Jan. 16, 1940. B. N. BLETSO 2,187,298

TENSIONING TOOL

Filed June 23, 1937 4 Sheets-Sheet 1

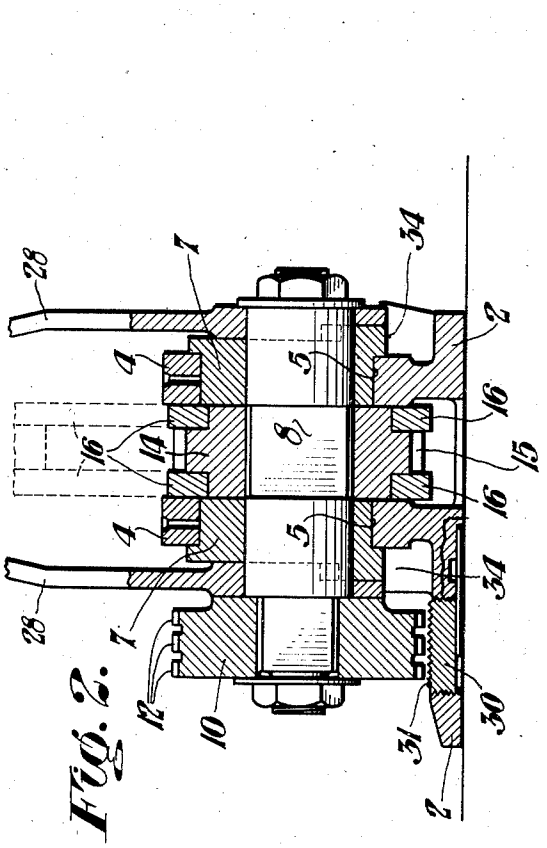


Fig. 2.

Fig. 1.

Inventor:
BRUCE N. BLETSO,
by: Jessica & Rauber
his Attorneys.

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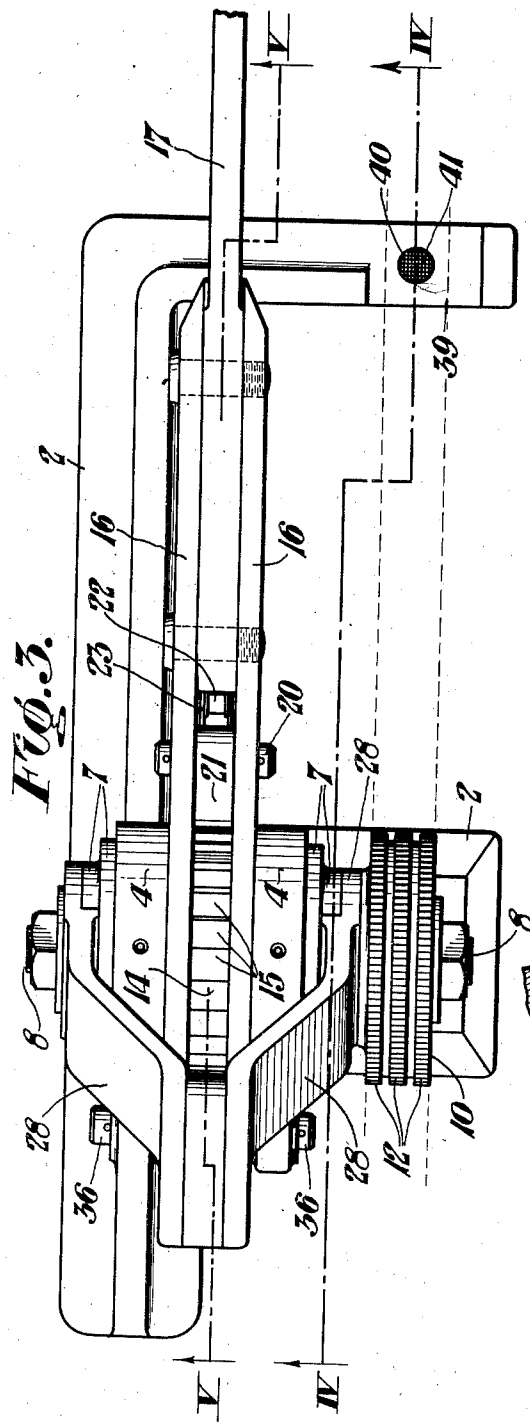


Fig. 3.

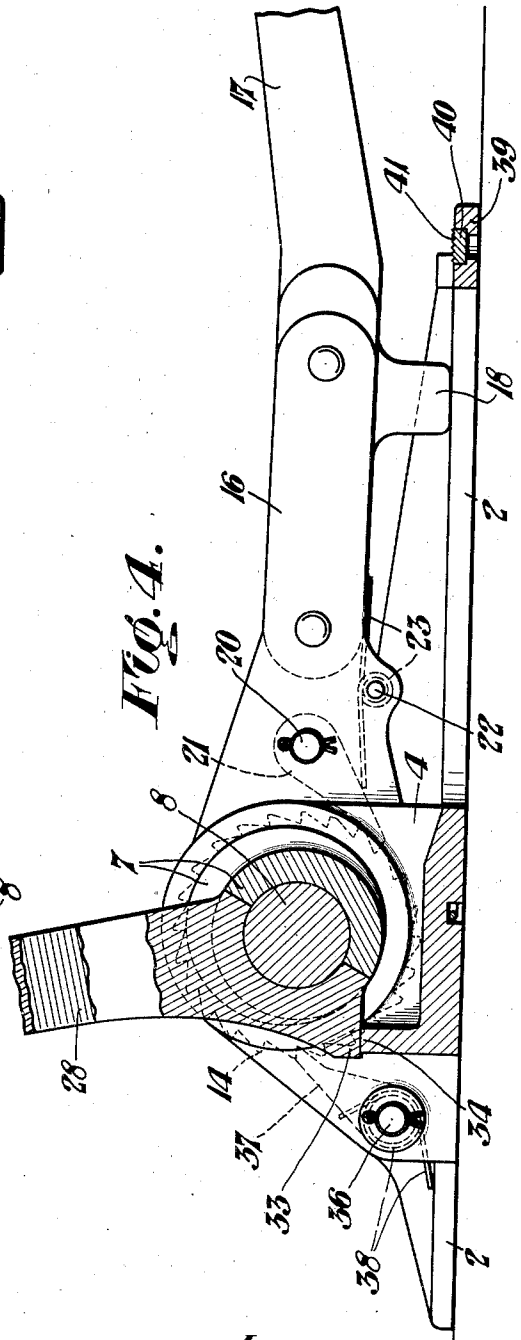


Fig. 4.

Inventor:
BRUCE N. BLETSO,
by: Cecil & Rauber,
his Attorneys.

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TENSIONING TOOL

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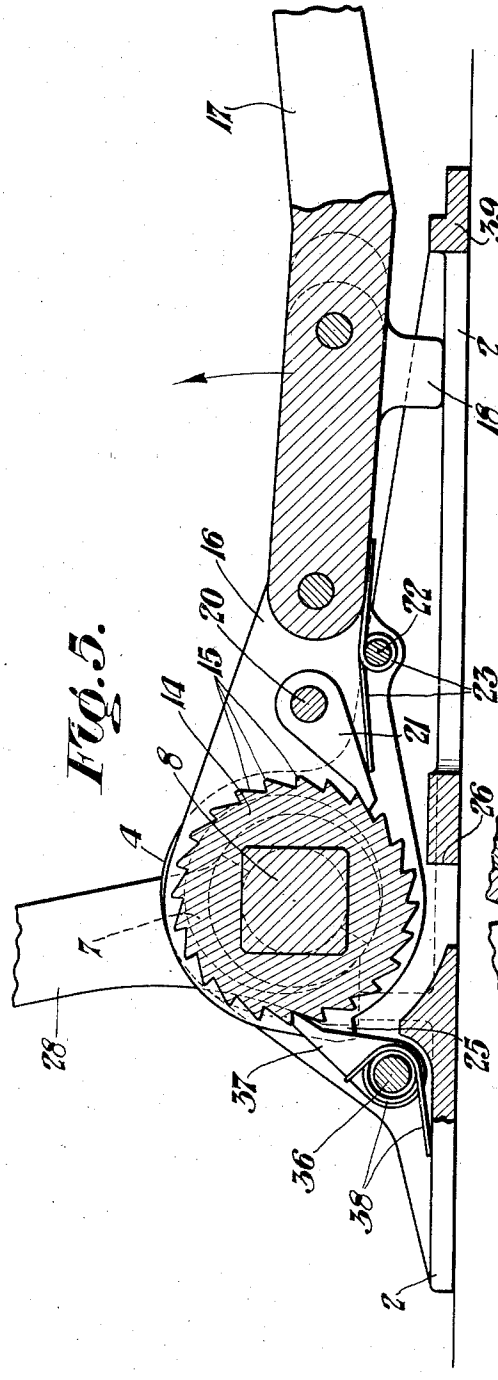


Fig. 5.

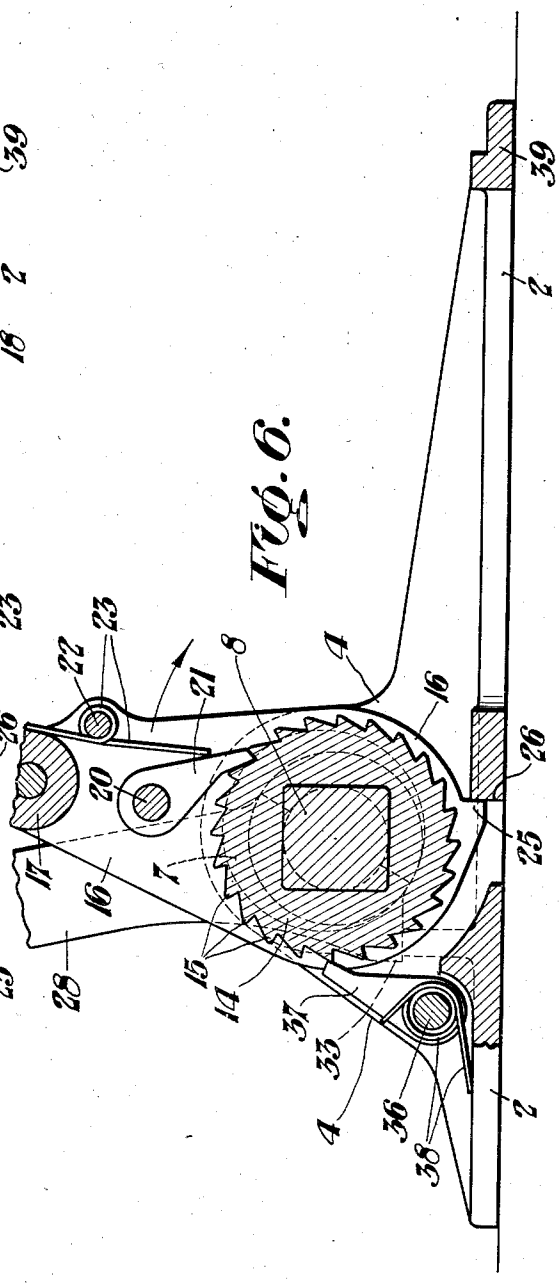


Fig. 6.

Inventor:
BRUCE N. BLETSO,
by: Usina & Rauber
his Attorneys.

Jan. 16, 1940. B. N. BLETSO 2,187,298

TENSIONING TOOL

Filed June 23, 1937 4 Sheets-Sheet 4

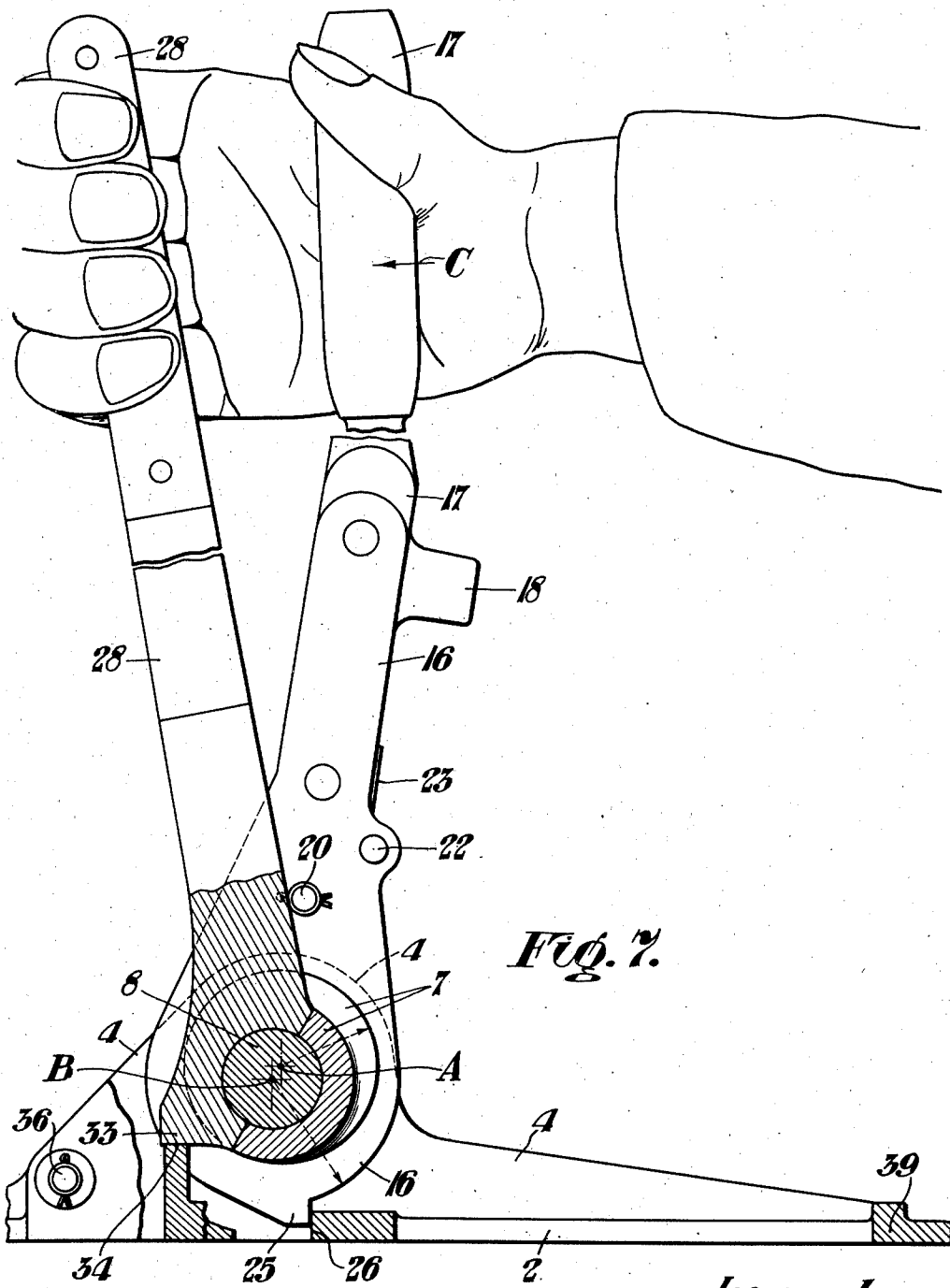


Fig. 7.

Inventor:
BRUCE N. BLETSO,
by: Usina & Lauber
his Attorneys.

Patented Jan. 16, 1940 2,187,298

UNITED STATES PATENT OFFICE

2,187,298

TENSIONING TOOL

Bruce N. Bletso, Cleveland Heights, Ohio, assignor to The American Steel and Wire Company of New Jersey, a corporation of New Jersey

Application June 23, 1937, Serial No. 150,002

4 Claims. (Cl. 254—51)

This invention relates to the art of applying and sealing tying elements, such as bale ties, etc., to various types of packages and other objects, and particularly to the application of the tying elements.

It is among the objects of the present invention to provide a novel tool for rapidly and easily applying tying elements of the class described, after which said tying elements may be sealed in any manner desired.

The foregoing and other objects will be apparent after referring to the drawings, in which:

Figure 1 is a side elevation of the tool of the invention.

Figure 2 is a sectional view on the line II—II of Figure 1.

Figure 3 is a plan.

Figure 4 is a sectional view on the line IV—IV of Figure 3.

Figure 5 is a sectional view on the line V—V of Figure 3.

Figure 6 is a view similar to Figure 5 but showing the elements thereof in another operative position.

Figure 7 is an elevation, partly in section, illustrating the manner in which the tool is released from the tying elements after the sealing thereof has been acccomplished.

Referring more particularly to the drawings, the numeral 2 designates a base for the tool of the invention. This base 2 supports a pair of vertical uprights 4 each of which is apertured, as at 5, to receive a rotatable eccentric bushing 7. A rotatable shaft 8 is disposed to extend through the rotatable eccentric bushings 7 and carries on one of its ends a rigidly secured pinch-wheel 10, the periphery of which is knurled, as shown at 12. The mid-portion of the rotatable shaft 8 carries a rigidly secured ratchet-wheel 14, the ratchet teeth of which are shown at 15. The ratchet-wheel 14 pivotally carries the ends of a pair of parallel levers 16 to which there is secured an operating handle 17, the latter being provided with a downwardly extending lug 18 for contacting the upper face of the base 2 in order to prevent its excessive downward movement.

The pivoted parallel levers 16 carry a transverse pin 20 on which there is mounted a pivoted pawl 21. The pivoted parallel levers 16 also carry a pin 22 on which there is mounted a spring 23 for resiliently holding the pivoted pawl 21 against the ratchet teeth 15 of the ratchet-wheel 14.

Each of the pivoted parallel levers 16 carries a lug 25 which engages an abutment 26 provided on the upper face of the base 2 when said levers are in their uppermost positions.

The rotatable shaft 8 pivotally carries the ends of a bifurcated lever 28. The pivoted ends of this bifurcated lever 28 are interlocked with the rotatable eccentric bushings 7, as shown in Figures 3 and 4, whereby these elements may be rotated in unison. That is to say, the upward movement of the bifurcated lever 28 rotates the rotatable eccentric bushings 7 and thereby lowers the pinch-wheel 10 toward the upper face of the base 2. Immediately below the knurled periphery 12 of the pinch-wheel 10 the base 2 carries a block 30 having a knurled upper face 31. The pivoted ends of the bifurcated lever 28 carry a pair of lugs 33 which engage a pair of vertically extending abutments 34 on the base 2.

Immediately adjacent its vertically extending abutments 34, the base 2 carries a pin 36 on which there is mounted a pivoted pawl 37. This pivoted pawl 37 is resiliently held against the ratchet teeth 15 of the ratchet-wheel 14 by a spring 38.

Immediately below the operating handle 17 on the pivoted parallel levers 16 the base 2 is provided with a lateral extension 39. This lateral extension 39 carries a block 40 having a knurled upper face 41. The function of the lateral extension 39 of the base 2 is to enable the raising of the overlapped tying elements from the surfaces of the objects to which they are being applied. That is, the tying elements are supported between the blocks 30 and 40, and buckling therebetween is prevented.

In operation: The tying element (i. e., a piece of box strapping not shown) is placed around the object, such as a bale, with its ends overlapped. The operating lever 17 on the parallel pivoted levers 16 and the bifurcated lever 28 are placed in downward position and the base 2 applied to the overlapped ends of the tying element. In this position the inner of the overlapped ends of the tying element rests upon the blocks 30 and 40. The bifurcated lever 28 is then raised, rotating on the axis A whereupon the pinch-wheel 10 is lowered onto the upper of the overlapped ends of the tying element. This clamps the overlapped ends of the tying element together. The counter-clockwise rotation of the ratchet-wheel 14 (see Figures 5 and 6) is prevented by the pawl 37, and the loosening of the tying element thereby prevented. The operating lever 17 on the parallel pivoted levers 16 is then raised rotating on the axis B until the lugs 25 thereon engage the abutment 26 on the base 2. The operating

handle is then lowered, causing the pawl 21 to engage the ratchet teeth 15 of the ratchet-wheel 14, whereby the latter is given partial clockwise rotation. This movement of the operating handle 17 is repeated until the pinch-wheel 10 has sufficiently tensioned the tying element. The overlapped ends of the tying element are then sealed in any suitable manner (not shown).

After the seal has been made, the bifurcated lever 28 is moved from the vertical to the horizontal position. This, by means of the eccentric arrangement of the bushings 7 on the shaft 8, lifts the pinch-wheel 10 from the tying element to release it. The movement of the bifurcated lever 28 from the vertical to the horizontal position is not extremely easy because the knurled periphery 12 of the pinch-wheel 10 is jammed hard into the outer of the overlapped tying elements. Therefore, as previously stated, the operating handle 17 is swung up into vertical position until the lugs 25 on the pivoted parallel levers 16 engage the abutment 26 on the base 2. Then, by pressing the levers 17 and 28 together, as shown in Figure 7, the lever 28, because of its eccentric mounting about the axis A on the rotatable shaft 8, is caused to initially move towards the lever 17, which acts to start a release of the pinch-wheel 10 so that further release of the same is very easily accomplished by moving the levers 17 and 28 simultaneously from the vertical to the horizontal position.

While I have shown and described one specific embodiment of my invention, it will be understood that I do not wish to be limited exactly thereto, since various modifications may be made without departing from the scope of my invention, as defined by the following claims.

I claim:

1. A tensioning tool for a box-band or the like comprising, in combination, a base member, a stationary pinch-block carried by said base member, a rotatable eccentric bushing carried by said base member, a rotatable shaft in said eccentric bushing, a pinch-wheel secured to said rotatable shaft, said pinch-wheel being disposed opposite said pinch-block and adapted for cooperation therewith, a manually operable lever for rotating said eccentric bushing, said lever being constructed and arranged to occupy a position at substantial right-angles to the axis of the box band when said pinch-wheel is most adjacent said pinch-block, and manually operable means for rotating said pinch-wheel.

2. A tensioning tool for a box-band or the like comprising, in combination, a base member, a stationary pinch-block carried by said base member, a rotatable eccentric bushing carried by said base member, a rotatable shaft in said eccentric bushing, a pinch-wheel secured to said rotatable shaft, said pinch-wheel being disposed opposite said pinch-block and adapted for cooperation therewith, a manually operable lever for rotating said eccentric bushing, said lever being constructed and arranged to occupy a position at substantial right-angles to the axis of the box band when said pinch-wheel is most adjacent said pinch-block, and a manually operable ratchet lever for rotating said pinch-wheel, said manually operable ratchet lever being capable of movement into close adjacency with respect to said first-named lever when the latter is at substantial right-angles to the axis of the box band.

3. A tensioning tool for a box-band or the like comprising, in combination, a base member constructed and arranged to support said box-band at spaced points, a stationary pinch-block carried by said base member, a rotatable eccentric bushing carried by said base member, a rotatable shaft in said eccentric bushing, a pinch-wheel secured to said rotatable shaft, said pinch-wheel being disposed opposite said pinch-block and adapted for cooperation therewith, a manually operable lever for rotating said eccentric bushing, said lever being constructed and arranged to occupy a position at substantial right-angles to the axis of the box band when said pinch-wheel is most adjacent said pinch-block, and a manually operable ratchet lever for rotating said pinch-wheel, said manually operated ratchet lever being capable of movement into close adjacency with respect to said first-named lever when the latter is at substantial right-angles to the axis of the box band.

4. A tensioning tool for a box-band or the like comprising, in combination, a base member constructed and arranged to support said box-band at spaced points, a stationary pinch-block carried by said base member, a rotatable eccentric bushing carried by said base member, a rotatable shaft in said eccentric bushing, a pinch-wheel secured to said rotatable shaft, said pinch-wheel being disposed opposite said pinch-block and adapted for cooperation therewith, a manually operable lever for rotating said eccentric bushing, said lever being constructed and arranged to occupy a position at substantial right-angles to the axis of the box-band when said pinch-wheel is most adjacent said pinch-block, a manually operable ratchet lever for rotating said pinch-wheel, said manually operated ratchet lever being capable of movement into close adjacency with respect to said first-named lever when the latter is at substantial right-angles to the axis of the box-band, and means for arresting the upward movement of said manually operated ratchet lever when it is at substantial right-angles to the axis of the box-band whereby said levers may be gripped in unison and said manually operated ratchet lever utilized to establish an added leverage for imparting initial movement to said first-named lever in its downward movement.

BRUCE N. BLETSO.