C. K. DODGE.

Machine for Stretching Belting.

No. 207,259. Patented Aug. 20, 1878.

Fig. 1.

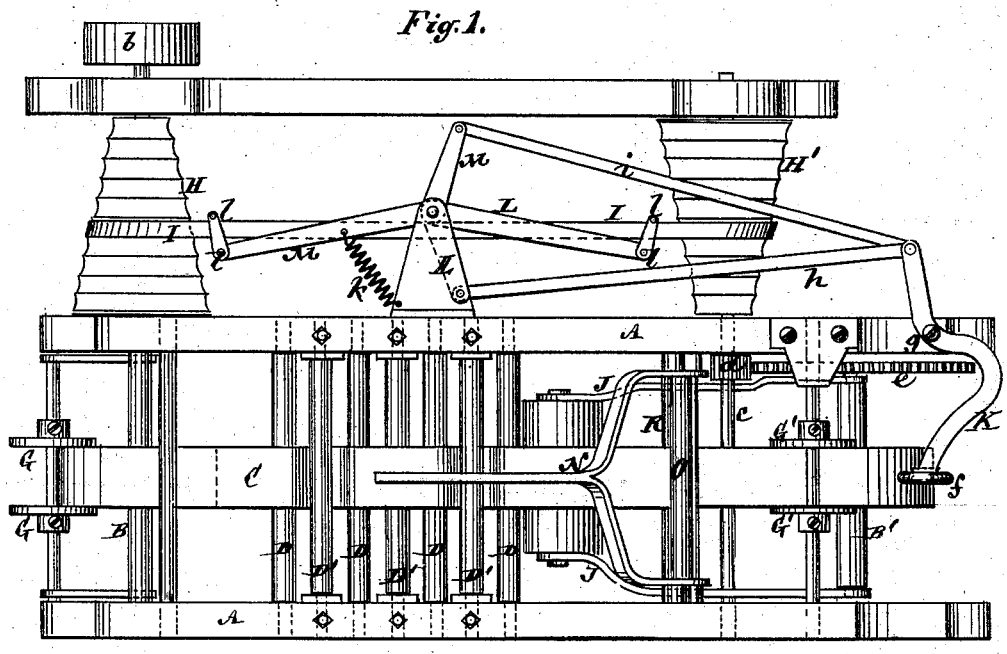
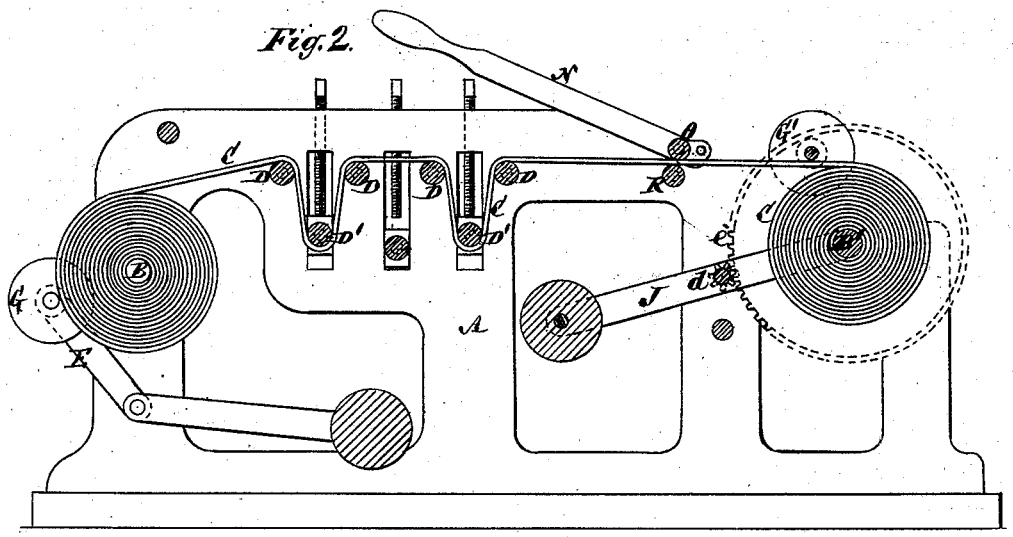


Fig. 2.



Witnesses:

Henry Eichling.

Fred. Haynes

Inventor:

Cleaveland K. Dodge

by his Attorneys

Brown & Allen

UNITED STATES PATENT OFFICE.

CHEEVER K. DODGE, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN MACHINES FOR STRETCHING BELTING.

Specification forming part of Letters Patent No. **207,259**, dated August 20, 1878; application filed February 1, 1878.

To all whom it may concern:

Be it known that I, CHEEVER K. DODGE, of the city of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Machines for Stretching Belting, of which the following is a description, reference being had to the accompanying drawing, forming part of this specification.

This invention more particularly relates to machines for stretching belting by alternate flexion and reflexion while said belting is subjected to longitudinal tension, whereby a thorough and permanent stretching of the thicker as well as the thinner parts of the belting is generally effected. The means which are best adapted to thus stretching belting consist of a delivery-roll, to which one end of the belting is secured, and on which the belting is first coiled or wound; a receiving-roll or take-up, on which the belting is wound as it is taken from the delivery-roll; one or more brakes, for producing the necessary longitudinal tension on the belting as the latter is taken from the delivery-roll by the receiving-roll, and a series of flexion and reflexion rollers interposed between the delivery and receiving rolls.

It is to such a machine or machines of similar character that my invention is designed more especially to be applied; and the invention consists in a combination, with a delivery-roll and a receiving-roll for the belting, flexing and reflexing devices interposed between said rolls, and one or more brakes, for producing longitudinal tension on the belting, of means for diminishing the velocity of the receiving or take-up roll as the coil of belting increases in bulk or diameter on it and diminishes in bulk or diameter on the delivery-roll, whereby the speed of the belting is substantially equalized during its passage from one roll to the other, subject to the action of the brake or brakes, and a uniformity of stretch generally is obtained for the belting.

The invention also consists in a special construction of said means for automatically varying the velocity of the receiving-roll.

Furthermore, the invention consists in a combination, with the receiving and delivery rolls for the belting, and interposed flexing and reflexing devices, of adjustable means or devices for putting an intermittent resistance or tension on the belting between the flexion and reflexion devices and the receiving-roll, for the purpose of stretching the belting evenly when varying in thickness in direction of its length.

The invention likewise consists in a special construction of said intermittently-stretching means or devices, whereby the desired result is obtained in a simple and perfect manner.

In the accompanying drawing, Figure 1 represents a plan of a machine for stretching belting constructed in accordance with my invention, and Fig. 2 a vertical central longitudinal section of the same.

A is the frame of the machine, at opposite ends of which are respectively placed a delivery-roll, B, and a receiving-roll, B′, the belting C to be stretched being wound first upon the delivery-roll, and subsequently wound off from the delivery-roll and on the receiving-roll, as or while the belting is being stretched. D and D′ are the flexion and reflexion rollers between the delivery and receiving rolls, for effecting a more thorough and permanent general stretching of the belting as the latter passes from the delivery-roll B alternately over or round said rollers D D′, one set, D′, of which is preferably made adjustable as regards distance from the other set, D. These several flexion and reflexion rollers D D′ are parallel with each other and with the receiving and delivery rolls B B′. The rollers D D′ may vary both in position and number.

E is a weighted lever-brake, arranged to subject the belting C to a general tension as it is delivered from the delivery-roll B and passes to the receiving-roll B′. This brake, which need not necessarily be a lever one, but may be of any suitable construction, may be applied either directly to the roll B, indirectly thereto through the intervention of gearing, or directly to the belting itself, which latter is the arrangement here shown. Said brake gives a constant or continuous longitudinal tension to the belting as the latter, which is fastened at its one end to the delivery-roll B, passes over or around the flexion and reflexion rollers D D′, and is taken up by the receiving-roll B′.

Disks or flanges G, one or both of which

may be adjustable, may be fitted on the brake E, for guiding the belting at its edges, and other like disks or flanges, G′, be arranged at the receiving-roll end of the machine, for similarly guiding the belting; or any other suitable edge-guiding devices for the belting may be used.

To operate the machine, power is or may be communicated by a pulley, *b*, to a cone-pulley, H, on the shaft of which the delivery-roll B runs loose. From this cone-pulley H motion is conveyed by a band, I, to a reversely-arranged cone-pulley, H′, on the shaft *c*, on which is a pinion, *d*, that gears with a spur-wheel, *e*, on the shaft of the receiving-roll B′, for the purpose of giving a winding action or motion to the latter. Combined with said or other suitable means for communicating motion to the receiving-roll B′ is an automatic speed-regulating device or mechanism, for substantially equalizing the speed of the belting as it is wound by the roll B′ in a coil of constantly-increasing diameter from the roll B, the coil on which proportionately decreases in diameter. In such action the relative velocities of the rolls B B′ will be constantly changing as the amount of belting diminishes on the delivery-roll and increases on the receiving-roll.

The compensating means for automatically diminishing the speed of the receiving-roll B′ as the coil of belting on it increases in diameter may be variously constructed and arranged; but the following devices will be found very successful for the purpose.

K is a lever, having its fulcrum *g* on the main frame, and preferably provided with a roller, *f*, on its outer or free end, which bears against the outer coil of the belting C on the receiving-roll B′. This lever is connected by rods *h* and *i* with two independent bell-crank levers, L and M, one of which has applied to it a spring, *k*, for keeping the free end of the lever K, or roller *f* thereon, in contact with the coil of belting on the receiving-roll B′. Said bell-crank levers are constructed or provided with clips *l l*, to form belt-shifters to the band I of the cone-pulleys H H′, the arrangement of said parts being such that when the free or roller end of the lever K is forced outward by the increasing diameter of the coil of belting C on the receiving-roll B′, the band I is shifted toward the larger end of the cone-pulley H′ and toward the smaller end of the cone-pulley H, and vice versa—that is, toward the larger end of the cone-pulley H and smaller end of the cone-pulley H′—when the coil of belting C, as, for instance, on starting the machine, is of greater diameter on the delivery-roll B than on the receiving-roll B′. This gives a varying velocity to the receiving-roll B′, so that as the coil of belting thereon increases in diameter the velocity of it on the outer surface remains almost the same.

As the belting, especially when made of leather taken from different parts of the hide, frequently varies in thickness throughout its length—as, for instance, when made from the "butt" and shoulder portions of the hide—it is desirable to give to particular portions of the belting, in direction of its length, an increased tension; as, for instance, to the butts or firmer portion of the leather I employ, at a suitable point between the flexion and reflexion rollers D D′ and the receiving-roll B′, in proximity to said roll, an intermittent and adjustable belt-stretcher, or means for putting an extra longitudinal tension on the belting, uniformly across it, whenever a firmer or butt portion of the belting is about passing onto the receiving-roll. These means may be variously constructed and applied; but a simple device for the purpose, by way of illustration, is shown in the drawing, in which N is a lever, that may be intermittently operated by hand or otherwise, and which carries a roller, O, having its axis arranged transversely to the longitudinal travel of the belting C. Said belting passes over or above a roller, R, working in stationary bearings, and arranged in relation with the roller O, so that when the lever N is not depressed the belting runs free from any bearing action on or against the rollers O R; but when the lever N is depressed the roller O pinches the belting between it and the roller R, to give additional stretch or tension on the belting prior to its passage to the receiving-roll without any material stretching on the belting back of the rollers O R—that is, between them and the flexion and reflexion rollers D D′. To provide for this action and freedom from action of the rollers O R, as circumstances require, the belting C is always kept well up to or nearly the same level in passing from the flexion and reflexion rollers D D′, to the receiving-roll B′. This is or may be done by suspending the roll B′ on a weighted frame, J, arranged to keep the outer coil, irrespective of its diameter, up against the axle of the guide-flanges G′, roller thereon, or other suitable stop, said weighted frame working on the shaft of the pinion *d* as a center of motion. In this way a butt or firmer portion of the belting may be separately or additionally stretched without interfering with the general stretch of the belting by the continuous brake E.

In practice, I propose to alternately reverse the actions of the delivery and receiving rolls B B′, so that after the belting has been wound on one of said rolls the action may be changed to wind it on the other, and so run the belting backward and forward till it is perfectly stretched. To this end it will be necessary to reverse the driving mechanism, so that the roll B will be driven by the cone-pulley H, the other cone-pulley, H′, be driven in an opposite direction to its former one, and have the roller B′ loose on its shaft, also to reverse the positions of the brake E and intermittent additional stretcher O R, relatively to said rolls. These changes, to provide for making what was previously the delivery-roll a receiving one, and vice versa, it is not necessary here to describe, inasmuch as the invention is clearly

defined by referring to the roll B as the delivery device, and the other roller, B′, as the receiving device.

The adjustable presser-roller O, instead of being carried by a single lever, N, it is preferred to support by slotted bearings in independent hand-levers, at opposite ends of it, to vary the amount of pressure on opposite edges of the belt, to adapt the pressure to different thicknesses of belting in a transverse direction of the latter. Furthermore, instead of the rollers O R, a pressure-bar, operating to deflect the belting, may in some cases be used.

I claim—

1. The combination, with a delivery-roll and a receiving-roll for the belting, flexion and reflexion rollers or devices interposed between said rolls, and one or more brakes for producing longitudinal tension on the belting, of automatic means for varying the velocity of the receiving-roll to substantially equalize the speed of the belting as it is unwound from the delivery-roll and wound upon the receiving-roll, essentially as described.

2. The combination, with a delivery-roll, B, receiving-roll B′, and a tension-brake, E, of the cone-pulleys H H′, connected by a band, I, the lever K, arranged to bear on the coil of belting on one of said rolls, and the band or belt shifters L M, substantially as specified.

3. The combination, with delivery and receiving rolls for the belting, and flexion and reflexion rollers or devices interposed between said rolls, of adjustable means or devices between the flexion and reflexion rollers and the receiving-roll, for putting an intermittent tension on the belting as it passes to the receiving-roll, essentially as and for the purpose herein set forth.

4. The combination of the adjustable pressure-roller O, the roller R, the delivery-roll B, the receiving-roll B′, adjustable in relation with the rollers O and R, as described, and the flexion and reflexion rollers or devices D D′, substantially as specified.

CHEEVER K. DODGE.

Witnesses:
VERNON H. HARRIS,
FRED. HAYNES.