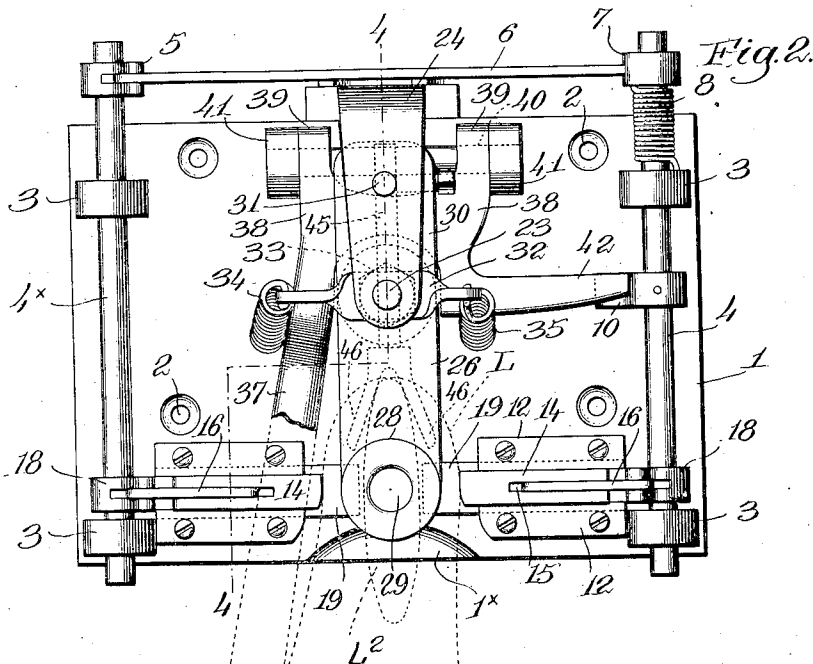
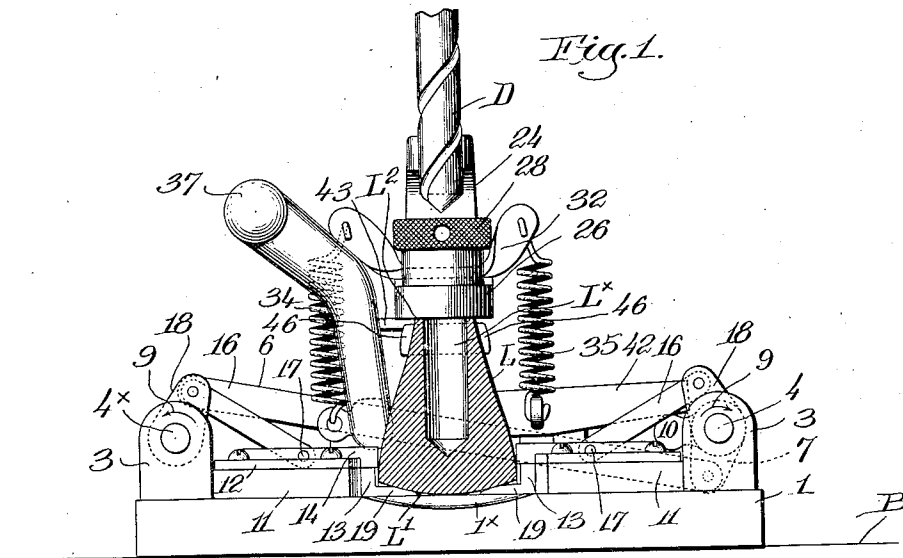


W. H. BAYNARD.
JIG FOR BORING JACK HOLES IN LASTS.
APPLICATION FILED APR. 10, 1909.

948,284.

Patented Feb. 1, 1910.

2 SHEETS—SHEET 1.



Witnesses.
Thomas J. Drummond,
Joseph M. Ward.

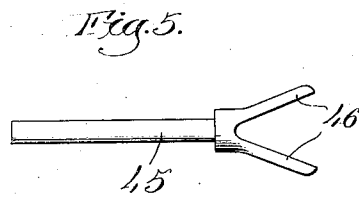
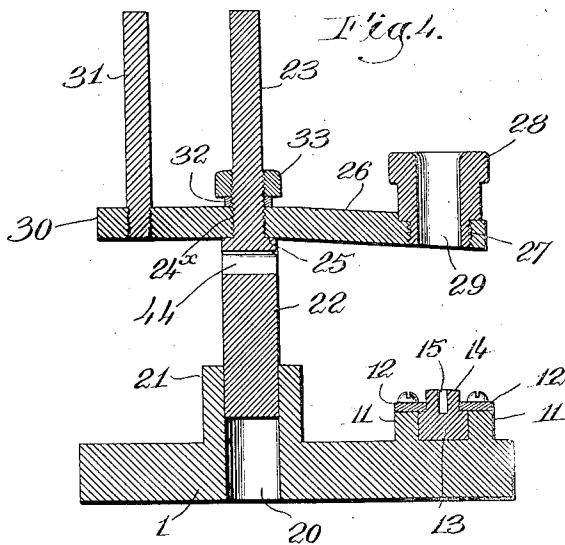
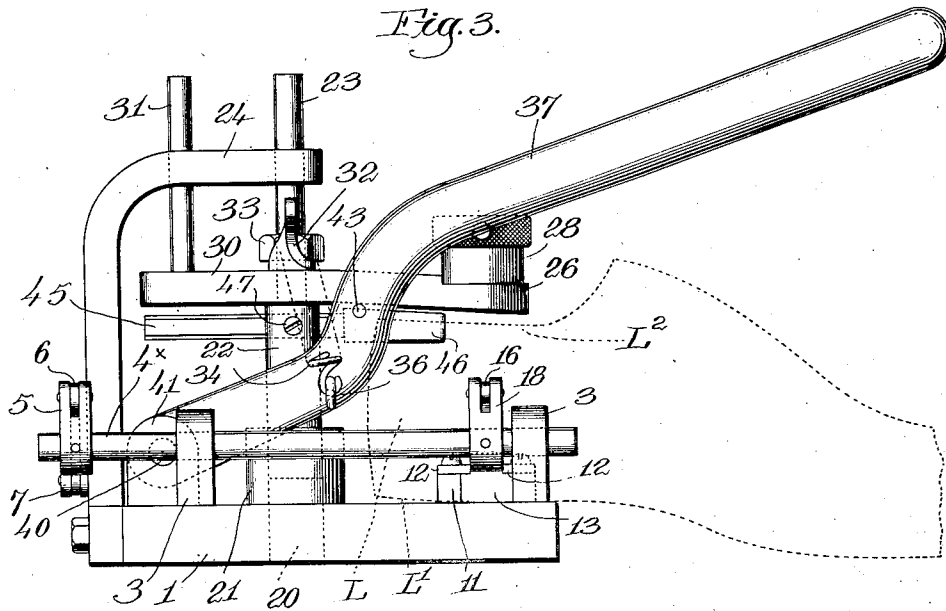
Inventor.
William H. Baynard,
by Lewis Augustus.

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2 SHEETS—SHEET 2.



Witnesses:

Thomas J. Drummond,
Joseph M. Ward.

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UNITED STATES PATENT OFFICE.

WILLIAM H. BAYNARD, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO A. E. LITTLE & COMPANY, OF LYNN, MASSACHUSETTS, A FIRM.

JIG FOR BORING JACK-HOLES IN LASTS.

948,284.

Specification of Letters Patent.

Patented Feb. 1, 1910.

Application filed April 10, 1909. Serial No. 489,095.

To all whom it may concern:

Be it known that I, WILLIAM H. BAYNARD, a citizen of the United States, and resident of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Jigs for Boring Jack-Holes in Lasts, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention has for its object the production of a novel jig for boring jack-holes in lasts, whereby the hole is formed in the proper position with relation to the width and length of the last, and at the proper inclination to the bottom of the last.

In shoe making as now conducted the wooden last is retained in the shoe during the performance of various operations, and in some of the operations, such as heeling, the last is supported upon the spindle of a jack in such manner that the operator can revolve the last and the shoe thereon about the jack-spindle, in order to present different portions of the bottom of the shoe in proper position to be acted upon.

When heel-nailing or slugging is performed it will be manifest that the bottom of the heel should be maintained in a given plane during the revolving of the shoe to present different parts of the heel-bottom to the nail inserting device, or else some of the nails or slugs will be driven in too far while others will not be driven in to the proper depth. This lack of uniformity is not only objectionable as concerns the nailing or slugging of the heel itself, but it gives rise to trouble and annoyance in subsequent operations, requiring greater time and care for the performance thereof, and at times interfering with the proper appearance of the finished shoe.

If the hole in the last for the reception of the spindle of the jack is out of its true position the revolution of the last on the spindle cannot be effected properly and accurately for if the jack-hole is inclined toward one or the other side of the last one side of the bottom thereof will be too high, and the other side too low, when the last is placed on the jack.

In practice the jack-hole should be in a perpendicular plane with respect to the bottom of the heel of the last, and midway between the sides of the heel-part, and it

should be inclined forward from its upper to its lower end about 5° from the perpendicular, in order to secure the best results.

Jack-holes are bored by passing the last beneath an upright drill or boring tool, and the skill and care of the operator are depended upon for holding the last in the proper position for receiving the tool as it is fed into the last. Consequently any slight carelessness, lack of attention or skill on the part of the operator will cause the jack-hole to be bored improperly, and when the last is used in the manufacture of a shoe the objections hereinbefore noted manifest themselves.

In accordance with my present invention I provide a jig for holding and properly positioning the last during the operation of boring the jack-hole, the construction and arrangement being such that the last is clamped laterally and also vertically, the vertical clamping means acting upon the last to position it for the desired for and aft inclination of the jack-hole.

The construction of the jig is simple, its operation is speedy and readily controlled by the operator, and adjustment for lasts of different lengths and sizes is provided for and easily effected.

The various novel features of my invention will be fully described in the subjoined specification and particularly pointed out in the following claims.

Figure 1 is a front elevation of a jig embodying one form of my invention, in operative position clamping a last, the latter being shown in cross-section, the lower end of the boring tool being shown; Fig. 2 is a top plan view of the jig shown in Fig. 1, with the parts in the same relative positions, the operating handle being broken off and the last being shown in dotted lines; Fig. 3 is a left hand side elevation of the jig, with the parts thereof in position ready to receive and clamp the last, the latter being indicated by dotted lines; Fig. 4 is a vertical sectional detail on the line 4-4, Fig. 2, to be referred to. Fig. 5 is a plan view of the adjustable heel-stop, detached.

Referring to the drawings, I have shown the various operating parts of the jig as mounted on a heavy, rectangular base-plate 1, provided with holes 2, Fig. 2, for the reception of suitable screws, not shown, by which the jig is rigidly secured to the bed or

table of the boring machine, such bed or table being indicated at B, Fig. 1, and therein I have shown the lower end of the upright boring tool or drill D by which the jack-hole 5 is bored in the last.

The base-plate is provided with opposite pairs of upright ears 3, which form bearings for two parallel rock-shafts 4, 4*, clearly shown in Fig. 2, arranged adjacent the sides 10 of the base-plate, and at its rear end the shaft 4* is provided with an upturned arm 5 pivotally connected by a link 6 with a similar but depending arm 7 on the shaft 4, so that the two shafts will rock oppositely and 15 through equal angles.

A retracting spring 8 is shown in Fig. 2 coiled around the shaft 4 and having its ends attached to the arm 7 and the bearing ear 3, respectively, the winding of the spring 20 being such as to turn the shafts in the direction of the arrows 9, Fig. 1, and thereby elevate a short, inturned arm 10 fixed on the shaft 4, for a purpose to be referred to hereinafter.

Between the front ears 3 and parallel to the front of the base-plate I form thereon opposite guide-ribs 11, surmounted by inwardly extended cover-plates 12, clearly shown in Fig. 4, to form guideways at right 30 angles to the rock-shafts and for the reception of longitudinally movable clamping and positioning members.

Each clamping member is made as a block 13 slidable on the base-plate between a pair 35 of ribs 11 and held in place by the plates 12 which overhang the longitudinally shouldered top of the block, the central portion 14 thereof rising between and above the plates 12 and having a groove 15 formed therein, 40 to receive the end of a link 16 which is pivoted to the clamping member at 17, Fig. 1.

The outer end of each link is pivotally connected with a short arm 18 fast on the adjacent rock-shaft, 4 or 4*, as the case may be, and from the description and drawings 45 it will be manifest that the members 13 will be moved toward or from each other uniformly and positively by rocking movement of the shafts 4, 4*.

As shown in Fig. 1 the upper part 14 of each clamping member extends slightly beyond the inner end of the main part or body 13 of such member, to form an engaging portion adapted to coöperate with the side 55 of the heel-part L of a last, as shown in Fig. 1, when the bottom L' of the said heel-part is seated on the base-plate 1 between the clamping members. This part of the base-plate thus forms a support for the heel 60 of the last, and it is cut away or concaved at 1*, Figs. 1 and 2, to allow perfect freedom for the last when being positioned for boring.

Referring to Fig. 1 it will be seen that 65 owing to the convex bottom L' of the heel-

part the last would have a tendency to tip or rock on the base-plate even when the clamping members are in engagement with the sides, as shown in Fig. 1, so that the jack-hole 1* would not be bored in a true central 70 plane, and to obviate this tendency I have formed toes or extensions 19 on the inner ends of the clamping members, said extensions being chamfered off to pass under the heel bottom L' and hold the last from tipping. 75

I have shown the jack-hole L* in Fig. 1 in order to better illustrate the lateral positioning of the last with respect to the line of feed of the tool D, it being understood, 80 of course, that the line of feed is perpendicular to the base-plate 1 of the jig.

When the last is placed in the jig it may be at one side or the other of the line of feed, but when the clamping members are actuated 85 they will engage and properly position the last for the reception of the boring tool, so that the longitudinal axis thereof will be exactly in the median plane of the heel-part L. 90

The clamping members adapt themselves automatically to different sizes or styles of last, as will be obvious, for if the heel-part is thicker said members will not move so far 95 toward each other as they would if a thinner heel-part were engaged and positioned.

Before the lateral positioning of the heel-part is effected the last is engaged and held seated on the base-plate, and properly tipped in a fore and aft direction so that the jack-hole 100 may have the proper inclination, previously referred to, and the means for effecting such results will now be described.

Midway between the rock-shafts 4, 4* the base-plate has a vertical hole 20, Fig. 4, surrounded by an annular curb 21, providing a bearing for a vertically movable spindle 22 reduced in diameter at its upper end at 23, and threaded at 24*, Fig. 4, the part 23 sliding longitudinally through a hole in an 105 overhanging guide-arm 24 bolted or otherwise secured rigidly to the base-plate at its back.

Upon the shoulder 25 rests a presser 26, extended frontward above the space between 115 the clamping members 13, and having a threaded aperture 27 in axial alinement with the axis of the tool D, this aperture having screwed thereinto a tubular tool-guide 28, the bore 29 thereof, see Fig. 4, being of such 120 a diameter that the particular tool to be used will just pass therethrough.

The presser is shown as slightly inclined, see Fig. 4, so that its under face, when brought into engagement with the crown L² 125 of the last, will tip the last on its support, to wit, the base-plate 1, and hold it so that when the jack-hole is bored it will have the correct inclination from its upper to its lower end. Were the under face of the presser 130

horizontal the proper inclination or tipping of the last would not be effected.

At its rear end the presser is extended, as at 30, and has rigidly attached to it an up-right guide-pin 31 which slides through a suitable hole in the arm 24, as shown, to prevent any twisting or lateral displacement of the presser when the spindle 22 rises and falls.

Above the presser a transverse cross-head 32 is mounted on the spindle extension 23 and held in place by a nut 33, thereby holding the presser firmly on the shoulder 25, the ends of the cross-head being bent up, as shown, to form attaching devices for the upper ends of coiled springs 34, 35.

The lower end of spring 34 is attached to an eye 36 on an actuating handle 37, herein shown as forming an integral part of a casting 38 provided with ears 39 fulcrumed on a horizontal rod 40 carried in ears 41 at the back of the base-plate, the rod 40 being at right angles to the rock-shafts.

The lower end of spring 35 is attached to an arm 42 extended laterally from the casting and bearing on the top of the short rocker-arm 10 previously referred to, and as shown in Fig. 3 the handle 37 is extended upward and forward within easy reach of the operator, said handle having a pin 43 extended beneath the presser 26.

As shown in Fig. 4 the spindle 22 has a horizontal hole 44 to receive the shank 45 of a heel-stop, shown separately in Fig. 5, the head of the shank being bifurcated to present diverging fingers 46, the heel-stop being positioned beneath the presser and arranged to receive between its fingers 46 the heel of the last adjacent the crown L^2 , Figs. 1, 2 and 3. The heel-stop is held in adjusted position by a set screw 47, Fig. 3, and it will be seen that by adjusting said stop the position of the heel-part of the last, in a longitudinal direction, will be determined, such adjustment enabling the jig to be used for men's women's and children's lasts, of various sizes, this heel-stop determining how far forward from the rear end of the crown the jack-hole is to be bored.

In using the apparatus described the operator takes a last by the fore-part and places it on the supporting part of the base-plate 1, between the retracted clamping members 13, and pushes the back of the heel-part L against and between the fingers or jaws 46 of the heel-stop. The handle 37 is now pulled down and through the springs 34, 35 the spindle 22 is caused to descend, bringing down the presser 26 upon the crown of the last, as in Fig. 1, and thereby giving to the last the proper inclination fore and aft. At the same time the arm 42 acts upon the rocker-arm 10 and through it and the link 6 the rock-shafts 4 and 4* are turned oppositely to arrows 9, Fig. 1, so that the links 16

cause the clamping members 13 to move inward positively, and this movement continues after the presser seats on the crown of the last, as the springs 34, 35 stretch as the downward stroke of the handle 37 is completed.

Whether or not the last is accurately positioned laterally when the presser descends is not important, for as the clamping members are brought into engagement with the sides of the heel-part L the latter will, if necessary, be moved to the right or left to accurately center it laterally with relation to the line of feed of the tool D, and when so centered it will be held there by the grasp of the parts 14 of the clamping members. The toes or extensions 19 are then under the bottom of the heel, see Fig. 1, and prevent any possibility of tipping or rocking of the last.

While the clamping members are completing their operative movement the presser 26 is yieldingly held upon the crown of the last by the springs, so that any lateral shifting under the action of the clamping members will be permitted.

When the last is thus positioned by the successive operations of the presser and the clamping means the operator continues to press down on the actuating handle 37, and then effects the downward feed of the drill D by usual means, forming no part of my invention, the tool passing through the guide 28 into the last and making therein the jack-hole L^* . After the hole is bored the tool is retracted, the handle 37 is swung up, the retracting spring 8 then acting to draw back the clamping members away from the last, and the pin 43 extending beneath the presser acts to raise the latter, and the spindle 22, so that the last is altogether released and can be removed.

The device is simple, rapid in action, and highly efficient, holding the last securely in exactly the right position to be bored and so that the jack-hole will be bored correctly in the proper part of the last, the presser being yieldingly connected, and the clamping means positively connected, with a common actuating instrumentality.

Various changes or modifications in details of construction and arrangement may be made by those skilled in the art without departing from the spirit and scope of my invention as set forth in the claims annexed hereto.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a device of the class described, a support for the bottom of the heel-part of a last, an elongated presser movable in a fixed path toward and from the support, to engage the crown and maintain the heel-part of the last seated on the support, movable clamping members to engage opposite

sides of the heel-part of the last and position the same laterally, and an actuating instrumentality operatively connected with said presser and the clamping members and acting to bring them successively into engagement with the last and to maintain it in position for the jack-hole to be bored.

2. In a device of the class described, relatively movable means to engage and hold at top and bottom the heel-part of a last and automatically tip it for the reception of a boring tool, a stop to position the last longitudinally, means to position the heel-part laterally with relation to the line of feed of the boring tool, a manually operated actuator, and separate connections between it and each of said means, to effect coöperation of said means successively with the last, whereby it is positioned laterally after the first-named means has been brought into engagement with and effected the longitudinal inclination of the last.

3. In a device of the class described, a support for the bottom of the heel-part of a last, a vertically movable presser provided with a tool-guide and adapted to engage the crown of and properly tip the last longitudinally and maintain the heel-part of the last seated upon the support, means to engage the sides of and position laterally the heel-part of the last, an actuator coöperating with and to operate positively said means, and a yielding connection between said actuator and the presser, whereby the latter bears yieldingly upon the top of the heel-part while the laterally positioning means is brought into action by continued movement of the actuator.

4. In a device of the class described, a base-plate, a presser vertically movable thereon and having an elongated and inclined under face to engage the crown of the last and tip it longitudinally, laterally movable clamping members to engage the sides and laterally position the heel-part of a last, said members adapting themselves automatically to the thickness of the heel-part, an actuator, operating connections between it and said clamping members, to move them positively toward each other uniformly, spring-actuated retracting means for said members and a yielding connection between the actuator and the presser, to move the latter downward into engagement with the top of the heel-part of the last and maintain it seated upon the bed in position to be bored, the yielding connection permitting further movement of the actuator to operate the clamping members after the presser has been brought into engagement with and positioned the last in a fore and aft direction.

5. In a device of the class described, a support for the heel of a last, opposed clamping members movable toward each other to engage the sides of and properly

position laterally the last to be bored, positively operating actuating means for said clamping members, a presser movable into engagement with the top of the last, a heel-stop movable with and manually adjustable relatively to the presser, and a connection between the latter and the said actuating means permitting continued movement of the clamping members after stoppage of movement of the presser.

6. In a device of the class described, a base-plate adapted to support the heel of a last, a vertically-movable spindle on said base-plate, a presser fixedly mounted on the spindle and overhanging the heel of the last, the under face of the presser being inclined, to engage the crown of and slightly tilt a last seated on the support, said presser having an opening for the passage of the boring tool, clamping members movable into engagement with the sides of and to laterally position the last with relation to the feed path of the tool, a manually operated actuating member coöperating with and to move said clamping members positively, and a yielding connection between the actuating member and the spindle, to draw it downward and bring the presser into engagement with the crown of the last.

7. In a device of the class described, a base-plate on which the last is supported, parallel rock-shafts mounted on said base-plate, connections between and to turn the rock-shafts oppositely and equally, clamping members slidably mounted on the base-plate and operatively connected with said rock-shafts, said clamping members being movable into clamping engagement with opposite sides of the last near the heel, to laterally position it, a manually operated handle coöperating with and to turn the rock-shafts and effect the actuation of the clamping members, a presser to bear upon the crown of and tip automatically the last longitudinally upon the support to determine the angularity of the jack-hole, a yielding connection between the presser and the handle, to effect descent of said presser to operative position upon the crown of the last, and an adjustable heel-stop for the last.

8. The combination, with a vertically movable boring-tool, of a support for the heel of a last, means movable perpendicularly to said support to engage the crown of and tip the last automatically on the support with relation to the axis of the tool, other means to engage opposite sides of the last and laterally position it with relation to such axis, and a single, manually actuated instrumentality operatively and separately connected with said two means to bring them successively into operative engagement with the last.

9. In a device of the class described, a support for the heel of a last, means to en-

gage and hold the last thereon and tip it automatically in position for boring, oppositely movable clamping members to engage the sides of the last and position it laterally, 5 each member having a foot to pass under the heel and prevent rocking of the last, spring-actuated retracting means for said members, a handle, connections between it and said members, to move them positively toward 10 and hold them clamped upon the last, and a separate, yielding connection between said handle and the means to hold and tip the last.

10. In a device of the class described, a 15 support, a vertically movable, apertured and elongated presser to engage the crown of a last, tip it longitudinally, and maintain it on the support, a tool-guide on the presser, registering with the aperture therein, means 20 to engage opposite sides of the last and position it laterally with relation to the tool-guide, and a common actuating device to cause operative engagement of the presser and said means, successively, with the last, 25 to thereby effect lateral positioning of the

last after the crown thereof has been engaged and tipped by the presser.

11. In a device of the class described, a support, a vertically movable spindle, an elongated presser having an inclined under 30 face and fixedly mounted on the spindle and adapted to engage the crown of a last, tip it longitudinally, and maintain it on the support, clamping means to engage opposite 35 sides of the heel-part of the last and position it laterally with relation to the presser, devices movable with the clamping means to extend beneath the bottom of the heel-part and prevent rocking of the last, and an actuating instrumentality to operate the presser 40 yieldingly and to operate positively the clamping means.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

WILLIAM H. BAYNARD.

Witnesses:

ARTHUR P. CURRIER,
STACEY A. MARBLE.