

(No Model.)

3 Sheets—Sheet 1.

F. F. RAYMOND, 2d.

HEEL NAILING MACHINE.

No. 356,554.

Patented Jan. 25, 1887.

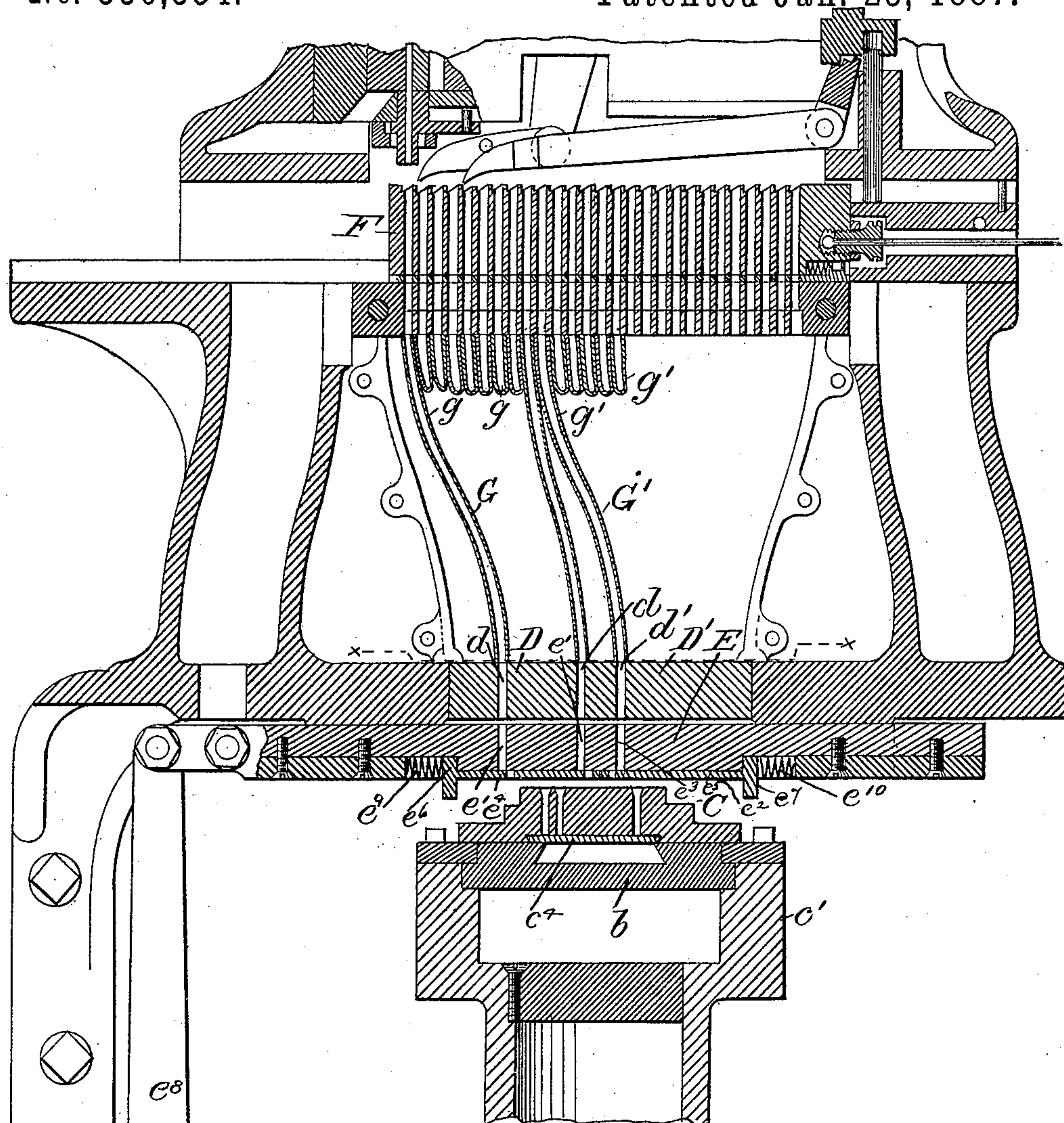


Fig. 1.

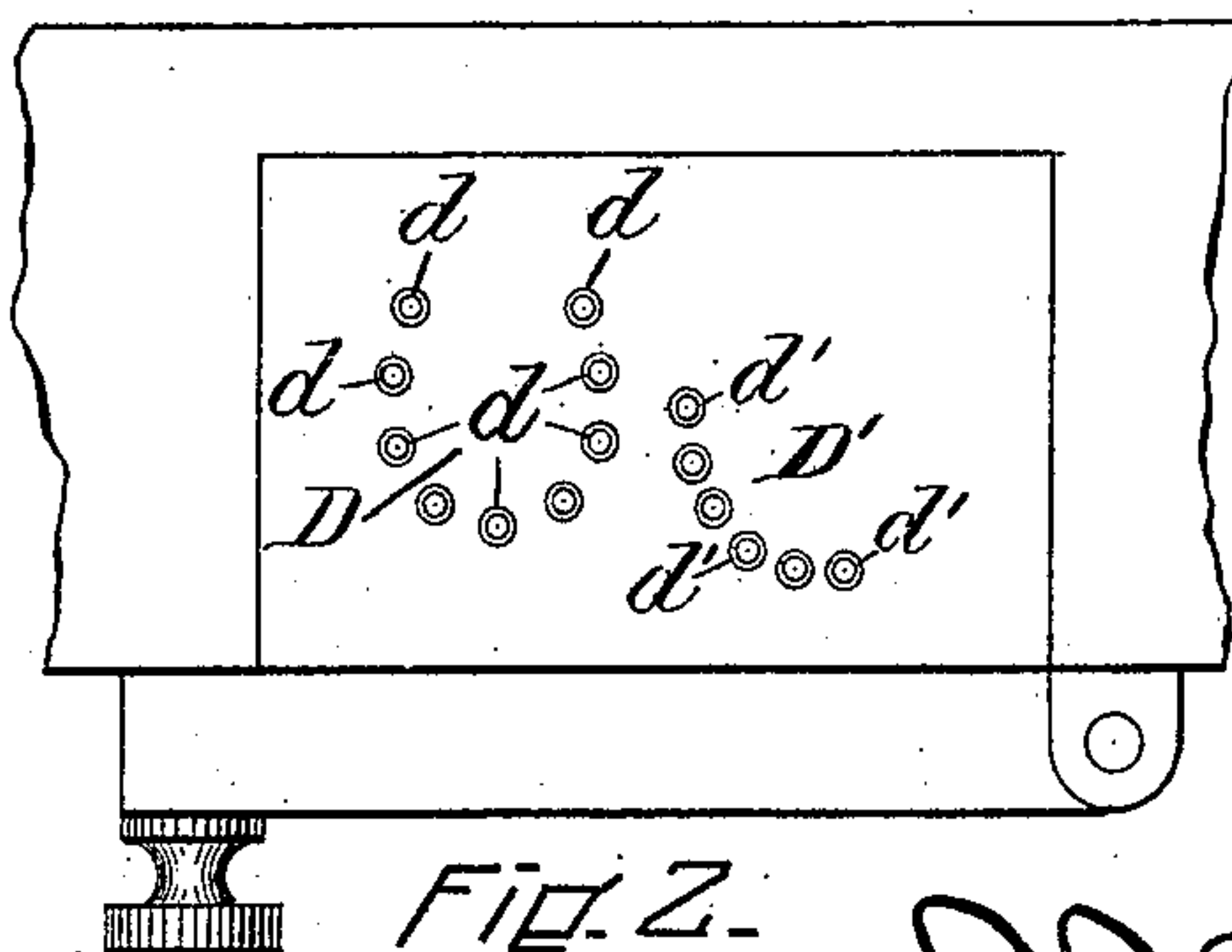


Fig. 2.

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WITNESSES

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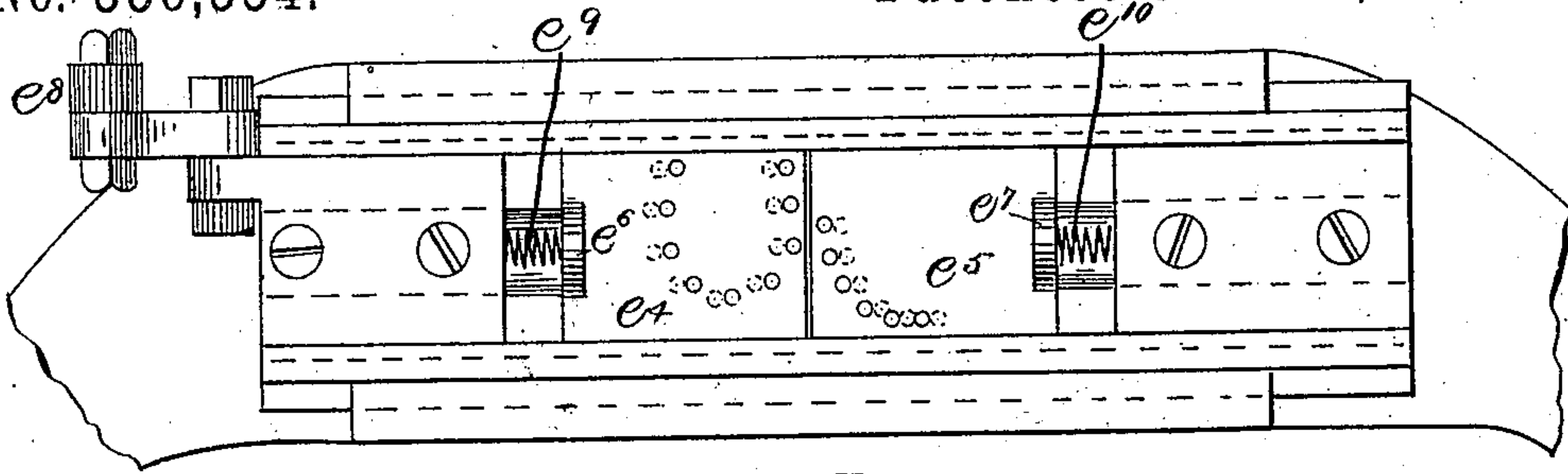


Fig. 3.

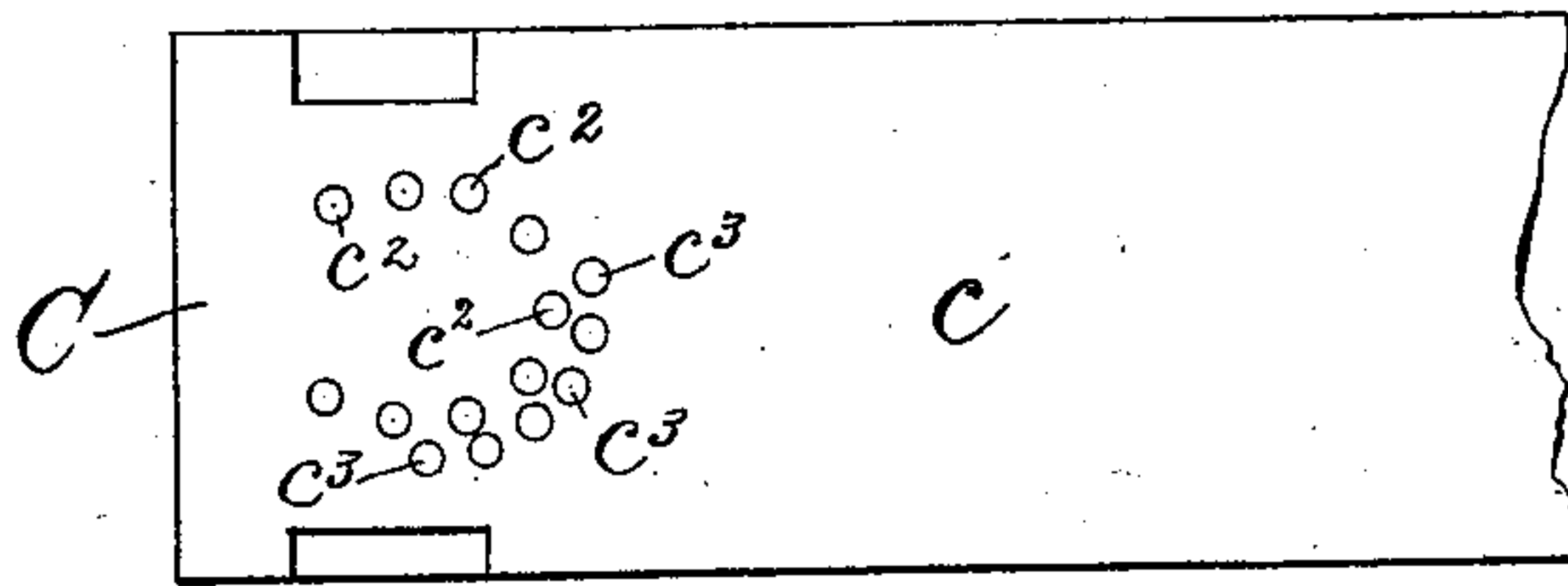


Fig. 4.

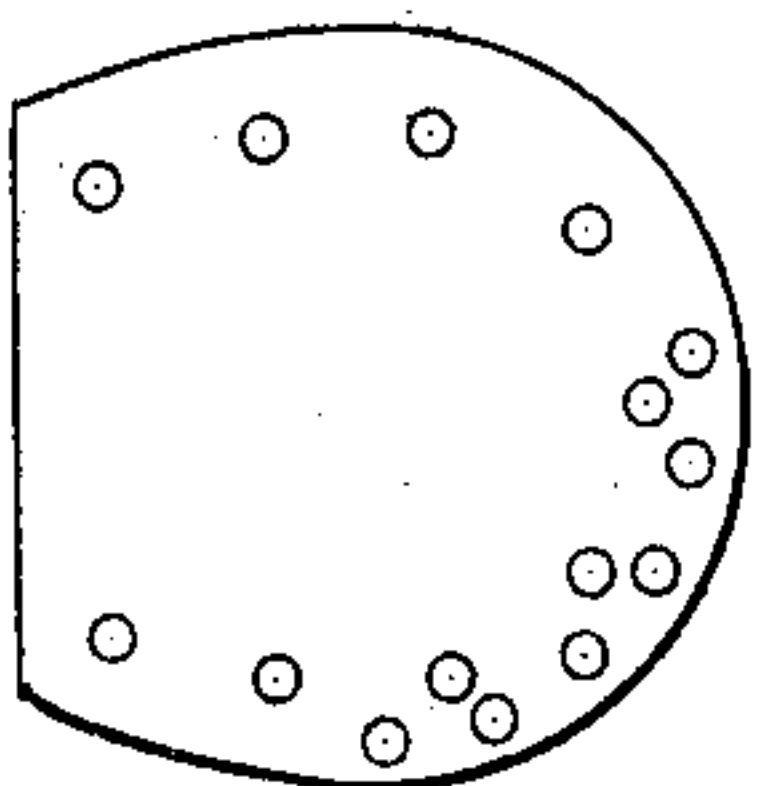


Fig. 5.

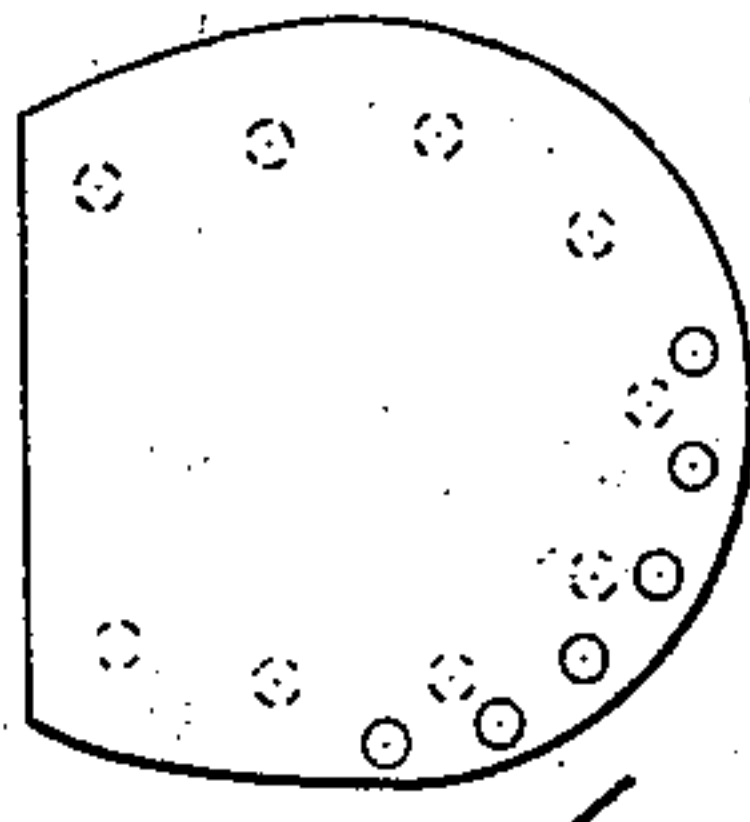


Fig. 6.

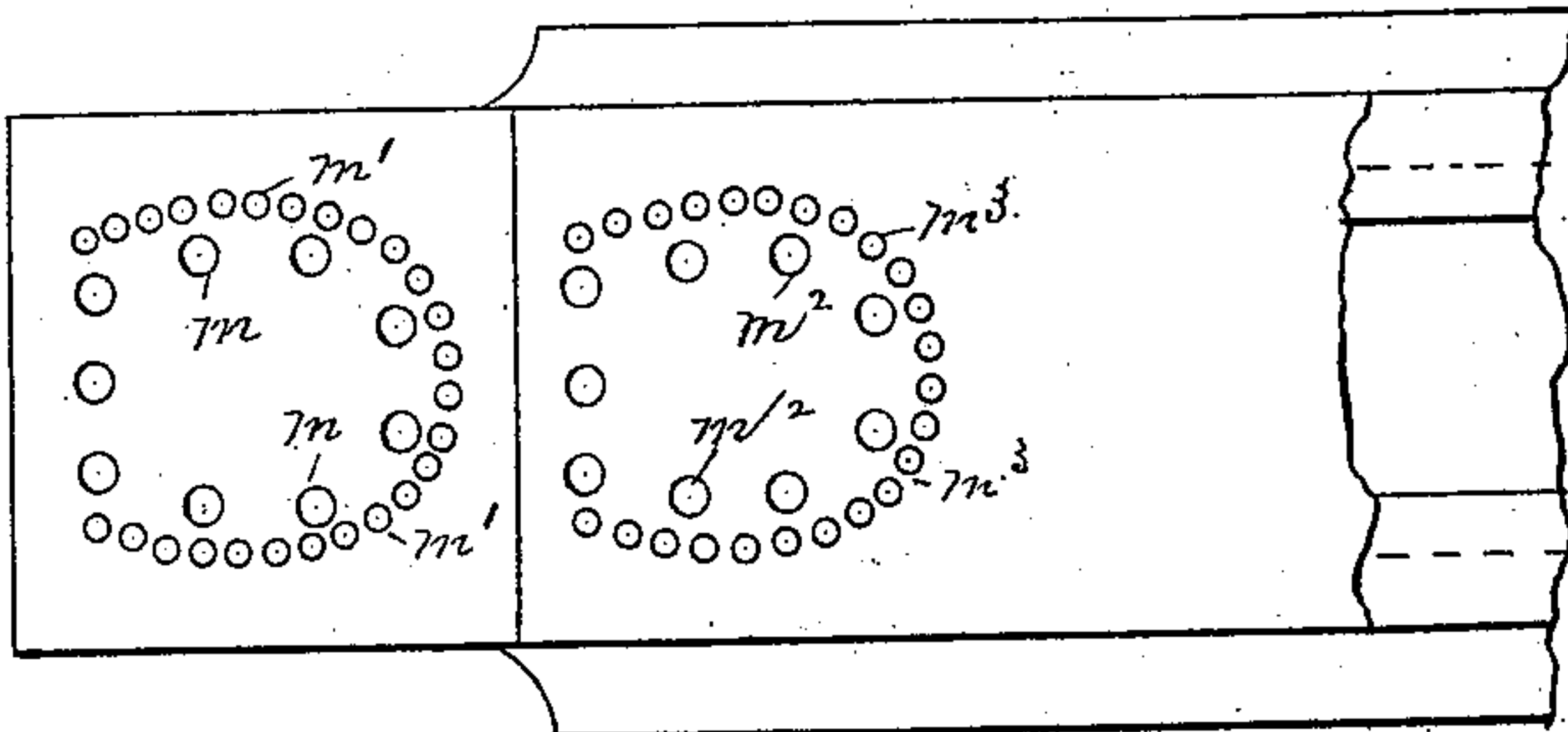


Fig. 7.

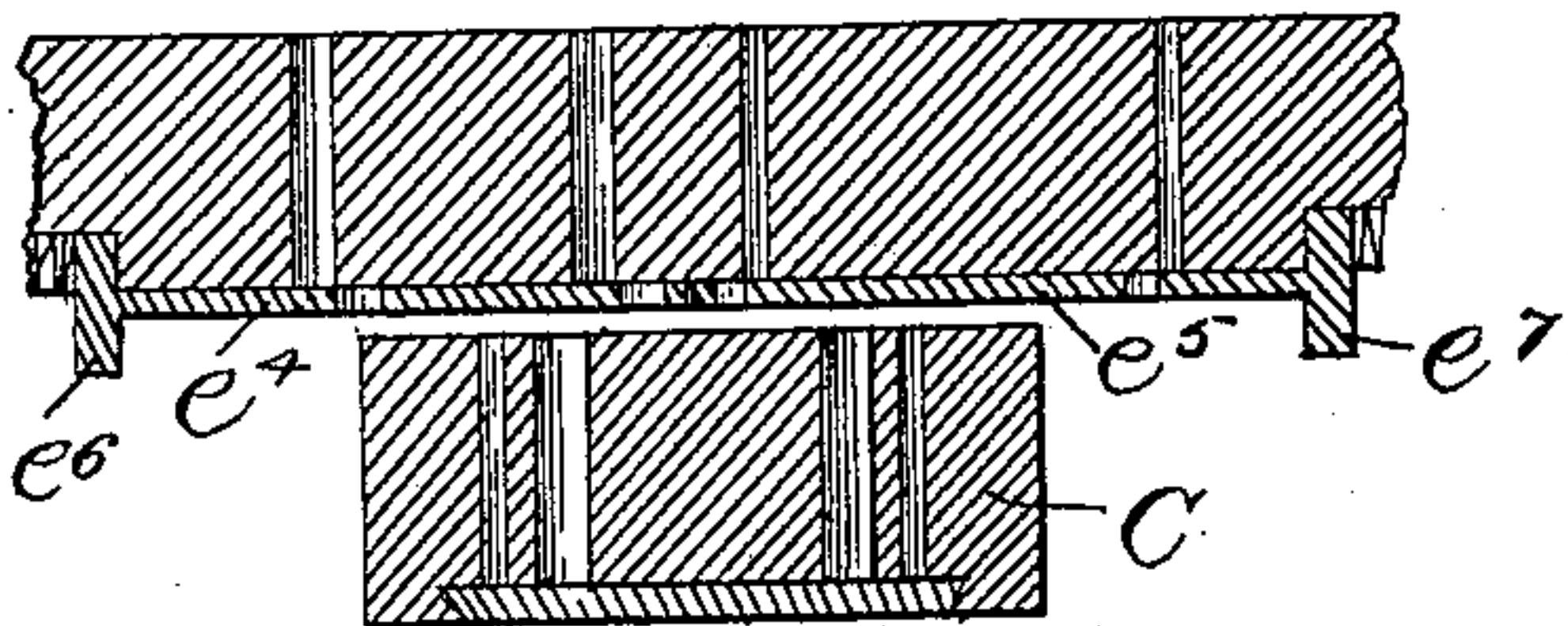


Fig. 8.

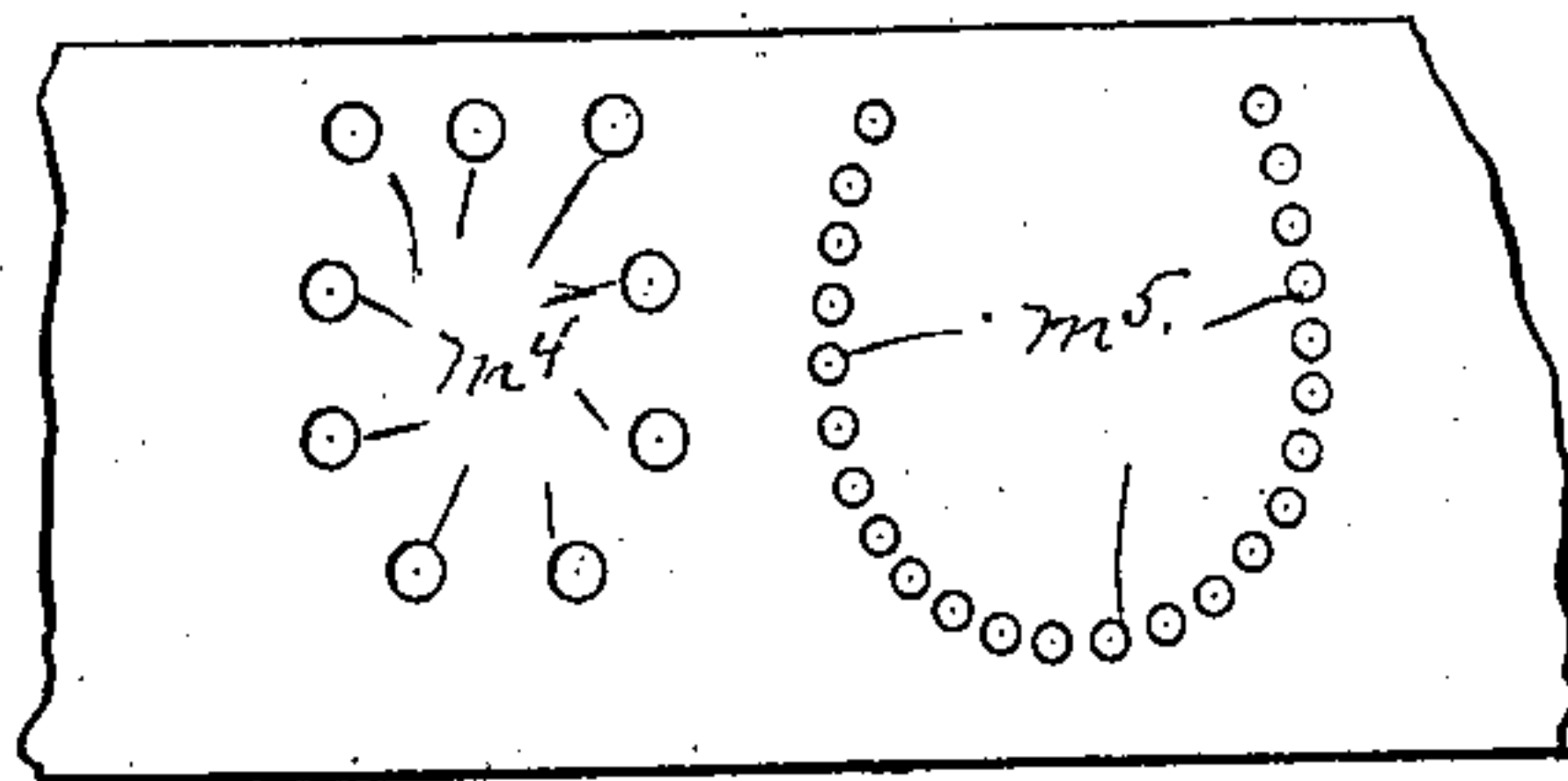


Fig. 9.

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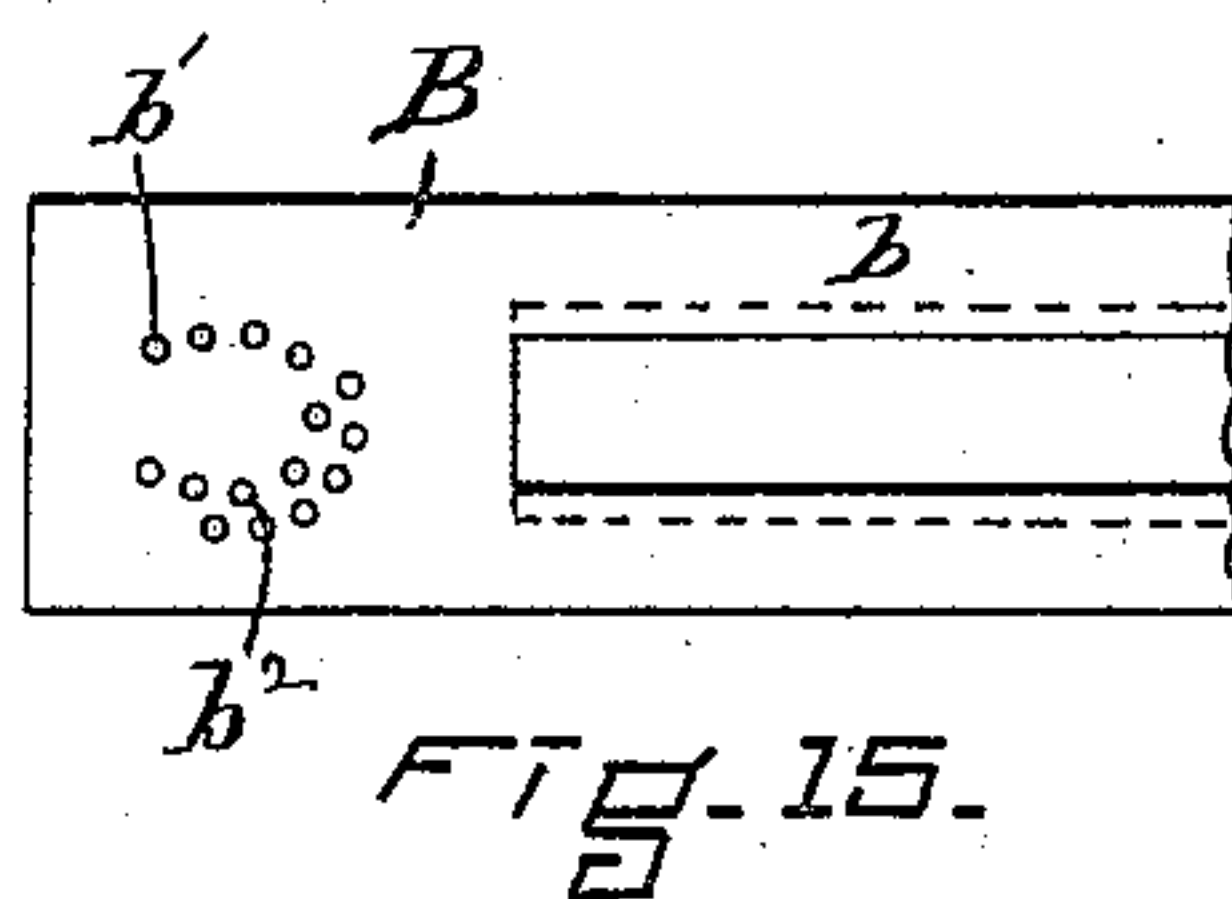
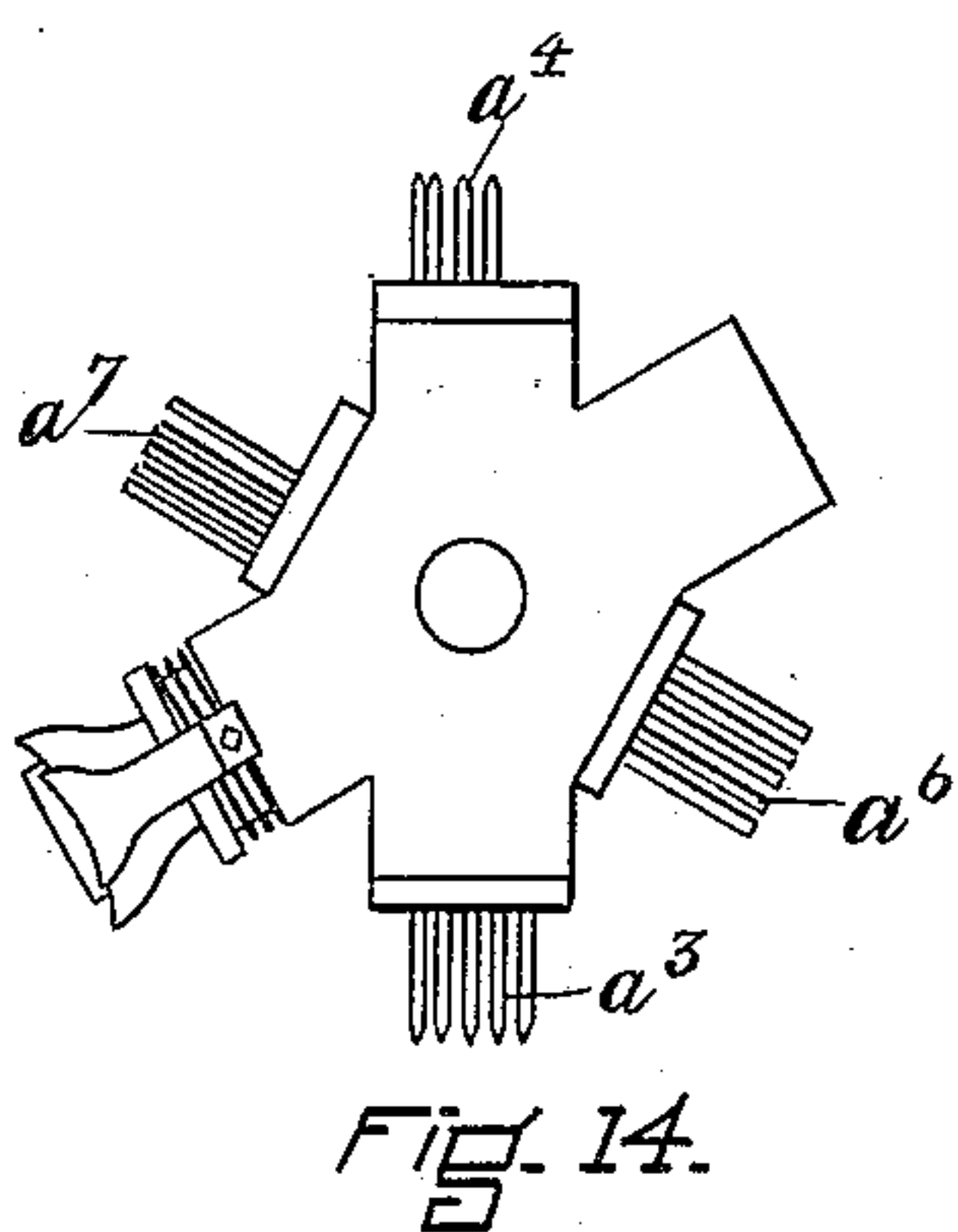
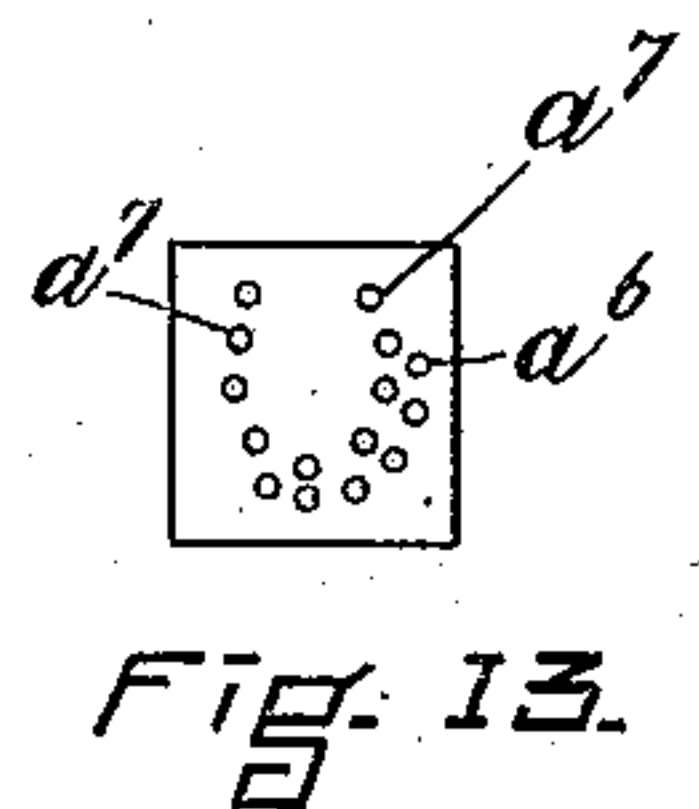
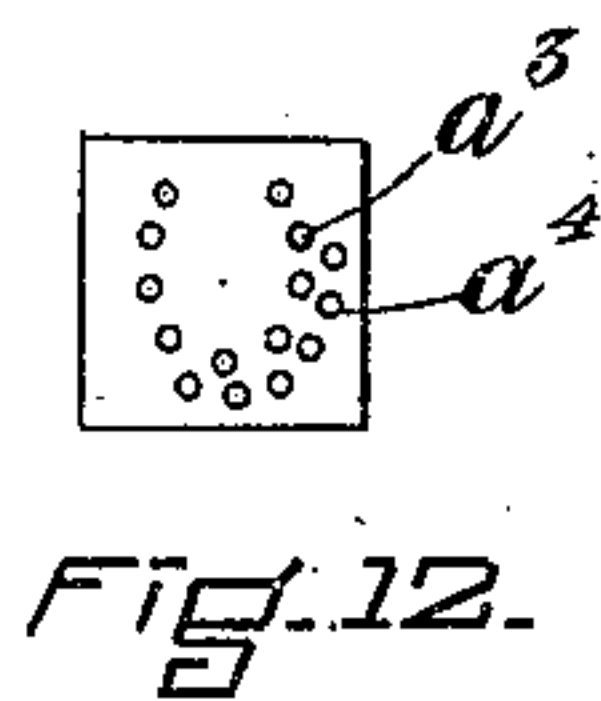
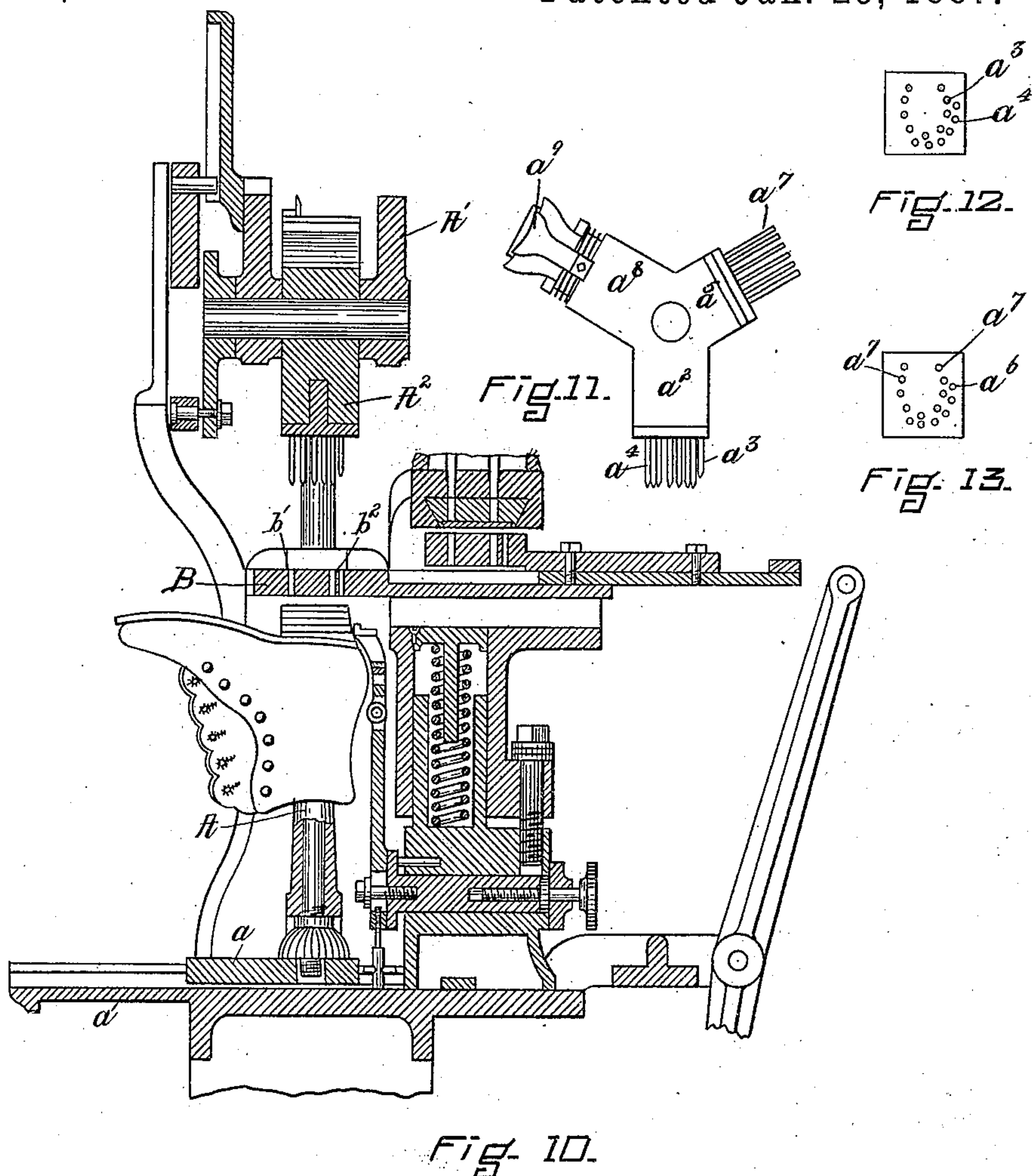
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HEEL NAILING MACHINE.

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UNITED STATES PATENT OFFICE.

FREEBORN F. RAYMOND, 2D, OF NEWTON, MASSACHUSETTS.

HEEL-NAILING MACHINE.

SPECIFICATION forming part of Letters Patent No. 356,554, dated January 25, 1887.

Application filed November 17, 1886. Serial No. 219,146. (No model.)

To all whom it may concern:

Be it known that I, FREEBORN F. RAYMOND, 2d, of Newton, in the county of Middlesex and State of Massachusetts, a citizen of the United States, have invented a new and useful Improvement in Heel-Nailing Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The object of the invention is to provide means for driving into a heel or heel-blank two gangs or groups of nails or fastenings in successive order; and it comprises a templet having a double line of holes, or holes through which two lines of nails or fastenings may be driven, a nail-carrier having two lines of holes for feeding two lines of nails in successive order and transferring them to the templet, a reciprocating cross-head carrying a block supporting two gangs or groups of awls, and when the heel is flush-nailed only a block carrying two gangs or groups of drivers. When it is blind-nailed, there will be two groups or gangs of drivers used; but they will be separated from each other and attached to separate holding-blocks.

The invention also comprises nail-distributing devices having two nail-holders into which two gangs or groups of nails are automatically fed, and a supplemental double nail-carrier arranged to receive nails from both holders, and to transfer them in successive order to the nail-carrier.

The invention further relates to various details of organization and construction, all of which will hereinafter be described.

In the drawings, Figure 1 is a view in vertical section of parts of the machine necessary to illustrate my invention. Fig. 2 is a plan view of a supplemental plate having a compound or double nail-holder. Fig. 3 is a plan view inverted thereof, showing its guides and cap-plates and the sliding covering-plates for covering the holes of the holders. Fig. 4 is a plan view of the nail-carrier and a part of the nail-carrier plate. Fig. 5 is a view to illustrate two gangs or groups of nails driven as in flush-nailing. Fig. 6 is a plan view of a heel, showing one line driven as in blind-nailing and the other as in flush-nailing. Fig. 7 is a plan view of the templet and nail-carrier

and a portion of the nail-carrier plate, representing two complete lines of holes, the inner line being larger in size than the outer line. Fig. 8 is a view in section of the supplemental nail-carrier plate and its holders, and of the nail carrier or holder arranged to deliver two gangs of nails of different sizes to the holes of the carrier represented in Fig. 7. Fig. 9 is a plan view of the supplemental nail-carrier plate. Fig. 10 is a vertical section of the central and upper parts of a heel-nailing machine having the features of my invention. Fig. 11 is a view of a revolving head having two gangs or groups of awls carried by one holding-block, and two gangs or groups of drivers carried by one holding-block. Fig. 12 is a view of the awl-holding block for two gangs or groups of awls. Fig. 13 is a view of the driver holding-block for two gangs or groups of drivers. Fig. 14 is a view of a revolving head having arms for holding the two groups of awls and drivers separate. Fig. 15 is a view in plan of a templet-plate, showing the double line of holes.

A is the last or work-support; a , the jack; a' , the bed upon which it slides. A' is the cross-head. It is reciprocated in any desired way, and it carries a revolving head, A^2 , which has an arm, a^2 , carrying a block holding a gang or group of awls, a^3 , and another gang or group of awls, a^4 , the arm a^5 , which holds a block carrying a gang or group of drivers, a^6 , and a gang or group of drivers, a^7 , and an arm, a^8 , holding or carrying a breasting-knife, a^9 . When the revolving head is automatically rotated, instead of arranging the two groups of awls and the two groups of drivers as described, I provide the revolving head with a separate arm for each group of awls and a separate arm for each group of drivers, (see Fig. 14,) and I prefer to use for rotating it automatically substantially the mechanism described in the Henderson and Raymond Patent No. 317,647, although I do not limit myself to the especial devices therein described.

B is the templet. It is formed in the end of or supported by the templet-plate b , and it may be stationary so far as the horizontal movement is concerned; or it may be moved horizontally by a cam and suitable connecting devices, as described in Patent No. 290,109. It has two lines of holes—first, the line b' , and

second, the line b^2 . The line b' is a complete line, and is the line through which the principal attaching-nails are driven. The line b^2 may or may not be complete, and it may be inside of the line b' or outside thereof, according to the position which it is desired the nails shall have in the heel. (It is shown outside in Figs. 12 and 13.)

C is the nail-carrier. It is formed in or supported by the end of the plate c , and it has a horizontal movement provided it by means substantially as described in said Patent No. 290,109. Both it and the templet-plates are represented as supported by the vertically-movable table c' , which is like that described in said patent. The said carrier has two lines of holes—first, the line c^2 , which holds the principal attaching-nails, and second, the line c^3 , which holds the supplemental or additional nails. These holes are covered by the sliding plate c^4 , and the holder may be operated so that a single group or gang only of nails shall be delivered at a time to the templet—that is, the cam for moving the carrier C may be so constructed or shaped that it moves it inward to deliver one gang of nails, then backward to receive another, then inward again to deliver another gang which are fed into the other holes of the carrier, and then inward to deliver this second gang, and then backward again.

To supply the two sets of holes c^2 c^3 successively and automatically with nails or fastenings, I have arranged a compound distributor, which comprises, essentially, a nail-holder, D, having nail-holding holes d of the same arrangement as the groups $b' c^2$ of the templet and nail-carrier, and the nail-holder D', which has its holes d' arranged in the same order as the groups $c^3 b^2$ of the nail-carrier and templet. These two nail-holders D D' preferably are arranged closely together and over the nail-carrier plate c , and between them and the nail-carrier plate is a supplemental double nail-carrier plate, E. This nail-carrier plate has the nail holder e , the holes e' of which are adapted to register with the holes d of the nail-holder D, and the nail-holder e^2 , the holes e^3 of which are arranged to register with the holes d' of the holder D'.

The supplemental double carrier E has a sliding hole-covering plate, e^4 , for the holder e' , and the sliding hole-covering plate e^5 for the holder e^2 , and the holding-plate e^4 has the projections e^6 , and the plate e^5 the projections e^7 , the office of which will hereinafter appear.

The plate E is moved by a cam (not shown) and connecting-lever, e^8 , and the plate is given movements in relation to the nail-holders D D' and the nail-carrier C, as follows: At the end of a backward movement of the direct carrier-plate c the nail-carrier C is brought into a position to receive nails from the nail holder e , which is then moved transversely to it until its holes come in register with the holes c^2 , when a gang or group of nails is delivered to the carrier C. The sliding plate e^4 is moved to uncover the holes by the contact of the pro-

jection e^6 with the side of the carrier C. The carrier C is then moved forward, the plate E remaining stationary, and after the nails have been delivered to the templet and driven the carrier is returned to its back position, and the plate E moved by its cam in a reverse direction to bring the holes e^3 of the holder e^2 in register with the holes c^3 of the nail-carrier C, whereby the second gang or group of nails is delivered to the carrier, and the carrier is then moved forward again to feed the second gang or group of nails to the holes b^2 of the templet. The sliding plate e^5 is moved to uncover the holes of the holder e^2 by the stop or projection e^7 coming in contact with the side of the nail-carrier plate, and both sliding plates e^4 e^5 are closed automatically to cover the holes by the springs e^9 e^{10} , the plate e^4 by the spring e^9 , and the plate e^5 by the spring e^{10} . The supplemental carrier-plate E is then returned by its cam to its normal position under the holders D D', and the nail-making machine started.

Any suitable nail-making devices may be employed, and in the drawings I have represented only the receiving-block F of the Towns and Raymond Patent No. 346,137, which is arranged to receive the nails from the nail-making devices; and I would say in this connection that it receives nails differing in length, so that the group of nails delivered to the holder D shall be long, if desired, and the group delivered to the holder D' short. The receiving-block F is moved forward with an intermittent motion, and backward with a continuous movement, and it delivers its nails in two gangs or groups—first, a gang or group through the passages g of the distributor G, which conducts the nails and guides them to the holder D, and, second, through the passages g' of the distributor G', which conducts nails to the holder D'. This distributor, however, is like in all essential parts that described in my Patent No. 346,125.

The nail making and delivering mechanism is not started to deliver the nails to the receiving block until after the supplemental carrier-plate has delivered both loads of nails to the main nail-carrier and returned to its normal position.

The supplemental nail-carrier plate may have the distributor secured to it, so as to be made movable therewith, as described in my application filed August 28, 1886, Serial No. 212,040, if desired.

In Figs. 7, 8, and 9 I have illustrated the invention as applied to feeding and driving nails of comparatively large size for attaching-nails, and nails of very small size for wearing-nails and for ornamentation. When these two gangs of nails of different sizes are used, the attaching-nails are generally driven first as in blind-nailing and a top lift then attached, and the small nails then driven through the top lift, although I would say that both gangs may be driven as for flush-nailing, and when two full gangs are used, the first for

blind-nailing and the second for flush-nailing, I prefer to use a revolving head having five or six arms, substantially as shown in Fig. 14, the first of which supports a gang or group of awls, a^3 , for forming the holes for the attaching of large nails, the second of which supports a gang or group of drivers, a^6 , for driving the attaching-nails, the third of which supports a top-lift spanker or top-lift-attaching device, the fourth of which supports a gang or group of shorter and smaller awls for forming the smaller line of holes, the fifth of which supports the smaller drivers, a^7 , for driving the small nails, and the sixth of which supports a compound spanker and breaster.

To permit nails of different sizes to be used, as above specified, it is necessary that the templet should have the line of large holes m and the line of small holes m' set much more closely than the line of large holes m . The nail carrier must have the line of large holes m^2 and the line of small holes m^3 set much more closely than the line of large holes m^2 . The supplemental nail-carrier must have the line of large holes m^4 for delivering nails to the large holes m^2 of the nail-carrier, and the line of small holes m^5 set more closely together for delivering nails to the small holes m^3 of the nail-carrier.

When nails of two sizes are then used, the compound distributor $G\ G'$ will be adapted to receive nails of two sizes from two nail-making devices—one for making large nails and delivering them through the distributor G , and the other for making small nails and distributing them through the passage of the distributor G' .

I would say that the time of operation or movement of the supplemental carrier-plate E may be such as to deliver both gangs or groups of nails to the carrier C at successive operations, and before the carrier is moved to deliver them to the templet, so that the two groups should be delivered to the nail-driving devices at the same time to be driven together. When the machine is thus operated, it will be desirable to use blocks carrying a double gang of awls and a double gang of drivers, as represented in Fig. 11.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. The combination, in a gang nailing-machine, of the nail-driving devices, a templet; B , having two sets of holes, a nail-carrier, C , having two sets of holes, and a supplemental nail-carrier, E , having two nail-holders movable across the said nail-carrier, and adapted to deliver in successive order nails to the two lines or groups of holes in said carrier, substantially as described.

2. The combination, in a gang nailing-machine, of a nail-carrier with a supplemental nail-carrier plate, E , supporting two nail-holders adapted to be moved transversely, the said nail-carrier to deliver nails from the nail-

holders in successive order to the carrier, substantially as described.

3. The combination, in a gang nailing-machine, of a nail-carrier having the line of holes c^2 and the line of holes c^3 , with the supplemental nail-carrier having the two nail-holders $e\ e^2$, one provided with a line of holes, e' , and the other with a line of holes, e^3 , substantially as described.

4. The combination, in a gang nailing-machine, of the distributors $G\ G'$, the nail-carrier plate E , having two nail-holders, $e\ e^2$, and the nail-carrier C , substantially as described.

5. The combination of the nail-carrier C and a cam for operating the same, and the supplemental nail-carrier E and its operating-cam, substantially as described.

6. The combination of the nail-carrier C , the supplemental nail-carrier E , the nail-holders $e\ e'$, carried thereby, and the hole-covering plates $e^4\ e^5$, having the projections $e^6\ e^7$, adapted to be brought in contact with the nail-carrier plate alternately or in successive order, substantially as described.

7. In a heel-nailing machine, the combination of a support for the boot or shoe, a templet having a line of large holes, m , and a line of small holes, m' , set more closely together than the large holes m , and on a line parallel with the line of large holes m , and the nail-driving devices, substantially as described.

8. The combination of a support for the boot or shoe, a templet having the large holes m , the line of small holes m' , arranged upon a line substantially parallel with the line of large holes, a sliding nail-holder having the large holes m^2 and small holes m^3 upon a line substantially parallel with that of the large holes, and the nail-driving devices, substantially as described.

9. The combination of a support for the boot or shoe, a templet having the line of large holes m and the parallel line of small holes m' , and a gang or group of long awls for use in connection with the large holes m , a gang or group of small short awls for use in connection with the gang or group of holes m' , a gang or group of large drivers for use with the gang or group of holes m , and a gang or group of small drivers for use with the holes m' , substantially as described.

10. The combination, in a heel-nailing machine, of a nail-carrier having the line of large holes m^2 and the parallel line of small holes m^3 , with the supplemental nail-carrier plate E , having a line of large holes, m^4 , having the same order or arrangement as the holes m^2 of the nail-carrier, and the line of small holes m^5 , having the same order and arrangement as the line of large holes m^3 of the nail-carrier, substantially as described.

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Witnesses:

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FRED. B. DOLAN.