(No Model.) 3 Sheets—Sheet 1.

A. A. COLLINS.

APPARATUS FOR MOLDING SPRING HEEL SOLES FOR BOOTS AND SHOES.

No. 540,537. Patented June 4, 1895.

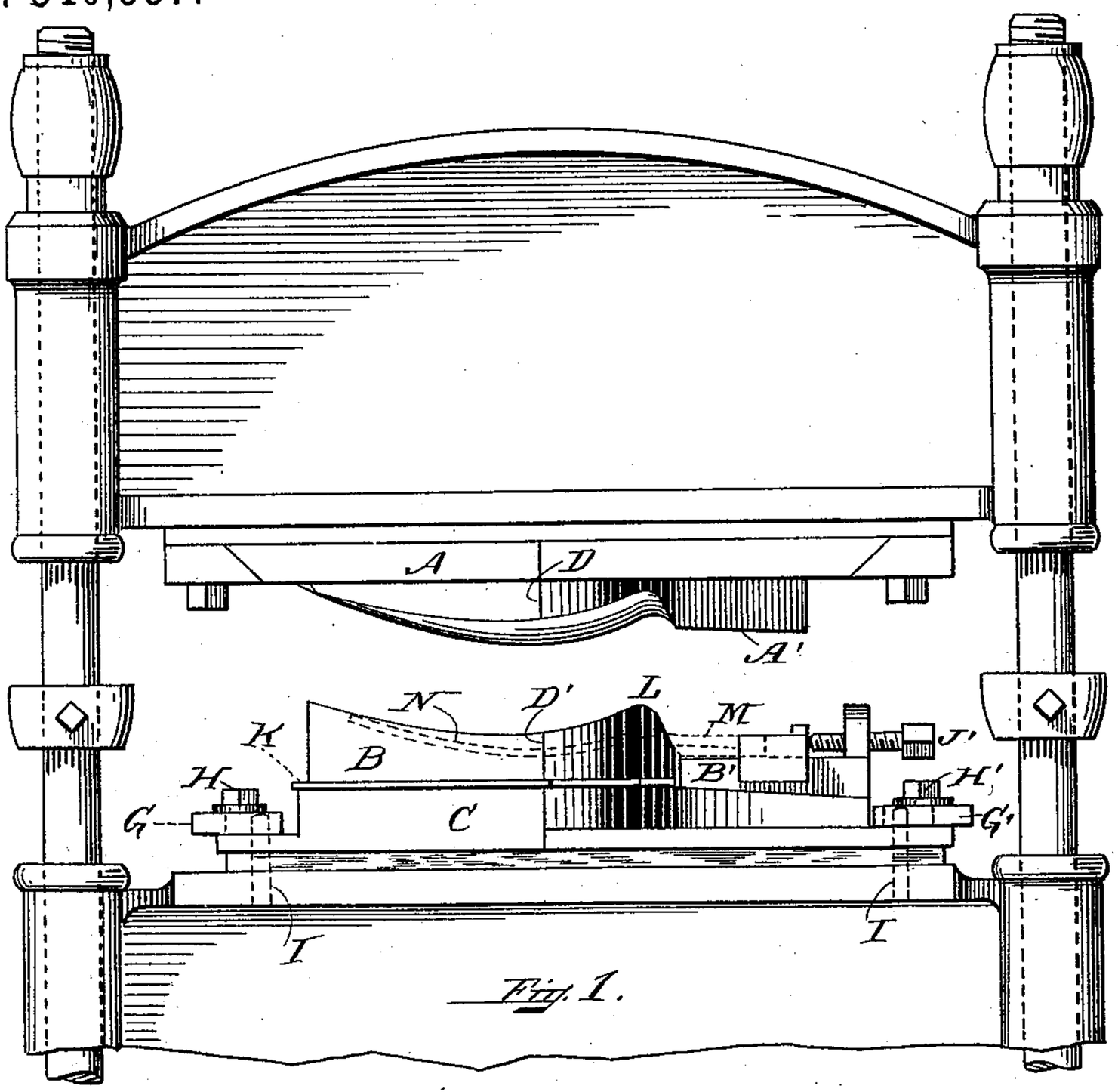

Fig. 1.

Fig. 2.

Fig. 3.

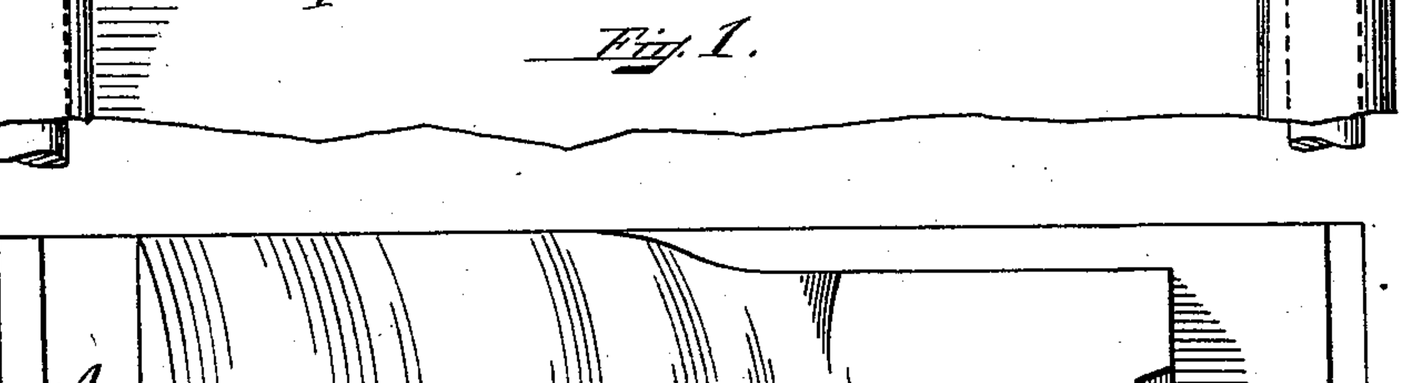

Fig. 4.

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per Eugene Humphrey
his atty.

(No Model.) 3 Sheets—Sheet 2.

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APPARATUS FOR MOLDING SPRING HEEL SOLES FOR BOOTS AND SHOES.

No. 540,537. Patented June 4, 1895.

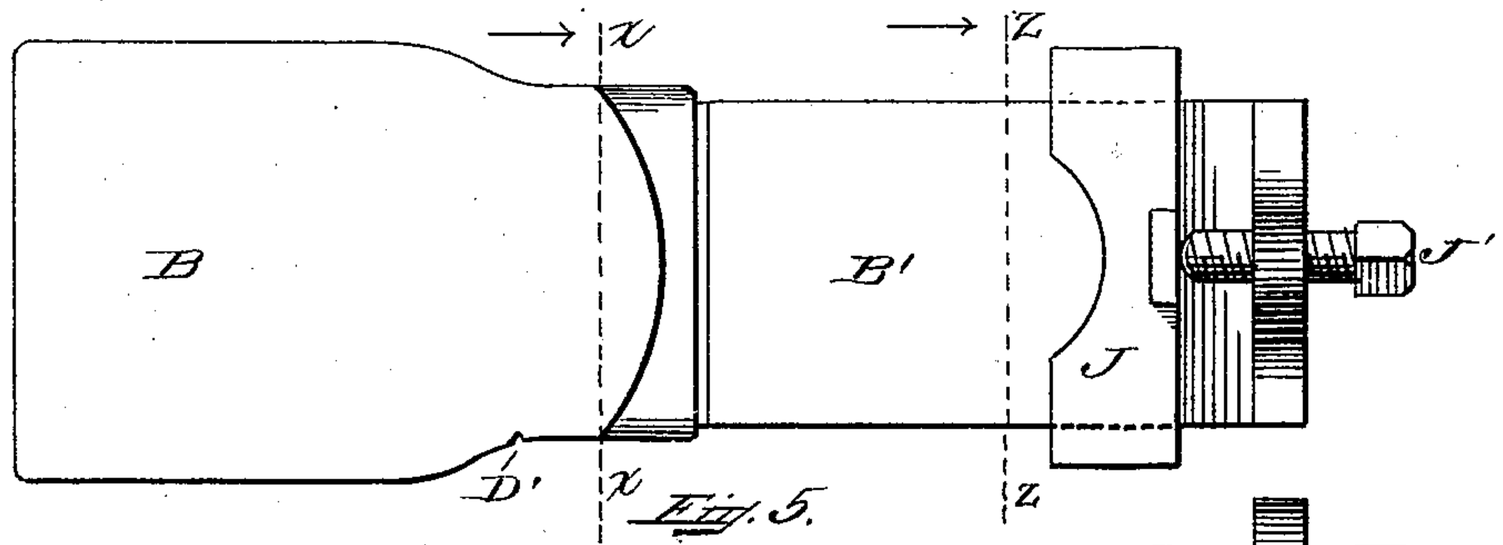

Fig. 5.

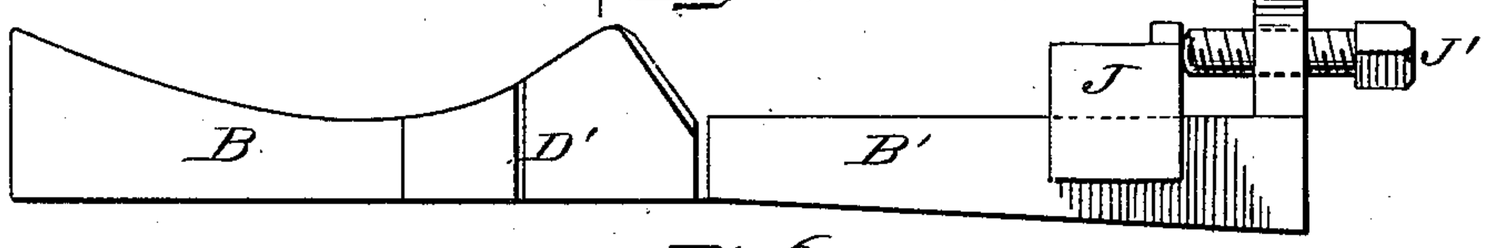

Fig. 6.

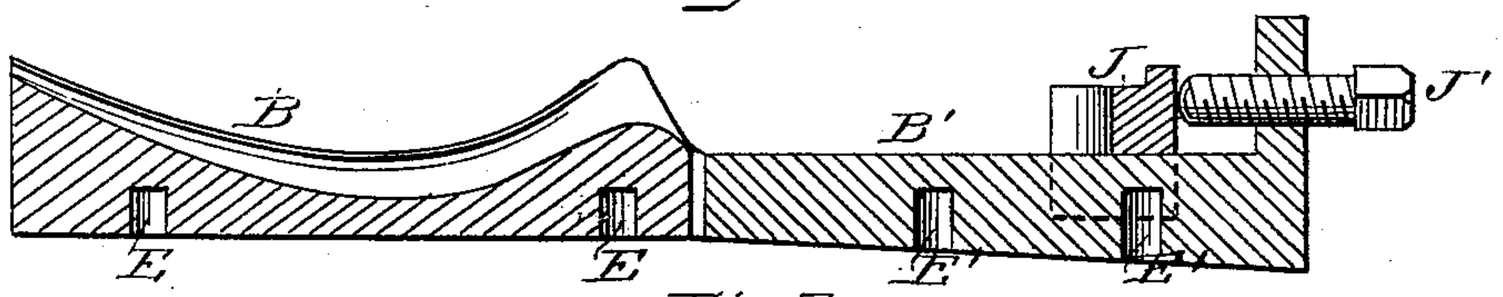

Fig. 7.

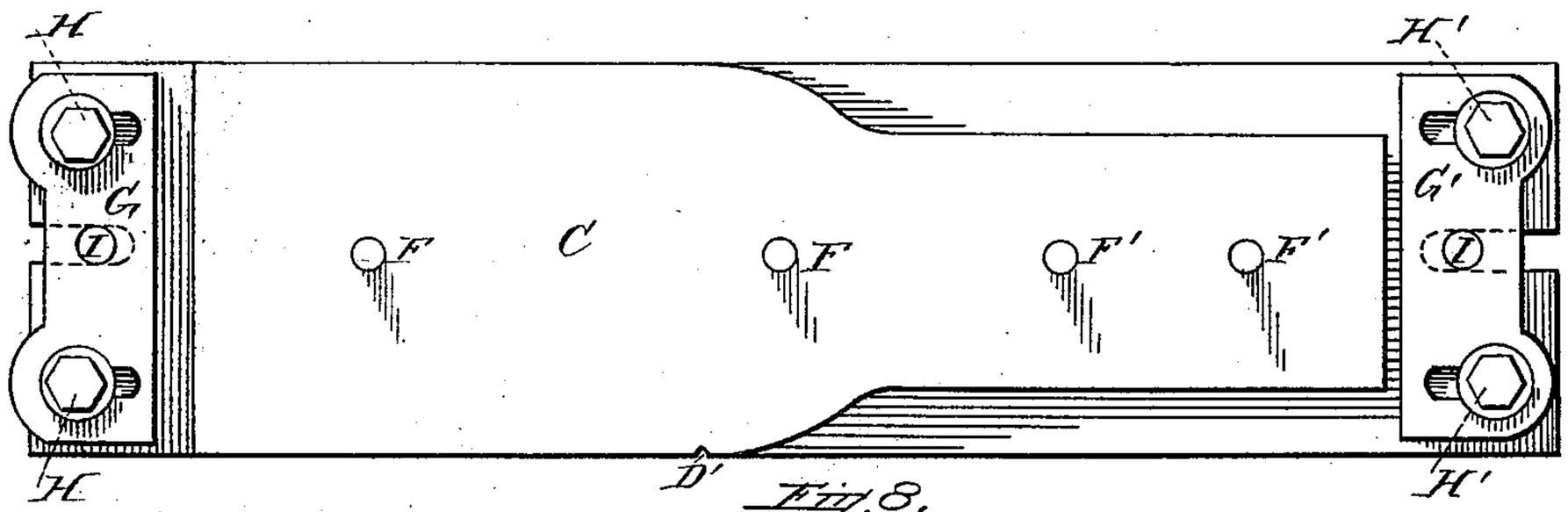

Fig. 8.

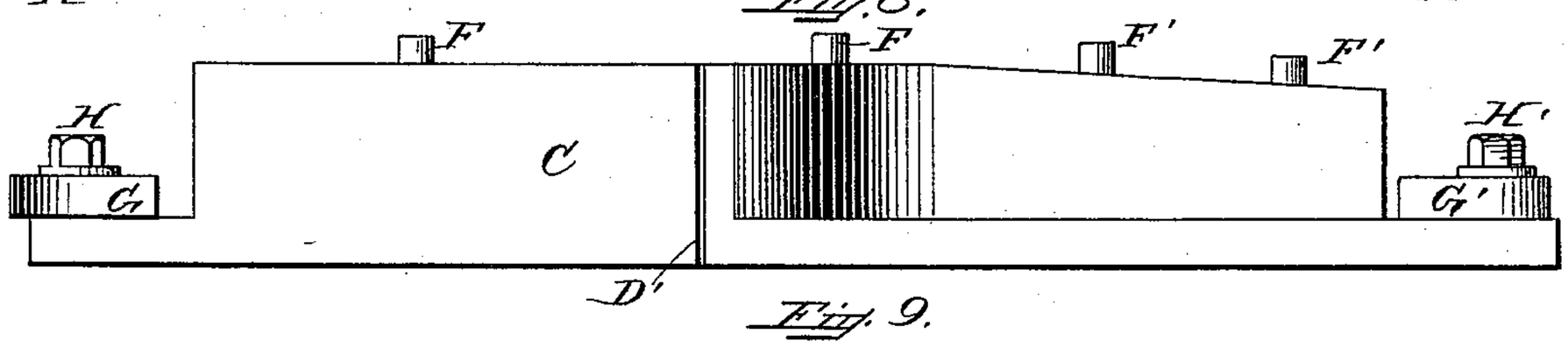

Fig. 9.

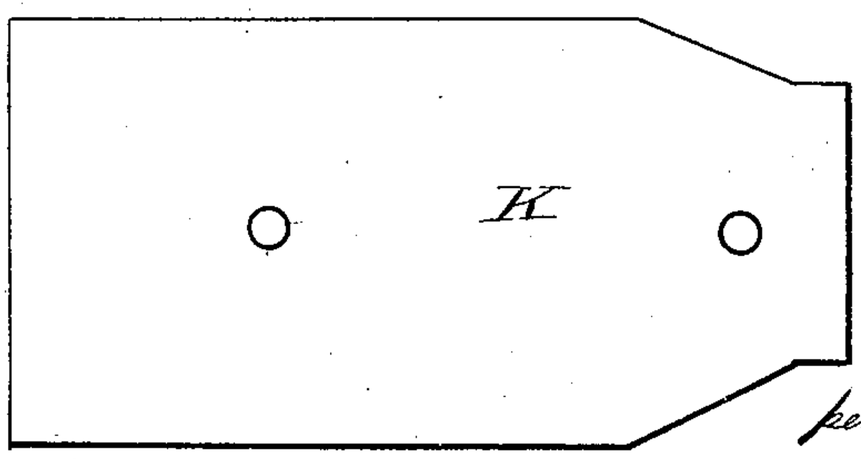

Fig. 10.

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(No Model.) 3 Sheets—Sheet 3.

A. A. COLLINS.

APPARATUS FOR MOLDING SPRING HEEL SOLES FOR BOOTS AND SHOES.

No. 540,537. Patented June 4, 1895.

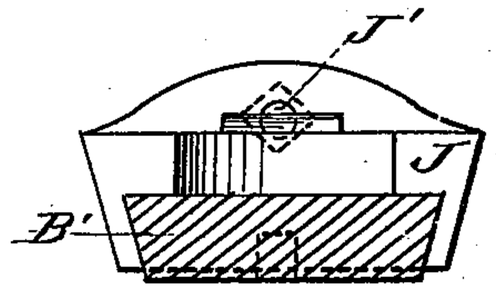

Fig. 11.

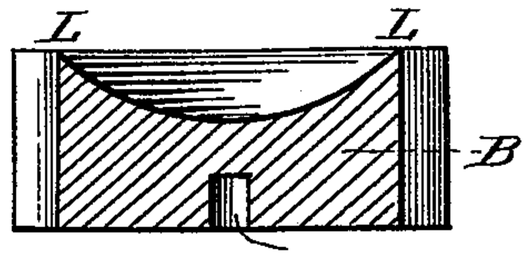

Fig. 12.

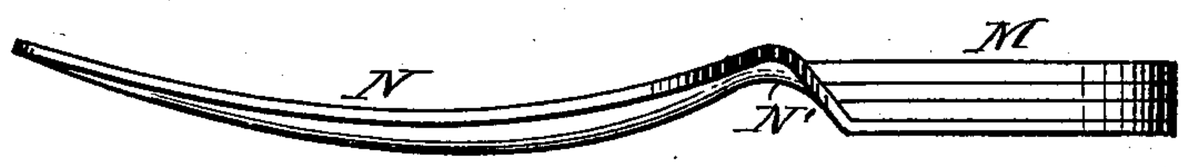

Fig. 13.

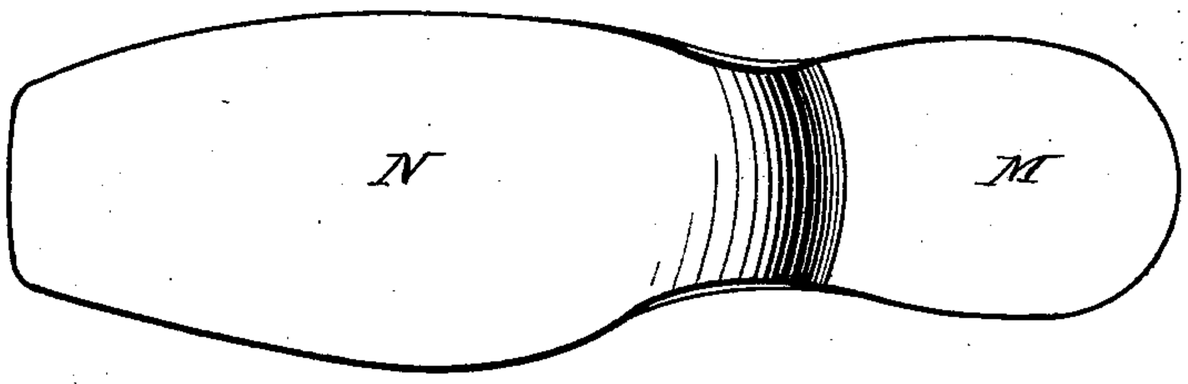

Fig. 14.

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UNITED STATES PATENT OFFICE.

ALFRED A. COLLINS, OF DANVILLE, NEW HAMPSHIRE.

APPARATUS FOR MOLDING SPRING-HEEL SOLES FOR BOOTS OR SHOES.

SPECIFICATION forming part of Letters Patent No. 540,537, dated June 4, 1895.

Application filed March 28, 1895. Serial No. 543,439. (No model.)

To all whom it may concern:

Be it known that I, ALFRED A. COLLINS, of Danville, in the county of Rockingham and State of New Hampshire, have invented a new and useful Improvement in Apparatus for Molding Spring-Heel Soles for Boots or Shoes, which will, in connection with the accompanying drawings, be hereinafter fully described, and specifically defined in the appended claims.

The principal object of my invention is to produce an adjustable mold for forming the soles of spring heel shoes, after the spring lifts are attached thereto, to produce the proper depression, or offset, in the sole at the breast of the heel, and to give the desired curvature to the shank; such mold to be capable of a positive and unyielding adjustment according to the varying thickness of the spring and consequent depth of the depression required to be formed thereby; and the invention consists in a mold embodying the novelties in construction and mode of operation hereinafter fully described and claimed.

In the drawings, Figure 1 represents a side elevation of the upper portion of a well-known form of press in which my improved mold is shown as when properly secured therein and adjusted for practical use. Fig. 2 is a plan of the under side of the detached upper part or half of the mold. Fig. 3 is a side elevation of the same. Fig. 4 is a central vertical section taken longitudinally through the same. Fig. 5 is a plan of the upper side of the lower part or half of the mold, which is transversely divided on a line coincident with the breast of the heel. Fig. 6 is a side elevation of the same. Fig. 7 is a central vertical section taken longitudinally through the same. Fig. 8 is a plan of the upper side of the bed-plate which supports the subdivided lower part of the mold and which is longitudinally adjustable upon the bed of the press. Fig. 9 is a side elevation of the same. Fig. 10 is a plan of one of the adjusting-plates employed in making the required adjustments of the transversely-divided half-mold. Fig. 11 is a transverse section taken as on line *z z*, Fig. 5, and as seen from the left of said line. Fig. 12 is a like section taken as on line *x x*, same figure, and as viewed from the left of said line. Fig. 13 is an edge view, and Fig. 14 a plan, of a spring-heel sole as shaped by my improved mold and in conformity with the invention described in Letters Patent of the United States No. 524,886, issued to me August 21, 1894.

Referring to Fig. 1, the mold is therein shown attached to a press for practical operation and as comprising an integral upper half or part A, formed to give, in conjunction with its counterpart, the proper shape to the sole. This part of the mold is secured to the lower face of the fixed head of the press, as shown. Its counterpart B is secured through intermediate devices to the movable and operative bed of the press in the well known and customary manner. The press itself is of usual construction and constitutes no part of my invention, and it is therefore not deemed necessary to show or describe the same more in detail; it being understood that the movable bed of the press, when in practical operation, carries part B, up into contact with its counterpart A, with the requisite force to produce the necessary pressure upon the sole interposed, as indicated by dotted lines, between the coacting molds A and B, to impart thereto the required form.

The principal parts of the mold designated as part A and part B, each has a formative face on the fore part, as A and B, and a plain, compressing face, or heel, as A′ and B′; part B being transversely divided as before stated, and for a purpose which will be explained. In practical use parts B and B′ are adjustably mounted upon a longitudinally adjustable bed C, through which they are attached to the movable bed of the press, and operated thereby. It is essential that corresponding parts of the upper and under molds shall, when thus forced together, exactly fit each other, and therefore adjustment lines D and D′ are made in the edges of the several parts to aid in adjusting them so that they will register with precision.

Figs. 2, 3, and 4, give, respectively, a plan of the bottom side, a side elevation and a section of mold A, detached from the press, and Figs. 5, 6, and 7 show, respectively, a plan of the top side, a side elevation, and a longitudinal section of mold B, detached from the press.

The parts B and B′ of the under mold are

provided with a number of holes E and E′ into which a corresponding number of projecting pins F, in bed C, fit when the mold is placed upon said bed, and it is thus secured in its proper position thereon. Slotted adjusting plates G, G′ are fitted over threaded bolts which are fixed in, and project upward from, bed C, and upon which nuts H and H′ are threaded to screw down upon and hold plates G firmly in place upon the bed. Through these last named plates an adjustment of bed C, longitudinally upon the operative bed of the press is secured, by means of pins I and I′ which project upward through an open slot in bed C (indicated by dotted lines) from the bed of the press, in which they are fixed, and enter corresponding holes in plates G and G′ as shown. This adjustment is necessary to bring the registering mark D′ on the lower mold into alignment with mark D on the upper mold; the lateral adjustment of the parts of the mold being secured by simply placing their front sides or edges flush with each other. By unscrewing nuts H the bed C, by reason of the slots in the ends thereof, may be moved endwise sufficiently for the purposes of said adjustment, carrying molds B and B′ with it on its dowel pins until the lines D and D′ coincide; and the slots in caps G will permit the bolts on which nuts H are threaded to move therein, and when the bed is thus properly placed, turning down the nuts will clamp the plates firmly to bed C and, through pins I, will secure it and its mold in such adjustment against any tendency of the molding operations to crowd it out of place. The usual adjustable heel-gage J, regulated by a screw J′ is employed in the well known manner to adjust upon the mold heels of various lengths. The spring of the heels of this class of shoes also varies considerably in thickness which fact renders the molding of complete spring heel soles into proper form, without defacement or injury to the outer face of the sole, a matter of considerable difficulty with any mold hitherto produced. I overcome this difficulty and accomplish a perfect molding of the combined spring heel and sole by means of the following construction and method of adjustment, which are the most essential features of my present improvement: As before stated, I divide the under mold transversely in the plane of the breast of the heel, into a forepart B and a heel part B′, so that the two sections can be adjusted relatively to each other, in a vertical plane, by means of thin plates K, illustrated in Fig. 10, one or more of which may be interposed between either section B, or B′ and bed C, thereby raising such section more or less relatively to its adjacent co-operating section. The plates K are perforated with holes corresponding with the dowel pins in the part of the bed to which they are applied, and are placed over and secured by said pins. The spring as already stated, varies considerably in the heels of such shoes, and unless there is a capability of corresponding adjustment in the mold there will be no uniformity of pressure on the various parts of the sole, and imperfect results will follow. For example, if the normal height of part L, on mold B, is five sixteenths of an inch above the top of its co-operating part B′, and the spring M of the sole N is about five sixteenths of an inch thick, then when the mold is closed upon the sole to shape the same, a corresponding depression N′ will be made in the sole at the breast of the heel, and a practically uniform pressure will be exerted on all parts of the sole, giving it a proper curvature in all directions in conformity to the shape of the mold; but if the spring should be an eighth or sixteenth of an inch thicker, then to obtain a like perfect result the height of point L should be increased that much by placing under mold B, upon bed C, one or more adjusting plates K, which would bring the parts B and B′ of the mold into right relation to each other to produce the desired result. This method and means of adjustment are positive and unyielding, and, as before stated may be employed wholly under part B, or partly under that part and partly under B′ to secure the proper adjustment, as circumstances may require. As the combined sole and spring heel thus molded into form is sometimes deformed by the additional operations of attaching the sole to, and completing the shoe, it has been found very useful and convenient to use upon the bottom of the lasted shoe the parts B and B′ by mold constructed and made adjustable substantially as described, as a separate device, for reforming the sole while the shoe is upon the last, by pressing or beating the sole with said combined parts, being slightly modified in construction to adapt them to that manner of use, in which case the last serves as the counterpart of mold B.

By molding spring heels I mean shaping by molds the outer sole after the "spring" or heel lifts, are attached thereto, into proper form, to be attached to the insole and give the requisite style and shape to the bottom of the finished shoe.

I claim—

1. A mold for forming the soles of spring-heel shoes after the spring lifts are attached thereto, comprising an integral formative part A, and a transversely divided counterpart B. B′, said parts B. B′ being capable of positive vertical adjustment relatively to each other, and mounted upon a movable supporting bed C, substantially as and for the purposes specified.

2. A mold for forming spring-heel soles, comprising an integral formative part A; a transversely divided counterpart B, B′, detachably mounted upon and connected through a bed C; and an adjusting plate, or plates K, interposed between part B and bed C, as and for the purposes specified.

3. A molding device for forming spring-heel soles embodying the combination of an ad-

justable formative part B; a compressing part B′; a bed C, upon and through which parts B and B′ are supported and connected, so as to act in unison upon a sole, against a suitable opposing formative device on the opposite side of the sole, as and for the purposes specified.

4. A device for molding spring-heels, embodying the combination of a bed piece C, having open end slots and provided with pins F F′; the parts of a transversely divided mold B, B′ detachably mounted upon and connected through said bed piece, and provided with holes E E′ fitted to receive pins F F′; slotted clamping plates G G′, extended across the slotted ends of bed C, and provided with central holes fitted to receive pins I of the press which operates the device, and arranged to be clamped to bed C by nuts H H′ screwed on to studs fixed in the bed and projecting through the slots in the plates; whereby bed C and the mold mounted thereon are made capable of longitudinal adjustment, as and for the purposes specified.

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Witnesses:
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