

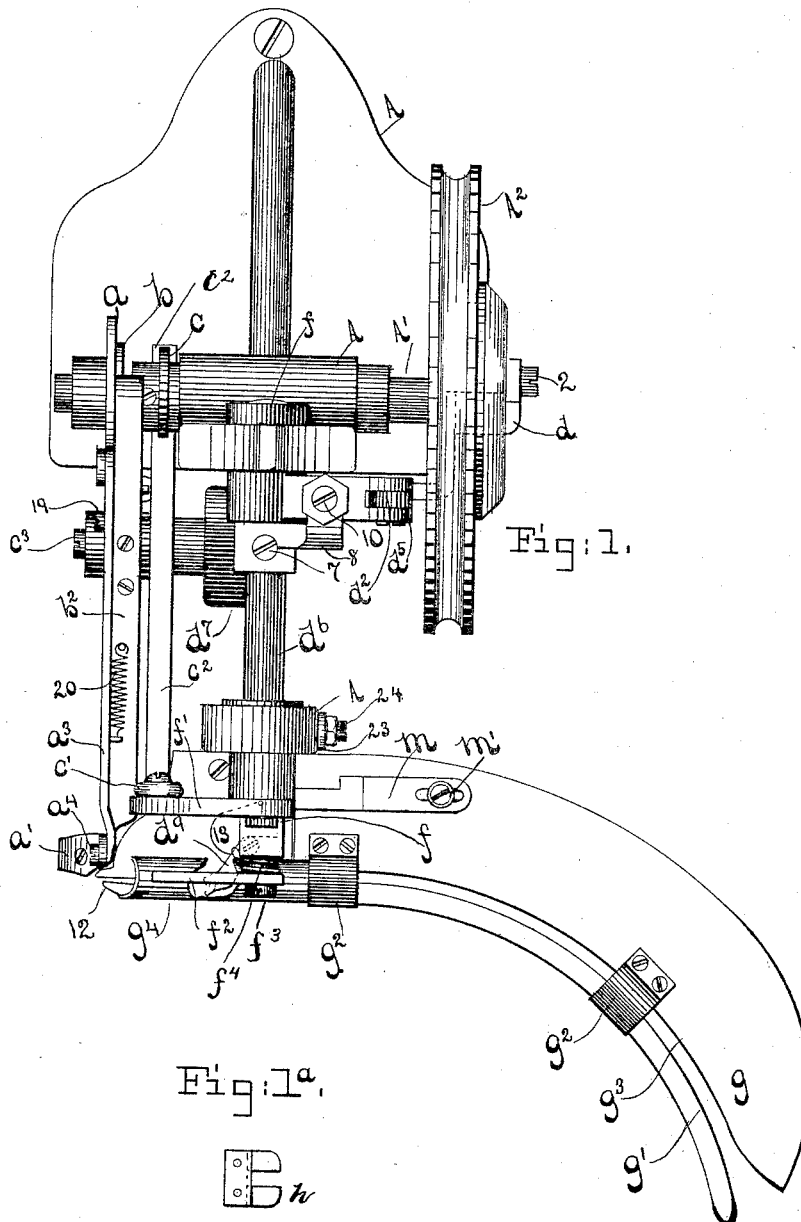
(No Model.)

3 Sheets—Sheet 1.

J. KEITH.
MACHINE FOR BUTTONING BOOTS.

No. 458,835.

Patented Sept. 1, 1891.



Witnesses:
Edward F. Allen.
Oscar F. Hill.

Inventor.
Jeremiah Keith.
by Lemby Gregory attys.

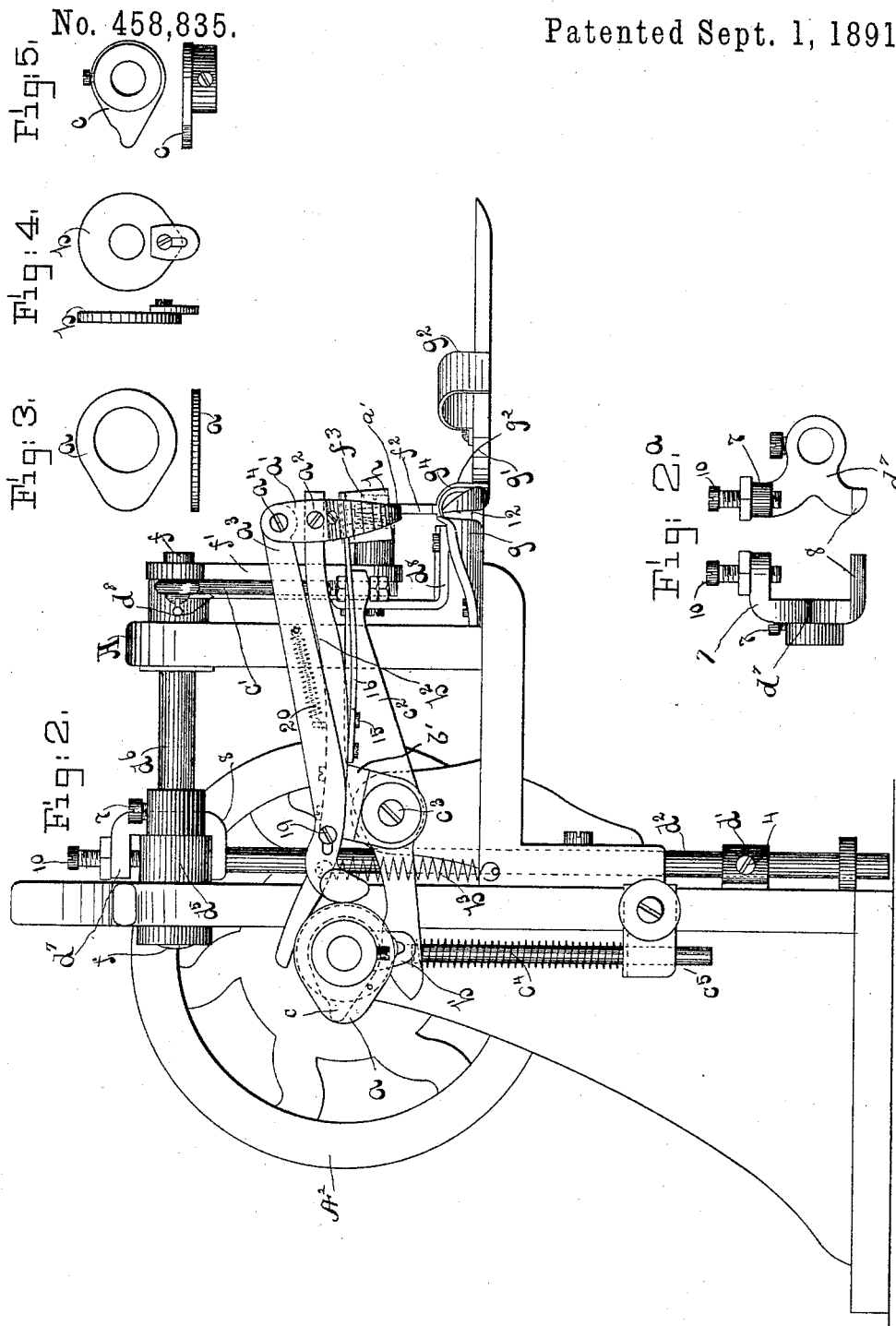
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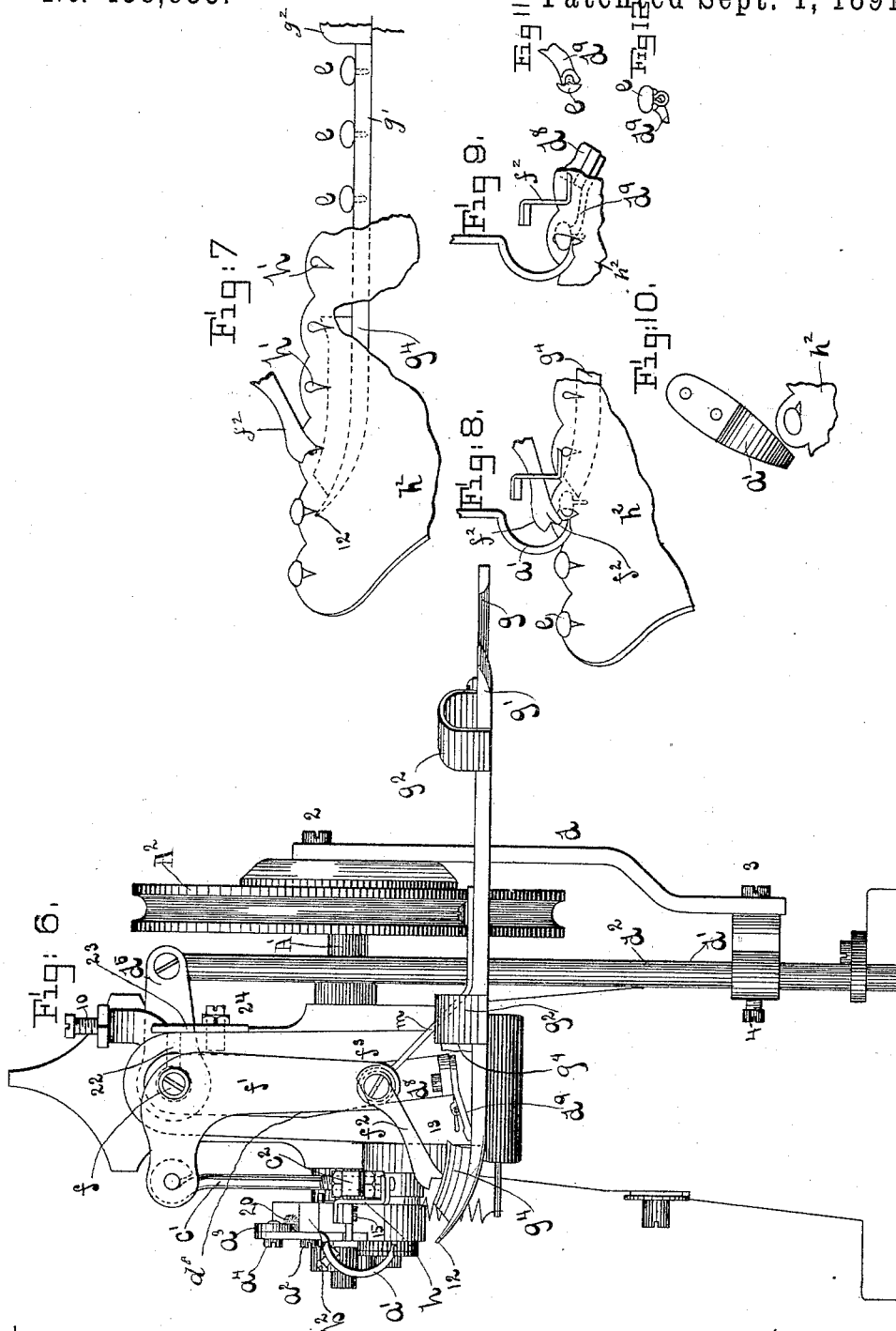
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UNITED STATES PATENT OFFICE.

JEREMIAH KEITH, OF NORTH MIDDLEBOROUGH, ASSIGNOR TO FRANK F. STANLEY, OF SWAMPSCOTT, MASSACHUSETTS.

MACHINE FOR BUTTONING BOOTS.

SPECIFICATION forming part of Letters Patent No. 458,835, dated September 1, 1891.

Application filed March 7, 1891. Serial No. 384,083. (No model.)

To all whom it may concern:

Be it known that I, JEREMIAH KEITH, of North Middleborough, county of Plymouth, State of Massachusetts, have invented an Improvement in Machines for Buttoning Boots, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention is an improvement on the machine represented in my United States Patent No. 360,021, dated March 29, 1887. In the patent referred to the buttons duly attached to a shoe are fed along between guides by a feeding device, which engages the shank of each button in succession, and co-operating with such feed device was a holder, which engaged a button-shank and held it and the shoe in place, while the feed device referred to was moved backward over the tops of the buttons to again engage a button and feed it and the shoe forward. The patent referred to contained two buttoners or fingers, which were depressed upon the button-fly lying on top of the buttons, and in their downward pressure caused the button-hole in the button-hole piece to be crowded down on the button then under it and retained by the holder. In the machine referred to the action of the feed device against only the button-shank to move the shoe and carry the button attached thereto into position under the buttoners to enable the button-hole piece to be forced over the button was found to operate imperfectly, and such form of feed alone could not be relied upon with all classes of work, so I have had to interpose a shield between the heads of the buttons and the button-hole piece, the said shield covering a number of the buttons out, terminating back from the delivery and of the guide-plates sufficiently to leave uncovered that button next to be engaged by the button-hole piece, the said shield supporting the under side of the button-hole piece, so that the button-holes therein may be engaged by a button-hole-feeding device, which I have added to the machine. The buttoners referred to in the said patent in their action upon the button-hole piece, if the button-hole therein was in proper position with relation

to the head of the button, would operate well with thin stock; but when the stock was heavy or stiff the buttoners would not always act, and the operator was obliged to assist by hand.

My present invention therefore comprehends a buttoning-machine containing the following instrumentalities, viz: A guideway for the buttons attached to the boot or shoe, a shield to cover the heads of the said buttons, and a button-hole-feeding device to engage the said button-holes and aid in feeding the button-hole piece and boot or shoe. The button-hole feeder herein employed also acts as an opener or spreader and co-operates with a tucker, which tucks the side of the button-hole engaged by the said button-hole feeder or finger under the head of the button. The button-hole feeder has also combined with it a presser-foot to bear on the button-hole piece and clamp it on the shield, while the button-hole feeder acts to expand the button-hole, as stated, and at the same time a button-feeder acts on the shank of a button and forces it into and through the button-hole, while the opener acts to hold down and tuck under the front edge of the button-hole.

In the operation of the parts described the button-hole feeder is so timed and moved forward in engagement with the forward side of the button-hole a little in advance of the action of the button-feeder on the shank of the button, that the button-hole is placed in position and expanded and opened preparatory to the button-feeder acting to feed the button into and through the opened hole.

Different features of my invention as stated will be hereinafter more particularly described and made subject of claims at the end of this specification.

Figure 1 is a top or plan view of a machine embodying my invention, the presser-foot being broken off to show the shield under it. Fig. 1^a shows the presser-foot in plan view; Fig. 2, a left-hand side view of the machine shown in Fig. 1; Fig. 2^a, a detail of the block *d'*; Figs. 3, 4, and 5, details of cams to be referred to; Fig. 6, a front end elevation; Figs. 7, 8, 9, and 10, details to be referred to. Fig. 100

11 in plan view represents the forked end of the button-feeder as engaging the shank of the button, the head of the button being more than half broken away. Fig. 12 shows a right-hand side view of the parts represented in Fig. 11.

The frame-work A, of suitable shape to sustain the parts, has suitable bearings for the main shaft A', provided with a suitable driving-pulley A². The main shaft has attached to it three cams a b c. The pulley A² has a crank-pin 2 for a connecting-rod d, attached to a stud 3 of a block d', adjustably secured by a suitable set-screw 4 to a slide-rod d², jointed at its upper end to an arm d³, the hub of which surrounds the rock-shaft d⁴, the latter shaft having fastened to it a forked block d⁵, (shown separately in Fig. 2^a.) the said block having two projections 7 8, the one marked 8 having an adjusting-screw 10, such an arm and block affording proper amount of lost motion, so that the arm d³, fast to the rock-shaft and carrying at its lower end the button-feed device d⁶, may be moved to feed the button-piece, as when the arm d³ strikes the projection 8, the forward notched end of the feeding device then engaging the shank of a button e, as best shown in Figs. 11 and 12. The projection 7 has an adjusting-screw 10, which may be screwed in more or less to limit the extent of upward motion of the arm d³ before it strikes the said screw. The less the lost motion the longer the backward stroke given to the button-feeding device, thus adapting it to buttons of different spacing, as required, the forward motion of the button-feeding device being always to the same point, as the button attached to the shoe in the usual manner must always be fed forward into the same position to be engaged by a button-hole.

The frame-work has suitably attached to it two guide-plates g g', joined by yokes g², and having between them a curved guiding-slot g³, in which enter the shanks of the buttons already attached to the shoe, the under side of the heads of the buttons resting on the said plates. The delivery end of the said plates are curled or turned up, as shown at 12, (see Figs. 6 and 7,) and from a point just back of the said delivery end substantially to one of the yokes g² the slot between the said plates is covered by a shield g⁴, represented, however, as partially broken out in Fig. 6 to better show the button-feeding device. This shield g⁴ receives upon it the under side of the usual button-hole piece h² of the boot or shoe, it having a series of button-holes h'. The weight of the shoe is sustained chiefly by the heads of the buttons resting on the plates g g'.

The button-feeding device d⁶ is pivoted on a horizontal ear at the lower end of the arm d³, a spring 13 normally acting to keep the forked end of the said feeder pressed toward the shank of the buttons.

At the outer end of the rock-shaft d⁴ is a journal or stud f for the lever f', on which is

mounted the button-hole feeder f², it being mounted loosely on a stud f³ (shown by full lines, Fig. 1, and by dotted lines, Fig. 2) of the said lever, and being acted upon by a suitable spring f⁴, (see Fig. 1,) which normally keeps the pronged end of the said feeder pressed down upon a button-hole piece resting on the said shield, the prong of the button-hole feeder entering a button-hole as the prong is moved forward, and always carrying the front edge or half of the button-hole engaged by it to the same spot, the prong in the backward movement of the said lever dragging over the button-hole piece for a distance equal to the greatest space between two adjacent button-holes.

The lever f' has a link c', attached to its short arm and to the long end of a lever c², pivoted on a stud c³, the shorter or rear arm of the said lever being acted upon by the cam c referred to, the rear end of the said lever being kept pressed against the said cam by a spring c⁴ on a guide-rod c⁵. The stud c³, as shown, carried by the frame-work, supports also the hub b' of a lever b², acted upon by the cam b, (shown separately in Fig. 4,) the rear end of the said lever being kept normally in contact with the said cam by a spring b³.

The lever b² has connected to it by screws the spring-shank 16 of the presser-foot h, (shown separately in Fig. 1^a.) it being shown as slotted for the passage through it of the button-hole feeder, the said presser-foot bearing on the work only when the button-hole-feeding device engaged in the button-hole is stretching or expanding the same open, in order that the button being fed forward at the same time may be fed or pushed from under the shield into the open button-hole, the forward movement of the button-hole-feeding device in engagement with a button-hole moving a little faster in its forward movement than the button-feeding device, the button-hole-feeding device stopping, however, a little before the button-feeding device stops in its forward movement, and it is while the button-hole-feeding device is at rest that the presser-foot holds the button-hole piece firmly on the shield. As the button-hole-feeding device reaches its forward position and the presser-foot descends, as stated, a tucker a' descends upon the material at the front edge of the button-hole just at the end of the button-hole feeder, as best shown in Fig. 8, and while the button-feeder engages the shank of the button the said tucker pushes that edge of the button-hole down below the head of the button and the tucker passes its free curved end under the head of the button and then the tucker is swung about its pivot a² near the end of lever b² by the action of the cam a on the end of a slide-bar a³, connected to the upper end of the tucker at a⁴, the said slide-bar being slotted, as shown in Fig. 2, and being guided in its movements by a pin 19 in the lever b², a spring 20 (shown by dot-

ted lines, Fig. 2) normally acting to keep the end of the bar a^3 against the said cam a . The extent of backward movement of the lever f' is governed by the adjustable stop m , held by the set-screw m' . The rock-shaft d^b has a friction device, which bears against it and prevents any movement of the said shaft, except that desired, the said friction device being herein shown as a pin 22, (see dotted lines, Fig. 6,) which is acted upon by a spring 23, made adjustable by a suitable adjusting-screw 24.

It is not intended to limit this invention to the exact form of the shield or to the exact shape shown for the button-hole-feeding device or for the tucker, nor to the exact means shown for actuating the button-hole-feeding device or the tucker, as prior to my invention I am not aware that any form of shield has ever been interposed between the heads of the buttons and the under side of the button-hole piece, nor that a button-hole piece has ever been engaged in the button-hole itself to either feed or aid in feeding the shoe or in opening the button-hole, nor am I aware that a tucker operating as described has ever before been employed.

I claim—

1. In a buttoning-machine, the following instrumentalities, viz: a guideway for the buttons attached to the shoe to be buttoned, a shield extended rearwardly from the delivery end of the guide to cover the said buttons, and a button-hole feeder located above said shield to engage the button-hole piece resting thereon and feed a button-hole into position over the button exposed beyond the shield to cause it to enter said button-hole, substantially as described.

2. In a buttoning-machine, a guideway to receive the buttons attached to the shoe to be buttoned, a shield extended rearwardly from the delivery end of the guide to cover some of the said buttons, and a button-hole feeder located above said shield and having its end shaped to enter the button-holes of the button-hole piece one after the other, and means to actuate the said feeder, for the purpose set forth.

3. In a buttoning-machine, the following instrumentalities, viz: a guideway for the buttons attached to the shoe to be buttoned, a shield extended rearwardly from the delivery end of the guide to cover the said buttons, a button-feeding device located within said shield to engage and feed the buttons, and a button-hole feeder located above said shield to engage the button-hole piece resting thereon and feed a button-hole into position over the button exposed beyond said shield for the button to enter the hole, substantially as described.

4. In a buttoning-machine, the following instrumentalities, viz: a guide for the buttons attached to the shoe to be buttoned, a shield extended rearwardly from the delivery end

of the guide, a feeder located above and movable longitudinally over the shield to engage and open the button-holes in the button-hole piece resting on the shield, and a tucker at the delivery end of the shield to enter the button-hole and aid in holding the front end of the button-hole open, substantially as described.

5. In a buttoning-machine, the following instrumentalities, viz: a guide for the buttons attached to a shoe, a button-hole-feeding device, a slotted presser-foot to clamp the button-hole piece and through the slot of which the button-hole-feeding device is moved, a tucker, and a button-feeding device to feed the button into the expanded button-hole held between the presser-foot and button-feeding device, substantially as described.

6. In a buttoning-machine for shoes, a guide for the buttons attached to the shoe to be buttoned, a shield extended rearwardly from the delivery end of the guide to cover some of the buttons immediately at the rear of the button held at the delivery end of the guide to be engaged by a button-hole, a button-hole feeder located above and adjacent to said shield to engage and move the button-hole piece resting on the shield, and a tucker beyond the delivery end of the shield to engage the front edge of the button-hole next to be buttoned and press the button-hole below the head of the button exposed beyond the shield, and means to move the said tucker, whereby it has given to it a motion to pass under the head of the said button and then longitudinally in the direction of the length of the button-hole, substantially as described.

7. In a buttoning-machine for shoes, a guide for the buttons attached to the shoe to be buttoned, a shield extended rearwardly from the delivery end of the guide to cover some of the buttons immediately at the rear of the button held at the delivery end of the guide to be engaged by a button-hole, a button-hole feeder located above and adjacent to said shield to engage and move the button-hole piece resting on the shield, and a tucker beyond the delivery end of the shield to engage the front edge of the button next to be buttoned and press the button-hole below the head of the button exposed beyond the shield, and means to move the said tucker, whereby it has given to it a motion to pass under the head of the said button and then longitudinally in the direction of the length of the button-hole, and a presser-foot to clamp the button-hole piece between it and the shield, substantially as described.

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

JEREMIAH KEITH.

Witnesses:

GEO. W. HAMMATT,
A. L. PICKETT.