

(No Model.)

3 Sheets—Sheet 1.

S. W. LADD.
LASTING MACHINE.

No. 500,141.

Patented June 27, 1893.

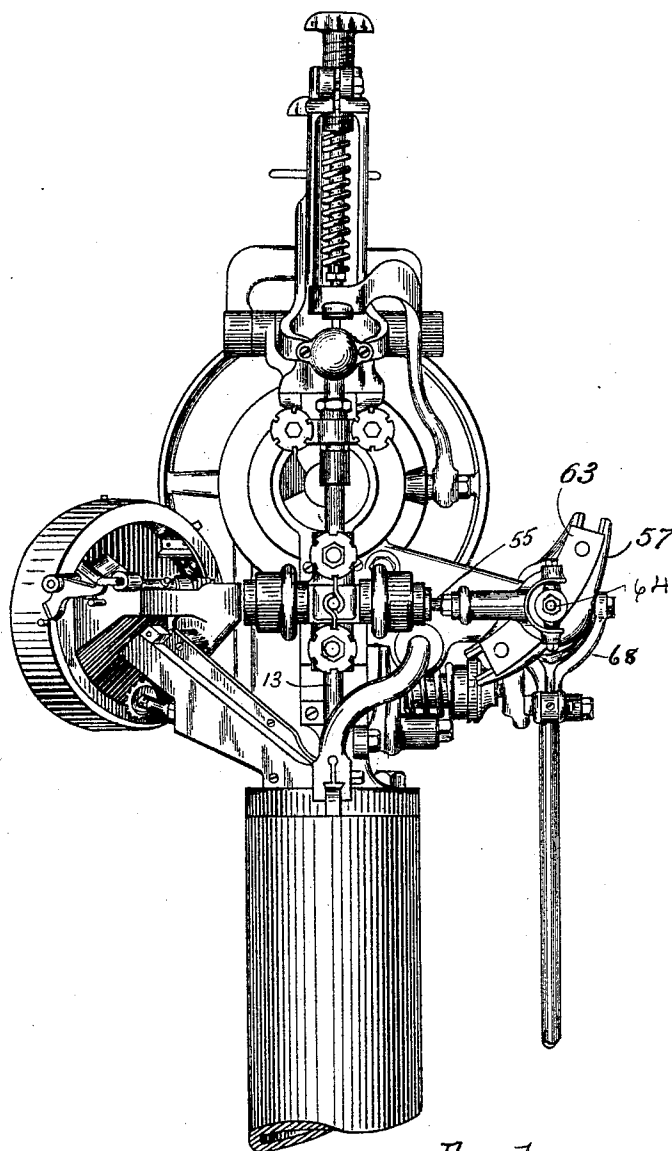


Fig. 7

WITNESSES:

E. E. Hamill.
W. Beale

INVENTOR:

S. W. Ladd

By *C. B. Tuttle*
Att'y

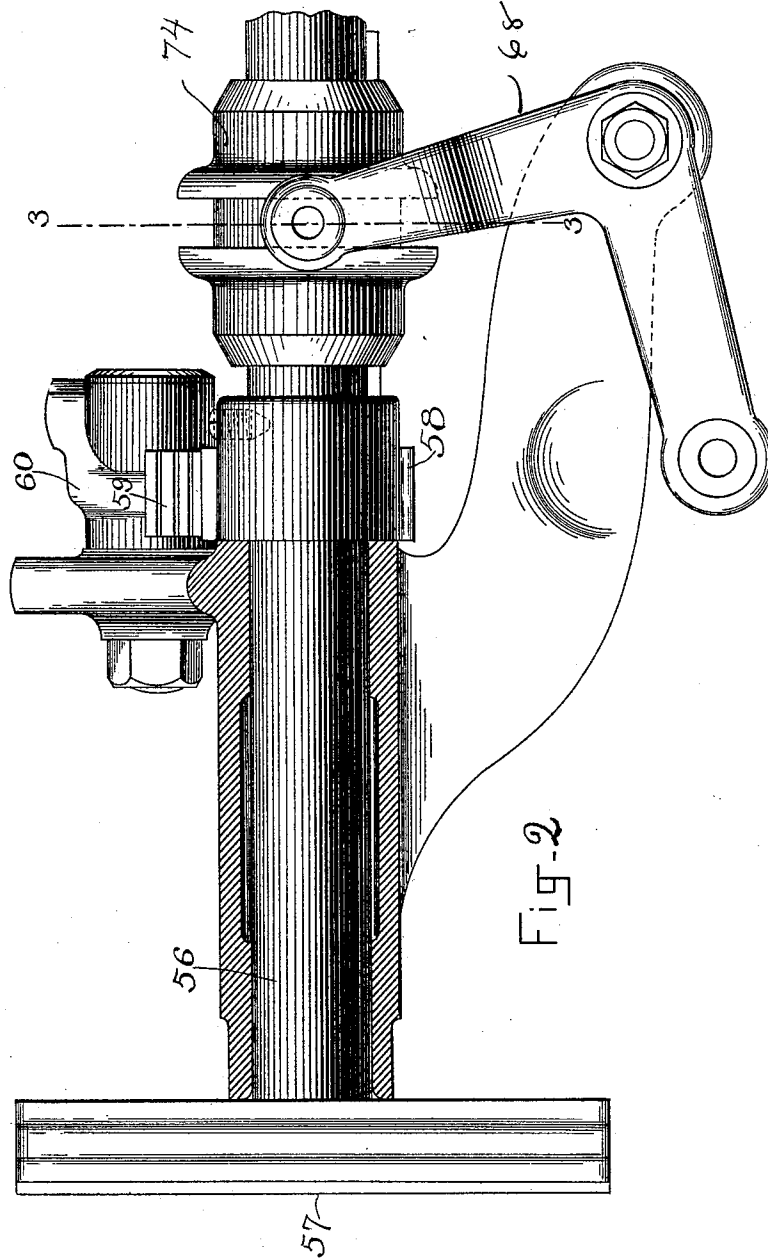
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3 Sheets—Sheet 2.

S. W. LADD.
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Patented June 27, 1893.



WITNESSES:

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(No Model.)

3 Sheets—Sheet 3.

S. W. LADD.
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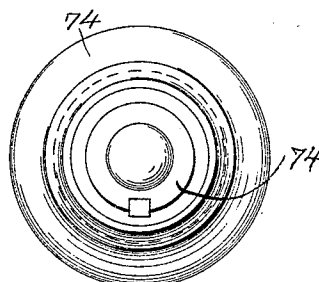
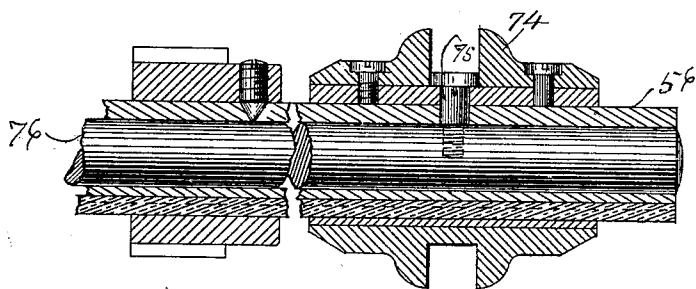
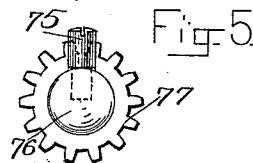
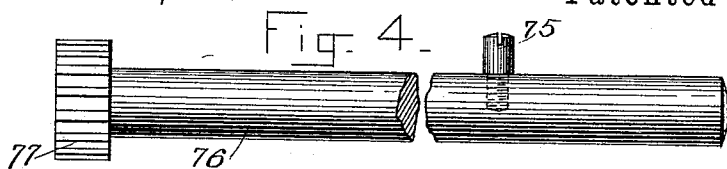


Fig. 6.

Fig. 7.

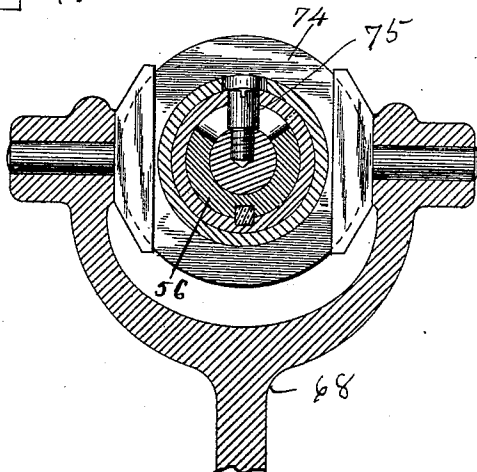


Fig. 8.

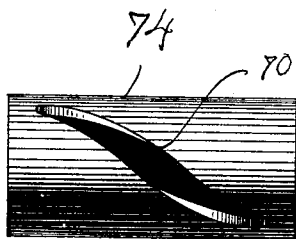


Fig. 9.

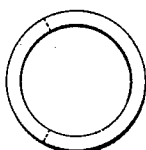


Fig. 10.

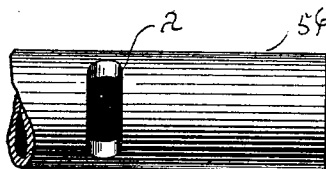


Fig. 11.

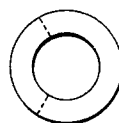


Fig. 12.

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UNITED STATES PATENT OFFICE.

SHERMAN W. LADD, OF SOMERVILLE, MASSACHUSETTS.

LASTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 500,141, dated June 27, 1893.

Application filed November 21, 1890. Serial No. 372,233. (No model.)

To all whom it may concern:

Be it known that I, SHERMAN W. LADD, of Somerville, in the county of Middlesex and Commonwealth of Massachusetts, have invented certain Improvements in Lasting-Machines, of which the following, taken in connection with the accompanying drawings, is a specification.

This invention relates to improvements in lasting machines. It is an improvement on the machine described and shown in Letters Patent of the United States No. 423,922. It pertains to that portion of said machine described in said Letters Patent as the mechanism for imparting the plaiting movements to the pinchers devices.

It consists in matters of construction and is specifically described hereinafter.

In the drawings Figure 1 is a front elevation of the machine. Fig. 2 is a sectional side elevation of the pinchers operating shaft to which my present invention is applied and shows also the parts of the machine which support and in part operate said shaft. Fig. 3 is a section on line 3, 3, of Fig. 2. Figs. 4, 5, 6, 7, 8, 9, 10, and 11 are details connected with Fig. 2 and embody this, my present invention, all of which will be further described hereinafter.

In Letters Patent of the United States No. 423,922, granted to Charles S. Gooding and Sherman W. Ladd March 25, 1890, the construction and operation of the general mechanism for performing the work of lasting boots or shoes are described in detail. Reference is hereby had to that specification for a description of parts not shown or described in this application.

In this specification such parts only of the machine are represented and described as are necessary in order to present, clearly, the construction of parts embodying this invention and the relation and connection of such parts with the machine as a whole. It may be here stated that the shoe is prepared for lasting, by first putting the upper on to the last, drawing it over at the toe and preferably at the sides and securing these overdrawn portions to the inner sole by tacks or other fastening devices.

In completing the work of lasting the boot or

shoe, as it is carried out by the machine referred to, the shoe is next presented to the machine lasting devices, supported in the hands of the workman and moved about, as required to present successively the portions of the upper which it is necessary to draw over and secure to the inner sole in order to complete the lasting operation. The pinchers are made to grasp, strain and lay over the several portions of the upper progressively to which end the pinchers are given vertical and front-to-rear movement. At the heel and toe it becomes necessary to plait the upper to which end the pinchers are given a lateral movement in either direction in addition to the front-to-rear and vertical movements and it is to the construction and arrangement of mechanism for imparting to the pinchers these lateral or plaiting movements that my present invention specifically relates.

In Fig. 2 of the accompanying drawings is represented a rock-shaft, 56, which carries, on its front end, a driver head, 57.

In Fig. 1 of the accompanying drawings is represented the mechanism connecting the driver head, 57, with the pinchers proper the shank of one of which is indicated at 13. This connecting mechanism is fully described in Letters Patent No. 423,922, the only part of such connecting mechanism, designated by reference numeral in the drawings of this application being the rod 65. The shaft, 56, at the end of which is the driver head 57, is supported in a boss of the machine head and carries a sectional gear, 59, that engages a correspondingly toothed rack on the end of lever, 60, to the end that tilting movements of the lever, 60, operate to give partial rotations to shaft, 56. The mechanism whereby lever, 60, is given a reciprocating tilting movement as also the reciprocating rotary movements imparted thereby to shaft, 56, and the effect of such movements on the pinchers to perform the plaiting operations are all set forth and described in detail in Letters Patent No. 423,922. To that specification reference is also had for a more detailed description of the construction and arrangement of shaft, 56 and its operative rocking mechanism. It may be here stated that the shaft, 56, has a continuous

rocking movement and on the driver head, 57, of said shaft is a movable slide, 63, having a pin, 64, between which pin, 64, and the pinchers connection is established through jointed, 5 spring mechanism, (for description thereof see Letters Patent No. 423,922,) whereby movement is transmitted from the rock-shaft, 56, to the pinchers. It will be understood that so long as pin, 64, is permitted to remain in 10 line with the axis of rotation of shaft, 56, the pin, 64, receives from the shaft, 56, a simple reciprocating rotary movement conformable to the rocking movements of shaft, 56, and no motion is transmitted by the shaft, 56, to the pinchers. If, however, the pin, 64, is 15 moved in either direction eccentric to the line of the axis of rotation of shaft, 56, it operates as a crank-pin, imparting to the pinchers lateral movements conformable to the vibrations of the pin, imparted thereto by the rocking shaft, 56. The pin, 64, is moved in 20 one direction eccentric to shaft, 56, for causing the pinchers to lay the plaits to one side and in the opposite direction eccentric to shaft, 56, for causing the pinchers to lay the plaits to the other side and when no plaiting movement is required the pin, 64, is brought 25 into alignment with the shaft, 56. To the end that these described movements of pin, 64, may take place during the continuous operation of the machine and be shifted and interchanged to suit the will of the operator, a mechanism is interposed between the pin, 64, and a lever operated by the knee of the work- 30 man whereby a movement of the knee lever to one side effects a corresponding movement of pin, 64, to one side of shaft, 56, and a movement of the knee lever in the opposite direction, to one side of the center line, effects a 35 corresponding movement of pin, 64, to the opposite side of shaft, 56, the normal position of the knee lever being such as to hold the pin, 64, in alignment with shaft, 56. The mechanism interposed between pin, 64 and the 40 said knee-operated lever embodies this, my present invention and the same I now proceed to describe as follows:

The rock-shaft, 56 is constructed with a central, longitudinal bore in which is journaled 50 the shaft, 76. Said shaft, 76, carries on its front end a gear, 77, that meshes with a correspondingly toothed rack, (not shown,) formed integral with the pin-supporting-slide, 63, (Fig. 1.) The shaft, 76, permits rotary reciprocating movements in its bearings, to the 55 end that a partial rotation of the shaft, 76, in one direction, may be had in order to move the slide, 63, and consequently the pin, 64, to one side of the axis of rotation of shaft, 56, 60 and that an obverse partial rotation of the shaft, 76, may be had in order to move the slide, 63, and consequently the pin, 64, to the opposite side of the axis of rotation of shaft, 56.

In Fig. 2 of the drawings is shown a bell 65 crank lever, 68. Said lever is pivotally supported on the machine head frame and con-

nects, at one end, with the knee-operated lever, (not shown,) hereinbefore referred to. Said lever and its connections intermediate 70 the lever and bell crank lever, 68, are shown and described in Letters Patent No. 423,922. It may be here stated that a movement of the knee lever, in one direction, lifts and a movement thereof, in the opposite direction, 75 past the normal center line, depresses the horizontal arm of bell crank lever, 68. The vertical arm of bell crank lever, 68, is forked to embrace the collar, 74, (Fig. 3) through the medium of anti-frictional buttons interposed in the branches of the lever and pro- 80 jected into a circumferential groove formed in the collar, as shown, (see Figs. 2, 3.) The collar, 74, is supported on the rock-shaft, 56 and permits longitudinal reciprocating movements on said shaft. Obviously a movement 85 of the knee-lever, which effects an upward movement of the horizontal arm of bell crank-lever, 68, operates to move the collar, 74, in one direction on the shaft, 56, and a movement of the knee-lever which depresses the 90 horizontal arm of bell crank lever, 68, effects an obverse movement of the collar, 74, on its supporting shaft, 56. In the collar 74, (see Fig. 8) is a spiral cam-groove, 70. In the shaft, 76, is set a pin, 75, (see Figs. 4, 5, 6 and 3.) 95 This pin is projected outwardly from the shaft, 76, through an opening in the shaft, 56, (see Fig. 10,) to operate in the cam-groove, 70, of collar, 74, as shown in Fig. 3. The collar, 74, is arranged with a groove and key 100 connection to the shaft, 56, so as to permit movement on the shaft longitudinally and to participate in the rotary rocking movements of the shaft.

From the foregoing description it will be 105 understood that a movement of the collar, 74, in one direction, forces one side of the cam-groove, 70, to bear upon the pin, 75, and a further movement of the collar moves the pin thereby partially rotating the shaft, 76, and 110 forcing the slide, 63, and consequently the pin, 64, out of alignment, to one side of the rock-shaft, 56. An obverse longitudinal movement of collar, 74, operates in a like manner to force the opposite side of cam-groove, 70, 115 against the pin, 75, and the movement of the collar, being sufficiently continued, the pin, 75, and with it shaft, 76, is carried to the opposite direction and effects a movement of the slide, 63, and consequently the pin, 64, 120 to the opposite side of the line or axis of rotation of shaft, 56.

The construction and arrangement of the mechanism herein described is in practice 125 found to be more economical in construction, more prompt and responsive in action than the mechanism described in said Letters Patent No. 423,922 for effecting the same operation of the pinchers.

I claim—

In a lasting machine the described combination of the rock-shaft, 56, a slide, 63, hav- 130

ing crank-pin, 64, supported movably on the shaft, 56, the shaft, 76, journaled to permit rocking movements in the shaft, 56, and engaging, at one end, the slide, 63; the collar, 5 74 having spiral-cam-groove, 70, supported to permit longitudinal movement on shaft, 56, and a pin in the shaft, 76 extending outwardly through shaft, 56, into the cam groove, 70, of

the collar, 74, with a pivotally supported pinch-ers mechanism all substantially as described. 10
Signed at Boston this 2d day of November,
A. D. 1890.

SHERMAN W. LADD.

Witnesses:

JOHN TIERNEY,
C. B. TUTTLE.