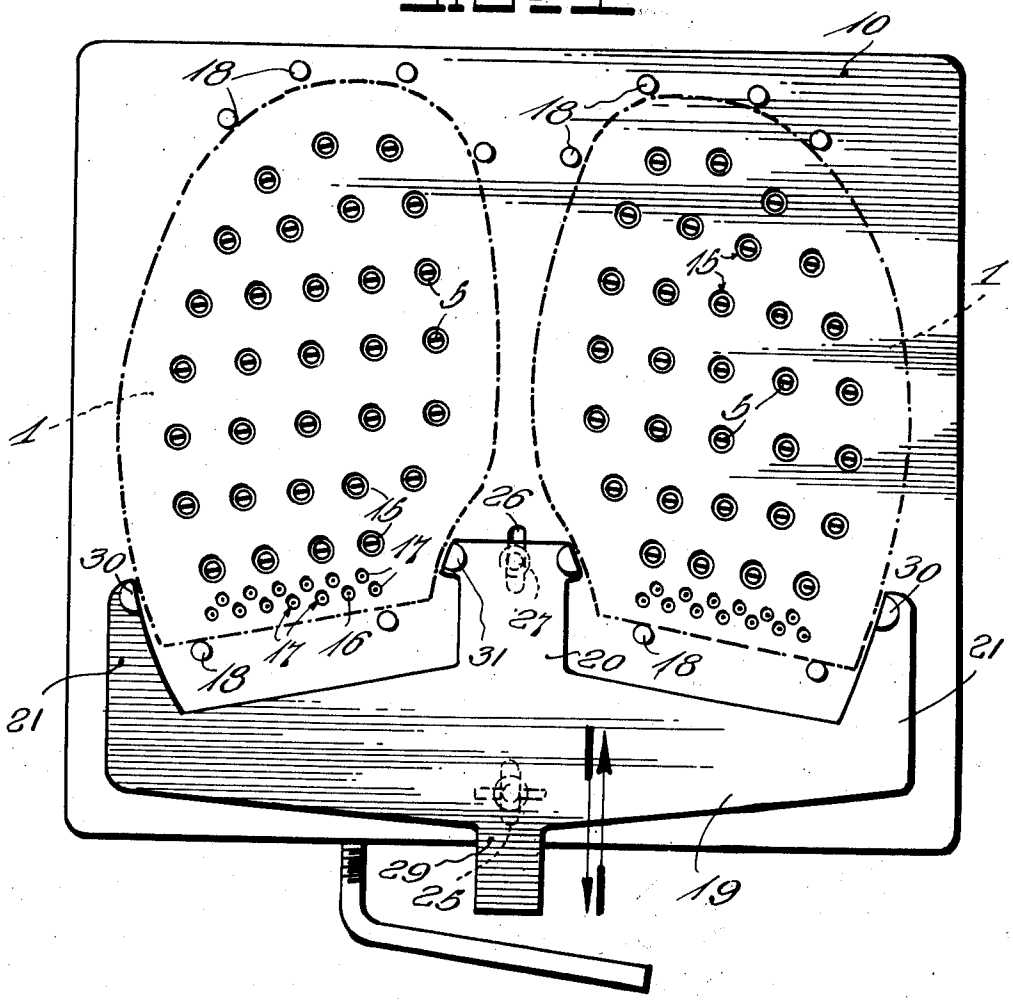
June 22, 1943. T. F. CARFAGNO 2,322,726

SHOE SOLE PUNCHING DIE

Original Filed Sept. 2, 1941 4 Sheets-Sheet 1

FIG. 1



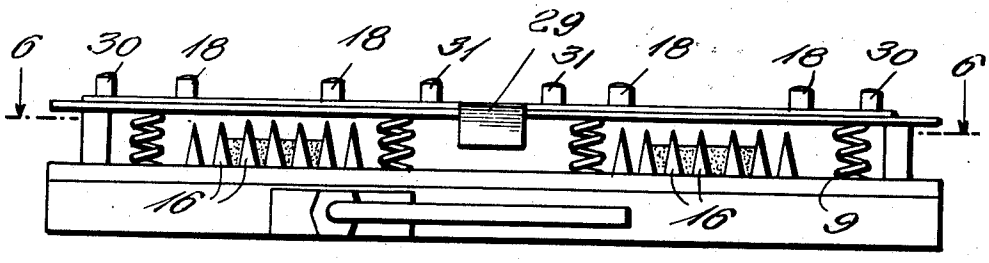


FIG. 2

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SHOE SOLE PUNCHING DIE

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FIG. 3

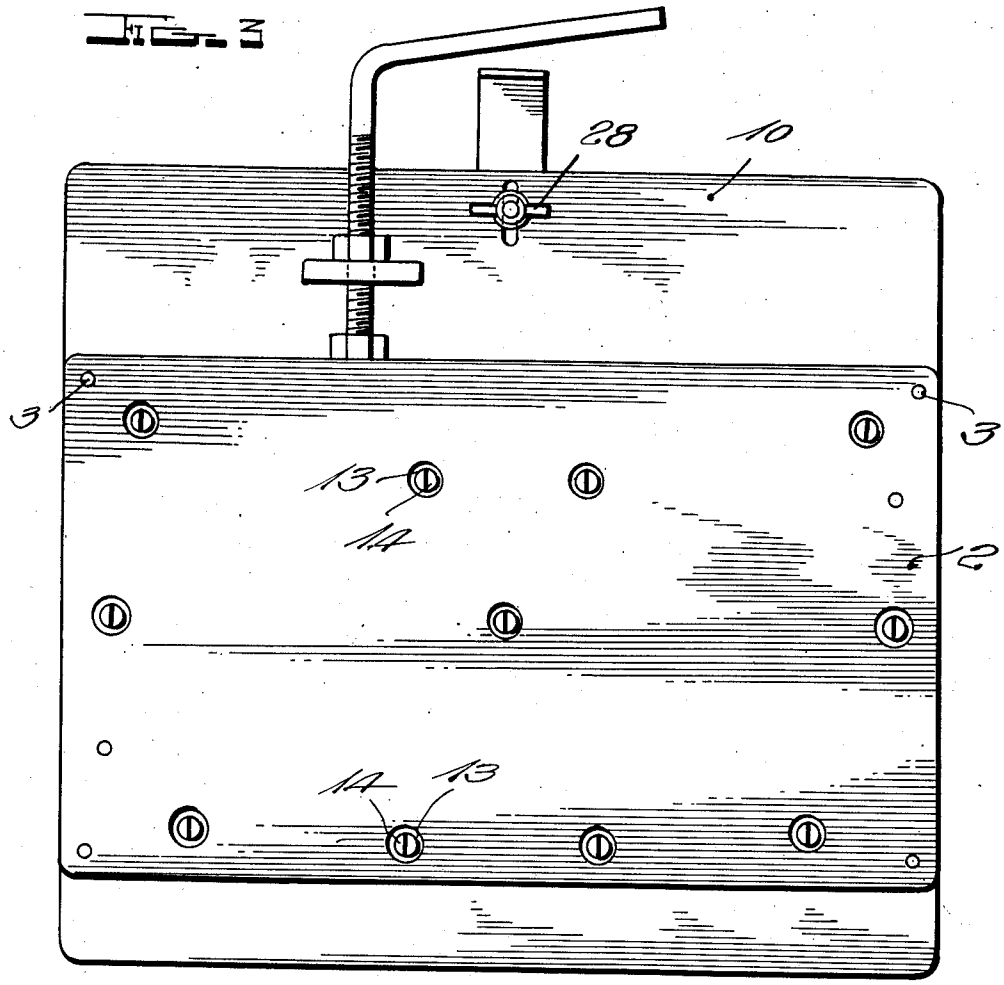


FIG. 4

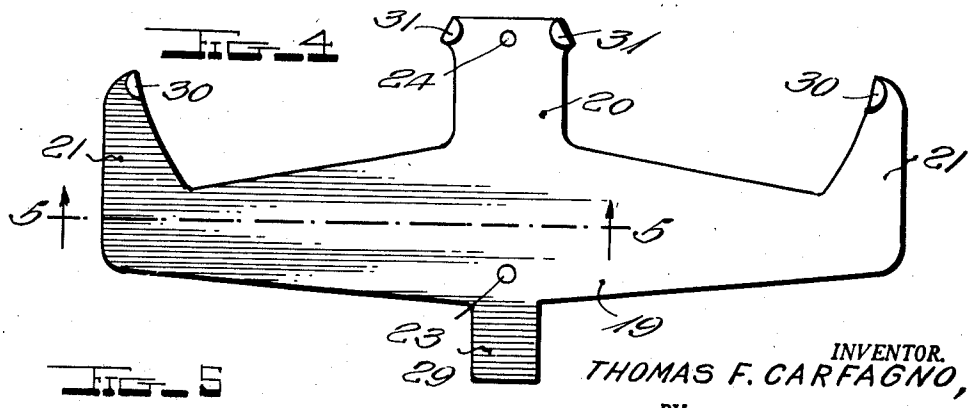
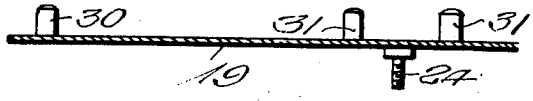


FIG. 5

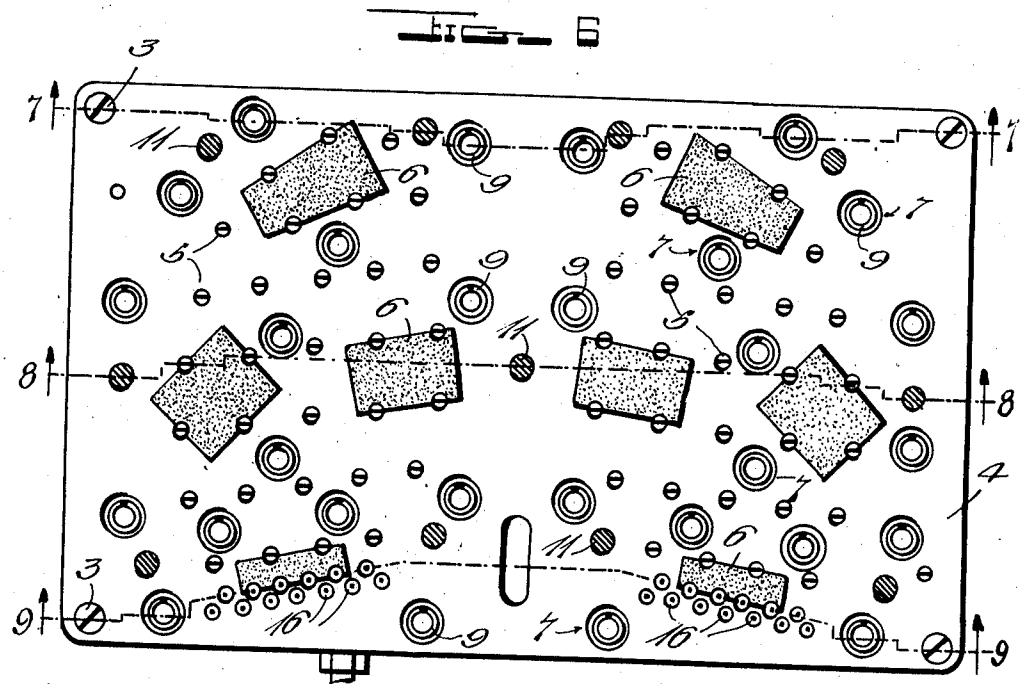


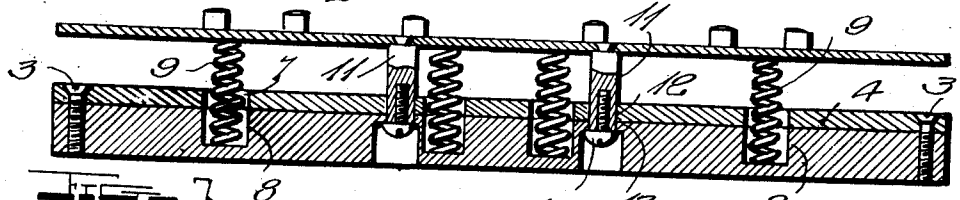
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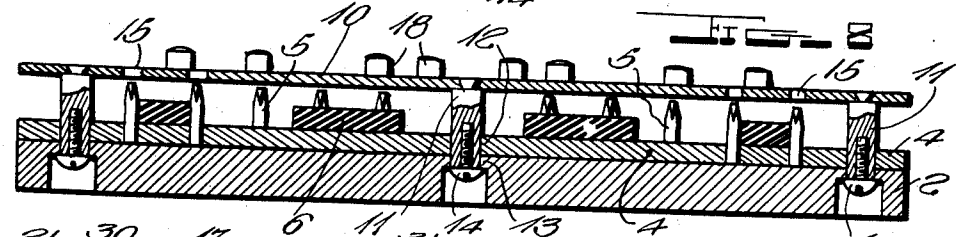
June 22, 1943. T. F. CARFAGNO 2,322,726

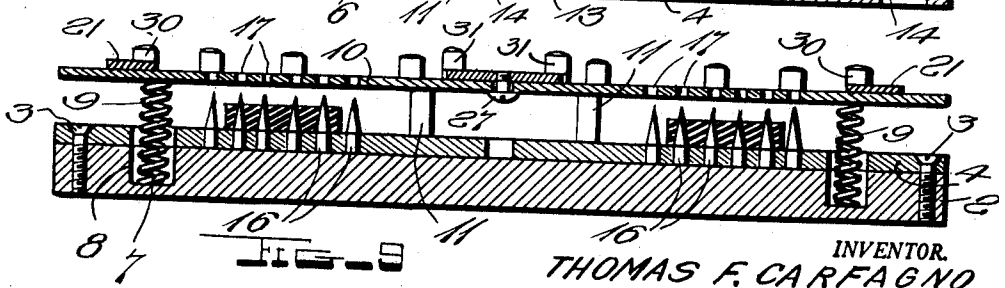
SHOE SOLE PUNCHING DIE

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SHOE SOLE PUNCHING DIE

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FIG. 10

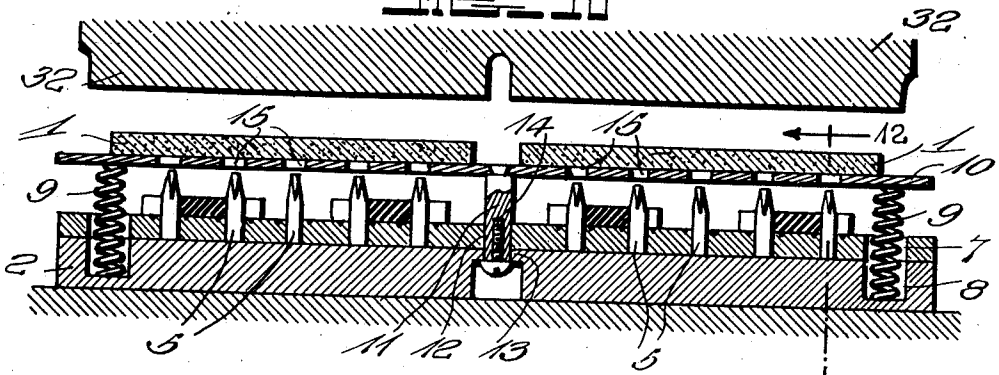


FIG. 11

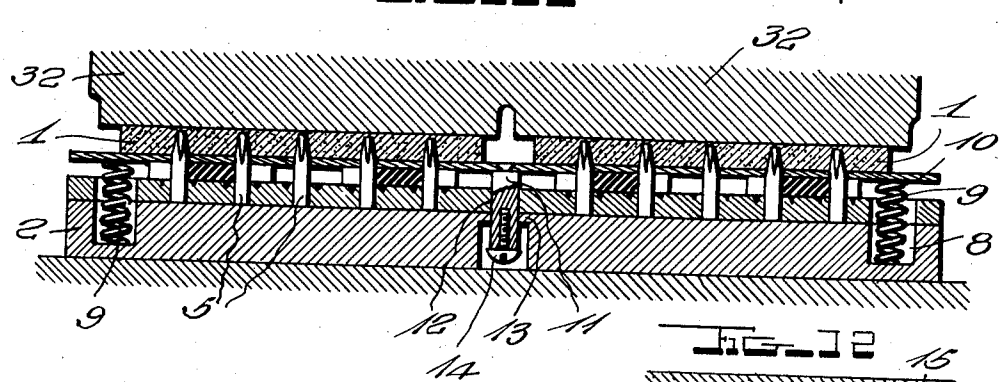


FIG. 12

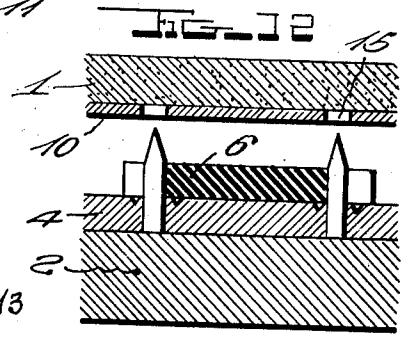


FIG. 13

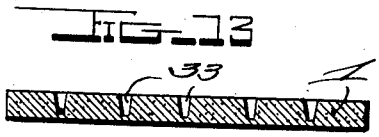


FIG. 14

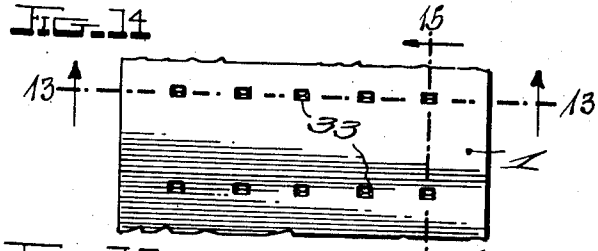


FIG. 15

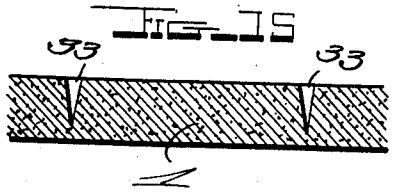
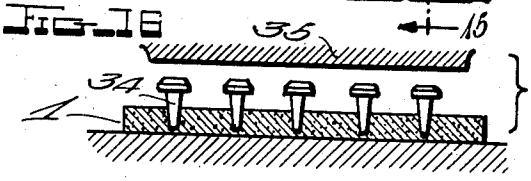


FIG. 16



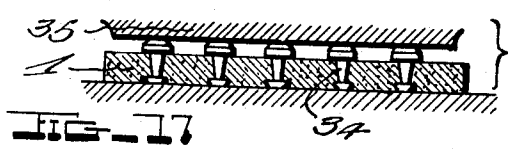


FIG. 17

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Patented June 22, 1943 2,322,726

UNITED STATES PATENT OFFICE

2,322,726

SHOE SOLE PUNCHING DIE

Thomas F. Carfagno, Hanover, Pa., assignor to Cannon Shoe Company, Baltimore, Md., a corporation of Massachusetts

Original application September 2, 1941, Serial No. 409,309. Divided and this application June 13, 1942, Serial No. 446,923

3 Claims. (Cl. 164—29)

This invention relates to new and useful improvements in apparatus for attaching hob nails to shoes, the same being a division of my copending application, Serial No. 409,309, filed September 2, 1941.

The principal object of the invention resides in the provision of a punching die which will uniformly, quickly and effectively form openings in taps or soles for shoes of various sizes, whereby the hob nails may be readily and quickly secured thereto prior to the nailing or the stitching of the soles to the bottoms of the shoes.

A further object of the invention resides in providing a die of the type described which will reduce the work and time ordinarily required to accomplish the result and thus enable increased production at reduced cost.

A still further object of the invention resides in providing an improved die which will effectively and uniformly produce openings in a sole to enable the hob nails to be inserted therein and quickly and effectively engaged and secured thereto.

A still further object resides in providing an improved die which is designed to accommodate soles of various sizes, so that with several dies it is possible to produce a complete line or run of army shoes.

Still another object of the invention resides in providing an improved die which not only provides openings in a tap or sole to accommodate hob nails but which simultaneously provides means for securing the tap or sole to the shoe.

A still further object of the invention resides in providing a die which is simple and durable in construction, comparatively inexpensive to manufacture and one which will be very efficient and useful in operation.

With these and numerous other objects in view, my invention consists of the novel features of construction, combination and arrangement of parts as will be hereinafter referred to and more particularly pointed out in the specification and claims.

In the accompanying drawings, forming a part of this application,

Figure 1 is a plan view of the die with the taps or soles of shoes being shown in dot-and-dash lines;

Figure 2 is a front elevational view thereof;

Figure 3 is a bottom plan view of the same;

Figure 4 is a plan view of the adjusting plate removed from the die;

Figure 5 is a vertical transverse section through the plate as seen on the line 5—5 of Figure 4;

Figure 6 is a horizontal sectional view taken substantially on the line 6—6 of Figure 2;

Figure 7 is a vertical section as seen on the line 7—7 of Figure 6;

Figure 8 is a similar view as seen on the line 8—8 of Figure 6;

Figure 9 is a vertical transverse section as seen on the line 9—9 of Figure 6;

Figure 10 is a sectional view showing the die with the sole or tap thereon in relation to the plunger, the latter being in the position it assumes before it descends;

Figure 11 is a transverse sectional view through the die showing its relation to the plunger when the latter is lowered to permit the openings to be formed in the tap or sole;

Figure 12 is a vertical transverse section as seen on the line 12—12 of Figure 10;

Figure 13 is a detailed sectional view taken substantially on the line 13—13 of Figure 14; showing the indentations or openings made in the sole or tap after removal from the die;

Figure 14 is a fragmentary plan view of one of the soles or taps removed after the openings have been made therein;

Figure 15 is a transverse sectional view on an enlarged scale taken on the line 15—15 of Figure 14;

Figure 16 is a sectional view showing the hob nails supported on the sole preparatory to being secured thereto; and

Figure 17 is a similar view showing a press applying the hob nails to the sole.

My device is, as aforesaid, particularly applicable to use in the method of attaching hob nails to the soles of shoes, as set forth in my copending application, Serial No. 409,309, of which application this is a division. This method contemplates the locking of soles or taps on the upper face of a die, means being provided to accommodate soles of various sizes, the application of pressure by plunger or press applied to the die, so that wedge-shaped depressions may be formed in one face of the soles, and the removal of the soles from the die whereby hob nails may be inserted in the uniformly arranged wedge-shaped depressions formed in said soles. Thereafter, the sole with the nails so inserted and held therein is placed in a position so that a plunger or press may quickly secure these nails in place and clinch the same to the soles. This method, as such, constitutes the invention of my aforesaid pending application, the invention herein being specif-

ically directed to the punching die used in said method.

In describing my invention, I shall refer to the drawings in which similar reference characters designate corresponding parts throughout the several views and in which the numeral 1 designates the sole or tap of a shoe, said sole being shown by dot-and-dash lines in Figure 1 of the drawings.

The die comprises a base plate 2 which has secured to the upper face thereof by medium of the screws 3 a top plate 4, these latter having permanently secured thereto a plurality of wedge-shaped upstanding prongs 5 which are arranged on said plate in predetermined relation or position to correspondingly form openings in the tap or sole in a predetermined relationship. Frictionally held between certain of the wedge-shaped prongs 5 are the sponge rubber blocks 6 which absorb shock when pressure is applied to the die, as will be hereinafter and more particularly set forth.

In certain parts of the plate 4 openings 7 are provided which register with sockets 8 formed in the base plate 2, which permit coil spring 9 to be received in said sockets and projected upwardly through the openings 7 above the plate 4, as clearly shown in Figures 6 to 9, inclusive. As many of these coil springs may be provided as is found necessary, I have shown a reasonably large number thereof.

The upper ends of these springs 9 contact with a movable plate 10 from which depend a plurality of guide studs 11. These guide studs project through registering openings 12 and 13 formed respectively in the top plate 4 and base plate 2 and the opening 13 has the bore thereof enlarged a short distance below the upper surface of the plate 2 to provide a shoulder. The headed screws 14 engaged with the lower ends of the studs 11 are adapted to form stops for the upward movement of the plate 10, since the heads of the screws 14 are adapted to engage the shoulders formed by the enlargement of the bores of the openings 13, as clearly shown in Figures 7 to 11, inclusive. It will thus be seen that the upward movement of the plate 10 under action of the coil springs 9 is limited by contact of the heads of screws 14 with the shoulders aforesaid. Downward movement of the plate 10 under pressure against the action of springs 9 is permitted through the provision of the plurality of openings 15 in said plate registering with the wedge-shaped prongs 5, as shown in Figures 10 and 11 of the drawings.

Also secured to the top plate 4 adjacent the front edge thereof are a plurality of smaller tapered prongs 16 arranged in series. Correspondingly formed in the top plate 10 are the plurality of smaller openings 17 to receive therethrough the prongs 16 when said top plate 10 is formed or pressed downwardly, as clearly shown in Figure 9 of the drawings. The openings 17 are adapted to receive sole securing means (not shown) for the shank end of the sole.

Secured to and upstanding from the upper face of the plate 10 are the sole holding studs 18, certain of the same being arranged to hold the toe or forward portions of the soles in place, certain others holding or guiding the rear ends of the soles, as clearly shown in Figure 1 of the drawings. In order to lock the soles in place between the studs 18, and to accommodate soles of varied sizes, I provide the adjustable locking plate 19 which is substantially of inverted T formation, having a central projecting portion 20 and side projecting portions 21. This plate carries two depending studs 23 and 24 which project in and operate through slots 25 and 26, respectively, in the movable plate 10. The stud 24 is threaded and has a nut 27 engaged therewith while the stud 23 has a wing nut 28 engaged with it, as shown in Figure 1 of the drawings. Thus, this adjustable plate 20 may be moved longitudinally on the plate 10 and locked in any adjusted position, there being a finger piece 29 formed on the forward end of the plate 11 to manually actuate the same.

At the inner ends of the projections 21 are the upstanding studs 30, while at the outer ends of the projection 20 of the plate 19 are the studs 31, said studs 30 and 31 being flattened on their outer faces. These studs 30 and 31, as clearly shown in Figure 1 of the drawings, are adapted to contact with the side edges of the rear portions of the soles of the shoes when the latter are in position on the plate 10 and the adjustable plate 19 is brought into position to lock said soles thereon. Thus, the soles may be retained in secure position on the plate 10 preparatory to the formation of the indentations therein.

When the soles have been locked in position on the plate 10 between the studs 18 and the adjusting plate 19, a plunger or press 32 is adapted to be applied, as shown in Figures 10 and 11 of the drawings. Thus, the top plate 10 with the soles or taps thereon is forced downwardly and the prongs 5 and 16 are caused to project into the sole or soles. The series of prongs 16 form the aforesaid openings 17 in the sole or tap which, as aforesaid, are adapted for use in securing the sole to a shoe. The wedge-shaped prongs 5 will cause wedge-shaped indentations 33 to be formed in uniform arrangement on the sole or tap. Thereupon, when pressure is released, the plate 10 will be moved to its raised position under action of the springs 9 and the soles with the indentations 33 therein may be removed.

The hob nails 34 are then inserted in these openings 33, as shown in Figure 16, and the soles with the hob nails so inserted in position are then introduced in another machine whereupon a press or plunger 35 is applied to secure these hob nails in place and clinch the same, as clearly shown in Figure 17 of the drawings.

In this manner the hob nails will be uniformly applied to the soles. There will be no interference with the stitching of the soles to the shoes or to the securing of the same otherwise on the outsoles of shoes. The hob nails will be effectively and permanently secured in position without injuring the heads thereof.

From the foregoing description, the apparatus and the method of using same in applying hob nails to shoes will be readily understood and it will be seen that I have provided a comparatively simple, inexpensive and efficient means of carrying out the various objects of the invention. While I have particularly described the elements best adapted to perform the functions set forth, it is obvious that various changes in form, proportion and in the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the principles of the invention.

What I claim is:

1. In a device of the character described, a die comprising a base plate, a multiplicity of projections mounted on the upper face of said plate, a sole supporting plate yieldingly and normally supported in a plane just above the upper ends

of said projections, said sole supporting plate being provided with a multiplicity of openings registering with said projections, guide means for directing movement of said sole supporting plate with respect to the base plate, abutments carried by said supporting plate for engaging edges of soles, a clamping plate carried by said supporting plate and shiftable thereon to adjusted positions, abutments carried by said clamping plate for engaging edge faces of soles and coacting with the first abutments to firmly hold soles in place upon the supporting plate, and means for applying pressure to said sole supporting plate to force the same toward the base plate and permit the projections to project through the openings in said sole supporting plate.

2. In a device of the character described, a die comprising a base plate, a plurality of prongs mounted on the base plate and projecting upwardly therefrom, a sole supporting plate yieldingly and normally supported in a plane slightly above the upper ends of said prongs, guide means for said sole supporting plate directing its movement with respect to said base plate, means in association with said guide means to limit the upward movement of said sole supporting plate with respect to the base plate, said sole supporting plate being provided with a plurality of openings in registering alignment with the aforesaid prongs, abutment lugs extending upwardly from said supporting plate in position for engaging edges of front ends of soles resting upon the supporting plate in spaced side-by-side relation to each other, a clamping plate resting upon the rear portion of the supporting plate and slidable thereon toward and away from said lugs to adjusted positions, arms extending forwardly from ends of said clamping plate and midway the length thereof and provided with upstanding lugs for engaging side edges of rear portions of the soles and cooperating with the first lugs for clamping the soles in place upon the supporting plate when the clamping plate is shifted toward the first lugs and secured, and means for supplying pressure to the sole supporting plate against the tension of the yielding support thereof to position the sole supporting plate nearer the base plate and permit the prongs to project through the openings of the sole supporting plate and penetrate soles clamped upon the supporting plate.

3. In a device of the character described, a base plate, a plurality of prongs mounted on the upper face thereof and projecting thereabove, a sole supporting plate springs yieldingly and normally holding the sole supporting plate in a horizontal plane a predetermined distance above the upper ends of said prongs, said sole supporting plate having a plurality of openings therein in registering alignment with said prongs, means for guiding and limiting the upward movement of said sole supporting plate with respect to the base plate, elastic buffer blocks on the base plate disposed between certain of said prongs and formed with marginal recesses receiving the prongs to hold the blocks in place, and means for applying pressure downwardly on said sole plate to cause the prongs to project through the openings in said sole plate.

THOMAS F. CARFAGNO.