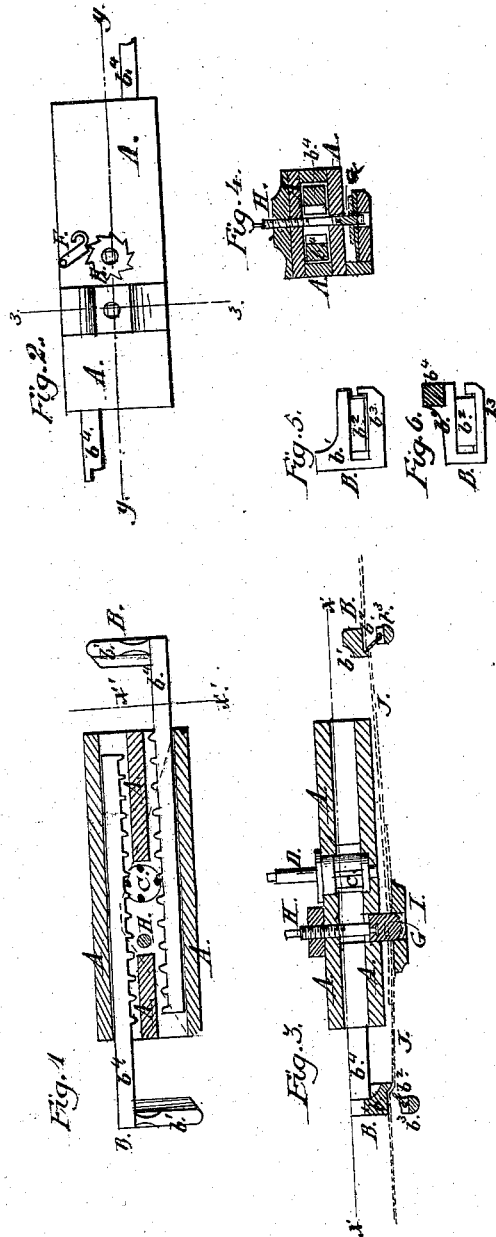


*R. S. Adams,*

*Bale Tie.*

*Patented May 15, 1866.*

*No. 54,810.*



*Witnesses:*

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# UNITED STATES PATENT OFFICE.

RICHARD S. ADAMS, OF LOYD, NEW YORK, ASSIGNOR TO HIMSELF AND  
GEORGE E. PARROTT, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR TIGHTENING AND SECURING THE HOOPS OF COMPRESSED BALES.

Specification forming part of Letters Patent No. 54,810, dated May 15, 1866.

*To all whom it may concern:*

Be it known that I, RICHARD S. ADAMS, of Loyd, Ulster county, State of New York, have invented a new and Improved Machine for Tightening and Securing the Hoops of Compressed Bales; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a longitudinal section of my improved machine, taken through the line *x x*, Fig. 3. Fig. 2 is a side view of the same; Fig. 3, a longitudinal section of the same, taken through the line *y y*, Fig. 2, looking upward. Fig. 4 is a cross-section of the same, taken through the line *z z*, Fig. 2. Fig. 5 is a detail view of the outer side of one of the gripes. Fig. 6 is a detail sectional view taken through the line *a' a'*, showing the inner side of one of the gripes.

Similar letters of reference indicate like parts.

My invention has for its object to furnish a machine by means of which the hoops may be drawn tightly around the bales and their ends secured to each other easily, securely, and cheaply; and it consists, first, of a machine formed by combining a pair of gripes, constructed as described, with each other, with the cog-wheel, ratchet-wheel, and pawl, and with the frame in which they are placed; and, second, of a punch, constructed as described, in combination with the machine, as herein-after more fully described.

A is the frame in which the various parts of the machine are placed and by which they are connected together.

B are the gripes by which the ends of the hoops are grasped and drawn toward each other or tightened around the bale. *b'* is the part of the gripe against which the hoop is held by the plate *b<sup>2</sup>*. The face of the part *b'* is made with a slight shoulder, as seen in Fig. 3, to enable the plate *b<sup>2</sup>* to take a firmer hold upon the hoop. The plate *b<sup>2</sup>* is pivoted to the part *b<sup>3</sup>*, as shown in Figs. 3, 5, and 6, and should have its edge slightly serrated, to enable it to take a firmer hold upon the hoop. *b<sup>4</sup>* are long arms, to which the parts *b'*, *b<sup>2</sup>*, and *b<sup>3</sup>* are attached. Upon one side of each of these arms is formed a rack, as shown in Fig. 1.

C is a cog-wheel formed upon the shaft D, which revolves in bearings in the frame A, as seen in Fig. 3. The cog-wheel C meshes into the racks formed on the arms *b<sup>4</sup>*, as seen in Fig. 1, and by its revolutions moves the gripes simultaneously either inward or outward, as may be desired.

To the shaft D, on the outside of the frame A, is attached a ratchet-wheel, E, into the teeth of which the pawl F drops and prevents the gripes B from being drawn apart by the strain of the hoop when the power which drew them together has been removed.

G is a punch attached to the end of the screw H, by means of which the said punch is operated. The punch G has two cutting-edges, as shown in Fig. 4, which cut two slits in the hoop, and the strip between the slits is forced forward by the rounded face of the punch, as seen in Figs. 3 and 4, the two strips on each side of the central strip being forced back by the rounded face of the plate I, against which the hoop has been forced by the punch G. As the punch is again withdrawn by the screw H the elasticity of the hoop causes it to move back against or toward the frame A, so that a key may be placed in the opening thus formed between the strips into which the hoop has been cut. This key may be a narrow strip cut from the end of a waste piece of hoop-iron, an old nail, or any other convenient thing. The screw H and the shaft D may be both operated by the same key, lever, or crank, as may be most convenient.

In using the machine, the arms *b<sup>4</sup>* are run out, the plate I put next the hole, and the ends of the hoop J clamped in the gripes B. These gripes are then drawn in by operating the cog-wheel C. This draws the hoop tightly around the bale, causing its ends to overlap, as shown in Fig. 3. When the hoop has been drawn sufficiently tight the crank is removed from the shaft D and applied to the screw H, (the ratchet-wheel E and pawl F keeping the gripes B from being drawn outward by the strain of the hoop,) and the punch is forced forward against the overlapped ends of the hoop, forming the opening for the key, as before described. The machine may then be removed from that hoop and applied to another one.

I have described my machine as operating upon iron hoops alone; but it is equally applicable to wooden hoops or to rope or wire bands,

except that in these latter cases the punch need not be used. To enable the machine to be applied more readily to these latter uses, one of the arms  $b^4$  may be made longer than the other, so as to bring the overlap of the hoops or bands at the end of the machine, for convenience in nailing the hoops or securing the ends of the bands.

It should be observed that there may be attached to the part  $b^3$  of the gripes B a small spring, that will force the plate  $b^2$  without its being necessary to close the said plate with the hand.

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

1. An improved machine formed by combining a pair of gripes, B, constructed as described, with each other, with the cog-wheel C, ratchet-wheel E, pawl F, and with the frame A, in which they are placed.

2. The combination of the punch G, constructed and operated substantially as described, with the machine, for the purposes set forth.

The above specification of my invention signed by me this 8th day of February, 1866.

RICHARD S. ADAMS.

Witnesses:

M. M. LIVINGSTON,  
JAMES T. GRAHAM.