(No Model.)

E. RAHM.

MACHINE FOR CUTTING LEATHER SHOE LACES.

No. 564,899. Patented July 28, 1896.

Fig:1.

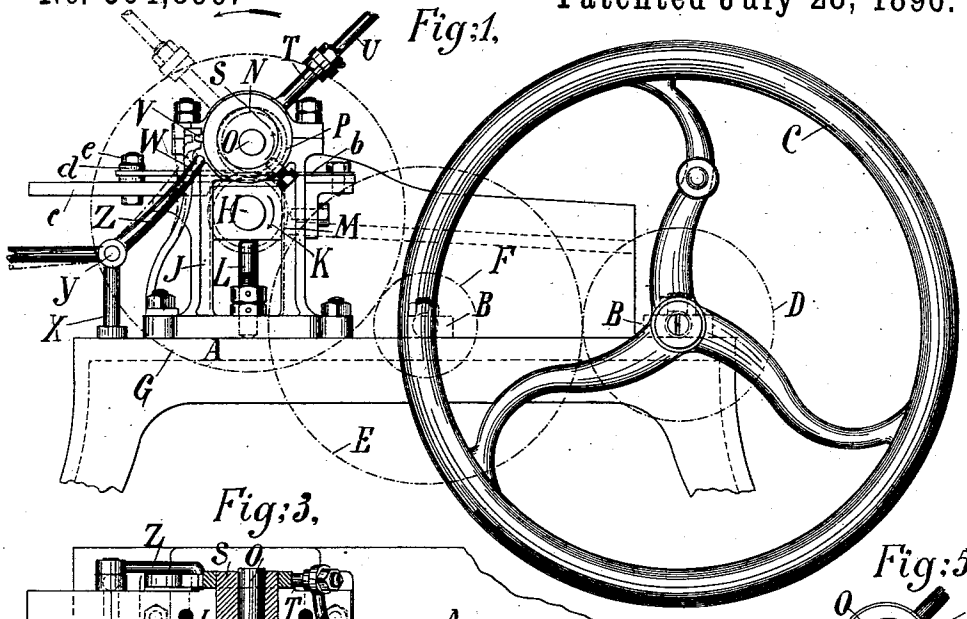


Fig:3.

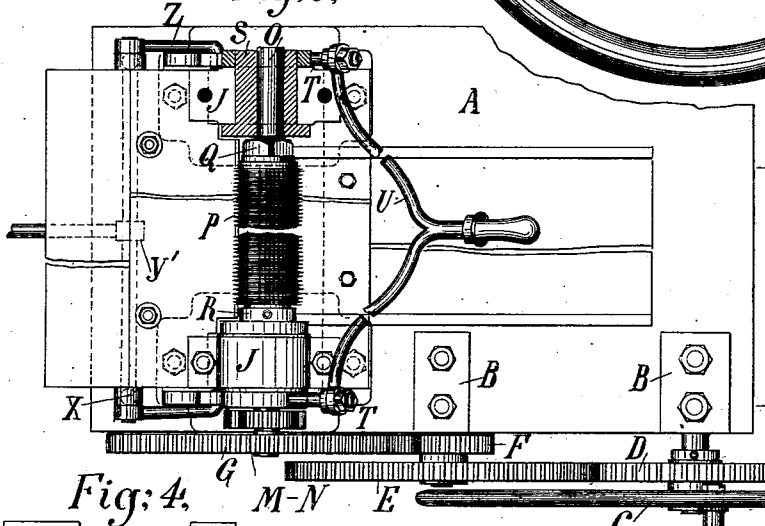


Fig:5.

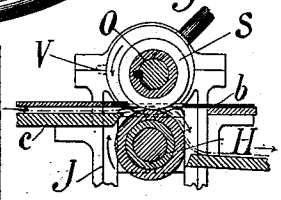


Fig:6.

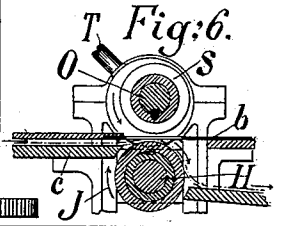


Fig:4.

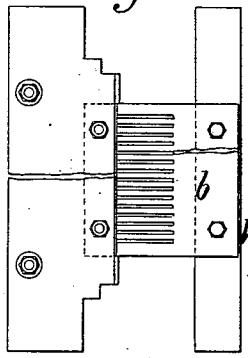


Fig:2.

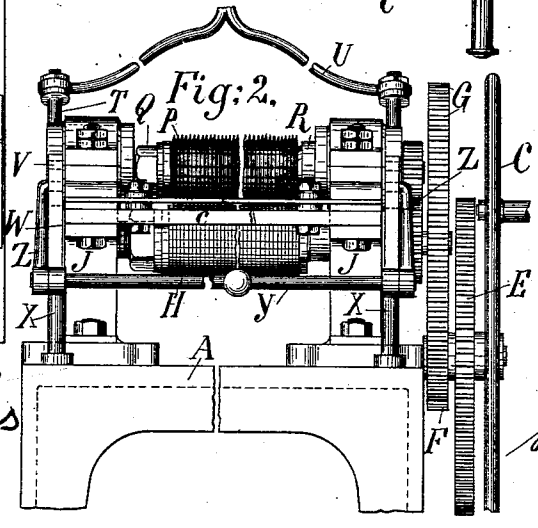
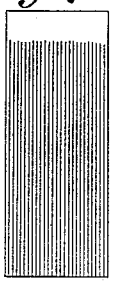


Fig:7.



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UNITED STATES PATENT OFFICE.

ERNST RAHM, OF ELBERFELD, GERMANY.

MACHINE FOR CUTTING LEATHER SHOE-LACES.

SPECIFICATION forming part of Letters Patent No. 564,899, dated July 28, 1896.

Application filed August 9, 1895. Serial No. 558,738. (No model.) Patented in England February 9, 1895, No. 2,953.

To all whom it may concern:

Be it known that I, ERNST RAHM, manufacturer, a subject of His Majesty the Emperor of Germany, residing at Elberfeld, Rhenish Prussia, Germany, have invented a new and useful Leather-Cutting Machine, (for which I have obtained a patent in Great Britain, No. 2,953, dated February 9, 1895,) of which the following is a specification.

The invention consists in so arranging the different parts of the machine that it will cut a large number of leather laces at one operation from a large skin without waste of leather, and all of one determinate length; and the objects of my improvement are, first, the shoe-laces shall be cut so as to remain connected with the skin, and to be exactly all of the same length; second, the machine to be self-feeding, so as to take in the leather as required; third, the cutting of laces to be performed in such a way that accidental winding up of laces on the knife-rollers is to be absolutely avoided. I attain these objects by the mechanical arrangements represented by the accompanying drawings, in which—

Figure 1 is a side view. Fig. 2 is a front view. Fig. 3 is a plan. Fig. 4 shows the slotted guide-plate. Figs. 5 and 6 show two cuts through the rollers in and out of action and the path of the leather. Fig. 7 shows a strip of leather cut into shoe-laces.

Similar letters in the drawings refer to similar parts throughout the several views.

A table A is preferably used to carry the framing of the machine, and at B a strong stud is horizontally protruding from the table to receive the hand fly-wheel C and pinion D, turning loose on it, and by the intermediate gear E F G the lower horizontal roller H with close circumferential grooves is put in revolution, being journaled in a pair of standards J by its shaft with two bearings K, supported and accurately fixed in position in the vertical guide-bars of the said standards J by screws L. In the same standards J above the bearings K are lodged the eccentrically-bored bushes S, their smooth round outside being mounted in the bored bearing of the standards J. The end of the shaft of roller H and the end of another shaft O, which turns in the eccentrically-bored brasses S, are geared by means of the pinions M and N. The shaft O is threaded on its part between the bushes S, and has put on it a variable number of circular knives or cutter-disks P, distanced between themselves by rings or bushes according to the desired width of the laces, and all kept pressed together by the clamping-nut Q against the flange R on the shaft O. This latter can be lifted out or put into contact of the circular knives with the lower grooved roller by a forked lever T, fixed to both the outer ends of the bushes S by bolts, wedges, or rings keyed on the bushes.

The forked lever is operated by handle U by the operator, according to the length of leather to be cut, and can be shifted to put the knives out of action at any moment during the process of cutting, so as to give the shoe-laces the desired length without cutting them off the skin, but leaving them adherent to the same, as is clearly demonstrated by Figs. 5 and 6, where, by shifting the lever U T to the right, Fig. 6, the eccentrically-bored bush is turned round, lowering the circular knives on the shaft so as to penetrate the leather, as shown in Fig. 5; and Fig. 6 shows the lever U T put to the left, when the eccentric bushes will raise the shaft with its rotary knives out of the work. The rings fastening the lever U T to the ends of the bushes have each a nose V caught in the side notch of the heads of strong springs W, fixed alongside of the standards J to the table. A cross-shaft Y is supported by two little columns X in their horizontally-bored heads, and has at the ends two horns Z, hooking behind the flat springs W, just beneath the notched heads. By a handle Y′, fixed on shaft Y in the middle, the springs can be pulled back and so free the noses V. This combination of noses V and springs with pulling-back horns Z is a safety arrangement to obviate any unconsiderate lowering down or lifting of the circular knives. The said number of circular knives P, in their lower position, penetrate through an equal number of slots in a plate *b*, fixed with its upper face exactly horizontal and just flush with the edges of the knives P in their upper position and with the surfaces of the distance-rings between the knives in their lower position. The plate is supported on the right hand by a flat strip laid across the machine on two angles fixed to the standards

J, and on the left hand it is fastened to the under side of a plate b', extending between the standards and fixed some height above a table c, carried on angles fixed to the left of the standards J. Between table c and plate b' the leather is introduced to the rollers, which, revolving in the direction of the arrows in Figs. 1, 5, and 6 by the gearing indicated, are bound to take hold of the leather when the roller P is lowered by means of lever U T and to drag it along under the slotted plate b, cutting the leather in as many laces as there are slots for the knives, and the exact position of plate b' above the table c is regulated by the elastic distance-washers d under the nuts of the fixing-bolts e and always regulated so as to just give passage to the thickness of leather operated upon with a small amount of friction. Further, in looking at Fig. 5, it will be seen that the laces are bound to follow the circumference of the lower roll, there being no passage left for them to pass through the slotted plate b and to curl up round the knife-roller. The exact position of the lower roll to the slotted plate is regulated by the two regulating screw-studs L and the nuts and lock-nuts thereon shown, Fig. 1.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a leather shoe-lace-cutting machine the combination, on a table A carrying the pivots and hand-wheel gearing D, E, F, G of a pair of parallel rollers H O geared to each other by pinions M N and the vertically-adjustable bearings K for the lower, and the eccentrically-adjustable bushes S for the upper cutter-roller, which said bushes S are simultaneously movable in the standards J by a forked lever T with handle U, for the purpose of lifting out of or lowering into the leather to be cut, the cutter-roller; and the combination of a stopping device to avoid accidentally lowering of cutter-roller O, which device consists of noses V on bushes S, engaged into the top recess of springs W fixed to table A, and which noses can be released by pulling back spring W by horns Z on shaft Y with handle Y' supported by columns X on table A, all substantially and for the purpose set forth.

2. In a leather shoe-lace-cutting machine the combination, on a table A with gearing D, E, F, G and standards J for a pair of parallel rollers H O journaled in bearings K and bushes S adjustable vertically and eccentrically, the said bushes S being simultaneously movable in standards J by a forked lever T for the purpose of lifting out of or lowering into the leather to be cut, the upper cutter-rollers, and the combination of a stopping device, to avoid accidentally lowering cutter-roller O, consisting of noses V on bushes S engaged in or released from notches in tops of springs W fixed to table A, the combination, between the two rollers, of a table C and a slotted plate b fixed with its upper face to be flush with the edges of cutters of upper rollers when lifted, the number of slots in b corresponding to the number of cutters and the said cutters just fitting in width in the slots, to obviate a curling of cut shoe-laces round the upper cutter-roller, but leaving them only to follow round the grooved roller H downward, and also the distance, of the slotted plate b fixed to plate b', above table c, on which the leather is laid to be taken in and dragged into the knives by the revolving cutter-roller, between b, and c, being adjustable by means of rubber washers, interposed between b', and c on the bolts e, substantially for the purpose as described and set forth.

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