E. TOOLE.

BELT LACING MACHINE.

APPLICATION FILED DEC. 3, 1909.

967,083.

Patented Aug. 9, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

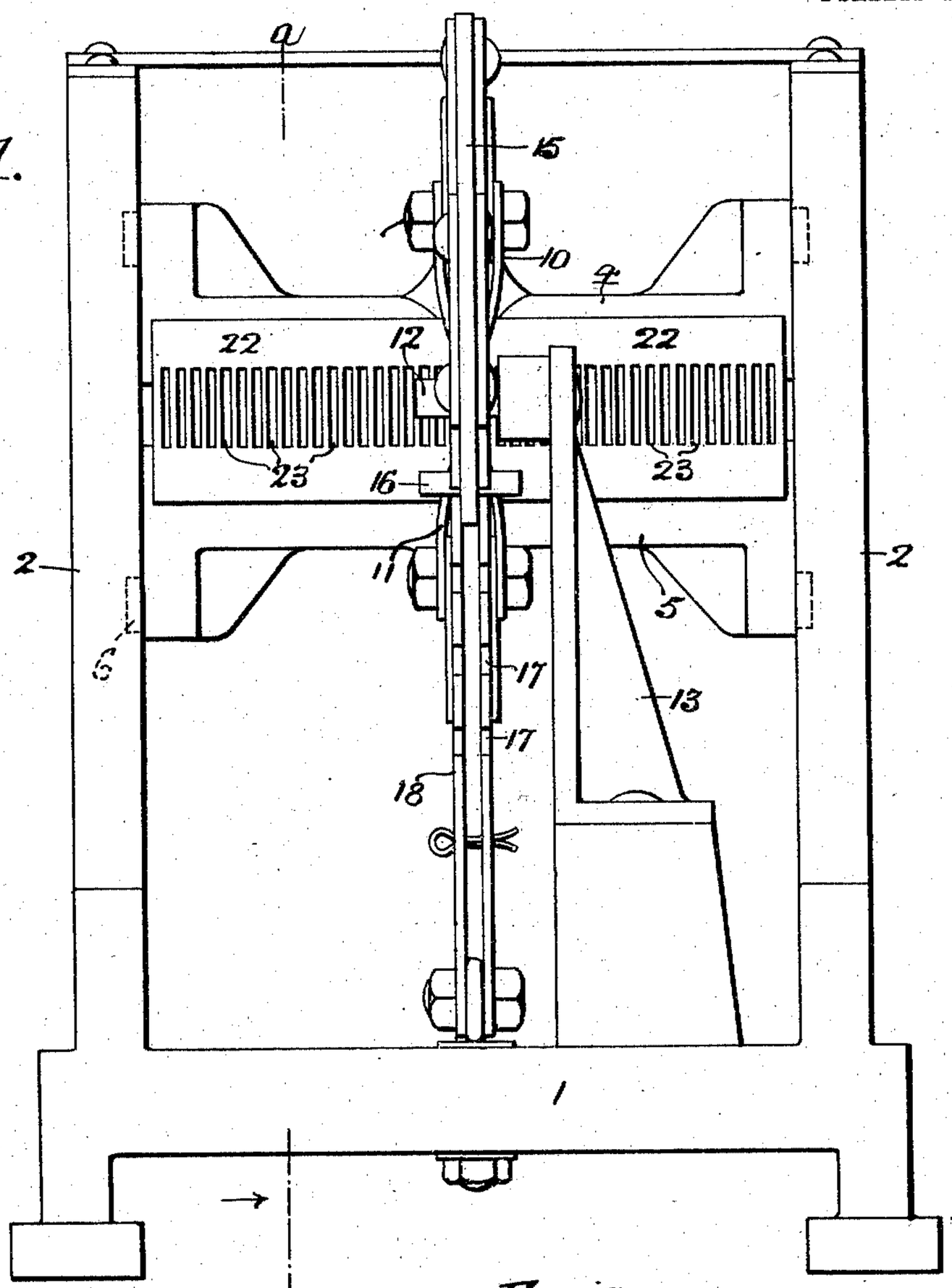


Fig. 4.

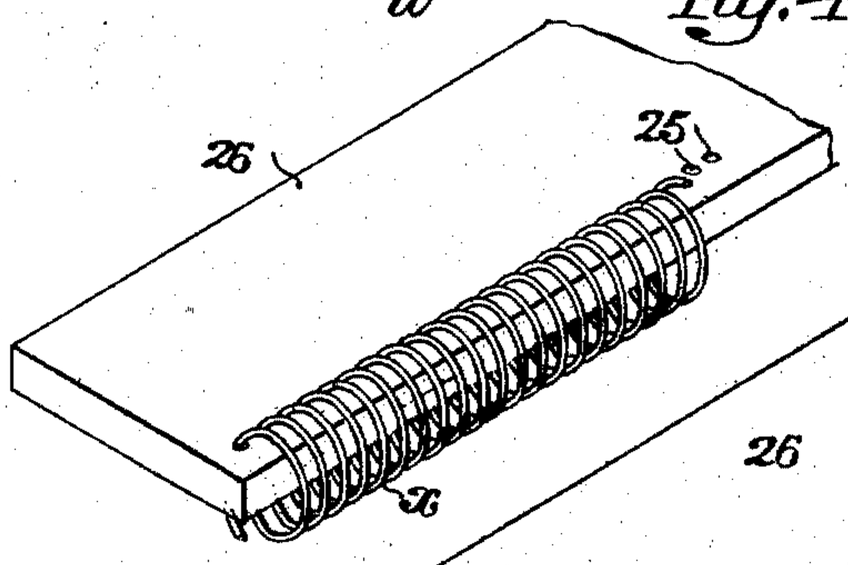
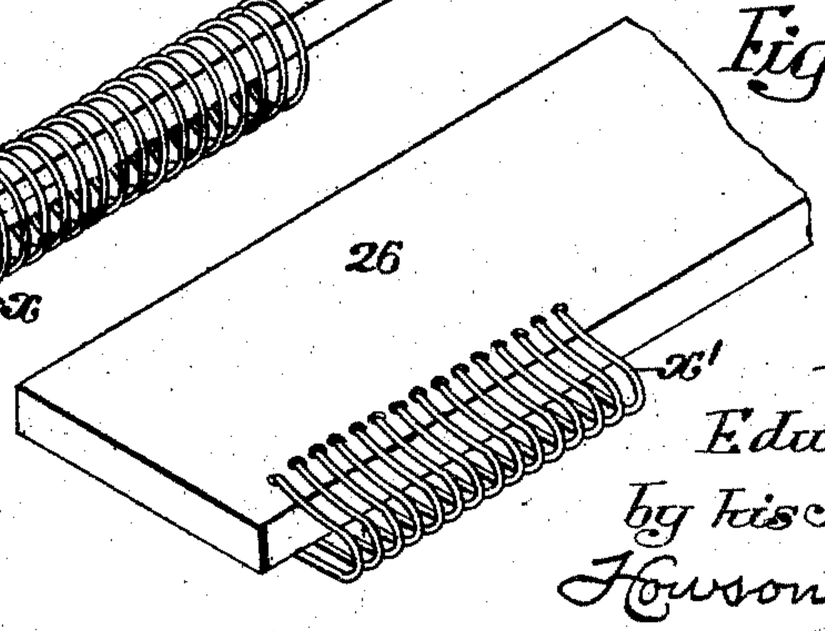


Fig. 5.



Witnesses

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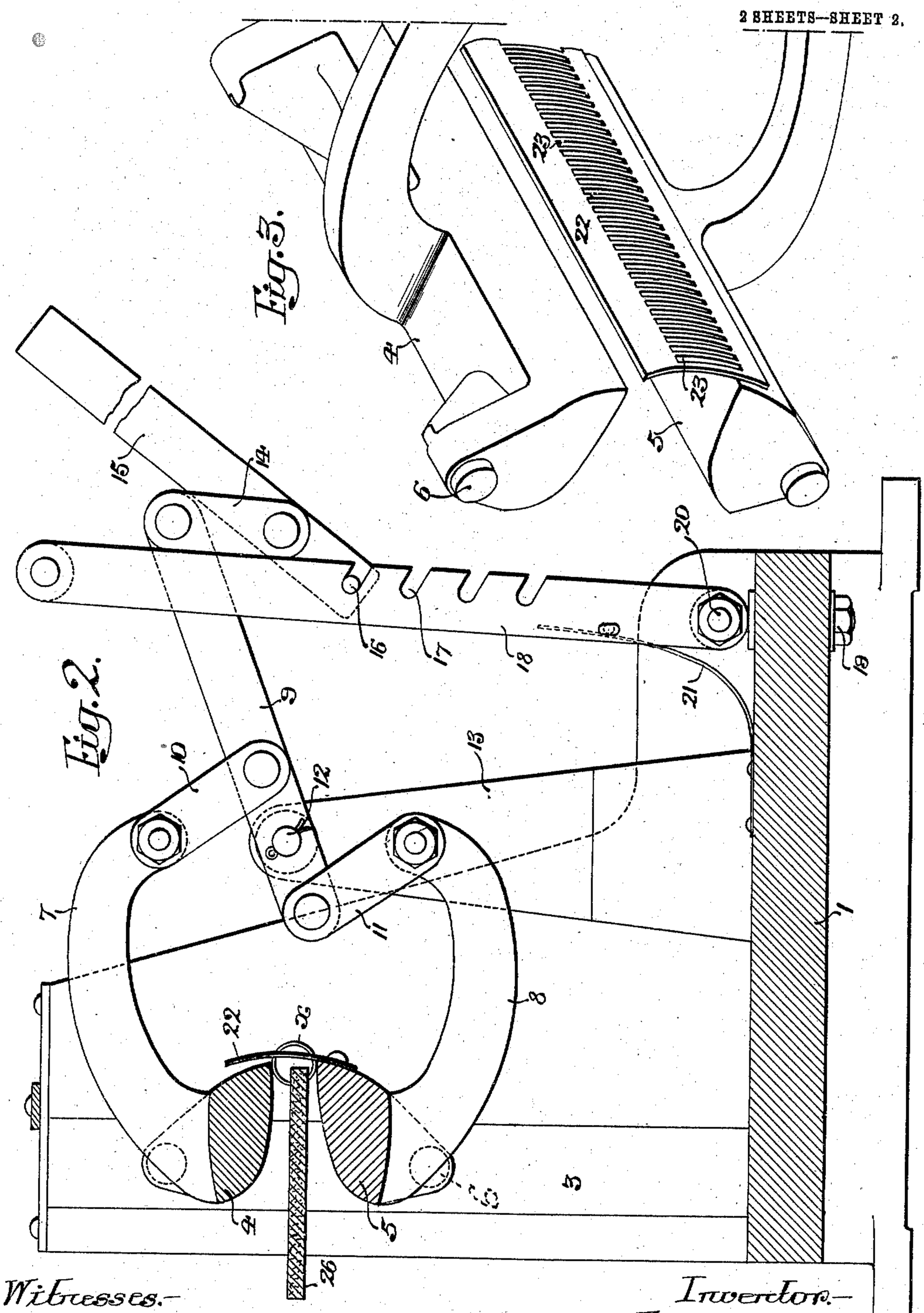

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UNITED STATES PATENT OFFICE.

EDWARD TOOLE, OF GLOUCESTER CITY, NEW JERSEY.

BELT-LACING MACHINE.

967,083. Specification of Letters Patent. Patented Aug. 9, 1910.

Application filed December 3, 1909. Serial No. 531,210.

To all whom it may concern:

Be it known that I, EDWARD TOOLE, a citizen of the United States, residing at Gloucester City, New Jersey, have invented certain Improvements in Belt-Lacing Machines, of which the following is a specification.

My invention relates to that class of devices particularly designed to crush or flatten the spiral coils of wire used as a lacing for conecting the ends of power belts; one object of said invention being to provide a device of the character noted which shall be capable of quickly and conveniently flattening the coils of a belt lacing after this has been placed in suitable holes in the end of a belt. I also desire that the arrangement of parts shall be such that the various convolutions of the coil shall not only be evenly spaced while being crushed or flattened, but shall be brought to and fixed in parallel planes at right angles to the plane of the end of the belt, so as to render possible the use of similar spiral coils in both ends of the belt. I further desire to provide a machine capable of operating on the belts and lacings of different sizes, which shall be simple, substantial, as well as relatively inexpensive in construction, and have its parts so arranged that they shall not be likely to get out of order under conditions of use. These objects and other advantageous ends I secure as hereinafter set forth, reference being had to the accompanying drawings in which;—

Figure 1 is a rear elevation of a machine embodying my invention; Fig. 2 is a vertical section on the line *a*—*a* of the machine shown in Fig. 1; Fig. 3 is a perspective view of the crushing jaws and their associated parts, and Figs. 4 and 5 are perspective views showing the ends of a belt with a lacing coil before and after it has been flattened by my machine.

In the above drawings, 1 represents the base of the framework of my machine which has two vertically extending standards 2 at its sides. In the inner face of each of these standards is mounted a metal bar or plate 3 and these two plates provide bearings for the two crushing jaws 4 and 5 which are mounted one above the other. Each of said jaws has journals 6 and an operative face whose surface is curved eccentrically to the imaginary line connecting the centers of said journals; such jaws being so placed that their two eccentric faces are adjacent each other and diverge from the rear to the front of the machine as shown in Fig. 2. The upper jaw 4 has projecting rearwardly from its central upper portion an arm 7, while the jaw 5 similarly has a rearwardly projecting arm 8. Said arms are respectively connected to a lever 9 by links 10 and 11; which are pivoted to it at points equi-distant from a fulcrum 12 formed by a pin carried on a standard 13 projecting upwardly from the base 1. The long arm of the lever 9 is connected through a link 14 with an operating lever or handle 15, whose short arm is provided with a pin 16 formed to enter any one of a number of notches 17 in a pair of upwardly projecting bars 18. The lever 9 extends between and is guided by these bars and the lower ends of said bars are movably connected by means of a pivot bolt 20 to an eye-bolt 19 mounted in the base 1, there being a spring 21 connected to said base and operative upon the bars 18 so as to tend to swing them toward the rear of the machine.

Mounted upon the rear side of the lower jaw 5 and projecting upwardly immediately to the rear of the jaw 4, is a comb-like spacing plate 22 provided with a number of vertical slots, whose distance apart is substantially equal to the distance between the successive convolutions of the lacing coil.

When under operating conditions it is desired to flatten the convolutions of the wire coil *x*, after said coil has been placed in the holes 25 in the end of a belt 26, the latter is introduced between the two jaws 4 and 5 in the position shown in Fig. 2, which illustrates said jaws as being separated to a maximum extent and the operating lever with its fulcrum pin 16 in the highest of the notches 17. Said belt is moved to the rear between the jaws to such a distance that the convolutions of the lacing *x* are forced partly through the vertical slots 23 of the spacing plate 22, and inasmuch as these slots are but very little wider than the thickness of the wires of said coil, they necessarily compel that part of each convolution passing through them, to lie in a plane at right angles to the plane of the belt 26. If now the operating lever 15 be moved downwardly, the long arm of the lever 9 is likewise drawn down and through the links 10 and 11, the arms 7 and 8 of the jaws are caused to approach each other, thereby causing the operative faces of said jaws to

likewise approach each other and crush or flatten the coil x to a certain extent. Under these conditions the various parts are in the positions shown in Fig. 2, and after the belt is moved a short distance to the front, so that the lacing coil is wholly between the jaws, the fulcrum pin 16 of the operating lever is moved to the next lower notch 17 of the bars 18, thereby again bringing said lever to its raised position. It may now be again pressed down to further draw down the long arm of the lever 9 and thus cause a closer approach of the jaws 4 and 5. The lacing coil is thus flattened by a succession of operations until it finally has the form shown in Fig. 5. Since during the flattening action of the jaws, the convolutions of the coil of lacing wire are held at equal distance apart and in vertical planes, that portion of the finished lacing x' projecting beyond the end of the belt 26 is in condition to receive between its loops the similarly formed loops of another lacing mounted in the other end of the belt, after which a suitable connecting pin may be run through both pairs of loops to connect the two ends of the belt in the well known manner. It is obvious that after the jaws have been caused to approach each other to such an extent that they crush the coils of wire into the belt, they may be immediately separated, and the belt with its finished lacing removed by disengaging the fulcrum pin 16 from the notch 17 in which it is engaged and raising upwardly the levers 15 and 9. The notches 17 are preferably so spaced that after the lever 15 has been moved downwardly to its maximum distance, it may be disengaged from the notch 17, and by being raised to its upper position, may have its fulcrum pin 16 easily entered in the next lower notch.

Owing to the form and arrangement of the jaws, the machine may receive belts of widely varying thicknesses and operate to crush lacing coils of similarly varying diameters;—it being obvious that the jaws may be separated to any desired extent by proper manipulation of the levers.

I claim;—

1. The combination of a supporting structure; two jaws rotatably mounted therein, and each provided with operating faces whose surfaces are curved eccentrically to their axes; with arms for rotating the jaws to cause their operative faces to approach each other.

2. The combination of a supporting structure; two jaws mounted therein, and provided with elongated operating faces curved eccentrically to their axes of rotation; an arm for each jaw; and mechanism operative on the arms for causing the operating faces of the jaws to approach each other.

3. The combination of a supporting structure; two jaws mounted therein, and each provided with diverging operating faces; means for spacing the convolutions of a belt lacing after it has been introduced between the jaws; and arms for causing the operative faces of the jaws to approach each other to flatten such lacing.

4. The combination of two jaws; a supporting structure; arms for moving said jaws together; and a device formed to engage the convolutions of a spiral lacing to maintain them in predetermined positions while they are being operated on by the jaws.

5. The combination of a supporting structure; two jaws mounted thereon; a device carried by one of said jaws for engaging the convolutions of a spiral wire lacing while it is between said jaws, for maintaining said convolutions in predetermined relative positions; and means for moving the jaws together to flatten the convolutions.

6. The combination of a supporting structure; two jaws thereon; a slotted plate carried by one of the jaws so as to be capable of engaging the convolutions of a wire lacing; and means for moving together said jaws to flatten such lacing.

7. The combination of a supporting structure; two jaws rotatably mounted thereon, and each provided with faces curved eccentrically to their axes of movement; a slotted plate carried by one of the jaws and projecting toward the other in position to engage the convolutions of a wire lacing between the jaws; and means for operating the jaws.

8. The combination of a supporting structure; two laterally elongated jaws rotatably mounted thereon, and having operating faces eccentric to their axes of rotation; an arm projecting from each jaw; a lever fulcrumed on the supporting structure; and a link for each arm extending between it and said lever.

9. The combination of a supporting structure having bearings; two elongated jaws each having journals at its ends capable of entering said bearings; an arm for each jaw; an upright member provided with a series of notches; with an operating lever connected to the jaw arms and capable of utilizing any of the notches for the reception of its fulcrum.

10. The combination of a supporting structure having two upright members; two jaws each having a journal entering one of said members and respectively provided with faces eccentric to said journals; arms for said jaws; and means operative on the arms for causing the faces of the jaws to approach each other.

11. The combination of a pair of laterally elongated jaws; a supporting structure therefor having bearings for the reception of the ends of said jaws; a notched fulcrum bar; an arm for each jaw; a lever fulcrumed

on the supporting structure; links respectively connecting said lever with said jaw arms; a second lever capable of removably engaging any of the notches of the fulcrum bar; and a link connecting said two levers.

12. The combination of a supporting structure having two pairs of bearings; a pair of jaws respectively mounted in said pairs of bearings; means for operating said jaws including a lever; and a notched fulcrum member for said lever, movably mounted on the supporting structure.

13. A belt lacing machine consisting of two jaws of cam section; a spacer placed to engage a belt lacing for positioning it between said jaws; and means for operating said jaws to cause them to shape said lacing.

14. A belt lacing machine consisting of two jaws of cam section; means for forcing said jaws together to cause them to shape the lacing; and a slotted structure for positively holding portions of the lacing in a predetermined position while it is being shaped.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

EDWARD TOOLE.

Witnesses:

WILLIAM E. BRADLEY,

WM. A. BARR.