E. DIETZE.

BOX STRAP APPLYING MECHANISM.

APPLICATION FILED APR. 25, 1919.

1,348,270.

Patented Aug. 3, 1920.

2 SHEETS—SHEET 1.

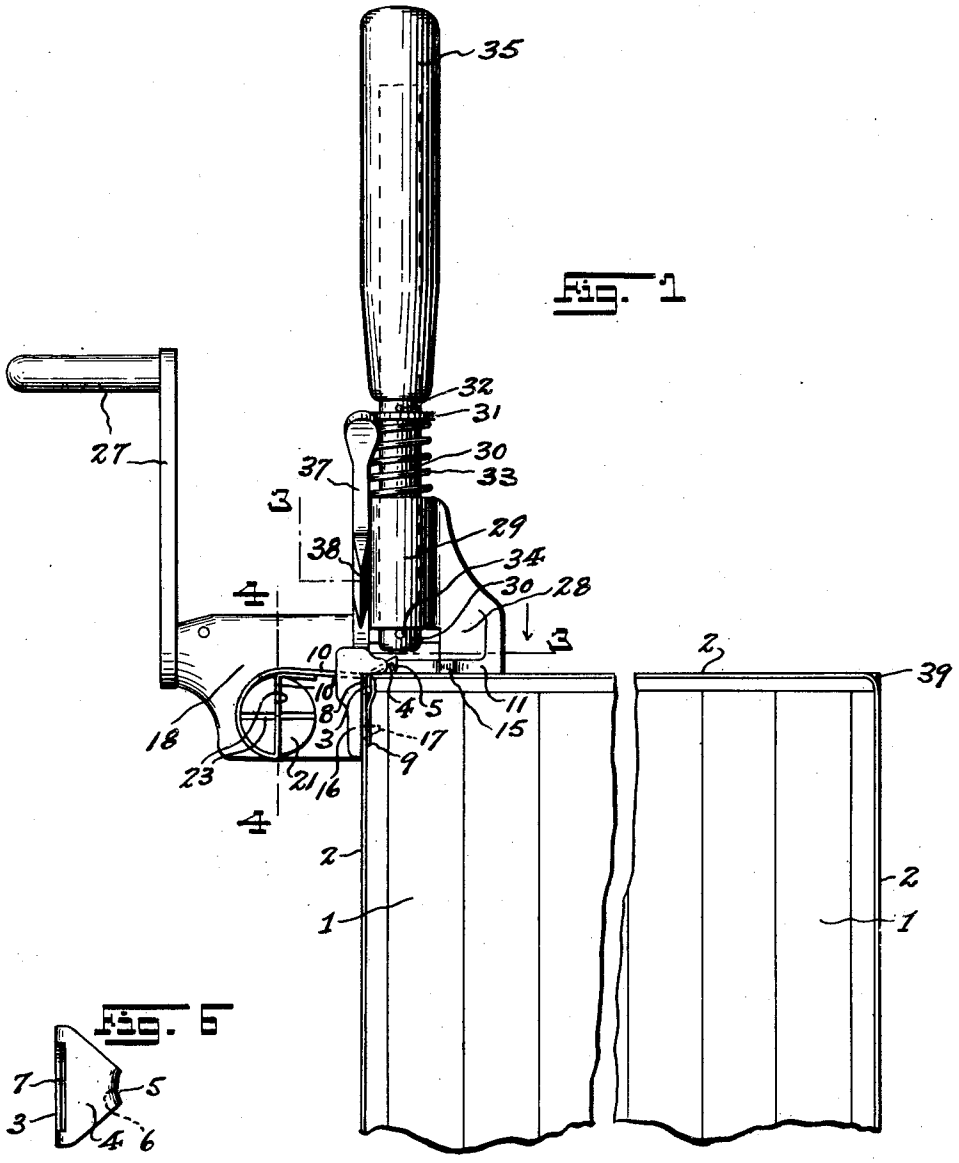



Fig. 1




Fig. 6

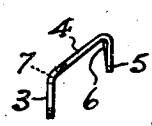



Fig. 7

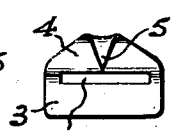



Fig. 8

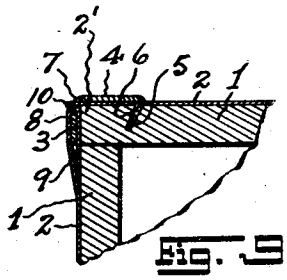



Fig. 9

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2 SHEETS—SHEET 2.

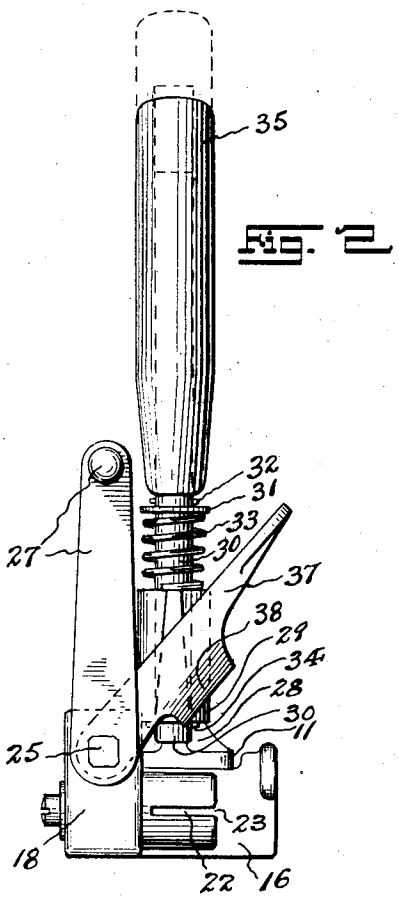



Fig. 2

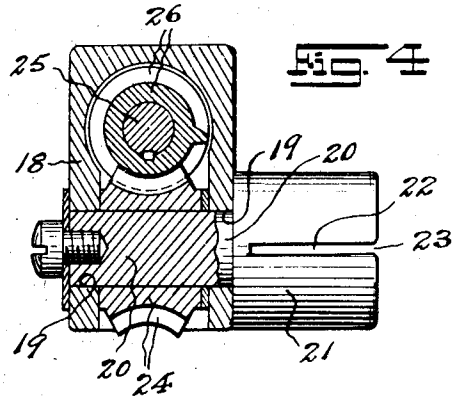



Fig. 4

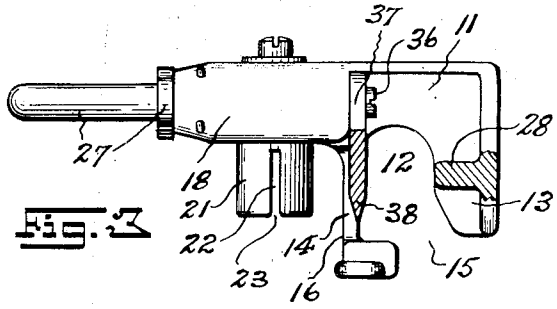



Fig. 3

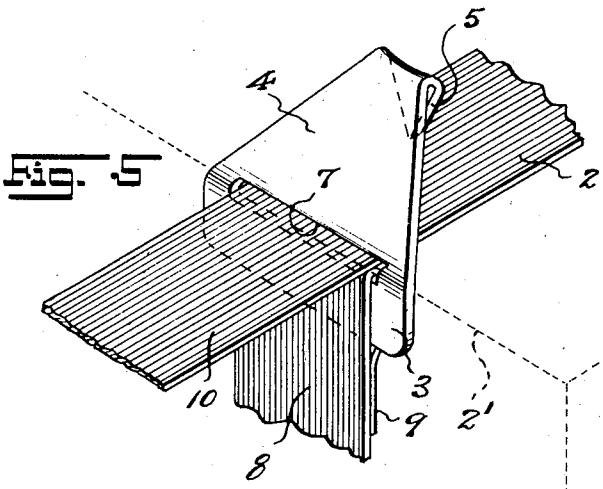



Fig. 5

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# UNITED STATES PATENT OFFICE.

EMIL DIETZE, OF BROOKLYN, NEW YORK.

## BOX-STRAP-APPLYING MECHANISM.

1,348,270. Specification of Letters Patent. Patented Aug. 3, 1920.

Application filed April 25, 1919. Serial No. 292,728.

*To all whom it may concern:*

Be it known that I, EMIL DIETZE, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Box-Strap-Applying Mechanism; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to characters of reference marked thereon, which form a part of this specification.

The present invention relates, generally, to improvements in a device for stretching and securing metallic fastening straps upon packing cases, crates, etc.

The invention has for its principal object to provide a simple, strong and easily and quickly operated mechanism for applying and stretching a metallic reinforcing strap about a packing case, crate or the like, together with a novel construction of fastening seal which is applied by the aid of said mechanism to securely hold the strap in its operative relation to said packing case, crate or the like.

Said novel mechanism comprises a strap stretching and tightening means which will hold the strap tightly drawn around the packing case or crate pending the locking of a novel seal therewith; a hammer mechanism for driving said novel seal into secured locking relation to the strap and packing case or crate; and a cutting means for severing the loose end of the strap from the applied portion thereof; all so arranged as to render the performance of the several required operations rapidly and easily accomplished.

Other objects of the present invention, not at this time more particularly enumerated, will be clearly understood from the following detailed description of the same.

With the various objects of the present invention in view, the same consists, primarily, in the novel construction of metallic strap applying and fastening mechanism, hereinafter set forth; and, furthermore, the invention consists in the novel arrangements and combinations of the various devices and parts, as well as in the details of the construction thereof, all of which will be hereinafter more fully described and claimed.

The invention is clearly illustrated in the accompanying drawings, in which:—

Figure 1 is a side elevation of the novel strap applying mechanism in operative relation to a packing case and reinforcing strap therefor, and showing, furthermore, the novel strap seal device connected with the strap in position to be operated upon by the applying mechanism to drive the same home into strap sealing and securing position.

Fig. 2 is a front end elevation of the novel strap applying mechanism alone.

Fig. 3 is a horizontal section, taken on line 3—3 in said Fig. 1, looking downward.

Fig. 4 is a detail transverse section through the strap stretching means of the mechanism, taken on line 4—4 in said Fig. 1, and drawn on an enlarged scale.

Fig. 5 is a detail perspective view of a strap and the novel sealing device therefor as arranged therewith ready to be driven home into locking relation to said strap and the case or crate with which the latter may be arranged.

Fig. 6 is a top elevation or plan of the novel strap seal device alone; Fig. 7 is a side elevation of the same; Fig. 8 is a front end elevation of the same; and Fig. 9 is a detail longitudinal section through a portion of the strap, case and seal device, showing the latter in the applied sealing or fastening position produced by the operation of the machine.

Similar characters of reference are employed in all the hereinabove described views, to indicate corresponding parts.

Referring now to the said drawings, the reference character 1, indicates a packing case around which is arranged one or more reinforcing straps 2, preferably made of metal. Said strap 2 is arranged to surround the packing case so as to extend over four sides thereof, in the usual manner.

Used in connection with said strap is a novel construction of strap seal or locking device. This seal or locking device comprises, normally, a metallic body roughly triangular in shape, the same being bent downward at its broad end or base to provide a normally perpendicular rear tongue or stirrup portion 3 from the upper end of which extends a normally upward and forwardly inclined main body 4, having forwardly converging side edges, said main body 4 terminating at its forward end

in a downwardly projecting and normally perpendicular sharpened spur 5. The body of said spur 5 is formed in concavo-convex shape to provide at its rear side a laterally convex face 6. Also formed in said body 4, at the junction thereof with the tongue or stirrup portion 3, is a laterally extending slot or stirrup opening 7.

In operatively relating said novel seal or locking device to the strap 2, one end 8 of the latter is passed over the outer face of the tongue or stirrup portion 3, and then through the slot or stirrup opening 7, the extremity 9 of the end 8 being then turned downwardly across the inner face of the tongue or stirrup portion 3. The novel seal or locking device, with one end of the strap 2 so attached thereto, is then placed against the forward side of the case 1, with the tongue or stirrup portion 3 extending vertically downward from the corner edge 2′ of the case, and with the main body 4 inclining upwardly above the upper side of the case 1 with the spur 5 directed vertically downward toward the upper side of said case 1. The strap 2 is then passed downward over the forward face of the case 1, underneath and across the bottom face thereof, upwardly across the rear face thereof, and thence forwardly across the upper face thereof, the opposite or free end 10 of the strap being passed beneath the spur 5, and then threaded through the slot or stirrup opening 7, to extend forwardly and outwardly therefrom. When the novel seal or locking device with the strap has thus been positioned relative to the case 1, it is ready to be operated upon by the novel strap applying mechanism.

The said novel strap applying mechanism comprises a base portion 11 having a cutaway portion or opening 12 therein providing a passage through which the strap 2 may be passed upwardly from beneath the rearward portion 13 of the base 11 and then over the forward portion 14 thereof. For convenience in applying relative to the strap the base is further provided with a gap or passage 15 leading into said opening 12, so that the strap 2 may be threaded sidewise therethrough and into said opening. Connected integrally with the forward portion 14 of said base 11, is a downwardly projecting apron or stop 16, disposed at right angles to said base portion 11, so as to act as a stop engaging the forward face of the case 1, to prevent rearward displacement of the mechanism when operated. Said apron or stop 16 may be provided on its inner face with spurs 17 which penetrate slightly the forward face of the case 1, to further guard against accidental displacement of the mechanism during operation. Integrally formed with said base 11 and its stop or apron 16, and disposed to extend forwardly from the latter in a position laterally offset from the position of the opening 12, is a housing 18. Said housing 18 is provided in its side walls with bearing openings 19 in which is journaled a transverse spindle 20 having on its outer end a drum 21 provided with transverse or diametrically disposed slots 22 open at their outer sides to provide receiving mouths 23. Fixed upon said spindle 20 within said housing 18 is a worm gear 24. Rotatably mounted in the upper end of said housing 18 is a longitudinal shaft 25 upon which is fixed a worm member 26 which meshes with said worm gear 24 in driving relation thereto. Fixed upon the outer end of said shaft 25 is a crank handle 27 for applying rotary movement thereto.

Connected with the rearward portion 13 of said base 11 is an upwardly extending bracket 28 which supports a vertically disposed guide member 29 alined above said opening 12. Slidably disposed in said guide member 29 is a stamp element 30. Associated with said stamp element 30, above said bracket 28 is a washer 31 stopped against a transverse pin 32. Arranged around said stamp element 30, between said washer 31 and the upper end of said guide member 29, is a compression spring 33 which exerts an upwardly moving pressure upon said stamp element to normally maintain the same in a raised or lifted position, against a stop pin 34 which engages the under side of said guide member 29. Slidably arranged upon the upper end of said stamp element 30 and in telescopic relation thereto, is a hammer device 35 for imparting a downwardly moving blow upon the end of said stamp element 30.

Pivoted to the rear end of said housing 18, by means of a pivot screw 36, is a lever arm 37, upon the under side or edge of which is provided a cutting blade 38. Said lever arm and its cutting blade are so disposed as to be capable of being carried into cutting engagement with the free end of the strap 2 beyond the seal or lock device associated therewith.

After the strap 2 has been arranged around the case 1, as already above described, the applying mechanism is operatively related thereto by threading the strap 2 into the opening 12 so that the same passes under the rear portion 13 of the base 11, but over the forward portion 14 thereof, the latter portion being cut down to the level of the upper surface of the case 1, so as to be flush therewith, thus permitting the strap 2 to lie flatly upon the said upper surface of the case 1. The extremity 10′ of the end 10 of the strap 2 is then threaded sidewise through a mouth 23 of a slot 22 of said drum 21, and the crank-handle 27 is turned to transmit through the worm and worm

gear a rotary motion to said drum 21 tending to wind up the end 10 of the strap 2 thereon. By thus winding up the end of the strap 2 the same is stretched and pulled very tightly in closely binding relation to the engaged surfaces of the casing 1 around which it extends, and is furthermore caused to sink into the corners of said casing 1, thus providing therein seating notches 39, which retain said strap against lateral displacement or side slipping. Since the transmission mechanism for the drum 21 comprises a worm and worm gear, not only does the same provide an exceedingly powerful means for stretching the strap 2, but also a power transmission means that is self-sustaining against any backward pull of the stretched strap tending to slacken or loosen the same from the properly stretched and tightened strain to which it has been subjected. This ability of the said transmission means to resist yielding to the pull of the stretched strap is of great advantage and importance, since the operator does not have to hold the crank-handle against reverse movement, but may release the same and have the use of both hands for proceeding with the other operations.

In thus drawing up the strap 2 the applying mechanism is firmly forced against the forward face of the casing 1, so that the apron or stop portion 16 clamps against the outer side of the tongue or stirrup portion 3 of the seal or lock device, thus holding the same securely against the case, while the main body 4 of the seal or lock device inclines upwardly through said opening 12 of the base 11 to position its spur 5 beneath the stamp element 30.

The hammer device 35 is now raised by the operator, and then brought forcibly down upon the upper end of the stamp element 30. The force of the blow drives the stamp element downward, against the tension of the spring 33, and thereby carries the same into downwardly driving engagement with spur 5 of the seal or lock device. By this means the spur 5 is caused to pierce the strap 2, and is then driven into the wood of the case 1, this movement flattening down the upwardly inclined body 4 of the seal or lock against the strap 2, the body 4 bending from the point of junction thereof with the tongue or stirrup 3, as a fulcrum point. Since the outer free end of the body 4, which carries the spur 5, describes an arc, when being thus flattened out, the tendency of such movement is to cause the spur 5, as it enters the wood of the case 1, to assume a forward slant or inclination, as shown in Fig. 9 of the drawings, thus positioning the same in the wood so that its resistance to accidental withdrawal is greatly increased. As the spur 5 passes through the body of the strap 2, its convex face 6 is presented in opposition to the pulling strain of the stretched strap, thereby eliminating at such point sharp edges in engagement with the strap, which under the strain of the pull thereon, might easily cause the body of the strap to be sheared through, and slackened from the case, if the same were not wholly disconnected from the lock or seal. Said convex face 6, if any tearing of the strap body does occur, tends to curl downwardly the marginal edges of the tear, so as to force the same downwardly into the wood of the case, and thereby soon opposing additional obstruction to the pulling strain upon the strap.

The strap is now sealed, locked and secured in its embracing and binding relation to the case 1, and all that remains to be done is to sever or cut off the loose end of the strap 2 which projects forwardly beyond the seal or lock, as it emerges from the stirrup-slot 7.

It will be remembered that, this end of the strap 2 being still attached to the stretching mechanism is under a considerable stretching tension, consequently by swinging downward the lever arm 37, to carry the cutting blade 38 into engagement with the stretched strap end, close to the seal or lock device, the said strap end may be easily severed, and that by means of a very light downward thrust of the blade 38, since once the edge of the strap is nicked by the blade, the tension or stretch of the same will easily and quickly aid the separating movement. Once the strap end is severed the applying machine may be removed, and the operation of applying the strap and its seal or lock device is completely accomplished.

I am aware that some changes may be made in the several arrangements and combinations of the devices and parts, as well as in the details of the construction of the same, without departing from the scope of my present invention as above described, and as defined in the following claims. Hence, I do not limit my invention to the exact arrangements and combinations of devices and parts set forth in the above specification, nor do I confine myself to the exact details of the construction of said parts as illustrated in the accompanying drawings.

I claim:—

1. In a device of the kind described, a base portion having at its forward side a depending apron disposed at right angles thereto, said base portion having an opening therein through which a box strap may be passed and into which a strap seal device may extend, a housing extending forwardly from the outer face of said apron and laterally off-set to permit said box strip to extend by the same, a transverse spindle journaled in said housing, an exterior laterally projecting drum on said spindle with which an end of said box strap may be engaged,

transmission means mounted in said housing for rotating said drum, a vertically disposed guideway connected with said base portion and disposed above said opening therein, a stamp-element slidably mounted in said guideway, spring means for normally holding said stamp-element in raised position, and a hammer device telescopically connected with the upper end of said stamp-element.

2. In a device of the kind described, a base portion having at its forward side a depending apron disposed at right angles thereto, said base portion having an opening therein through which a box strap may be passed and into which a strap seal device may extend, a housing extending forwardly from the outer face of said apron and laterally off-set to permit said box strap to extend by the same, a transverse spindle journaled in said housing, an exterior laterally projecting drum on said spindle with which an end of said box strap may be engaged, transmission means mounted in said housing for rotating said drum, a vertically disposed guideway connected with said base portion and disposed above said opening therein, a stamp-element slidably mounted in said guideway, spring means for normally holding said stamp-element in raised position, a hammer device telescopically connected with the upper end of said stamp-element, and a downwardly movable transverse lever arm provided with a cutting blade pivoted to the rear end of said housing to extend across the box strap adjacent to the forward side of said base portion.

3. In a device of the kind described, a base portion having at its forward side a depending apron disposed at right angles thereto, said base portion and its apron being adapted to be engaged with a corner of a packing case or the like, said base portion having an opening therein through which a box strap may be passed from beneath the rearward side thereof and thence above the apron, said opening being adapted to straddle a seal device connected with said box strap, a housing extending forwardly from the outer face of said apron and laterally off-set to permit said box strap to extend by the same, a transverse spindle journaled in said housing, an exteriorly projecting drum on said spindle, said drum having open diametrically disposed strap receiving slots extending inwardly thereinto from its free end, a worm gear fixed on said spindle within said housing, a longitudinal shaft mounted in said housing, a worm on said shaft operatively meshing with said worm gear, and a crank-handle on the outer end of said shaft.

4. In a device of the kind described, a base portion having at its forward side a depending apron disposed at right angles thereto, said base portion and its apron being adapted to be engaged with a corner of a packing case or the like, said base portion having an opening therein through which a box strap may be passed from beneath the rearward side thereof and thence above the apron, said opening being adapted to straddle a seal device connected with said box strap, a housing extending forwardly from the outer face of said apron and laterally off-set to permit said box strap to extend by the same, a transverse spindle journaled in said housing, an exteriorly projecting drum on said spindle, said drum having open diametrically disposed strap receiving slots extending inwardly thereinto from its free end, a worm gear fixed on said spindle within said housing, a longitudinal shaft mounted in said housing, a worm on said shaft operatively meshing with said worm gear, a crank-handle on the outer end of said shaft, a vertical guideway connected with said base portion and alined with said opening therein, a stamp-element slidably mounted in said guideway, spring means for normally holding said stamp-element in raised position, and a hammer device telescopically connected with the upper end of said stamp-element.

5. In a device of the kind described, a base portion having at its forward side a depending apron disposed at right angles thereto, said base portion and its apron being adapted to be engaged with a corner of a packing case or the like, said base portion having an opening therein through which a box strap may be passed from beneath the rearward side thereof and thence above the apron, said opening being adapted to straddle a seal device connected with said box strap, a housing extending forwardly from the outer face of said apron and laterally off-set to permit said box strap to extend by the same, a transverse spindle journaled in said housing, an exteriorly projecting drum on said spindle, said drum having open diametrically disposed strap receiving slots extending inwardly thereinto from its free end, a worm gear fixed on said spindle within said housing, a longitudinal shaft mounted in said housing, a worm on said shaft operatively meshing with said worm gear, a crank-handle on the outer end of said shaft, a vertical guideway connected with said base portion and alined with said opening therein, a stamp-element slidably mounted in said guideway, spring means for normally holding said stamp-element in raised position, a hammer device telescopically connected with the upper end of said stamp-element, and a downwardly movable transverse lever arm provided with a cutting blade pivoted to the rear end of said housing to extend across the box strap adjacent to the forward side of said base portion.

6. In a device of the kind described, the combination with a supporting frame-work of a laterally and freely projecting rotary drum having a spindle journaled in said frame-work, said drum having a diametrically disposed slot extending inwardly from the free end thereof to receive and dispose the end of a box strap at right angles to the axis of said drum whereby rotation of the latter will wind-up said box strap end upon the cylindrical surface of said drum to thereby stretch the strap, a worm gear fixed on said spindle, a rotatable worm member mounted in said frame-work to mesh with said worm gear, and a crank-handle connected with said worm member for rotating the same.

7. In a device of the kind described, means for engaging a corner of a packing case and adapted to coöperate with a box strap and seal therefor surrounding said case, a rotary drum supported by said case engaging means in position to receive the free end of said box strap and by winding up the same to stretch the same into proper binding relation to the case, a worm and worm gear transmission mechanism for rotating said drum, a crank-handle for operating said transmission means, a seal driving and securing mechanism supported by said case engaging means, and a movable cutting blade device connected with said case engaging means operative to sever the surplus portion of said box strap after the same has been stretched and secured to said case.

8. In a device of the kind described, means for engaging a corner of a packing case and adapted to coöperate with a box strap and seal therefor surrounding said case, a rotary drum supported by said case engaging means in position to receive the free end of said box strap and by winding up the same to stretch the same into proper binding relation to the case, a worm and worm gear transmission mechanism for rotating said drum, a crank-handle for operating said transmission means, a vertical guideway connected with said case engaging means, a strap seal stamping means slidably mounted in said guideway, spring means for normally holding said stamping means in raised position, and a hammer device telescopically connected with the upper end of said stamping means.

9. In a device of the kind described, means for engaging a corner of a packing case and adapted to coöperate with a box strap and seal therefor surrounding said case, a rotary drum supported by said case engaging means in position to receive the free end of said box strap and by winding up the same to stretch the same into proper binding relation to the case, a worm and worm gear transmission mechanism for rotating said drum, a crank-handle for operating said transmission means, a vertical guideway connected with said case engaging means, a strap seal stamping means slidably mounted in said guideway, spring means for normally holding said stamping means in raised position, a hammer device telescopically connected with the upper end of said stamping means, and a movable cutting blade device connected with said case engaging means operative to sever the surplus portion of said box strap after the same has been stretched and secured to said case.

In testimony, that I claim the invention set forth above I have hereunto set my hand this 28th day of March, 1919.

EMIL DIETZE.

Witnesses:
GEORGE D. RICHARDS,
ADOLPH HANSEN.