

May 26, 1931.

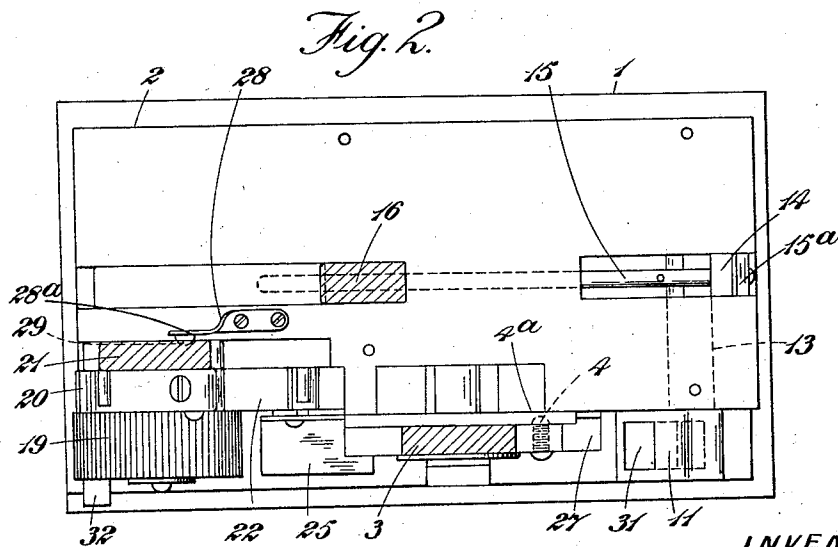
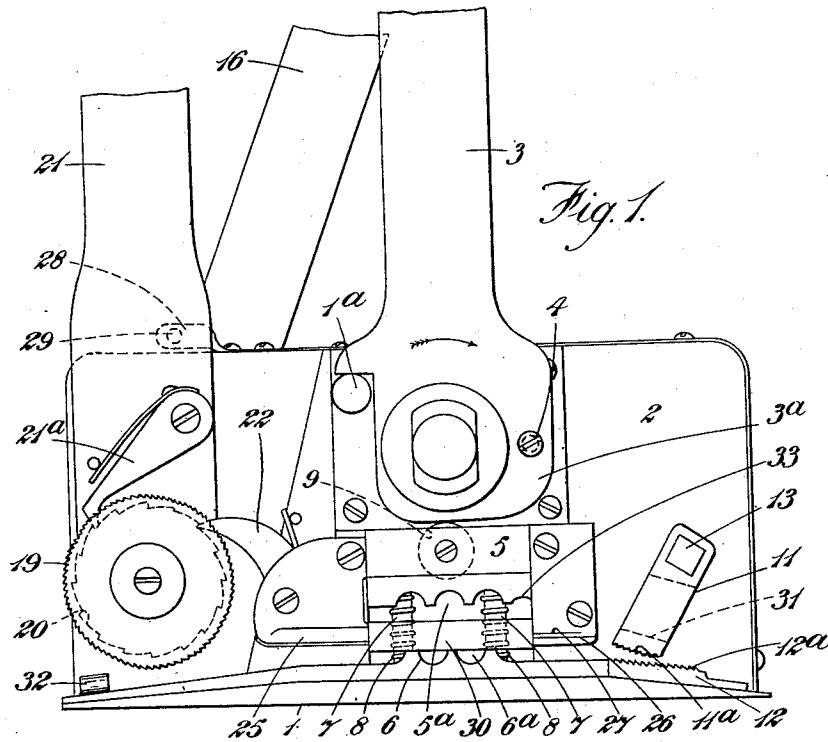
E. T. JAMES

1,807,479

WIRE TIGHTENING DEVICE

Filed Oct. 12, 1929

2 Sheets-Sheet 1



INVENTOR

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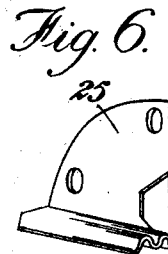
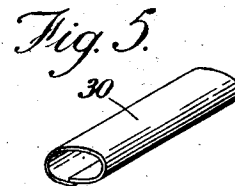
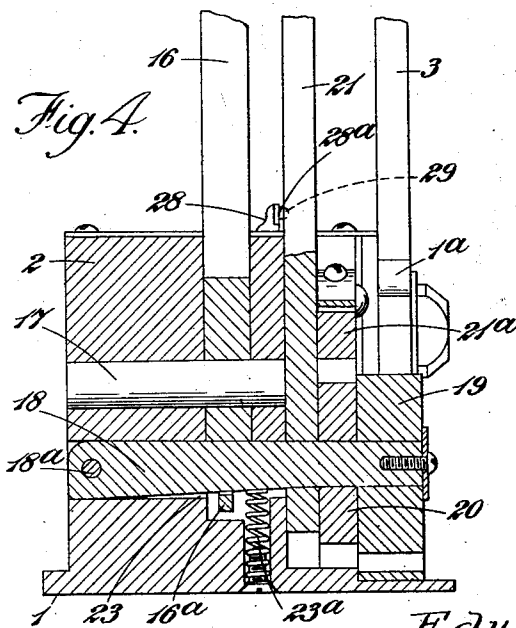
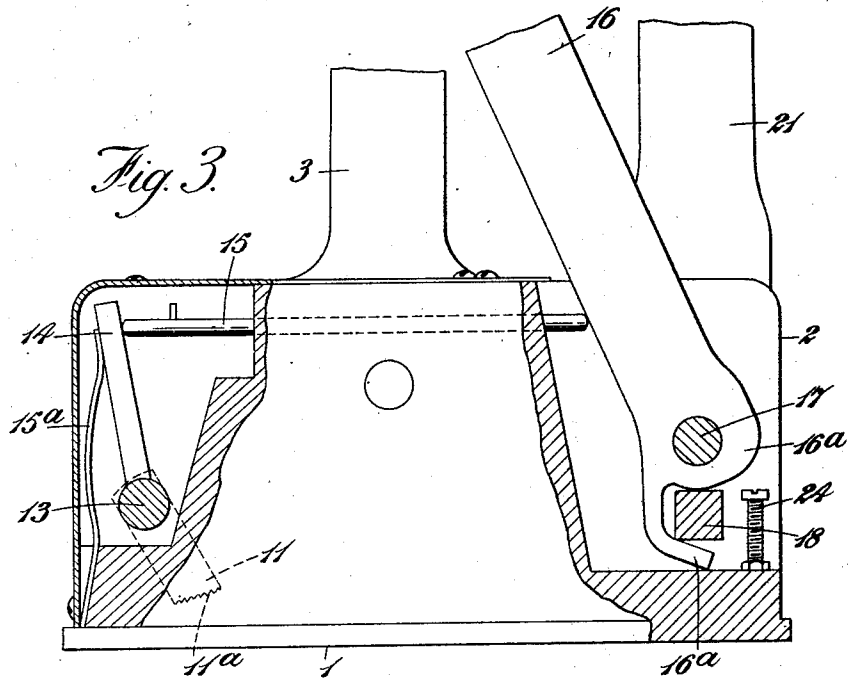
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UNITED STATES PATENT OFFICE

EDWIN TAKO JAMES, OF TASMAN, NELSON, NEW ZEALAND

WIRE TIGHTENING DEVICE

Application filed October 12, 1929, Serial No. 399,316, and in New Zealand May 21, 1929.

The present invention relates to machines used for tightening and securing wires and bands around packing cases and bundles, and more particularly to that kind of machine comprising a wire feeding wheel adapted to be pressed into contact with, and to be rotated to tighten, a wire or band passed about a packing case or bundle.

The improvements to be herein described, have been devised in order to enable encircling wires and bands to be strained and secured around the case or bundle, and to be cut from a coil or roll, without the necessity of first cutting the wire or the like into lengths, and also so as to enable the fastening of the wire or the like around the case or bundle, to be performed simply and securely, and further so as to reduce wearing parts to a minimum, while those parts affected by wear are enabled to be replaced at comparatively little expense, and with little trouble.

The machine provided by the invention comprises a base and a body portion, with a wire gripping pawl and a wire feeding wheel thereon, by means of which the wire is held and strained around the case or bundle, crimping blocks being provided between which a clip or clasp and the portions of the wire contained therein, are secured together by crimping.

The engagement of the pawl and the feeding wheel with the wire is controlled by a single cam lever, while the feeding wheel is actuated through a ratchet wheel provided with a lever and pawl, and the crimping is performed under the movement of a vertically operable block actuated by a further cam lever.

In order to enable the wire to be fed to the machine from a coil, the wire gripping pawl is formed with a hole therein through which the wire is passed to the clip or clasp between the crimping blocks, and thence around the case or bundle and back into the clip or clasp.

The machine is illustrated in the accompanying drawings, and will be further described in conjunction therewith,

Figure 1 being a front elevation,

Figure 2 a plan view, with cover plate removed,

Figure 3 a rear view (broken) and Figure 4 a cross sectional view of the machine, while

Figure 5 shows a clip or clasp, and

Figure 6 illustrates one of the wire guides. 55

The machine is constructed with a base 1, from which rises a body portion 2, the latter having pivoted thereto at its front and mid-way between its ends, a lever 3, which when inoperative is held in a vertical position against a stop 1^a by a spring pressed ball 4 in the cam portion 3^a of said lever 3, engaging in a recess 4^a in the body portion 2. Immediately below the cam portion 3^a is the upper of a pair of crimping blocks 5, 6, the upper block 5 being slidable in the body portion 2, and on guides 7, springs 8 around the latter acting to force said block upwards so that a horizontal roller 9 carried by and projecting above said block 5 is maintained in contact with the cam portion 3^a of the lever 3. The under surface of the block 5 has formed therein a number of cross grooves 5^a, the divisions between which are located directly over cross grooves 6^a formed in the upper surface of the lower block 6 which is a fixture on the base 1, below the upper block 5. 60 65 70 75

At one end of the front of the machine there is provided a pawl 11 containing a hole 31 and having teeth 11^a in its lower end formed the opposite way to the teeth 12^a of a plate 12 fixed on the base 1, and with which said pawl is adapted to co-act. The pawl 11 is secured on the front end of a cross shaft 13 mounted in the body portion 2, an arm 14 on said shaft being maintained in contact with one end of a rod 15 slidable through the body portion 2 under the action of a spring 15^a, pressing against said arm 14, the other end of the rod 15 being adapted to be engaged by a lever 16, which when moved to the position shown in Figure 3, slides the rod 15 against the action of the spring 15^a and causes the lower end of the pawl 11 to lift from the toothed plate 12. 80 85 90 95

The lever 16 is mounted on a spindle 17 in the body portion 2, and has a lower cam portion 16^a adapted to bear on and to depress, when moved outwards, a further spindle 18 pivoted at its rear end as at 18^a to the 100

body portion 2, and carrying at its front end, a peripherally notched feed wheel 19, a ratchet wheel 20 secured thereto, and a lever 21 with a spring pressed pawl 21^a for operating said ratchet wheel 20, a spring pressed check pawl 22 on the body portion 2, also engaging said ratchet wheel 20.

The spindle 18 is contained in a cross slot 23 in the body portion 2, made of sufficient depth to allow of vertical movement of said spindle, the latter being raised to lift the feed wheel 19, ratchet wheel 20 and lever 21, by the engagement under the spindle 18 of a lifting arm 16^a, on the lever 16, when the latter is brought inwards to the position indicated in Figures 1 and 3, a spring 23^a being provided to assist in raising said spindle 18, if required, while a screw 24 adjustable in the body portion 2, is provided as a stop for limiting outward and downward movement of the lever 16.

Guides 25, 26 having lower flat portions of crimped cross section are secured to the body 2 at either side of the crimping blocks 5, 6, while above the guide 26 a rigid metal plate 27 is secured to the body portion 2, so that its inner end is adjacent a cutting edge 33 formed across the end of the upper crimping block 5.

A spring check catch 28 with an end 28^a formed to enter a recess 29 in the ratchet lever 21 is provided on the body portion 2, for holding said lever in a vertical position, when not being used.

The clips or clasps 30 used are formed from sheet metal and are given a slightly flattened tubular formation as shown in Figure 5.

In forming and securing a wire around a case or bundle from a coil of wire, a clip or clasp 30 is first placed lengthways across the grooves 6^a in the lower block 6. The end of the wire is then passed inwards through the hole 31 in the pawl 11, over the plate 27, through the clip or clasp 30, below the guide 25 and feed wheel 19 through a further spring clip 32 on the base 1, then around the case or bundle and back between the toothed end of the pawl 11 and the toothed plate 12, below the guide 26 and again through the clip or clasp 30.

The lever 16 is then swung outwards, which action causes its cam portion 16^a to force the spindle 18 downwards, and the feed wheel 19 into firm contact with the wire on the base plate 1, below it. At the same time, movement of the lever 16 away from the rod 15, permits the spring 15^a to assert itself and to force the toothed lower end of the pawl 11 into engagement with the wire between it and the plate 12.

The lever 21 is then operated backwards and forwards and per medium of the ratchet wheel 20 and pawl 21^a imparts turning movement to the feed wheel 19, to strain on the

wire around the case or bundle against the grip on the wire by the pawl 11 and plate 12.

Upon the wire being tightened to the desired degree, and while the tension is maintained thereon, the lever 3 is swung in the direction indicated by the arrow in Figure 1, the cam portion 3^a bearing on the roller 9 and forcing the upper crimping block 5 downwards to crimp the clip or clasp 30 and the wire therein securely together, the cutting edge 33 on the block 5 acting in conjunction with the end of the plate 27 at the same time cutting the wire where it passes over said plate, so as to sever the wire encircling the case or bundle, from the wire leading from the coil thereof.

The cutting edge 33 does not extend below the under surface of the block 5, so that after cutting the wire above the plate 27, it fails to do any further cutting.

When the wire has been cut into lengths suitable for securing around cases or bundles, one end of the wire is passed between the pawl 11 and plate 12, and below the guide 26 into the clip or clasp 30 on the lower crimping block 6, and after the wire has been passed around the case or bundle its other end is passed through the spring clip 32 below the guide 25 and into the clip or clasp 30, the gripping, feeding, straining and securing of the wire being performed as before.

Upon the crimping being completed, the lever 3 is brought to its vertical position to raise the upper block 5, and the lever 16 is swung inwards again, which action raises the spindle 18 to cause the feed wheel 19 to leave the wire, the same operation imparting sliding movement to the rod 15, to raise the pawl 11 from the wire, whereupon the machine may be slid sideways from engagement with the case or bundle encircling wire.

If desired, one or more small rollers, preferably milled or toothed, may be mounted on the base plate 1 immediately beneath the feed wheel 19 to avoid undue friction between the wire and the base plate as the former is drawn tightly over the latter by said wheel 19.

Although wire has been described as the means for encircling and securing cases or bundles, it will be obvious that the machine can be adapted to deal with hoop iron, with comparatively little or no trouble.

What I claim is:—

1. In a machine of the character described, the combination with a wire feeding ratchet, a lever, and a pawl carried by said lever to cooperate with said ratchet, of a rocking spindle mounted to rock about a point near one of its ends and upon which the ratchet is journaled and the lever is positioned, a cam lever independently fulcrumed and associated with said spindle to raise and lower the same, and wire gripping means operable to engage the wire during movement of said spindle carrying the wire feeding ratchet.

2. In a machine of the character described, the combination with a wire feeding ratchet, a lever, and a pawl carried by said lever to cooperate with said ratchet, of a rocking spindle mounted to rock about a point near
5 one of its ends and upon which the ratchet is journalled and the lever is positioned, a cam lever independently fulcrumed and provided with an arm engageable with said spindle for raising the same and lifting there-
10 by the wire feeding ratchet, the cam portion of said lever cooperating with said spindle to lower the same, and wire gripping means associated with said lever and operated there-
15 by during movement of the wire feeding ratchet.

3. In a machine of the character described, a wire feeding ratchet, a lever associated with said ratchet to raise and lower the same, a
20 wire gripping pawl, a spring actuated cross shaft carrying said pawl, and a rod operative-ly associated with said cross shaft and lever to cause actuation of the gripping pawl simultaneously with the raising or lowering
25 of the wire feeding ratchet.

In testimony whereof I have hereunto signed my name.

EDWIN TAKO JAMES.

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