a spindle, 39, to which, by suitable gearing, an intermittent, rotary motion is imparted by mechanism which is not here shown, but which is fully described in Letters Patent No. 418,456, hereinbefore referred to. Bolted to the plate 37 is a fixed cam, 50. When the parts are in the position shown in Fig. 1, the dog 47 rests upon said cam 50, and is retained between the plate 37 and a similar plate, 51, outside of said cam. In the upper front portion of the dog 47 there is a longitudinal score (not shown), on opposite sides of which project upward pins, one of which is shown at 52. Supported upon the upper portion of the bar 46 is a downwardly-bent plate, 53, which is slotted and secured by a set-screw, 54, passing through the slot so that the vertical portion of said bar may be adjusted nearer to or farther from the extremity of the bending dog 47. Projecting from the head 37 is a forming pin, 57.

The aforesaid parts operate in the manner set forth in Patent No. 418,456 as follows, and constitute a device for bending back upon

itself the end of the wire A upon which the eye is to be formed. The wire A being introduced under the forming-pin 57, passes between the pins 52 on the dog 47 until its end reaches the stop 53. The wire then lies in the groove on the upper side of the dog 47, and the distance to which it extends over the dog is limited by the position of the stop 53, which is adjusted in the manner already described. By the mechanism set forth in Patent No. 418,456, the rod 38 is caused to move toward the left of the drawings. As it so moves, the cam 49 on the under side of the dog 47 meets the incline of the fixed cam 50, supported on the head 37, and rises over said cam. As it rises, it carries up with it the end of the wire which is beyond the forming-pin 57, so that this end of the wire assumes first a vertical position and then is bent backward over the pin 57, the end 48 of the dog finally riding over the loop and the parts assuming the position as shown in Fig. 2. In order now to form the eye, the rod 38 continues to move outward, and the lower end of the bar 46 meets an adjustable stop, 58, on the side of the fixed cam 50; and as the bar 46 continues to be pressed against this stop, the extremity, 48, of the dog is forced downward so as to bring the bent-over part of the wire into proximity to the standing part, as shown in Fig. 3.

I will now describe how the parts, operating in the manner before described, manufacture the bale tie represented in Figs. 4 and 5. The said tie consists of an eye, B, formed on the end of the band, which eye B receives a V-shaped saddle, C, which is preferably made of wrought metal. On the outside of the saddle formed by bending the edges thereof together is a groove, D, in which groove the wire of the eye B lies. It will be seen that I have changed the shape of the forming-pin 57 from that which is shown in Patent No. 418,456, to a pin of triangular cross-section which is adapted to receive upon it the saddle C. This saddle is placed in position upon the pin 57 by hand before the wire A is introduced into the machine, as shown in Fig. 1.

It will be evident from Fig. 2 that the operation of the dog 47 is, while bending the wire A around the pin 57, likewise to carry said wire snugly into the groove of the saddle C. It is, however, necessary that the saddle should be forced down tightly against the wire at the end of the eye; for I have found, by actual experiment with these bale ties, that when such is not the case, the saddle is liable to become ruptured under heavy strain; this being due to the fact that it is not properly supported or backed by the wire. I therefore provide, on the under side of the dog 47, a projection, E, in which projection there is a V-shaped recess, F. This recess is so constructed and disposed that when the parts reach the position shown in Fig. 3, the pin 57,

the saddle C thereon and the wire A (now bent over said saddle) will all be received in said recess F, and the remaining additional forward movement of the rod 38 causes the wire A and saddle C to be closely jammed or pressed together between the pin 57 and the sides of the recess F. In this way the wire is closely and snugly forced into the groove D on the saddle C; and also in the manner already described, the end 48 of the dog presses the wire in rear of the fastening pin downward so as to form the eye, as indicated in Fig. 3.

The remaining operation of the machine to effect the twisting of the eye is exactly the same as is described in said Patent No. 418,456, and therefore needs no further description.

I claim—

1. The combination in a machine for the manufacture of bale tie fastenings of the type hereinbefore described, of a fixed support constructed to receive the thimble or saddle of the eye, means for bending the wire around said saddle, and means for twisting the approximated parts of the wire together to form said eye, substantially as described.

2. The combination in a machine for the manufacture of bale tie fastenings of the type hereinbefore described, of a fixed support constructed to receive the thimble or saddle of the eye, means for bending the wire around said saddle, means of compressing the bent wire closely upon said saddle, and means for twisting the approximated parts of the wire together to form said eye, substantially as described.

3. The combination in a machine for the manufacture of bale tie fastenings of the type hereinbefore described, of a fixed V-shaped pin or support 57 adapted to receive the saddle C, mechanism for bending the wire A around said support to form an eye B, and a reciprocating block E having a V-shaped opening F adapted to receive said support intermittently moving upon the same and thereby compressing the wire of eye B into the groove D of the saddle C, substantially as described.

4. The combination in a wire-bending machine, of a fixed pin of wedge-shaped cross-section around which the wire is bent, a dog swinging in a vertical plane and also having at its center of oscillation a reciprocating motion toward and from said pin, a projection on one side of said dog having a wedge or V-shaped recess turned toward and adapted to receive said pin, and a fixed cam placed beneath said dog and regulating its upper throw; the aforesaid parts being arranged and operating so that when a wire is introduced under said pin and over said dog, the forward motion of said dog over said cam shall cause said dog to rise and to carry and bend said wire over said pin, and the continuing forward movement of said dog shall cause the recess in said projection to receive the

said wire loop and compress the same upon said pin.

5. The combination of the rotary head 37 and the wedge or V-shaped forming-pin 57 and fixed cam 50 thereon, the movable rod 38 and dog 47 pivoted thereto, and on said dog the projection E having the V-shaped recess

F adapted to receive said pin 57, substantially as described.

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Witnesses:

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W. W. ROUSSEAU.