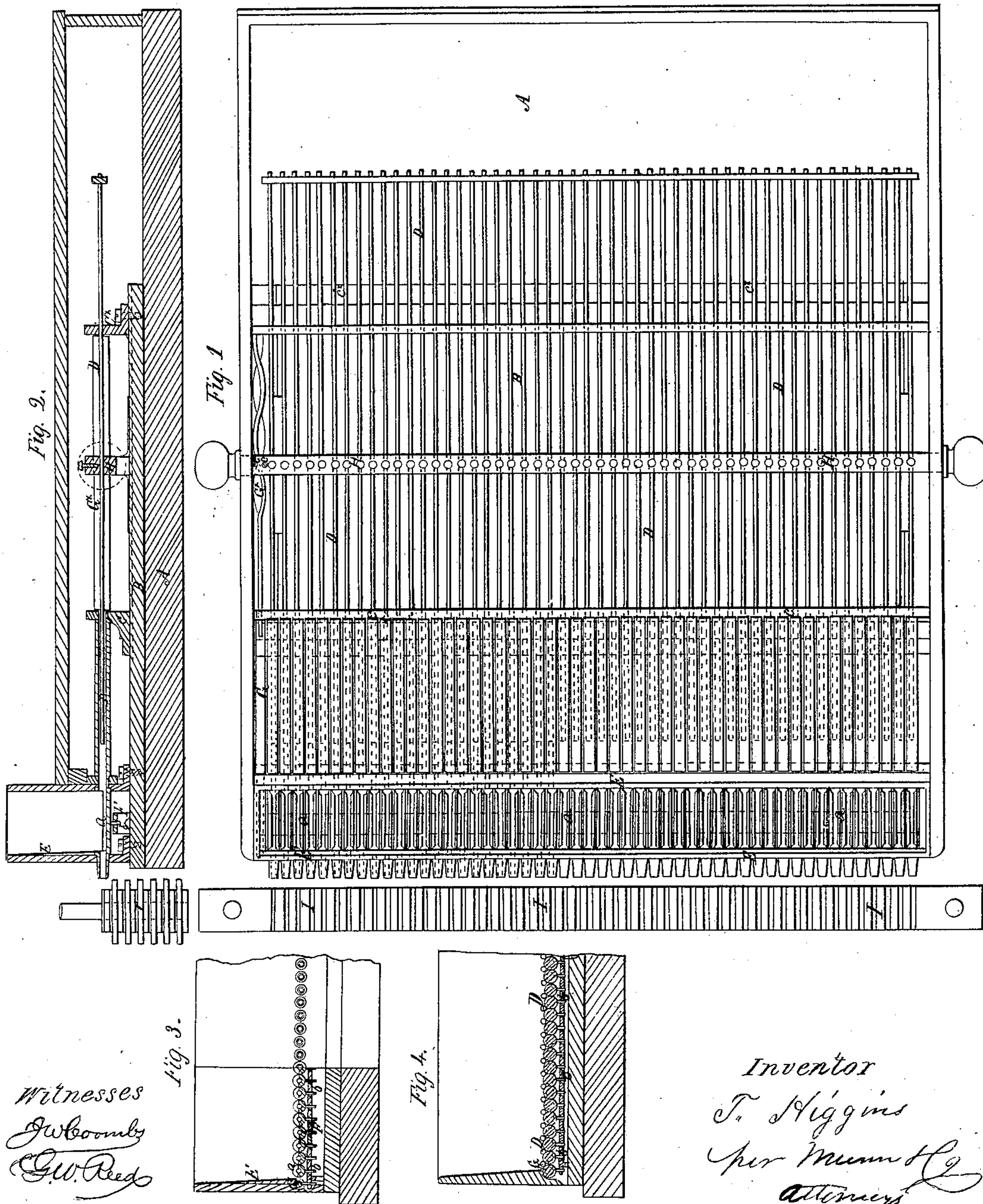


T. HIGGINS.  
MACHINE FOR FILLING DIPPING CLAMPS IN THE MANUFACTURE OF  
MATCHES, TAPERS, &c.

No. 36,463.

Patented Sept. 16, 1862.





# UNITED STATES PATENT OFFICE.

THOMAS HIGGINS, OF BOW, COUNTY OF MIDDLESEX, ENGLAND.

IMPROVED MACHINE FOR FILLING DIPPING-CLAMPS IN THE MANUFACTURE OF MATCHES, TAPERS, &c.

Specification forming part of Letters Patent No. 36,463, dated September 16, 1862.

*To all whom it may concern:*

Be it known that I, THOMAS HIGGINS, of Bow, in the county of Middlesex, tornographer, have invented Improved Machinery for Filling Dipping-Clamps with Match-Stems and Splints; and I do hereby declare that the following is a full and exact description of the said invention.

This invention relates to a novel arrangement of machinery whereby the splints, tapers, or matches intended to receive on their ends a coating of composition that will ignite by the application of friction may be arranged with facility in clamps ready to undergo what is known as the "dipping process," which is the process by which the phosphorous compound is applied to the tips of the splints, tapers, or matches.

In the accompanying drawings, Figure 1 is a plan view of the machinery. Fig. 2 is a longitudinal vertical section, and Figs. 3 and 4 are views of details, that will presently be more particularly referred to.

The object of this machinery is, first, to arrange in rows the tapers or splints which are supplied thereto preparatory to their being discharged into the dipping-clamps. The tapers or splints are arranged parallel to and equidistant from each other, and while in this position they are to be simultaneously thrust into the clamps prepared to receive them, which operation is effected by means of a series of plungers.

A A is the bed of the machine, upon which a plate of iron B is bolted. To this plate guide-bars C C<sup>x</sup> are secured by screws. These guide-bars are each pierced by a row of equidistant holes, which are intended to receive a series of sliding rods D D D. In front of these rods, and at the outer end of the plate B, a box E is mounted for receiving the splints, tapers, or matches to be operated upon. This box is open at top; its length is about equal to the width of the machine, and its breadth and length are slightly contracted toward the bottom, which is formed of a series of parallel tubes a a, mounted loosely in bearings in the sides of the box and having their upper halves cut away, as shown best in the partial longitudinal view, Fig. 3. The ends of these tubes are open, and the forward ends project through the front of the box E. From the under side of each tube, and about midway

between the ends thereof, projects a pin b. This series of pins enters a series of holes in a pierced bar F, which lies below the tubes and extends from end to end of the series of tubes. When, therefore, an endwise motion is imparted to this bar, all the tubes will be caused to rock simultaneously in the same direction in their bearings. The bore of these tubes is a little superior to the diameter of the splints or tapers to be supplied to the box E, and the machines must therefore be built to suit a given kind of work. That shown in the drawings is intended to operate upon wax-taper matches which are cut to a uniform length and inserted in any required quantity in the box E. By the oscillating motion of the tubes a the mass of loose tapers immediately overlying the tubes will be disturbed and caused to arrange themselves parallel to each other, while the lowest tapers of the series will drop into the cavities of the tubes ready to be discharged from the box. This oscillating motion of the tubes I obtain in the following manner:

G is a rock-shaft mounted in bearings in the guide-bar C and in a bar attached to the back of the box E. Secured to this rock-shaft, or forming a continuation of it, is a flat rod G<sup>x</sup> with a rounded end, which rests in a bearing in the guide-bar C<sup>x</sup>. For a portion of its length this flat rod is twisted axially alternately to the right and left, (see Fig. 1,) so as to produce a wavy edge. Set over this rod is a cross traversing bar H, provided at its opposite ends with handle. This bar is pierced, like the guide-bars C C<sup>x</sup>, with holes to receive the rods D, and by means of screws these rods are firmly clamped to the bar H, so that when it is moved to and fro by the workman all the rods will move with it. The bar H also carries two studs c c, which embrace between them the wavy edge of the flat rod G<sup>x</sup>. As, therefore, the bar H is moved backward and forward, it will cause the shaft G to rock and impart an endwise motion to the pierced bar F, whereby an axial motion will be given to the tubes, as before mentioned. At the same time that this axial motion of the tubes takes place for the purpose of arranging the tapers in the box F parallel to each other and causing a certain number of them to fall into the tubes, the rods D, being, as before mentioned, secured by the bar H, will be thrust forward,



and, being brought into contact with the ends of the tapers in the tubes, they will expel them from the box.

The clamps for receiving the tapers being arranged immediately in front of the tubes *a*, as shown at I I, Figs. 1 and 2—that is, so that the grooves in the clamps will be in a line with the tubes *A*—the tapers as they are thrust forward will be deposited in the clamps, the ends of the whole row ranging with each other and with those that have previously been discharged into the clamps. The attendant now secures them in position by the application of an additional clamping-board to those already piled up, and he continues the operation until he has accumulated the desired number of rows convenient for dipping. He then combines them together and puts the block of filled clamps aside ready for the man whose duty it is to dip the tapers or apply the phosphorous compound thereto.

I would remark that instead of forming the bottom of the box *E* of tubes *a* with their upper halves cut away, I may use rollers for arranging the splints or tapers, as shown at Fig.

4, the proximate surfaces of adjacent rollers serving as guides for supporting the splints and guiding them out of the box *E* when acted upon by the propelling-rods *D*, as already explained. The oscillation of these rollers will be effected in a manner precisely similar to that of the tubes. The last roller, however, of the series will form the rock-shaft *G* of the first-described arrangement.

Having now explained the nature of my invention, I would have it understood that I claim—

The mechanical means above described for arranging splints, tapers, and matches parallel to each other and discharging them into suitable dipping-clamps.

In witness whereof I, the said THOMAS HIGGINS, have hereunto set my hand this 23d day of June, in the year of our Lord 1862.

THOMAS HIGGINS. [L. S.]

Witnesses:

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