2 Sheets—Sheet 1.

T. B. DE FOREST.

Machine for Tipping Corset-Springs.

No. 203,428. **Patented May 7, 1878.**

fig. 1

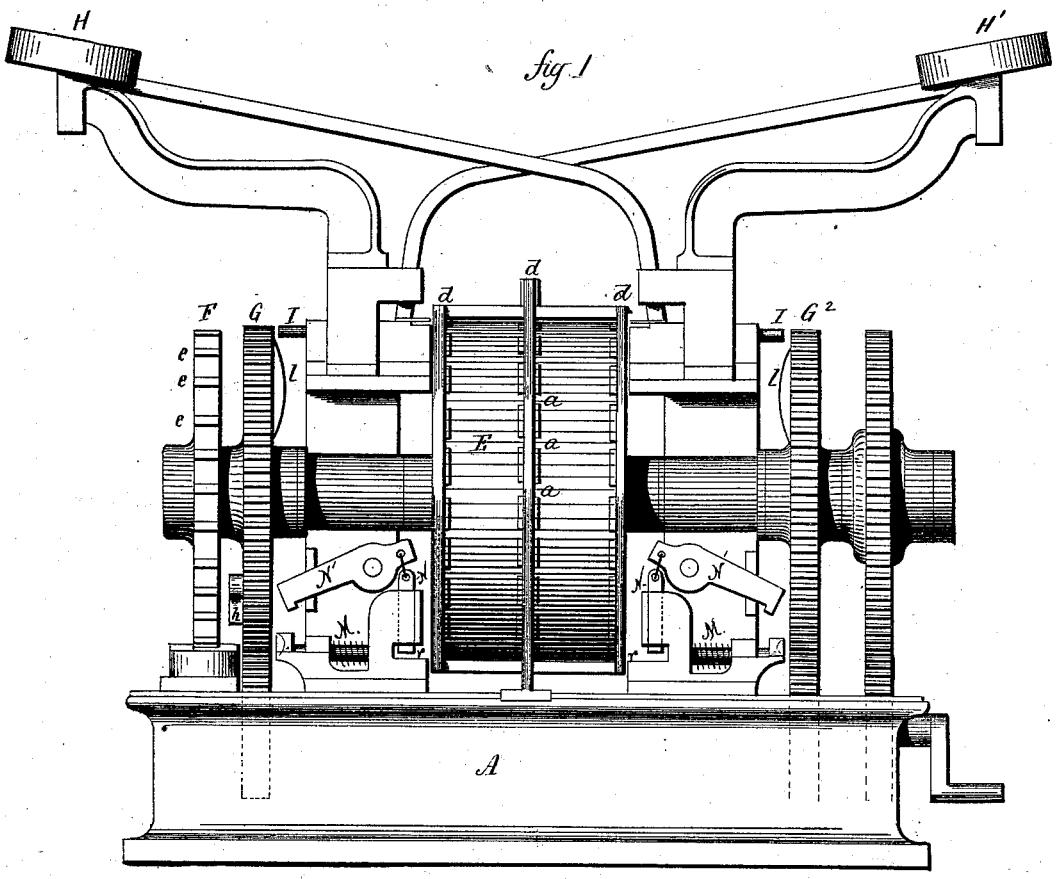


fig. 3

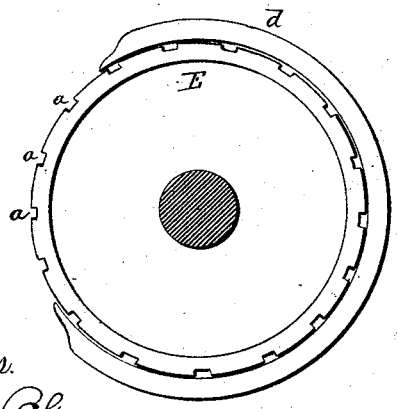
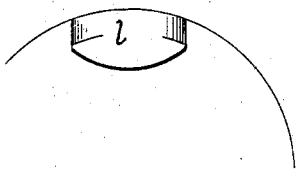


fig. 8.



Witnesses.

J. N. Shumway

H. A. Kitson.

Thos B. De Forest

Inventor

By Atty.

John D. Early

T. B. DE FOREST.

Machine for Tipping Corset-Springs.

No. 203,428. **Patented May 7, 1878.**

fig. 2

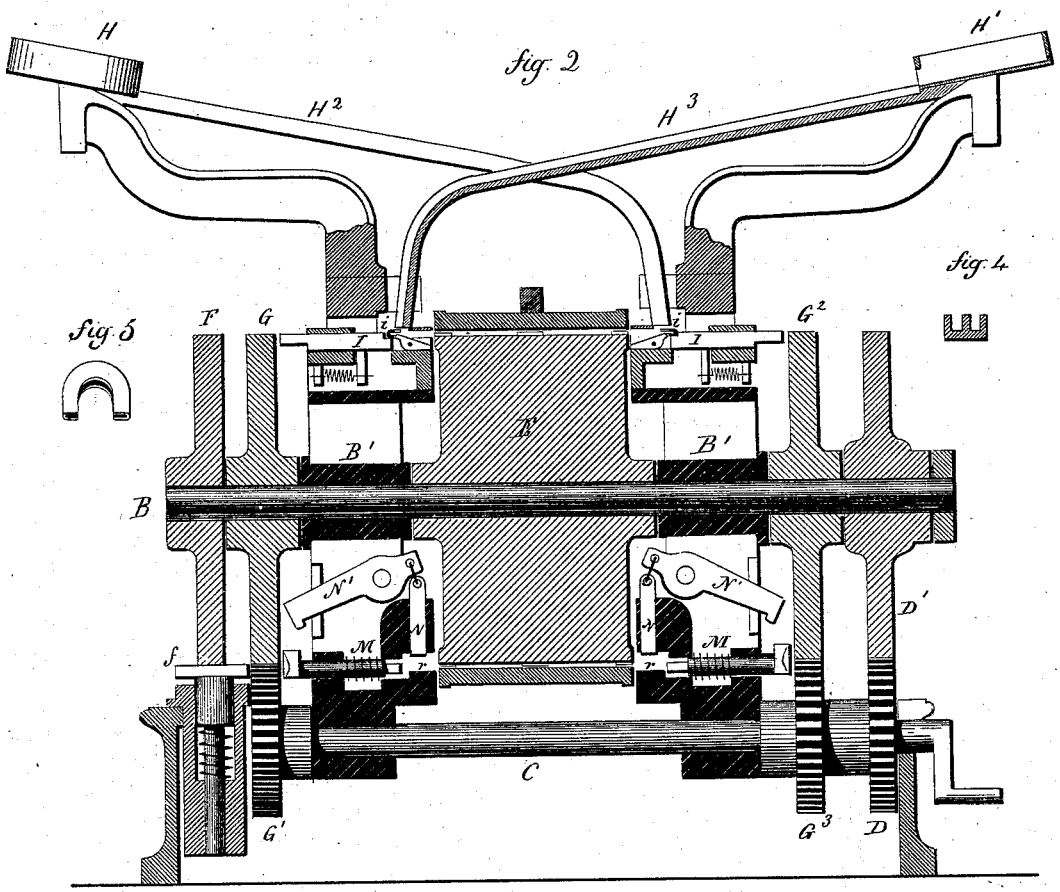


fig. 4

fig. 5

fig. 6

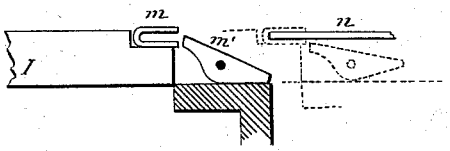
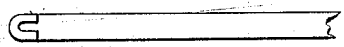


fig. 9



Witnesses.

J. H. Shumway

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UNITED STATES PATENT OFFICE.

THOMAS B. DE FOREST, OF BIRMINGHAM, CONNECTICUT.

IMPROVEMENT IN MACHINES FOR TIPPING CORSET-SPRINGS.

Specification forming part of Letters Patent No. **203,428**, dated May 7, 1878; application filed November 9, 1877.

To all whom it may concern:

Be it known that I, THOS. B. DE FOREST, of Birmingham, in the county of New Haven and State of Connecticut, have invented a new Improvement in Machines for Tipping Corset-Stays; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a side view; Fig. 2, a longitudinal section; Figs. 3, 4, 6, and 8, detached views; Fig. 5, the tip; and in Fig. 9, the stay with tip attached.

This invention relates to the construction of a machine for automatically attaching the tips to corset-steels and other stays for corset and dress purposes. These tips are first shaped from sheet metal, and are usually applied by hand to the end of the stay or steel, and then stamped to secure them in place.

The object of this invention is to automatically perform the work which has heretofore been done by hand; and it consists in the construction, arrangement, and combination of mechanism, as hereinafter described, and more particularly recited in the several claims.

A is the bed, on which the operative mechanism is arranged; B, the main or principal shaft, supported in suitable bearings B′, and so as to be revolved by the application of power thereto—here represented as by parallel shaft C, on which a pinion, D, works into a gear, D′, on the shaft B, but secured thereto by friction only, and so that, while the gear D′ will rotate constantly, the shaft B will remain stationary whenever the opposing force is greater than the friction between the gear D′ and the shaft B, but at other times the two will revolve together. The purpose of the intermittent feed thus produced will be described hereinafter.

On the shaft B is a cylinder, E, the periphery of which is provided with longitudinal recesses *a*, each sufficient to receive the piece to which the tips are to be applied. For a considerable portion of the circumference guards *d* are arranged around the cylinder E, as seen in Fig. 3, these guards serving to hold the pieces to be tipped in their places on the cylinder, while the space without the guards allows the introduction of the articles, by hand or otherwise, to the respective notches *a* in the cylinder.

F is a feed-wheel rigidly attached to the shaft B. This wheel is provided with teeth or notches *e*, corresponding to the notches or recesses *a* in the cylinder E, and at a convenient point—preferably beneath it—a pawl or stop, *f*, is arranged, which, in its normal condition, rests in contact with one of the notches in wheel F, so as to prevent the turning of the shaft B and cylinder E. In this condition the wheel D′ will turn on the shaft B; but when the stop *f* is removed, then the wheel D′ will turn the shaft and the cylinder E until the stop *f* comes in contact with the next notch. The pawl is operated by a cam, *h*, on the side of a toothed wheel, G, which rotates constantly by means of a pinion, G^1, on the shaft C, and at each rotation of the wheel G the pawl *f* is pressed down so as to free the wheel F and allow it to be turned one notch, together with the cylinder E.

H H^1 are two hoppers, into which the tips are placed in mass. From these they fall into their respective conductors H^2 and H^3. These conductors are shaped as seen in Fig. 4, with two parallel grooves, or may be a single bar, corresponding substantially to the internal shape of the tips, one of which is shown in Fig. 5. The two legs of these tips fall respectively into the grooves of the conductors, and gradually work down the conductors, until at the ends they lie in a flat or horizontal plane, and fall into a seat, *i*, on a slide, I. These slides are in a horizontal line with the periphery of the cylinder E, and in longitudinal line corresponding to the line of notches presented thereto, so that the stay which has been previously introduced will be presented, one end of each of the tips resting on the slides I, as seen in Fig. 2.

Loose on the shaft B is a second wheel, G^2, corresponding to the wheel G, and, like that, driven by a gear, G^3. On the inner faces of these two wheels is a cam, *l*, which at the proper time will strike the outer end of the slides I and force the said slides inward, carrying the tips *m* onto the respective ends of

the stay. One of the said slides I is shown enlarged in Fig. 6, and in which *n* represents the stay, and *m* the tip on the slide I; and forward of the seat for the stay is hung a dog, *m'*, the end of which, in its normal condition, lies up forward of the tip *m*, and so as to prevent its displacement; but as the slide I is moved forward to carry the tip onto the stay, as indicated in broken lines, Fig. 6, the stay will depress or turn downward the end of the dog *m'*, and so that the tip *m* will pass onto the end of the stay and the slide retreat, carrying the dog *m'* below the tip thus set.

The several stays are successively presented to receive a tip at each end. They are then carried around with the cylinder E until they arrive at the setters. These are preferably arranged directly below the point where the tips are introduced, and consist of a stamper, N, working vertically upon an anvil, *r*. The stampers are forced down by means of levers N', actuated by cams *l* on the inner face of the respective wheels G G², so that, as the tips of each stay are successively presented onto the anvils *r*, the tip will be struck or closely compressed upon the stay, and so as to firmly secure it thereto.

In case the tips should have worked partially from the stays in their progress around the cylinder, slides M are arranged at the anvils, similar to the slides I and actuated by the same cams, and which act before the closing pressure is made upon the tips, and force and hold the tips to their proper position on the stays until they have been closed; then the slides M retreat, and the stampers N rise preparatory to a like operation on another stay, Fig. 9 showing one of these stays with the tips attached. In some cases one end only may require to be tipped. In that case the tips are supplied accordingly, and the operation pursued the same.

Parts of this machine may be used independent of other parts, and to greater advantage than the usual method of tipping stays or steels—as, for instance, a single hopper or conductor may be used to present successively tips, so that a person by hand may introduce the end of the stay and remove the tip, then stamp it by hand, as heretofore. This will very much facilitate the usual process of tipping.

Again, the machine may be used, without the stamping or closing appliances, to simply place the tips upon the stays and deliver the stays to the hand of the operator, who will present the stays to suitable stamping devices to close the tips upon the stays.

Again, the tips may be placed upon the stays by hand introduced to the cylinder, to be thereby successively presented to the stamping devices to close the tips.

While a rotating or cylindrical feed or cylinder, E, is the best adapted for this purpose, the feed may be in the form of an endless band, or may be a reciprocating plane, it only being essential that the feed shall have an intermittent movement, so as to receive the stay, present and hold it stationary while it is receiving the tip, or to the closing device, as the case may be.

I therefore do not wish to be understood to limit the invention to the combination of all the devices shown, and for the further reason that other closing devices may be introduced in place of the stamps N N.

I claim—

1. The combination of one or two tip-presenting conductors with an intermittent feeding device, to successively present the stays or steels to receive the tip or tips from the said conductor or conductors, substantially as described.

2. The combination of one or two tip-presenting conductors with an intermittent feeding device, to successively present the stays or steels to receive the tip or tips from the said conductor or conductors, and stamping devices, substantially such as described, to subsequently close the said tip or tips upon the stay or steel as they are successively presented by the said intermittent feeding device, substantially as described.

3. The combination of an intermittent feeding device adapted to receive and transfer the stays or steels, and the stamping or closing device or devices to close the tip or tips which may have been introduced to the said feeding device, and thereby presented to said stamping or closing device, substantially as specified.

THOMAS B. DE FOREST.

Witnesses:
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H. A. KITSON.