

M. BROCK.  
LASTING MACHINE.

No. 302,885.

Patented Aug. 5, 1884.

Fig:1.

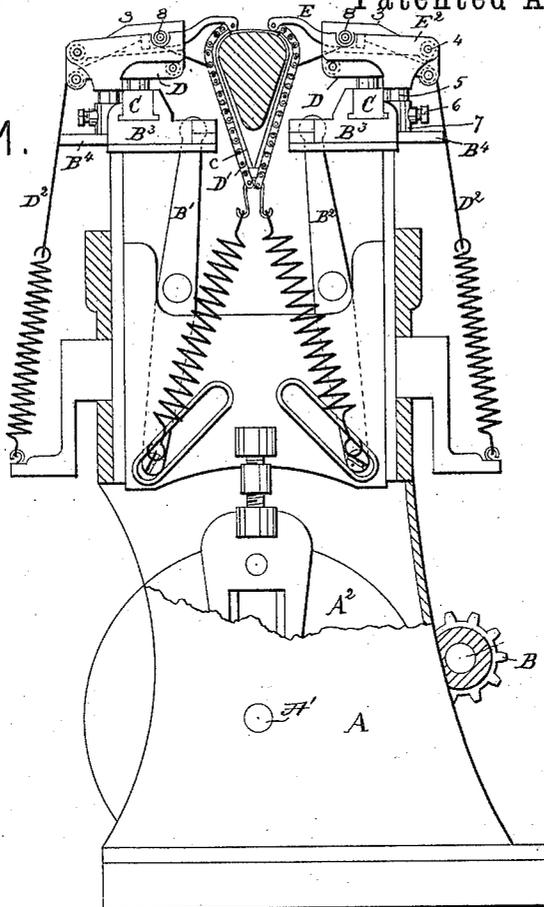


Fig:4.

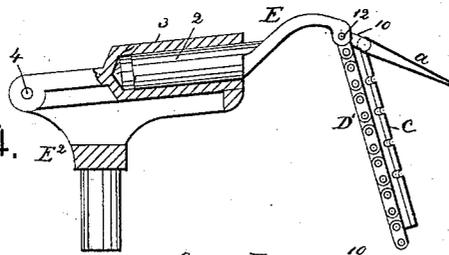


Fig:5.

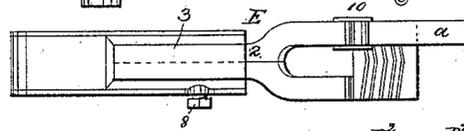
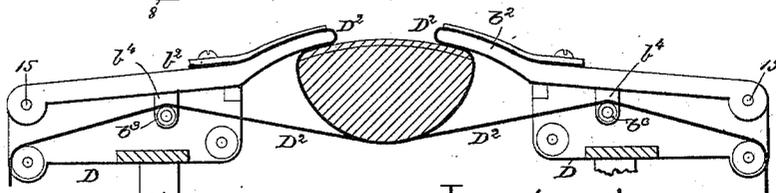


Fig:6.



Witnesses.  
*Henry Marsh*  
*John F. C. Printz*

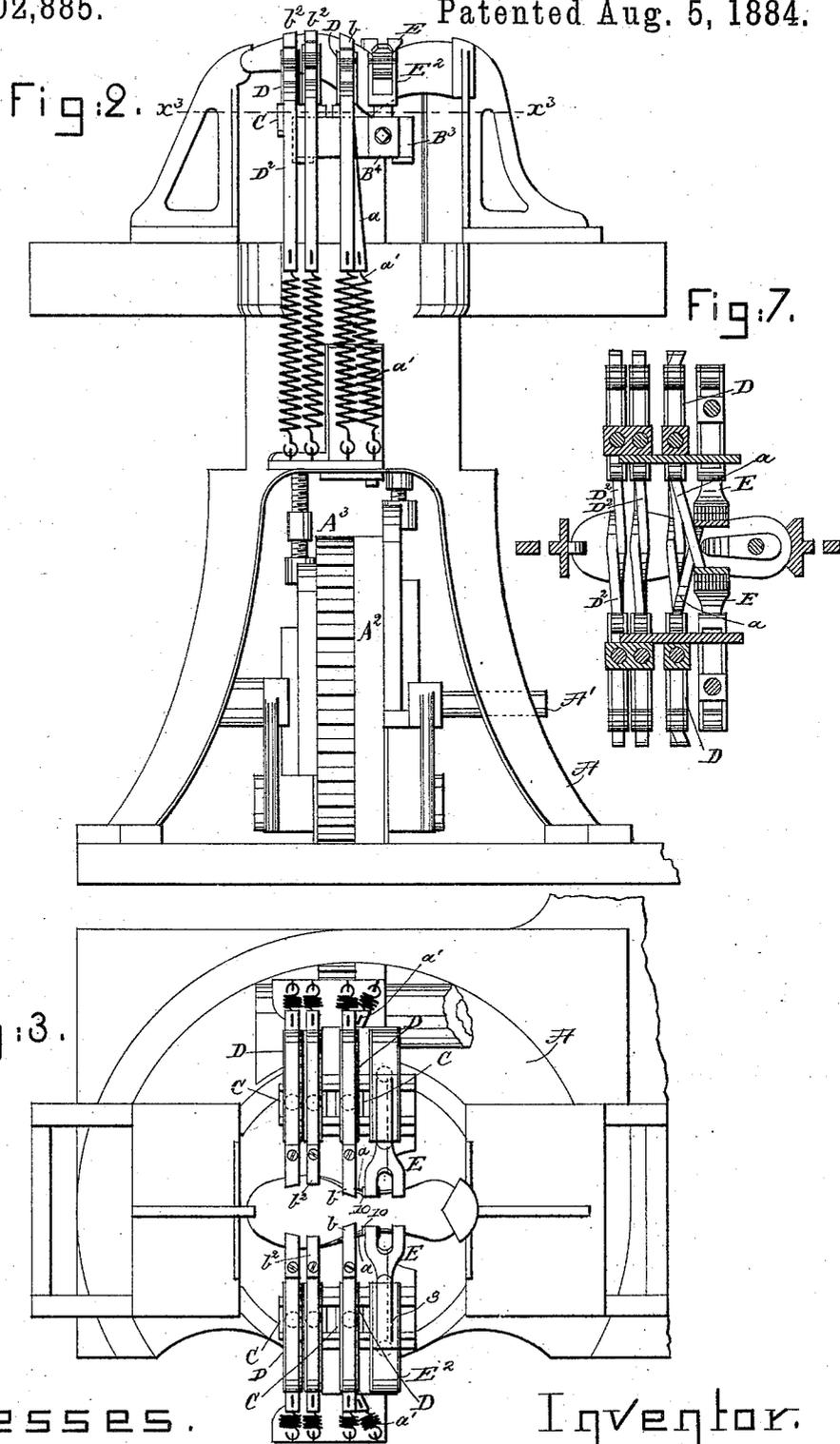
Inventor.  
*Matthias Brock,*  
 by *Crosby & Gregory attys.*

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# UNITED STATES PATENT OFFICE.

MATTHIAS BROCK, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO MCKAY & COPELAND LASTING MACHINE COMPANY, OF PORTLAND, MAINE.

## LASTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 302,885, dated August 5, 1884.

Application filed February 18, 1884. (No model.)

To all whom it may concern:

Be it known that I, MATTHIAS BROCK, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Lasting-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object certain improvements, to be described, whereby the operation of lasting the shank and fore part of a boot or shoe is facilitated, and the machine upon which the improved parts are to be applied is better adapted to last shoes upon lasts of any pattern selected by the manufacturer, which has sometimes been attended with much difficulty.

The invention herein contained is an improvement on the machine represented in United States Patent No. 254,617, dated March 7, 1882. The machine described in the said patent shows straps or bands, and also a chain connected with fingers or prongs of a shank-lasting device, which is so pivoted to the "shell," as it is called, that it can only rise and fall vertically for a short distance at its front end, to adapt the finger to variations in thickness of stock; but the said shank-lasting device is not so pivoted on the shell or so held that it can oscillate in order that both prongs of its fork can rest firmly upon stock of different thickness. The object of this present invention is to support the said lasting device in such manner that it may not only oscillate to thereby adapt each prong or extension to which a band, strap, or chain is attached so that it may rest snugly upon the stock or material immediately under it, but so, also, that the said lasting device to which the band, strap, or chain is attached may be readily adjusted not only vertically, but also longitudinally, as will be described. I have also herein so arranged the band or strap with relation to the lasting device or finger that the strain exerted upon the said band or strap is also exerted proportionally upon the lasting device between its acting end and its pivotal point, whereby the strain exerted to press and fit the upper about the fore part is also made efficient in pressing the lasting device down upon the upper and inner sole where the same rest upon the bottom of the last. I have herein provided what I shall denominate an "in-

step-strap," it being connected at one end with a prong located at one side of the shank of the last, and being carried across the instep of the last, or the shoe thereon, diagonally, it being then carried through a shell at the opposite side of the last, but not in the same vertical plane with the shell containing the prong to which the other end of the strap was first attached, as will be described.

Figure 1 is a partial vertical section of a sufficient portion of a lasting-machine which, taken in connection with the machine represented in the patent referred to, will enable my present improvements to be understood. Fig. 2 is a side elevation of a portion of my improved lasting-machine. Fig. 3 is a top view of Fig. 2. Figs. 4, 5, and 6 are details, to be described; and Fig. 7 is a section on the line  $x^2 x^2$ , Fig. 2, looking upward.

The base A, the cam-shaft A', the cam A<sup>2</sup>, cam-gear A<sup>3</sup>, pinion B, to drive the said gear, the slide-moving levers B' B<sup>2</sup>, the slides B<sup>3</sup> B<sup>3</sup>, cross-head B<sup>4</sup>, the longitudinally-movable slides C, which receive the stems of the shells D, the said shells, and the chains D' and straps or bands D<sup>2</sup> are substantially as in lasting-machines now in use, and substantially as in the said patent.

According to one part of this invention, the shank-lasting device E is made as a two-pronged fork having a round shank, 2, which is placed in a socket-piece, 3, pivoted at 4 upon the shank-shell E<sup>2</sup>, the stem 5 of which is adjustably held in a socket, 7, of the slide B<sup>3</sup> by a set-screw, 6, the latter permitting the shell and its attached parts to be adjusted vertically, and also to be oscillated in a vertical plane about the axis of the said stem. The shank 2 of the shank-lasting device is adjustably held in the socket-piece 3 by means of a set-screw, 8, (shown only in Figs. 1 and 5,) in order that the said lasting device may be adjusted horizontally, and so, also, that it may be oscillated in the said socket-piece, and preferably the shank of the shank-lasting device will be divided or separated longitudinally, in order that one prong or part of the forked end may be adjusted backward or forward independently of the other, such provision being better than the employment of two independent pieces, each having its own shank, inasmuch as by the use of the divided shank at least one socket-piece and parts for sup-

porting it are dispensed with, and, what is of quite as much importance, space is economized, less pieces are needed, and the parts may be made stronger and stiffer. Providing the shank-lasting device, to the prongs of which the chains *D'* are attached, (or they might be straps or bands,) with the adjustments mentioned enables boots and shoes to be lasted more snugly in the shank, notwithstanding variations in curvature of the shank.

A machine especially devised for a last of a given curvature would not need to be provided with all the adjustments herein stated; but, to enable the machine to be used equally well whatever lasts may be presented, such adjustments become very essential.

I do not broadly claim a forked adjustable finger, irrespective of chains or bands, to extend over the upper.

That one of the prongs of the shank-lasting device next the fore part (see Fig. 5) is provided with a pivotal loop or link, 10, held by the same pin 12, which joins the chain *D'* therewith. This loop receives the instep-strap *a*, which (see Figs. 2, 3, and 7) is carried diagonally downward and forward and about the instep of the upper on the last, and is then led through a space in the shell *D* at the opposite side of the last, and under the finger *b*, situated nearer the toe of the last than is the shank-lasting device, the outer end of the said instep-strap being connected, as usual, with a suitable spring, *a'*.

The chain *D'*, composed of links of usual shape, has immovably fixed or attached to one side of it, from its point of junction with the lasting-finger, a face or apron, *c*, composed of india-rubber, which is pressed closely against the upper, and by its rubbing friction on the upper draws and fits it to the last snugly; and preferably the said apron will be corrugated as shown in Fig. 4, to increase its friction on the upper and enable the latter to be drawn or stretched more snugly over the last. To successfully draw and stretch a heavy brogan-upper closely about the last, very considerable pressure and friction must be exerted on the upper, and to do this without marring the upper is of very considerable importance. The chain gives very great strength, coupled with flexibility, to conform to the shape of the last; the india-rubber face prevents the links of the chain from marring the upper, and the spring at one end of the chain permits the same to yield under strain as the last and chain are forced together with the upper between them.

The fingers *b*<sup>2</sup>, pivoted at 15 in shells *D*, have straps or bands *D*<sup>2</sup> attached to their inner ends, as usual; but the said straps, instead of being passed under and over a roll, as in Patent No. 254,617, of the "shell," as it is called, in practice, are passed over a roll, *b*<sup>3</sup>, of a depending lug, *b*<sup>4</sup>, attached to or forming part of the said finger, such plan enabling the strain put upon the straps *D*<sup>2</sup>, when they are acting to stretch or fit the up-

per over the last, to be also utilized in forcing the inner ends of the finger snugly down upon the upper and inner sole, between them and the bottom of the last.

I do not claim a chain provided with india-rubber rolls which rotate as the shoe is moved relatively to the chain, and so, also, I am aware that a belt has been provided with spring-pads of india-rubber.

I claim—

1. In a lasting-machine, a forked shank-lasting device adapted to be adjusted in the direction of its length in its supporting socket-piece, combined with a chain, belt, or band connected with the said shank-lasting device, to operate substantially as described.

2. In a lasting-machine, a chain, belt, or band connected and combined with a forked shank-lasting device, and pivoted socket-piece, in which the shank of the said shank-lasting device is adapted to be adjusted longitudinally, or in the direction of its length, and also to be oscillated, substantially as described.

3. In a lasting-machine, a forked shank-lasting device having its shank divided longitudinally, combined with a socket-piece to receive the said divided shank and permit one part of the same to be adjusted independently of the other.

4. In a lasting-machine, a shell, *D*, and socket-piece, and a shank-lasting device composed of two members independently adjustable on the said socket-piece, combined with a chain or band attached to each member, whereby the two parts of the shank-lasting device supported by the same are made independently adjustable to the different curvatures of different lasts, substantially as described.

5. In a lasting-machine, a chain having immovably affixed or applied to one side of it an india-rubber apron, *c*, which in operation is pressed closely against the upper, and, clinging to the same, stretches it about the last with a force measured by the pressure of the upper against the india-rubber face of the chain, all substantially as set forth.

6. In a lasting-machine, a shank-lasting device at one side of the machine, combined with the instep-strap *a*, extended diagonally forward toward the toe of the last and about the instep, substantially as described.

7. In a lasting-machine, two shells and two fingers pivoted thereon, each provided with an attached roll or rest, *b*<sup>3</sup>, combined with a strap attached to each finger, and extended over the roll or rest of the opposite finger, to operate substantially as described.

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

MATTHIAS BROCK.

Witnesses:

G. W. GREGORY,  
B. J. NOYES.