Nov. 13, 1923. 1,474,207

A. C. PAYNE ET AL

APPARATUS FOR SECURING METALLIC BANDS AROUND PACKING CASES, BOXES, BALES, AND THE LIKE

Filed Nov. 25, 1921 2 Sheets-Sheet 1

Fig. 1.

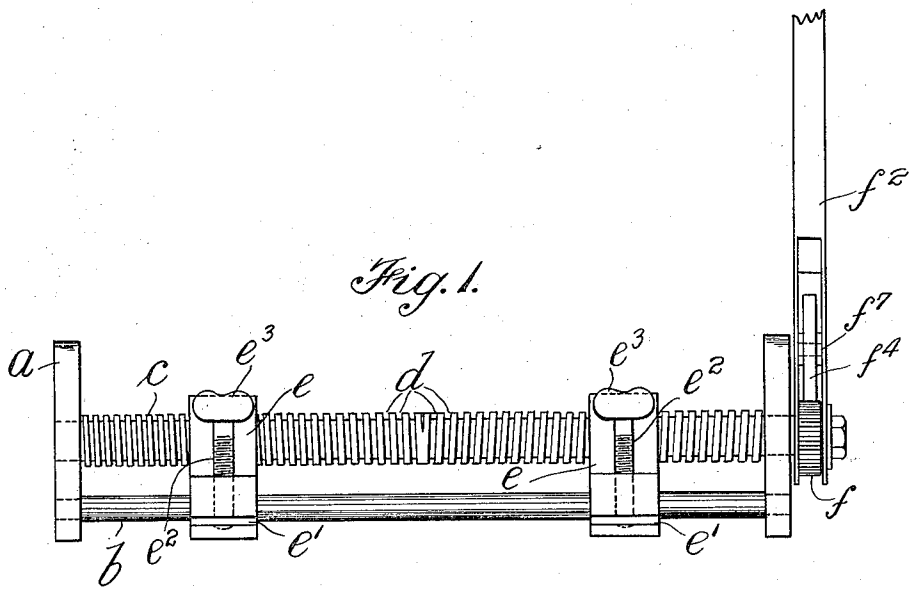


Fig. 2.

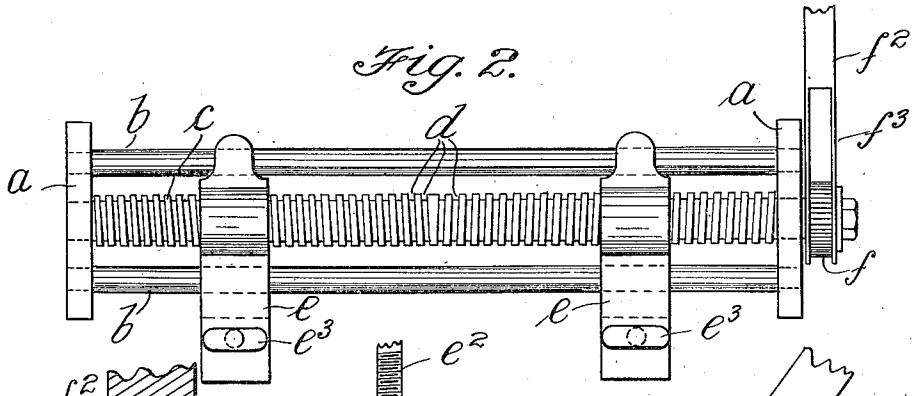


Fig. 4.

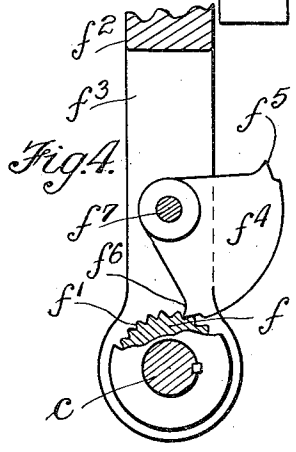


Fig 5

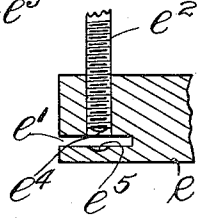


Fig. 3.

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Reginald Eyre
By M. N. Longhridge Attorney.

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Fig. 6.

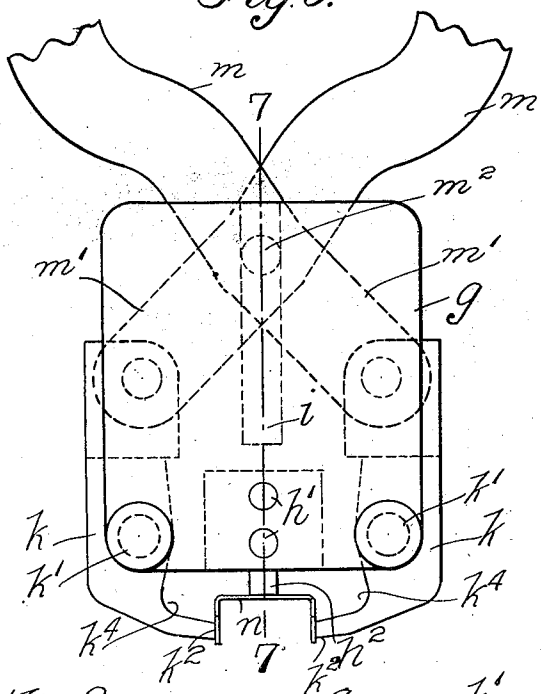


Fig. 7.

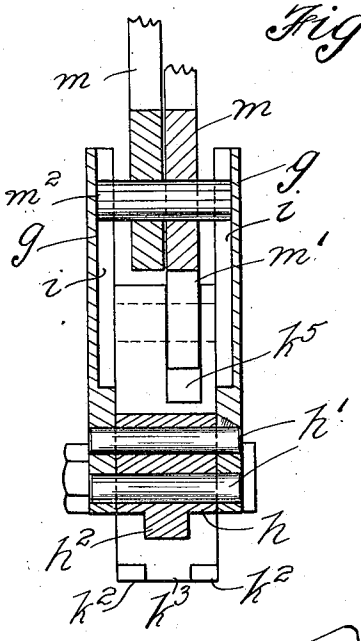
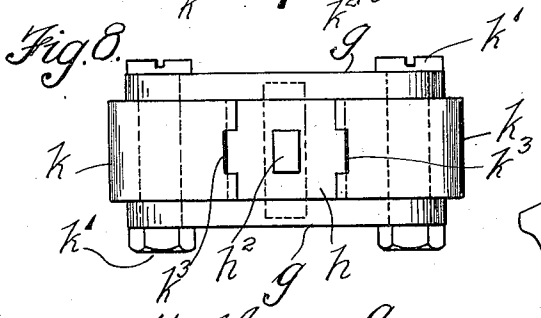


Fig. 8.



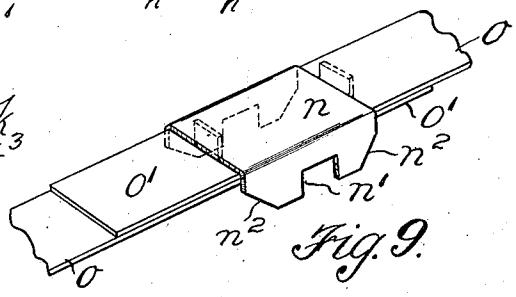


Fig. 9.

Fig. 11.

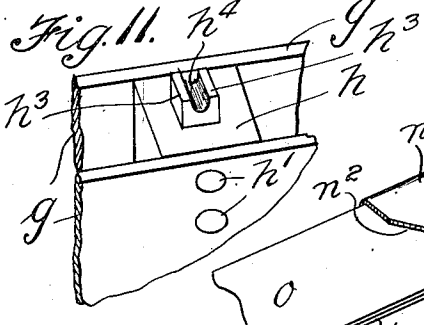


Fig. 10.

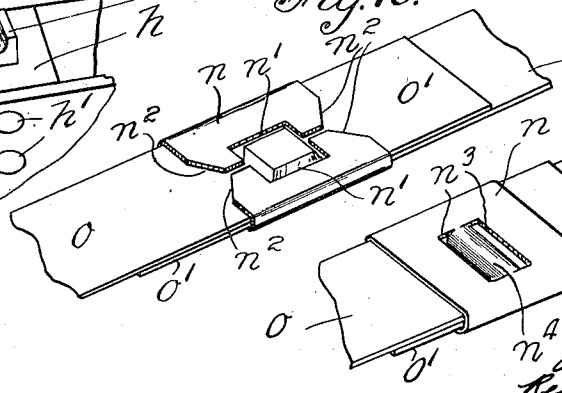


Fig. 12.

Inventors
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Reginald Eyre,
By A. H. Loughridge Attorney

Patented Nov. 13, 1923. 1,474,207

UNITED STATES PATENT OFFICE.

ARTHUR CHARLES PAYNE AND REGINALD EYRE, OF LONDON, ENGLAND.

APPARATUS FOR SECURING METALLIC BANDS AROUND PACKING CASES, BOXES, BALES, AND THE LIKE.

Application filed November 25, 1921. Serial No. 517,568.

To all whom it may concern:

Be it known that we, ARTHUR CHARLES PAYNE and REGINALD EYRE, subjects of the King of Great Britain and Ireland, residing at 125 Pall Mall, London, S. W. 1, England, have invented new or Improved Apparatus for Securing Metallic Bands Around Packing Cases, Boxes, Bales, and the like, of which the following is a specification.

Our invention discloses a means for drawing said metallic bands taut prior to the fastening of the ends and maintaining said bands in position during the fastening thereof. The invention includes improved means for fastening the ends of the metallic bands to one another, this attachment being effected by the use of a device which secures interlocking. A further feature of the invention consists in a combined apparatus for attaching metallic bands or straps with the minimum labour and in a more secure manner than is obtained with similar apparatus as at present constructed. A still further feature of the invention consists in improved means for securing said metallic bands in position which renders pilfering of the contents of the bales or packing cases to which our improved fastening means are attached during transit to be easily and readily detected.

The invention relates more particularly to apparatus of the kind in which the overlapping ends of the bands or straps passing round a packing case, bale or the like after being drawn taut are secured together by means of a sealing plate or strip which together with the ends of the said bands is distorted to form an interlocking connection by means of a clamping device.

In order that our invention may be readily understood reference is made to the accompanying drawings which show by way of example the apparatus constructed according to the invention.

Fig. 1 is a front elevation,

Fig. 2 a plan view, and

Fig. 3 an end view seen from the right of Fig. 1, showing the position of the apparatus for use in stretching and securing the bands or straps in position during sealing or interlocking of the ends thereof.

Fig. 4 is an enlarged end view partly in section showing the ratchet and pawl for for rotating the screw.

Fig. 5 is a detail sectional view of a portion of one of the jaws.

Fig. 6 shows in side elevation the apparatus for securing the ends of the bands together, the jaws being in the open position.

Fig. 7 is a vertical section on the lines 7—7 of Fig. 6.

Fig. 8 is an underplan of Fig. 6.

Fig. 9 is a perspective view of one form of sealing plate or strip.

Fig. 10 is a similar view of the reverse side of Fig. 9 showing the ends of the strap and the sealing plate or strip secured together.

Fig. 11 is a perspective view showing a modified construction of the fixed jaw.

Fig. 12 is a perspective view showing the sealing strip securing the ends of the bands together when the fixed jaw shown in Fig. 11 is employed.

The apparatus for stretching the bands or straps is shown in Figs. 1–5 and comprises a frame consisting of end members *a*, *a*, between which are located a pair of guide rods *b b*. Between and parallel with the guide rods is rotatably mounted a spindle *c* provided with right and left handed screw threads *d*. The threads are arranged so that the right and left handed portions extend over substantially half the length of the spindle respectively.

Mounted on the guide rods *b* is a pair of jaws *e*, *e*, each of which comprises a block of appropriate shape provided with suitable perforations which are threaded upon the guide rods *b*, *b*, so that the blocks have a free sliding movement longitudinally thereof. The blocks *e* are also each provided with a threaded aperture through which the screwed spindle *c* passes, so that when the spindle is rotated the blocks are either moved along the guide rods towards one another, or towards opposite ends of the frame, according to the direction of rotation of the spindle *c*.

The jaws are provided at one end with an inwardly extending slot e^1 and transversely of this slot is a screwed stud or the like e^2 provided with a head e^3 by means of which it may be rotated. The lower end of the screwed stud is provided with a rounded nose-like portion e^4, which co-operates with a depression e^5 in the lower face of the slot *e* in a manner hereinafter described

One end of the screw threaded spindle c is extended through the adjacent end member a and has keyed thereto a ratchet wheel f the teeth f^1 of which are preferably substantially V-shaped in cross section the ends of the sides of the V, that is the top and bottom of each thread being slightly radiused. The extended end of the spindle c also carries a pivotal operating lever f^2, the end f^3 of which is bifurcated or alternatively provided with a slot. Mounted on the operating lever between the forked ends thereof is a pawl f^4 provided with two operative faces f^5, f^6, the pawl being mounted on a pin or pivot f^7. The pivot is located in such a position that on the pawl being moved to a position on either side of the lever, one of the operative faces thereof is brought into engagement with the teeth f^1 of the ratchet wheel f so that the operating lever m may be moved to rotate the screw threaded spindle c in opposite directions.

In attaching a metallic band to a packing case or the like, the apparatus is placed in position on the box and the ends of the band, which has previously been cut to approximately the required length, are engaged in the slots e^1 of the blocks e, e, respectively. The studs e^2, e^2 are then tightened up so as to grip the metal band and hold it in position in the respective slots. In screwing up the studs e^2 the nose-like end e^4 of each of the studs presses the metal of the band into the depression e^5 in the portion of the block e beneath the slot so that the tendency to slip is reduced to a minimum. The pawl f^4 is now brought into position to engage the teeth of the ratchet wheel f, and by operating the lever the spindle c is rotated in a direction which will cause the jaws e e, to approach one another thus drawing the band tightly round the packing case or box. When the ends of the band have been drawn together so that they overlap to the required extent, the fastening means are attached or the band is nailed in position and the appliance may then be removed.

The provision of a pawl having two operative faces in combination with the particular construction of ratchet wheel renders it possible to easily reverse the direction of rotation of the spindle c, the pawl f^4 which engages the ratchet wheel under its own weight, being reversed in order to rotate the spindle in the opposite direction.

We may, however, if desired, substitute a pair of pawls either of which may be thrown out of engagement with the ratchet wheel.

We will now refer to Figures 7 to 12 of the drawings which show the means for securing the inter-locking engagement of the ends of the bands or straps drawn together by the apparatus already described.

The securing means comprises a suitable frame consisting of side plates g, g, between and preferably towards the lower edge of which is a fixed jaw h hereinafter referred to as the fixed jaw. The fixed jaw may be fixed in any suitable manner for instance by means of pins h^1 as shown.

The lower face of the jaw registers with the lower edges of the side plates g and is provided centrally with a projecting portion h^2 of any suitable shape. The movable jaws k, k, are pivotally mounted on a stud or pin k^1 k^1 equidistant from and on opposite sides of the fixed jaw, their operative surfaces k^2, k^2 facing one another as shown. The operative faces k^2, k^2 are cut away at k^3 k^3, to register with and embrace the edges of the projection h^2 on the fixed jaw. The movable jaws are also cut away at k^4 to provide clearance when the jaws are moved to operative position as hereinafter described.

The upper ends of the movable jaws are longitudinally slotted at k^5 to receive the arms m^1 of levers m, m constituting handles by means of which the apparatus is manipulated. The levers m, m are set off at an obtuse angle to the arms m^1 m^1 in order to render the apparatus more easy to manipulate.

The levers m, m, are mounted on a common pin or pivot m^2 the ends of which have a sliding engagement with longitudinal grooves or slots i, i in the plates g, g, so that the jaws approach and recede from the operative surface of the fixed jaw in a uniform manner.

The sealing plate or strip one form of which is shown separately in Figures 9 and 10, comprise a sheet of metal n having its sides, preferably the longitudinal sides, turned up at right angles, the upstanding edges being located at the required distance apart to form a good fit over the overlapping ends o^1 of the bands or straps o. The upstanding edges are also provided with a central cut-away portion at n^1, n^1 coinciding as nearly as possible with the projecting portion h^2 of the fixed jaw, whilst the ends of the upstanding edges may be cut off at an angle as shown at n^2.

The apparatus operates as follows:

The band or strap after being passed around the box or packing case to which it is to be attached, is drawn up tightly either manually or by means of a suitable tool with its ends overlapping. The sealing plate or strip n which has previously been placed in position between the jaws k, k, as shown in Figure 6, is then placed over the overlapping ends o^1 of the straps. The handles or levers m, m are now pressed apart thus causing the movable jaws k k, to be moved about their pivots k^1 k^1 to bring the operating surfaces thereof together and upwardly towards the co-acting surface of the fixed jaw h. This movement of the jaws causes the sides of the sealing plate or strip n

to be pressed inwardly under the overlapping ends o^1, and towards the end of their movement the portions of the ends o^1 of the straps o and the sides of the sealing plate or strip n are pressed firmly against the lower face of the fixed jaw h causing the central portion of the metal of both the sealing plate or strip n and the portions of the straps o adjacent thereto to be pressed outwardly into the aperture formed by the adjacent cutaway recesses n^1 in the sides of the sealing plate or strip n.

The important feature of this method of clamping the parts consists in the fact that neither the overlapping ends o^1 of the straps o nor the sealing plate or strip n are perforated or cut away in any way during clamping so that the connection effected constitutes a strong interlocking fastener which will not accidentally break away. Further the bent-over sides of the sealing plate or strip will be bent under the straps o, that is on the side adjacent the surface of the box or packing case, thus rendering it difficult for the sealing plate or strip to be opened out in order to release the overlapping ends o^1.

We may if desired provide suitable means for temporarily holding the sealing plate or strip n in position between the jaws k, k, prior to their attachment to the band or straps. For instance the side plates g, g may be extended to form a receptive portion for the edges of the sealing plate or strip, the receptive portion being of such size as to form a friction tight fit for the sealing strip, or the latter may be sprung into position therein. In an alternative arrangement the ends of the plate or strip n may be provided with one or more upstanding tongues or lugs as indicated by dotted lines at p in Figure 9, said tongues being sprung over the outer edges of the side plates g, g.

In Figures 11 and 12 we have shown a modified method of securing and interlocking the ends of the band or strap o, in which, however, the interlocking is assisted and strengthened by slitting and bending the metal transversely between its longitudinal edges. This is effected by providing the projecting portion h^2 of the fixed jaw h with a pair of spaced shearing edges h^3 between which is a parallel groove or channel h^4. By thus shaping the fixed jaw, the metal of the sealing strip is cut to form two slits n^3 parallel with one another, see Fig. 12, the metal forming the inner edges of said slits being bent or curved inwardly by the shearing edges h^3 and groove h^4 in the manner shown in Figure 12. By this means a more effective interlocking of the parts is obtained whilst the groove in the fixed jaw prevents the metal of the sealing strip being wholly cut through or being apertured, the edges being bent inwardly and firmly embedded in the overlapping ends o^1, o^1 of the band or strap o, the metal of the sealing strip between the slits being arched at n^4 by the grooved fixed jaw, and by thus embedding the edges of the arched portion into the overlapping ends of the band or strap o, an effective and secure interlocking is obtained which will not be liable to fracture or become separated under tension.

We claim:—

1. A strap fastening arrangement comprising a metal strap with overlapping ends, a seal plate for fastening said ends together, said plate folded around the overlapping ends of said strap, the abutting ends of said plate being deformed and arranged to meet substantially on the longitudinal centre line of said strap, said strap and seal plate being depressed from the opposite side to conform to the deformed ends of said plate.

2. A strap fastening arrangement comprising a metal strap with overlapping ends, a seal plate for fastening said ends together, the ends of said plate being notched, said plate arranged to fold around the overlapping ends of said strap so as to bring the notched ends opposite and said strap and seal plate being depressed from the opposite side to conform to said notches.

3. A strap fastening arrangement comprising a metal strap with overlapping ends, a seal plate for fastening said ends together, said plate folded around the overlapping ends of said strap and having an aperture on one of its faces and said strap and seal plate depressed from the side opposite the aperture in a form corresponding to the aperture.

4. A strap fastening arrangement comprising a metal strap with overlapping ends, a seal plate for fastening said ends together, said plate folded around the overlapping ends of said strap and having an aperture in one of its faces and means for securing said overlapping ends and seal plate together within the plane of said seal plate.

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Witnesses:
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E. C. KELLY.