

(No Model.)

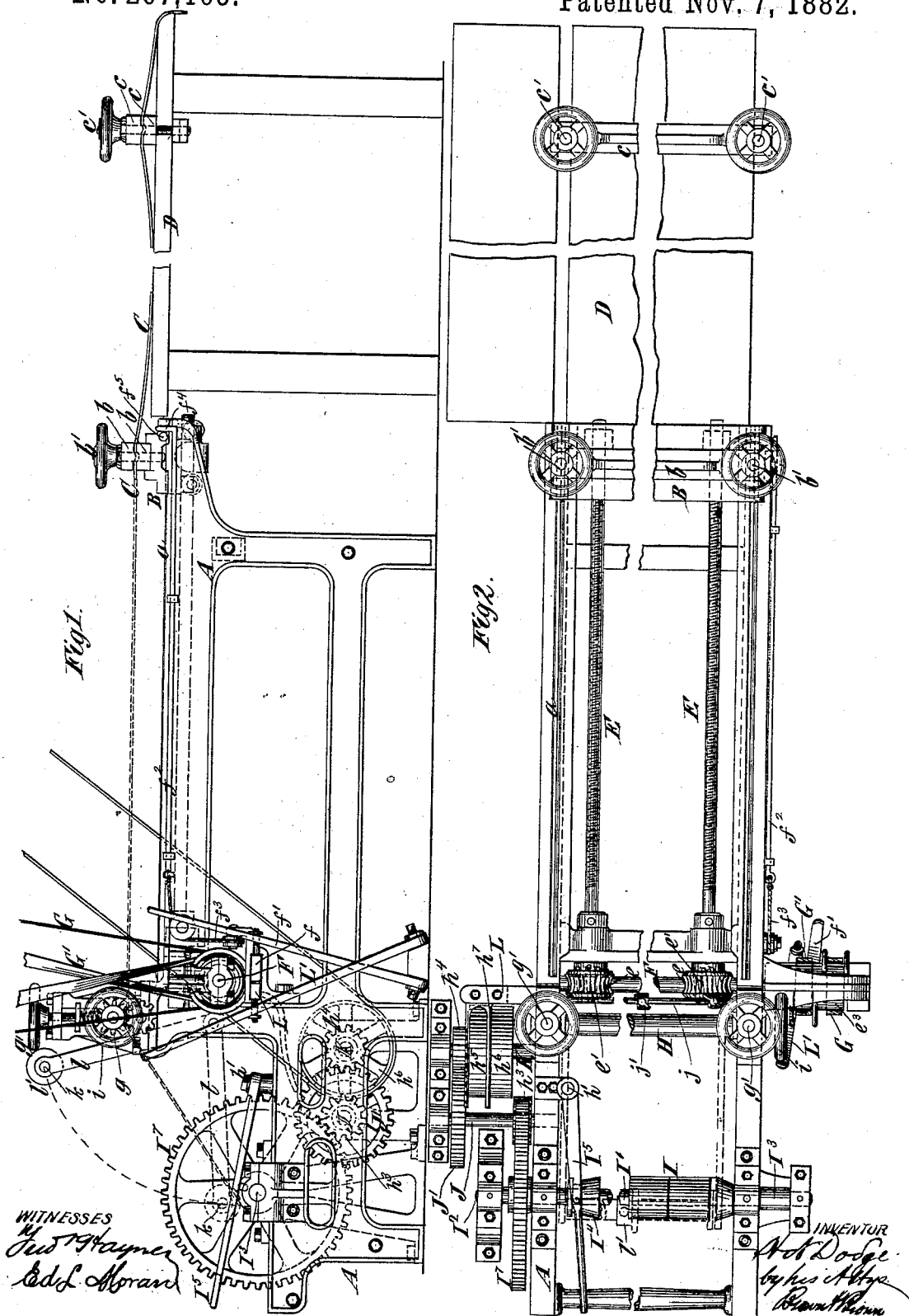
2 Sheets—Sheet 1.

H. N. DODGE.

MACHINE FOR STRETCHING LEATHER BELTING.

No. 267,165.

Patented Nov. 7, 1882.



WITNESSES
J. H. Hayner
Ed. L. Moran

INVENTOR
H. N. Dodge
by his Atty.
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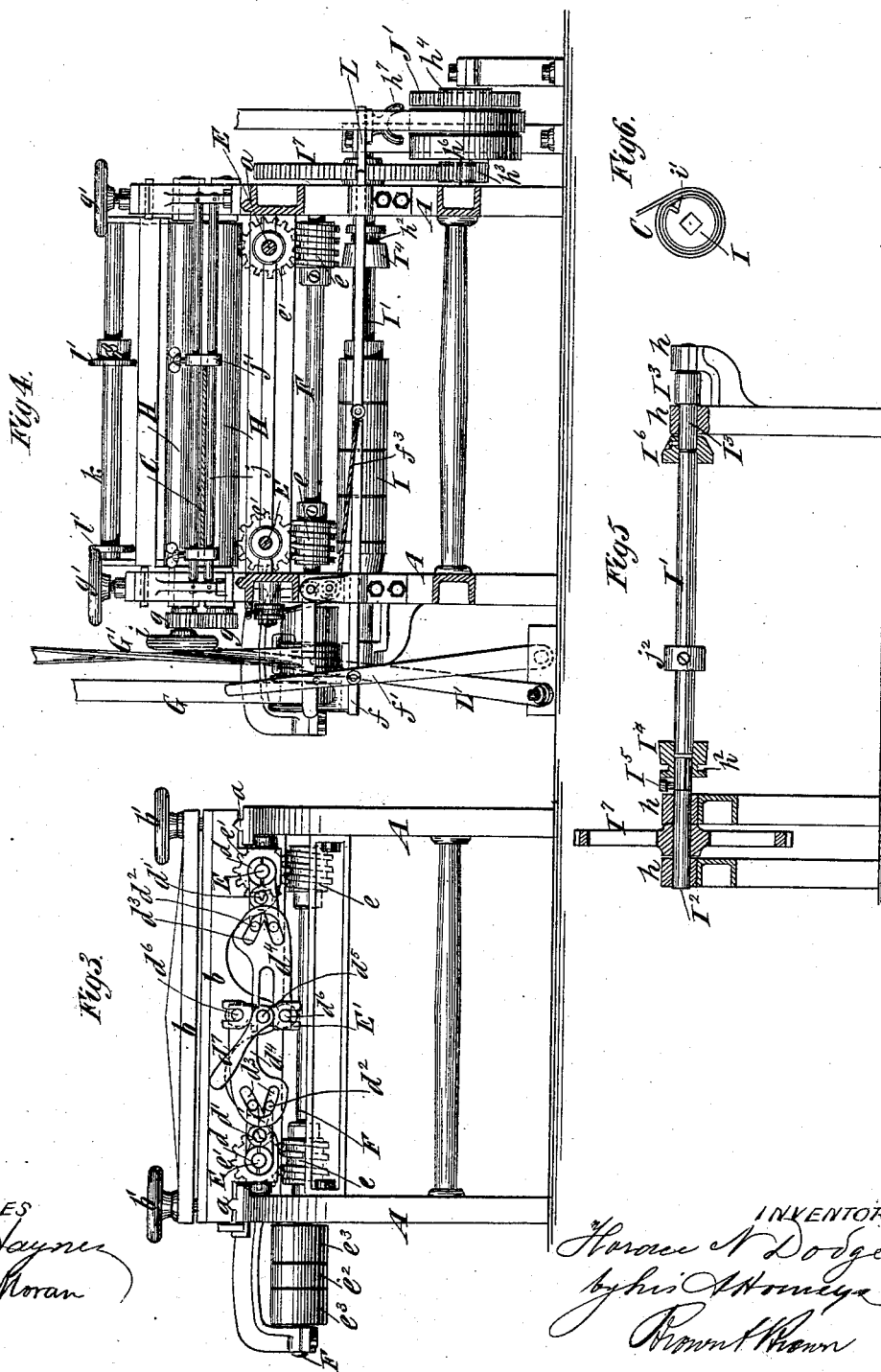
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UNITED STATES PATENT OFFICE.

HORACE N. DODGE, OF BROOKLYN, NEW YORK.

MACHINE FOR STRETCHING LEATHER BELTING.

SPECIFICATION forming part of Letters Patent No. 267,165, dated November 7, 1882.

Application filed September 7, 1882. (No model.)

To all whom it may concern :

Be it known that I, HORACE N. DODGE, of the city of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Machines for Stretching and Straightening Leather Belting, of which the following is a specification.

The objects of my invention are to provide a machine which shall be more effective in stretching belting than those heretofore employed, and in which provision is afforded for straightening the belting by hammering or by other means when necessary and while it is under tension; also, to provide for winding up the belting under tension after it has been stretched.

To this end my invention consists essentially in the combination of a stationary clamp for holding the belting, a traveling carriage provided with a clamp, and mechanism for moving it away from the stationary clamp to produce the stretching of the belting, and a table of stone, iron, or other suitable material between the clamps, and upon which the belting may be supported while it is straightened, by being subjected to light hammering or by other means.

The invention also consists in the combination, with the aforesaid carriage and clamps, of a novel combination of mechanism, particularly hereinafter described, for operating said carriage, including screws which are rotated by worm-wheels and worms, and which engage with nuts in the carriage. The screws may be rotated in the reverse direction to return the carriage after each stretching operation, or the nuts in the carriage may be split nuts, the sections of which may be separated to permit the carriage to be slid back without turning the screws.

The invention also consists in the combination, with stationary and movable clamps and a winding-drum, to which the end of the stretched belting may be attached, of a drag entirely independent of said clamps, through which the belt may be passed, and by which the belt is retarded or held back sufficiently to cause it to be wound up under tension.

The invention also consists in novel details in the construction of the winding-drum and in the manner of combining the same with its driving mechanism, whereby provision is

afforded for readily detaching the drum after the belting has been wound upon it, and for substituting another drum.

The invention also consists in novel details of construction and combinations of parts, hereinafter described.

In the accompanying drawings, Figure 1 represents a side elevation of a machine embodying my invention. Fig. 2 represents a plan of the machine, the central portions thereof being broken away to economize space. Fig. 3 represents an end elevation of the machine. Fig. 4 represents a transverse section of the machine. Fig. 5 represents a detail sectional view of the shaft which supports the winding-drum and its appurtenances, and Fig. 6 represents an end view of the winding-drum and a coil or roll of belting thereon.

Similar letters of reference designate corresponding parts in all the figures.

A designates the frame of the machine, which is provided with tracks or ways *a*, and B designates a carriage, mounted on and adapted to travel on said tracks or ways. The carriage B has mounted upon it a clamp, composed of two parts, *b b*, between which the belting C is introduced, and one of which is adapted to be actuated by screws *b'*, to clamp the belting between them. The clamps *b* may be of any length, but should be adapted to receive between them the widest belting for which the machine is intended.

At a considerable distance from the carriage B is a stationary clamp composed of two parts, *cc*, between which the belting C may be clamped by screws *c'*.

D designates a table or bed of stone, iron, or other suitable material, extending between the two clamps, and this bed may be of any suitable length. The table or bed D may, for example, be from fifty to two hundred feet long, and the machine is adapted to stretch at one operation a length of belting about equal to the length of the table.

E designates two screws, which are mounted in suitable bearings in the frame A, and which engage with nuts *d* in the carriage B. As shown in Fig. 3, the nuts are each formed upon two levers, which are pivoted at *d'*, and have at their ends pins *d²*, which engage with reversely-inclined slots *d³* in a bar or connection, *d⁴*. E' designates a lever, which is fulcrumed

at d^5 , and the ends of which are forked and engage with pins d^6 upon the bars or connections d^4 . The lever E' may be swung or turned by a handle, d^7 , and thereby the bars or connections d^4 are moved longitudinally, so as to cause the inclined slots d^3 to act upon the pins d^2 , and thus open and close the nuts to release them from or engage them with the screws E . The split nuts d may be actuated in any other suitable manner to cause them to engage with or disengage them from the screws E .

F designates a driving-shaft, extending transversely of the machine, and having upon it two worms or screws, e , which engage with worm-wheels e' upon the screws E , as shown in Figs. 2 and 4, and upon said shaft is one fast pulley e^2 and two loose pulleys, e^3 . When the split-nuts d are employed as here shown the driving-shaft F may be operated by a single belt and the screws E rotated continuously in one direction; but when the split nuts are not employed it is necessary that the direction of rotation of the screws should be reversed in order to run the carriage back toward the stationary clamp after the operation of stretching; and I have here represented the driving mechanism so arranged as to provide for such reverse rotation of the screws, although it would not be employed with the split nuts.

G designates an open, and G' a crossed, belt, which pass over the pulleys, and f designates a shipper-bar, extending transversely of the machine and adapted to control the two belts. The bar f may be shifted by a handle or lever, f' , and also by means of a sliding rod, f^2 , extending along the side of the machine and connected with the bar f by a cord, f^3 , as best shown in Fig. 4. At the end of the rod f^2 is a tappet or projection, f^4 , (shown in Fig. 1,) and when the belts are shifted to run back the carriage B , the screws move it back until a pin, f^5 , on the carriage strikes the tappet or projection f^4 , whereupon the belts are shifted and the carriage stopped.

The operation of these parts of my machine are as follows: The belting to be stretched is first clamped at the end in the clamp b , and is then drawn straight and clamped in the stationary clamp c . The driving-shaft F is then started, and the rotation of the screws moves the carriage B and stretches the belting. While the belting is thus put under tension the operator or attendant, by examination, can readily detect crooked places, and wherever he detects them the belt is to be lightly hammered at and near the concave edge, the table or bed D , of stone, iron, or analogous material, affording a support or anvil, upon which such light hammering is or may be performed.

H and H' designate two rolls, which are journaled in suitable bearings in the frame A , and are geared together by pinions g , as shown in Fig. 4, so that they will rotate in unison. In this example of my invention the upper roll H is pressed down upon the other by springs, the tension of which may be regulated by screws g' in a well-understood manner. These rolls

H have not a positive rotation imparted to them, but are adapted to turn by their frictional contact with the belting as it is drawn forward. After each stretching operation the belting is brought between the rolls H , and, upon the clamps before described being released, the belting may be drawn forward by mechanism, which will presently be described, the rolls forming a drag and sufficiently retarding the belting to cause it to be drawn forward and wound up under tension.

In lieu of a drag of this construction one formed of plain non-rotary bars or other devices may be used.

In front of the drag-rolls H is a winding-drum, I , which is composed of sections of a length adapted to the width of the belting to be wound thereon; and I' represents a shaft, upon which the said drum is loosely fitted, so that it may be slipped off therefrom, but will rotate therewith. As here shown, this shaft is square, fitting a square hole in the drum; but it might be polygonal or round, and fitted with a spline or feather entering a groove in the drum.

The shaft I' of the drum really consists of a removable section of shaft fitting between two stationary sections, I^2 I^3 , which are supported in bearings h . Upon the end of the section I^2 , which is squared, is secured a sleeve, I^4 , which is adapted to be slipped longitudinally upon the shaft, so as to fit over the end of the removable section I' ; and I^5 designates a lever, which is fulcrumed at h' , and is adapted to engage with a groove, h^2 , in the sleeve I^4 , to shift the latter. When the sleeve is shifted so as to engage with the section I' the lever I^5 may be dropped between the end of the sleeve and the adjacent bearing h , as shown in Fig. 5, and will then hold the sleeve in engagement with the section I' . Upon the end of the section I^3 is a socket, I^6 , into which the end of the section I' may be slipped.

As before stated, the length of the winding-drum should be equal to the width of belting to be wound thereon, and one or more drum-sections are employed, as may be necessary.

Upon the section I^2 of the shaft of the winding-drum is a large wheel, I^7 ; and J designates a counter-shaft, having upon it a large wheel, J' , and a pinion, h^3 , which engages with and rotates the wheel I^7 and the winding-drum.

K designates a short driving-shaft, carrying a pinion, h^4 , which engages with and rotates the wheel J' , and also carrying fast and loose pulleys h^5 h^6 , over which a driving-belt may pass. By this combination of mechanism a slow rotation is imparted to the winding-drum I .

L designates a shipper-bar, carrying a shipper-fork, h^7 , for shifting the driving-belt from one to the other of the pulleys h^5 h^6 , and adapted to be slid longitudinally in the same bearings as the shipper-rod f . The shipper-bar L is adapted to be moved by a lever, L' .

The operation of winding up the stretched belt is as follows: After the belting has been grasped between the drag-rolls H they are

turned by means of a hand-wheel, *i*, upon the end of the shaft of one of them, as shown in Fig. 4, so as to carry the end of the belting forward to the winding-drum I. The said winding-drum has in it a longitudinal groove, *i'*, as shown in Fig. 6, and into this groove the end of the belt is inserted. In lieu of being inserted in said groove the winding-drum might be otherwise constructed to provide for the ready attachment of the end of the belting. The shipper-bar L is then shifted to start the winding-drum I, and the belting is wound thereon under the tension produced by the drag of the rolls H until all, or nearly all, of the belting last stretched is wound up. The winding-drum is then stopped and the carriage B again operated to stretch another portion of the belt, which is afterward wound up; and these alternate operations of stretching and winding are continued until the whole length of belting is stretched and wound up. The sleeve I⁴ is then slipped off the end of the shaft-section I', and the latter is taken out and the drum slipped off and placed in a rack with the belting upon it. As the belting is sold it is wound off the drum-section.

Although the method here shown of connecting the drum I with its driving devices is very desirable, it might be done in various other ways.

In order to guide the belting properly and cause it to wind squarely on the winding-drum I, I conduct the belting through a guide adjacent to the drag-rolls H, (here shown as composed of parallel rods *j*,) which are provided with collars or gages *j'*, adjustable lengthwise upon them, as best shown in Fig. 4. The sections of the winding-drum I may be kept in proper place upon the shaft I' by means of a collar, *j*², (shown in Fig. 5.)

In order to aid in guiding the belting as it is wound up, especially after the roll on the drum becomes large, I may employ a gage in front of the drag-rolls H, which may consist of a rod, *k*, fitting or supported by arms, bars, or levers *l*, and adapted to be swung upward out of the way, as shown in Fig. 1 in full lines, or downward into action, as shown in dotted lines. The rod *k* is adapted, when swung downward, to rest upon the wound belting C, and has upon it adjustable collars or flanges *l'*, which fit on opposite sides of the roll and cause the belting to be wound squarely thereon.

By my invention I provide by one machine for both stretching the belting and straightening it.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a machine for stretching and straightening belting, the combination of a stationary clamp for holding the belting, a traveling carriage provided with a clamp and mechanism for operating said carriage, and a table-anvil or bed between the clamps, over which the belting may pass while being stretched, and upon which it may be hammered for the purpose of straightening it, substantially as described.

2. In a machine for stretching belting, the combination of a stationary clamp, a carriage, B, provided with a clamp and screw-nuts, the screws E, the driving-shaft F, and the worms or screws *e*, and worm-wheels *e'*, all substantially as described.

3. In a machine for stretching belting, the combination of a stationary clamp, a movable carriage provided with a clamp, and split screw-nuts, screws for engaging with said nuts, mechanism for operating said screws, and devices for opening said nuts to free them from the screws when it is desired to run the carriage back, substantially as described.

4. The combination, with a stationary clamp and a movable clamp for stretching belting, and devices, substantially such as described, for operating the movable clamp to perform the stretching operation, of a winding-drum to which the end of the belting may be attached, and a drag entirely independent of both said clamps arranged between the movable clamp and the winding-drum, and by which the belting is sufficiently retarded to cause it to be wound under tension, substantially as described.

5. The combination, with the drag-rolls H of the winding-drum I, provided with a groove, *i'*, adapted to receive the end of the belting, and mechanism, substantially such as described, for rotating said winding-roll, as set forth.

6. The combination, with the drag-rolls H of the winding-roll I, composed of sections, and the shaft I', whereon said sections are fitted, substantially as described.

7. The combination, with the drag-rolls H of the winding-roll I, the shaft-section I', and the shaft-sections I² I³, all substantially as described.

HORACE N. DODGE.

Witnesses:

FRED HAYNES,
ED L. MORAN.