No. 810,773. PATENTED JAN. 23, 1906.

G. KRON.

APPARATUS FOR BINDING IN THE TOES OF FOOTWEAR.

APPLICATION FILED MAY 9, 1903.

2 SHEETS—SHEET 1.

Fig. 1.

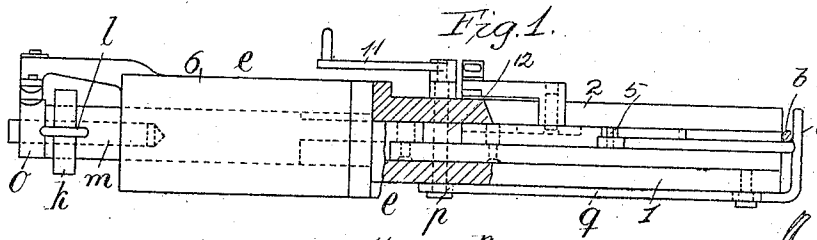


Fig. 2.

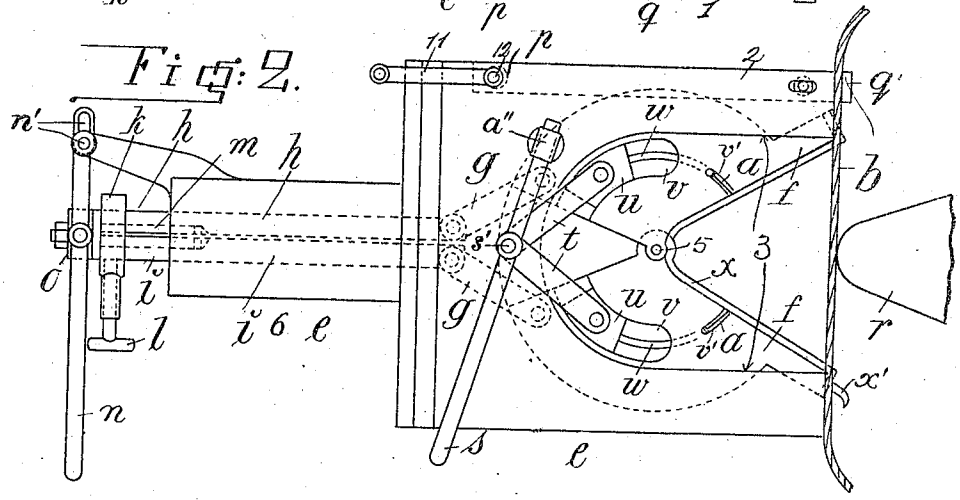


Fig. 3.

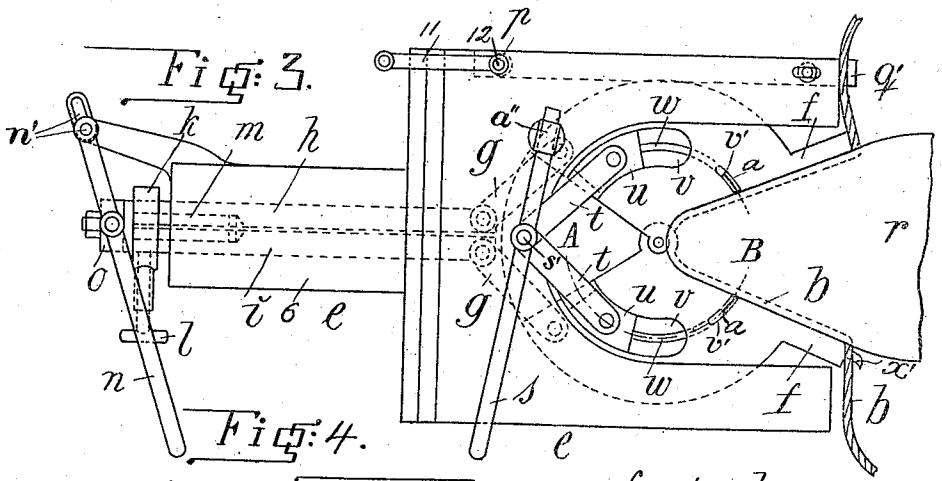
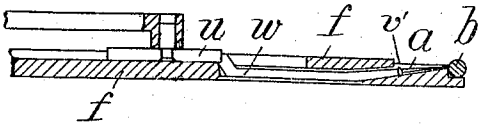


Fig. 4.



Witnesses.

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2 SHEETS—SHEET 2.

Fig. 9.

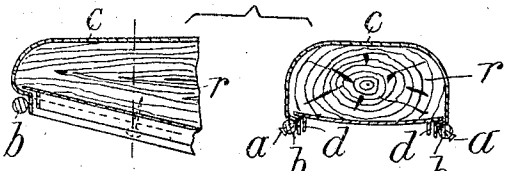


Fig. 5.

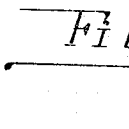


Fig. 6.

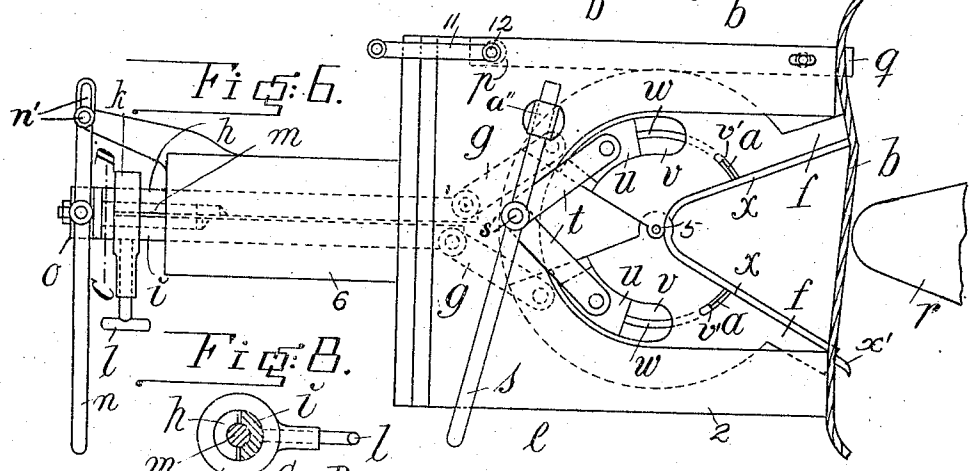
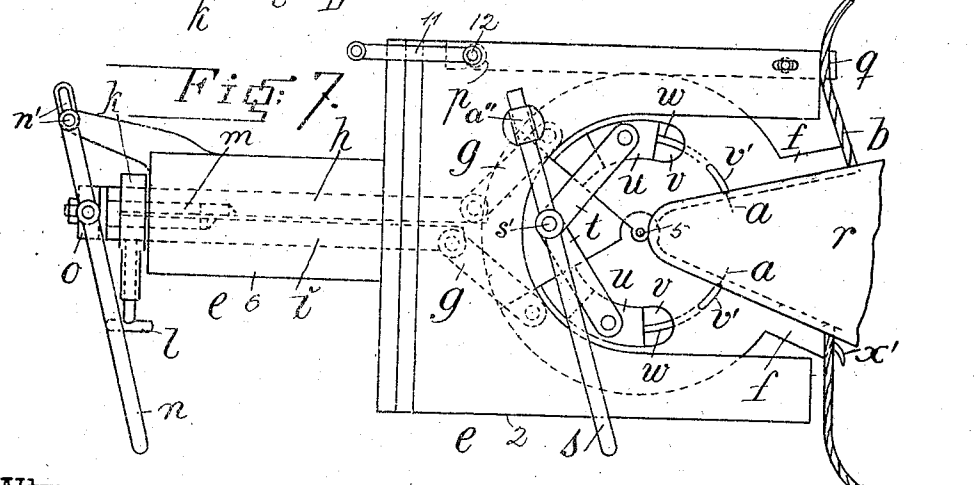


Fig. 8.

Fig. 7.



Witnesses.

Inventor.

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By his attorney

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UNITED STATES PATENT OFFICE.

GEORG KRON, OF MALMO, SWEDEN.

APPARATUS FOR BINDING IN THE TOES OF FOOTWEAR.

No. 810,773. Specification of Letters Patent. Patented Jan. 23, 1906.

Application filed May 9, 1903. Serial No. 156,336.

To all whom it may concern:

Be it known that I, GEORG KRON, engineer, a subject of the German Emperor, residing in Malmo, in the Kingdom of Sweden, (whose full post-office address is 65 Södra Förstadsgatan, Malmo, aforesaid,) have invented certain new and useful Improvements in and Connected with Apparatus for Binding in the Toes of Footwear; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters and figures of reference marked thereon, which form a part of this specification.

This invention has for its object to provide an apparatus for binding in the toe part of framed boots and shoes.

The apparatus comprising the invention consists, essentially, of a pair of nipper-jaws; mechanism for holding a binding-in cord with a regulatable frictional resistance, the said cord being stretched between the ends of the two nipper-jaws, so that the same is laid with sufficient tension, first, against the point of the toe, and, later, on both sides backward as the shoe is moved forward between the nippers with the toe in front; pushers for driving nails or equivalent fasteners through the said binding-in cord and the upper-leather into the lip of the welt or of the inner sole, and means for adjusting the nipper-jaws relatively to each other to adapt them for right and left and crooked lasts. The pegging and binding-in of the toe-piece thus takes place simultaneously, and any subsequent alteration of the form is avoided.

Reference will now be had to the accompanying drawings.

Figure 1 is a side elevation of the apparatus with certain parts broken away. Fig. 2 is a plan view and shows the device in position for the insertion of a shoe to be operated upon. Fig. 3 is a plan showing the parts in the position which they assume after the toe-piece has been bound in. The binding-cord now lies in the groove of the nipper-jaws; but the nails *a* are not yet driven in. Fig. 4 is a section on the line A B of Fig. 3 through one of the nipper-jaws along the center line of the arcuate groove *v*. Fig. 5 shows a staple or clamp which may be used instead of the nails *a* for fastening the cord *b*, if desired. Fig. 6 shows the invention adjusted for a left last, the nipper-jaws being shown in position to receive the toe of a shoe. Fig. 7 shows the parts in the position which they assume after the nails *a* have been driven in. Fig. 8 is a section on the line C D of Fig. 6 through the bolt *m* and one of the halves of the push-rod. Fig. 9 shows a toe-piece bound in according to this invention and shown, respectively, in longitudinal and transverse section.

The nipper-box *e* consists of two plates rigidly combined with each other by means of screws or the like—a lower one 1 and an upper one 2. Both plates are provided with an opening 3 at the one edge thereof where the shoe is introduced. Between these two plates the nipper-jaws *f* are inserted, being guided in grooves in the plates corresponding to the curved parts of the shanks of the jaws *f*. The jaws *f* are pivotally combined with each other by means of the central pin 5. With the plates 1 and 2 is rigidly combined the cap 6, forming steering and bearing surfaces for the bars *h i*, by means of which the jaws *f* are put in motion.

The nipping-jaws *f* are connected, by means of links *g*, with the two halves *h i*, respectively, of the longitudinally-divided push-rod. These two halves of the push-rod are guided in the cap 6 of the nipper-casing *e* and are drawn together at one end by means of a set-ring *k* and set-screw *l*, a bolt *m* arranged in two semicylindrical recesses of the half push-rods being simultaneously tightened up with them.

The opening and closing of the jaws *f* of the nippers is effected by the displacement of a lever *n*, which operates on the bolt *m*, and thus on the push-rod, by the intermediary of an intermediate piece *o* and causes the axial adjustment of the said push-rod. The piece *o* is simply a head on the bolt *m*, pivoted to the lever *n*, so that when said lever is actuated the head *o* and the bolt *m* will move. The slotted and pin fulcrum arrangement *n'* is seen at the upper end of the lever *n*.

The binding-in cord *b*, Figs. 1, 2, 3, 6, and 7, is attached to the nipper-casing *e* or, as shown, to one of the jaws *f* of the nippers by the outwardly-pointed hook *x'*, which is pushed through the said cord, or in any suitable manner and also pressed, by means of an eccentric-bolt *p* and stretching-piece *q*, against the nipper-box, so that when the last *r* is moved toward the nipper-box the binding-cord must overcome a frictional resistance, which is adapted to be regulated by

tightening up more or less the stretching-piece, and is then laid with a suitable tension in the edge of the jaws of the nippers, which edge is provided with a groove *x*. Both ends of the cord may also be held, if desired, by friction. The nipper-box is stationary while the last *r* is pushed in between the jaws *f*.

The arrangement for fastening the cord *b* consists of the rail *q*, movably secured to the under parts of the plate 1. The outer end *q'* of said rail *q* is bent at an angle upward, and between this angular part and the plates 1 and 2 the cord *b* can be fastened. This fastening takes place when the rail *q* is moved to the left in the drawings. This movement is effected by turning the crank-arm 11. An eccentric or cam *p*, secured to the crank-shaft 12, then engages in a corresponding opening in the rail *q*, thereby causing said movement. The crank-shaft 12 is journaled in the plates 1 and 2.

After the lasting of the toe-piece has been effected by the pushing forward of the last *r* and a simultaneous closing of the nipper-jaws, the binding-cord then inserting itself automatically in the grooved working edge of the nipper-jaws, the nails or clamps, Fig. 5, are driven through the cord *b* and the upper-leather into the insole by means of the lever device, Figs. 2, 3, 6, and 7, mounted on the cover of the nipper-box. This lever device consists of a lever *s* and two links *t*, by means of which the two slides or pushers *u* are pushed into an arcuate groove *v* of the two jaws of the nippers *f*. The pegs, nails, or clamps are laid in an extension *v'* of this groove before the prolongation *w* of the pushers and then by pressing the lever *s* forward are driven in. The fulcrum of the lever *s* is at the juncture of the two links *t* at *s'* relative to the links *t t*. The stationary fulcrum *a''* of the lever *s* is at the upper end of said lever and is stationary relative to the nipper-box *e*. The nails *a* are driven through the binding-cord *b* and the folded-over edge of the upper layer *c* into the lip *d* of the inner sole. The center of the arcuate groove is so placed that the nails are always driven approximately perpendicularly to the working edge of the nipper-jaws into the welt. The tongue-shaped prolongation *w* of the slide *u* is made elastic in order that it may slip up the inclined plane on which the nail or peg lies in the groove *v'* in the nipper-jaws *f*. (See Fig. 4.)

It has been assumed in the foregoing that the form (shape) of the shoe to be pegged and bound is a straight (symmetrical) one, the pegs, nails, or clamps being driven in at equal distances from the center line of the last. In the case of lasts which are not straight, or right or left hand lasts, the distance at which the pegs are driven in from the center line must, however, differ, and it is therefore necessary to arrange the two nipper-jaws *f* and the slides *u*, contained therein, in such a way that an adjustment is possible corresponding to the actual shape of the last—that is to say, the driving in of both nails into the lip of the inner sole is possible at a uniform distance from its edge. This adjustment is operated by the set-screw *l*, which holds together the two halves of the push-bar, being slackened, thus allowing the halves to be mutually axially displaced, and consequently admitting of a suitable adjustment of the jaws of the nippers varying from the central position, such position then being fixed again by retightening the set-screw *l*. It is evident that by this arrangement the jaws of the nippers may be adjusted both for straight and also for more or less crooked and right or left hand lasts.

I claim as my invention—

1. An apparatus for binding in the toe-piece of boots and other footwear, comprising a nipper-box *e*, nipper-jaws *f*, to one of which is secured a binding-in cord *b*; mechanism for holding the cord *b* at another point with a regulatable frictional resistance in such a way that on the movement of the nipper-box *e* toward the last *r*, for the purpose of lasting the toe-piece, the cord *b* lays itself with a suitable tension in the working edge of the nipper-jaws *f*, the said jaws having a groove *x* for the reception of said cord; and pushers *u* for driving nails *a* or similar fasteners through the binding-cord *b* and the upper-leather *c* into the lip of the welt *d*, the said nipper-jaws having arcuate grooves *v* in which the said pushers *u* are guided, substantially as described and set forth.

2. In an apparatus for binding in the toe-piece of boots and shoes and other footwear, the combination of a push-rod which is divided longitudinally into two parts *h* and *i*; nipper-jaws *f*; links *g* connecting one end of each of the parts *h i* with one of the nipper-jaws *f* respectively and a set-ring *k* and set-screw *l*, for clamping the other ends of the parts *h i* together in different positions of relative longitudinal adjustment, whereby the nipper-jaws are adjustable for right and left and crooked lasts, substantially as and for the purpose set forth.

3. In apparatus for binding in the toe-piece of boots and shoes and other footwear, the combination of a push-rod which is divided longitudinally into two parts *h* and *i*; nipper-jaws *f*; links *g* connecting one end of each of the parts *h i* with one of the nipper-jaws *f* respectively; each of the parts *h i* having a semicylindrical recess in the other end thereof; a bolt *m* disposed in said recesses; a set-ring *k* and set-screw *l*, for clamping the parts *h i* and the bolt *m* together in different positions of longitudinal adjustment of the parts *h i*, whereby the nipper-jaws *f* are adjustable for right and left and crooked lasts;

and operating means connected to the said bolt *m*.

4. In apparatus for binding in the toe-piece of boots and other footwear, the combination of nipper-jaws *f* to the outer end of one of which is attached a binding-in cord *b*, a clamp *q* for holding the cord *b* at another point, a cam *p* engaging the clamp *q*, and a manually-operated handle 11 for operating the cam *p*, whereby the cord *b* is held with a regulatable frictional resistance.

5. In apparatus for binding in the toe-piece of boots and other footwear, the combination of a nipper-box *e;* nipper-jaws *f* to the outer end of one of which at one side of the nipper-box is secured a binding-in cord *b;* a clamp *q* at the opposite side of the nipper-box for holding the cord *b* at another point, the said jaws having a groove *x* for the reception of the said cord; and a manually-operated cam *p* for operating the said clamp, whereby the cord *b* is held with a regulatable frictional resistance and laid with a suitable tension in the groove *x* when the nipper-box *e* is moved toward the last *r*.

6. An apparatus for binding in the toe-piece of boots and other footwear, consisting of the combination of a nipper-box *e;* nipper-jaws *f;* a clamp for holding a binding-in cord *b*, the said jaws having a groove *x* for the reception of said cord; a manually-operated cam for operating the said clamp, whereby the said cord *b* is held with a regulatable frictional resistance and laid with a suitable tension in the groove *x* when the nipper-box *e* is moved toward the last *r;* and pushers *u* for driving nails or equivalent fasteners through the binding-cord *b* and the upper-leather into the lip of the welt.

7. An apparatus for binding in the toe-piece of boots and other footwear, consisting of the combination of a nipper-box *e;* nipper-jaws *f;* a clamp for holding a binding-in cord *b*, the said jaws having a groove *x* for the reception of said cord; a manually-operated cam for operating the said clamp, whereby the said cord *b* is held with a regulatable frictional resistance and laid with a suitable tension in the groove *x* when the nipper-box *e* is moved toward the last *r;* pushers *u* for driving nails or equivalent fasteners through the binding-cord *b* and the upper-leather into the lip of the welt, the said nipper-jaws having arcuate grooves *v* in which the said pushers are guided; an operating-lever for said pushers; and links connecting said lever with said pushers respectively.

8. An apparatus for binding in the toe-piece of boots and other footwear, consisting of the combination of nipper-jaws *f;* mechanism for holding a binding-in cord *b* with a regulatable frictional resistance, pushers *u* for driving nails or equivalent fasteners through the binding-cord *b* and the upper-leather into the lip of the welt, the said nipper-jaws having arcuate grooves *v* in which said pushers are guided; an operating-lever for said pushers; and links *t* having a common pivot on said lever and connected respectively to said pushers.

9. An apparatus for binding in the toe-piece of boots and other footwear, consisting of the combination of nipper-jaws; mechanism for holding a binding-in cord with a regulatable frictional resistance, pushers for driving nails or equivalent fasteners through the said binding-in cord and the upper-leather into the lip of the welt; and means for adjusting the said nipper-jaws relatively to each other for right and left and crooked lasts.

10. An apparatus for binding in the toe-piece of boots and other footwear, consisting of the combination of a nipper-box *e;* nipper-jaws *f;* a clamp *q* for holding a binding-in cord *b*, the said jaws having a groove *x* for the reception of said cord; a manually-operated cam *p* for operating the said clamp; and pushers *u* for driving nails *a* through the binding-cord *b* and the upper-leather *c* into the lip *d*, each of the nipper-jaws *f* having a groove *v'* for guiding the said nails.

11. An apparatus for binding in the toe-piece of boots and other footwear, consisting of the combination of a nipper-box *e;* nipper-jaws *f;* a clamp *q* for holding a binding-in cord *b*, the said jaws having a groove *x* for the reception of said cord; a manually-operated cam *p* for operating the said clamp; pushers *u* for driving nails *a* through the binding-cord *b* and the upper-leather *c* into the lip *d*, the said nipper-jaws having arcuate grooves *v* in which the said pushers are guided and also having grooves *v'* for guiding the said nails; an operating-lever for said pushers; and links connecting said lever with said pushers respectively.

12. An apparatus for binding in the toe-piece of boots and other footwear, comprising a nipper-box *e;* nipper-jaws *f*, to one of which is secured a binding-in cord *b;* mechanism for holding the cord *b* at another point with a regulatable frictional resistance in such a way that on the movement of the nipper-box *e* toward the last *r*, for the purpose of lasting the toe-piece, the cord *b* lays itself with a suitable tension in the working edge of the nipper-jaws *f*, the said jaws having a groove *x* for the reception of said cord; and pushers *u* for driving nails *a* through the binding-cord *b* and the upper-leather *c* into the welt *d*, the said nipper-jaws having arcuate grooves *v* in which the said pushers are guided and having also other arcuate grooves *v'* for receiving and guiding the said nails, substantially as described and set forth.

13. In an apparatus for binding in the toe-piece of footwear, the combination of nipper-jaws pivoted together; devices for operating the said nipper-jaws; means by which the nipper-jaws may be adjusted relatively to

each other on their common pivot, for altering their relative closing positions; a clamp for holding a binding-in cord; manual devices for operating said clamp, whereby the said cord is held with a regulatable frictional resistance, each of the said nipper-jaws having a groove in its working edge for receiving the said cord; pushers guided upon said nipper-jaws for driving nails through the said binding-cord and the upper-leather into the welt; and driving mechanism for said pushers, the said nipper-jaws having grooves also for receiving and guiding the said nails.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

GEORG KRON.

Witnesses:

N. GUST. ABERG,

A. W. ANDERSON.