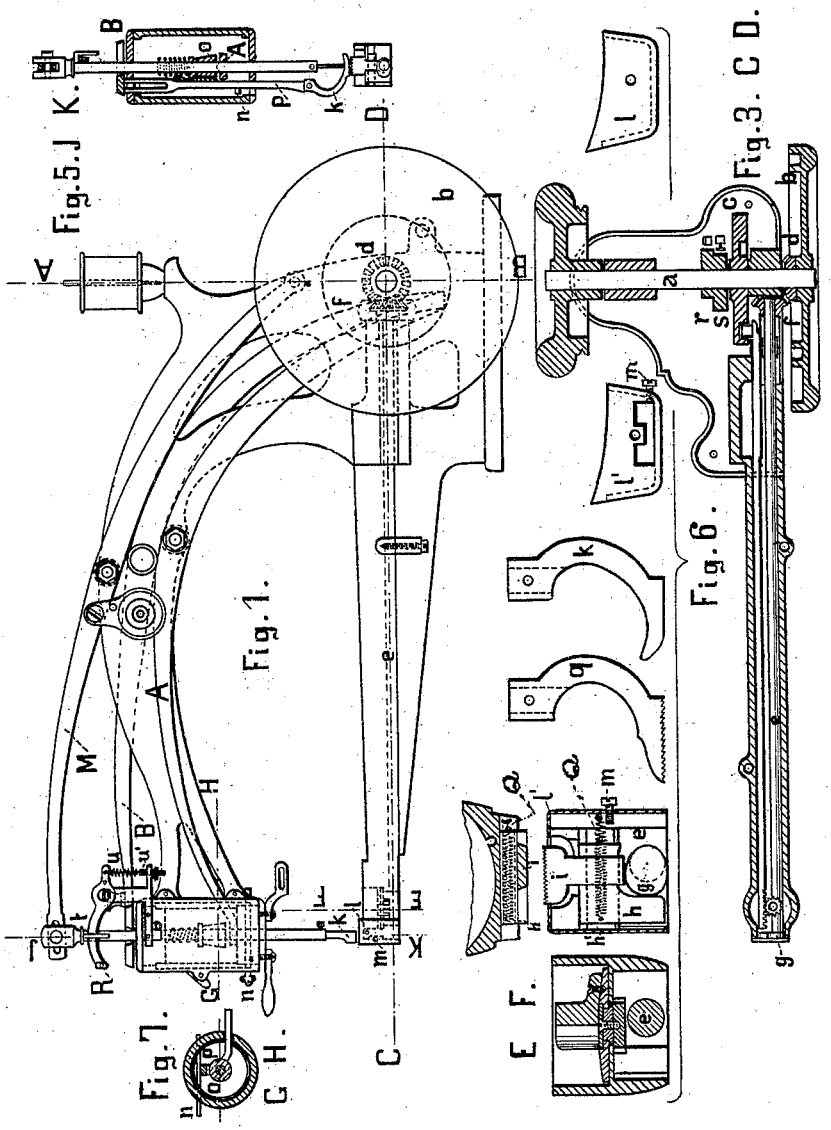
2 Sheets—Sheet 1.

N. DÜRKOPP.

Feeding Devices for Sewing-Machines.

No. 212,793. **Patented Mar. 4, 1879.**



Attest:

Geo. H. Graham.

W. C. Hespe.

Inventor:

Nicolaus Dürkopp,

by Munson & Philipp,

Atty's.

2 Sheets—Sheet 2.

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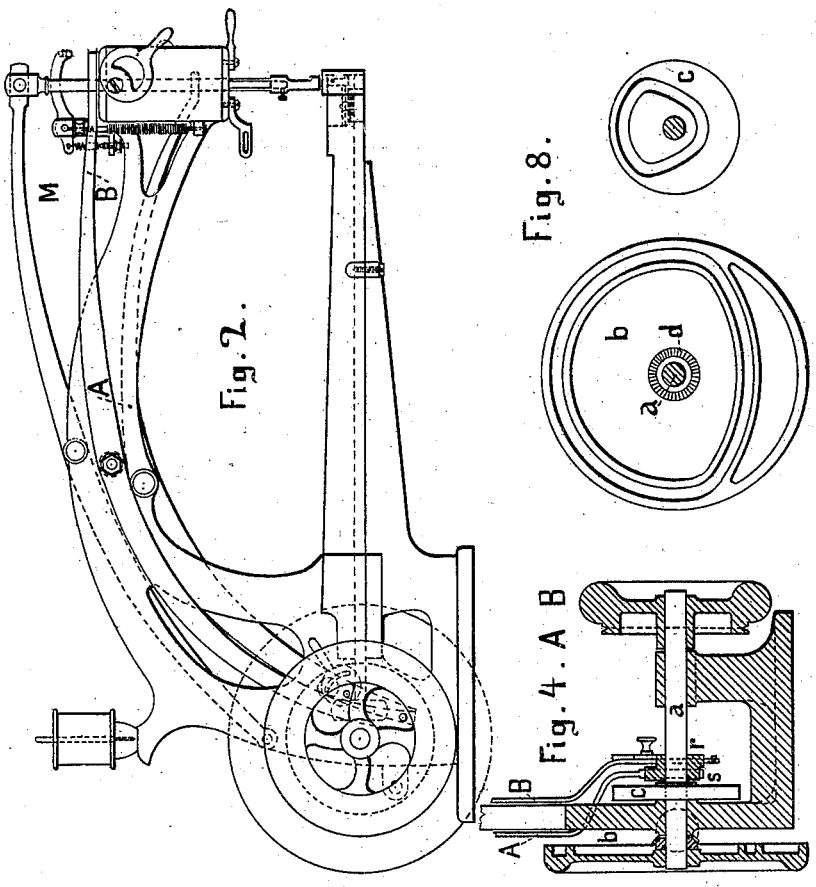

Attest;

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Inventor;

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UNITED STATES PATENT OFFICE.

NICOLAUS DÜRKOPP, OF BIELEFELD, PRUSSIA.

IMPROVEMENT IN FEEDING DEVICES FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. **212,793**, dated March 4, 1879; application filed December 11, 1877.

To all whom it may concern:

Be it known that I, NICOLAUS DÜRKOPP, of Bielefeld, in the Kingdom of Prussia, have invented certain Improvements in Sewing-Machines for Elastics for Boots and Shoes, of which the following is a specification:

This invention relates to certain improvements in feeding devices for sewing-machines for sewing elastics in the manufacture of boots and shoes.

Sewing-machines intended for this purpose are provided with a long and narrow arm, over which the piece of work is slipped, and which contains the shuttle and its driving-gear. This arm presenting a very limited space for any further mechanism, the said machines have hitherto commonly been provided with a top-feed motion only. Whenever delicate materials—such as japanned leather—are sewed by a machine of this arrangement, the serrated driving-foot is very apt to make impressions in the material which are visible when the work is finished. It is, therefore, of great advantage to have a bottom feed, by which this inconvenience is obviated.

The object of this invention is now to provide the said sewing-machine with a bottom-feed in addition to the top-feed motion, so that the one or the other may be used, according to desire.

The mechanical arrangement which I have designed for the said purpose is represented on the annexed two sheets of drawings.

Figure 1 is a side elevation of the entire sewing-machine; Fig. 2, a view of the other side of the same; Fig. 3, a horizontal section on line C D. Figs. 4 and 5 are vertical sections according to the lines A B and J K. Fig. 6 represents several parts in detail. Fig. 7 is a horizontal section on line G H, and Fig. 8 shows the two cam-disks *b* and *c*.

On the main shaft *a* of the machine two cam-disks, *b* and *c*, are fixed, the disk *b* actuating the needle-bar by means of the lever M, and the disk *c* driving the shuttle-gear, as usual. To the boss of the disk *b* a small bevel-wheel, *d*, is fixed, which gears into the wheel *f* on the shaft *e*. On the other end of the latter there is a small cam, *g*, Figs. 3 and 6, which actuates the new feeding device, consisting of the slide *h* and the serrated cloth-propeller *i*. The slide *h*, moving in a horizontal dovetailed groove, *h'*, is shifted in one direction by the cam *g*, and drawn back by a spring, Q, lying in a perforation of the slide. In a vertical dovetailed groove of the said slide the serrated cloth-propeller *i* moves up and down, being raised by the cam *g*, and depressed by the smooth presser-foot *k*, actuated by a spring attached to the head of the machine and to lever B, Fig. 2.

By the action of the cam *g* on the slide *h* and on the propeller *i*, the latter receives a combined horizontal and vertical motion, as required in sewing-machines, for the purpose of propelling forward at every stitch the material to be sewed.

The screw *m* serves to regulate the length of the stitch. By being screwed farther in, it prevents the slide *h* from being drawn back to the full amount of its course by the spring Q, thereby forming a shorter stitch.

While the ordinary top-feeding mechanism is being used, the cams *r* and *s* act on the ends of the levers A and B in the ordinary manner, the lever A raising the cone *o*, Figs. 5 and 7, causing it to oscillate the presser-bar *p*, so as to move the cloth forward. Previously, however, the lever B must have acted on the bar *p* from above, for the purpose of making the presser-foot bear on the cloth. Moreover, in this case the presser-foot must be provided with serrations, (see *q*, Fig. 6,) and the cloth-plate *l*, Fig. 6, has only a hole for the needle to pass through.

When the bottom-feeding device is to be used, the levers A and B must be put out of action. These levers are provided at their ends with screws, on which the eccentrics or cams *r* and *s* act. By turning back the said screws so as to bring them out of the reach of the cams, the levers are prevented from being oscillated by the latter. Instead of these screws any other suitable device may be applied for the same purpose. The lever B, when put out of positive action, is constantly pressed on the presser-bar by the spring, (shown in Fig. 2,) so that the foot of the said bar is kept in contact with the cloth, &c., while it follows the up and down motions of the propeller *i*. The presser-bar must, however, be prevented from oscillating and from turning, and for

this purpose a cotter, *n*, is passed through an aperture in the head of the machine and behind the presser-bar. (See Figs. 5 and 7.) Moreover, the smooth presser-foot *k* is substituted for the serrated foot *q*, the cloth-plate *l* is detached, the cloth-propeller *i* slipped into its groove in the slide *h*, and the cloth-plate *l'*, having an opening for the propeller to pass through, is screwed on. The machine being thereupon put in motion, the lower feeding device will operate as stated above.

I am aware that a feeding mechanism partly similar to the one specified above has been described by Hanlon in his patent-specification No. 60,888, of January 1, 1867. It must be observed, however, first, that Hanlon has not shown what his feed-bar acts against for propelling the cloth; consequently his design is incomplete. In my feeding device, on the contrary, the feed-bar or cloth-propeller has been described as acting against the presser-foot of another feeding arrangement. Secondly, Hanlon causes his feed-bar to be drawn down by a spring, which I do not use. Thirdly, Hanlon does not at all claim any cam for operating his feeding apparatus; and, fourthly, Hanlon's apparatus is excessively clumsy, while I have designed my feeding device for the very purpose of condensing it into a very small space.

In consideration of these facts I do not broadly claim the described under-feed motion in general; but

I claim as my invention—

In a sewing-machine for elastics provided with the ordinary upper-feed motion, and with a long narrow arm for supporting the work, as usual, the under-feeding device, consisting of a rotating shaft, *e*, a cam, *g*, a cloth-propeller, *i*, and a slide, *h*, having the spring *q'*, this feeding device being in combination with a smooth presser-foot, *k*, attached to the presser-bar *p* of the upper-feed motion, and with the cotter *n*, as and for the purpose described.

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

NICOLAUS DÜRKOPP.

Witnesses:

R. SUFELOWSKY,

C. GROBEL.