

(No Model.)

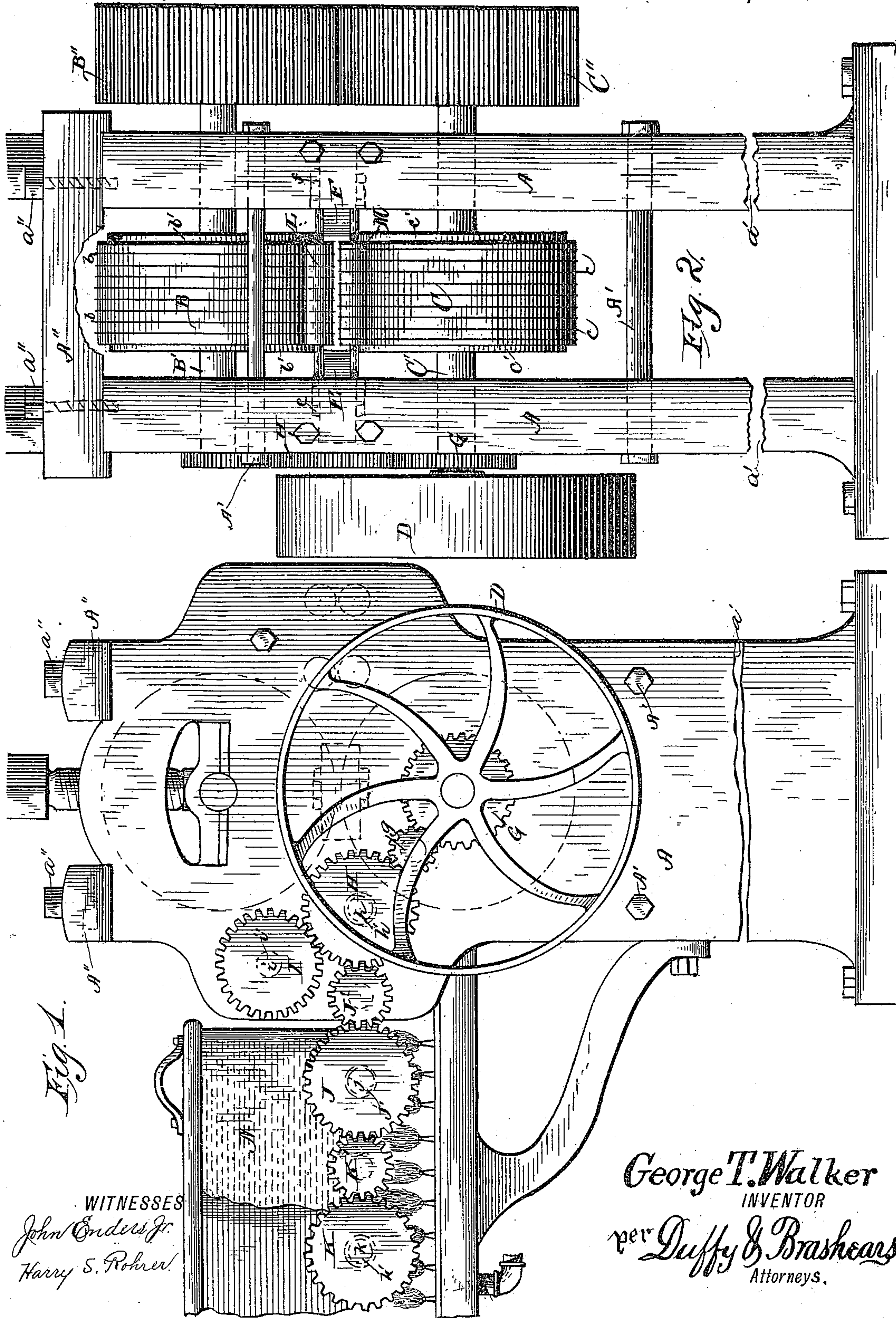
2 Sheets—Sheet 1.

G. T. WALKER.

ROLLS FOR ROLLING NAIL PLATES.

No. 355,848.

Patented Jan. 11, 1887.



WITNESSES  
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2 Sheets—Sheet 2.

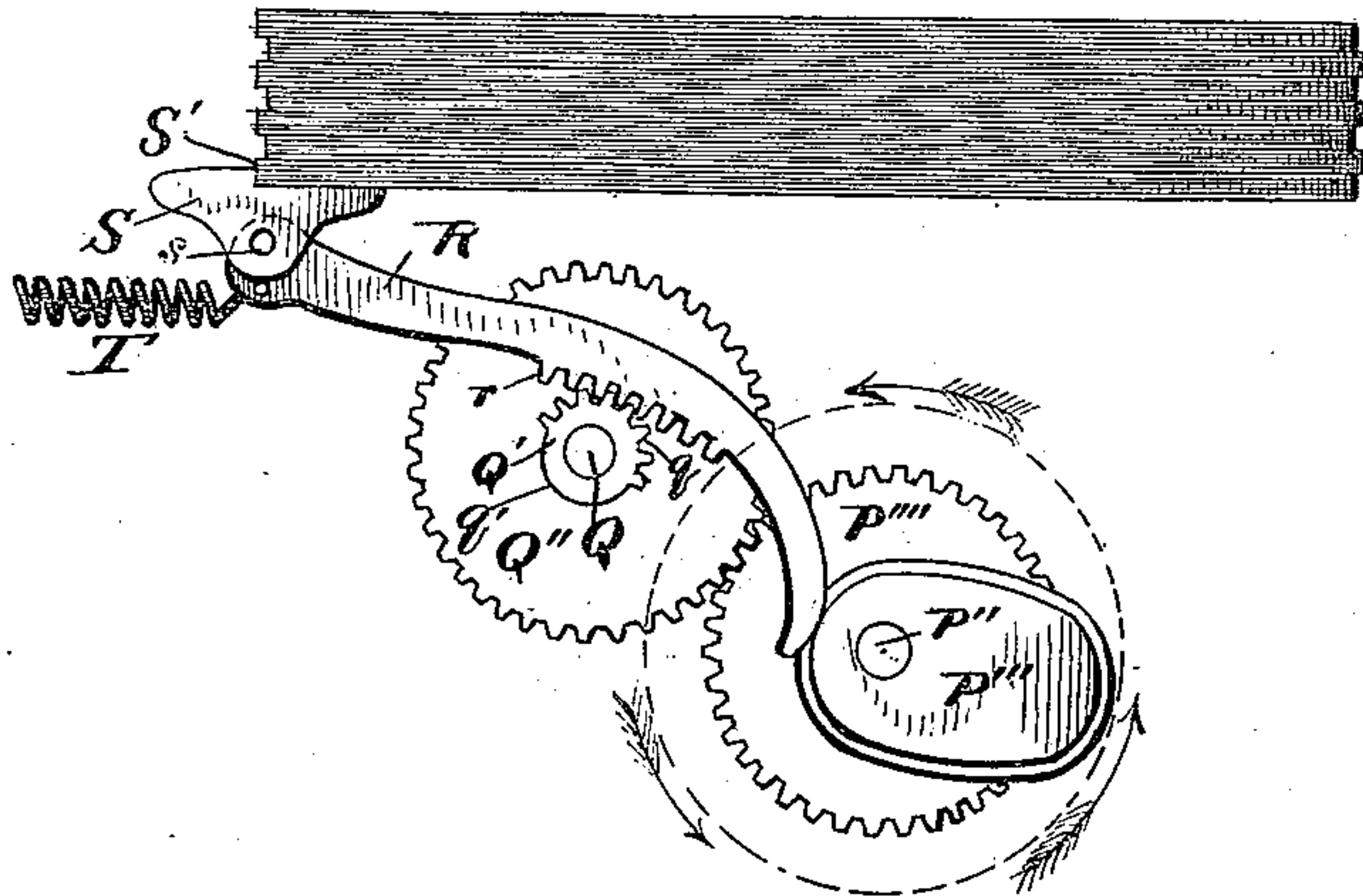
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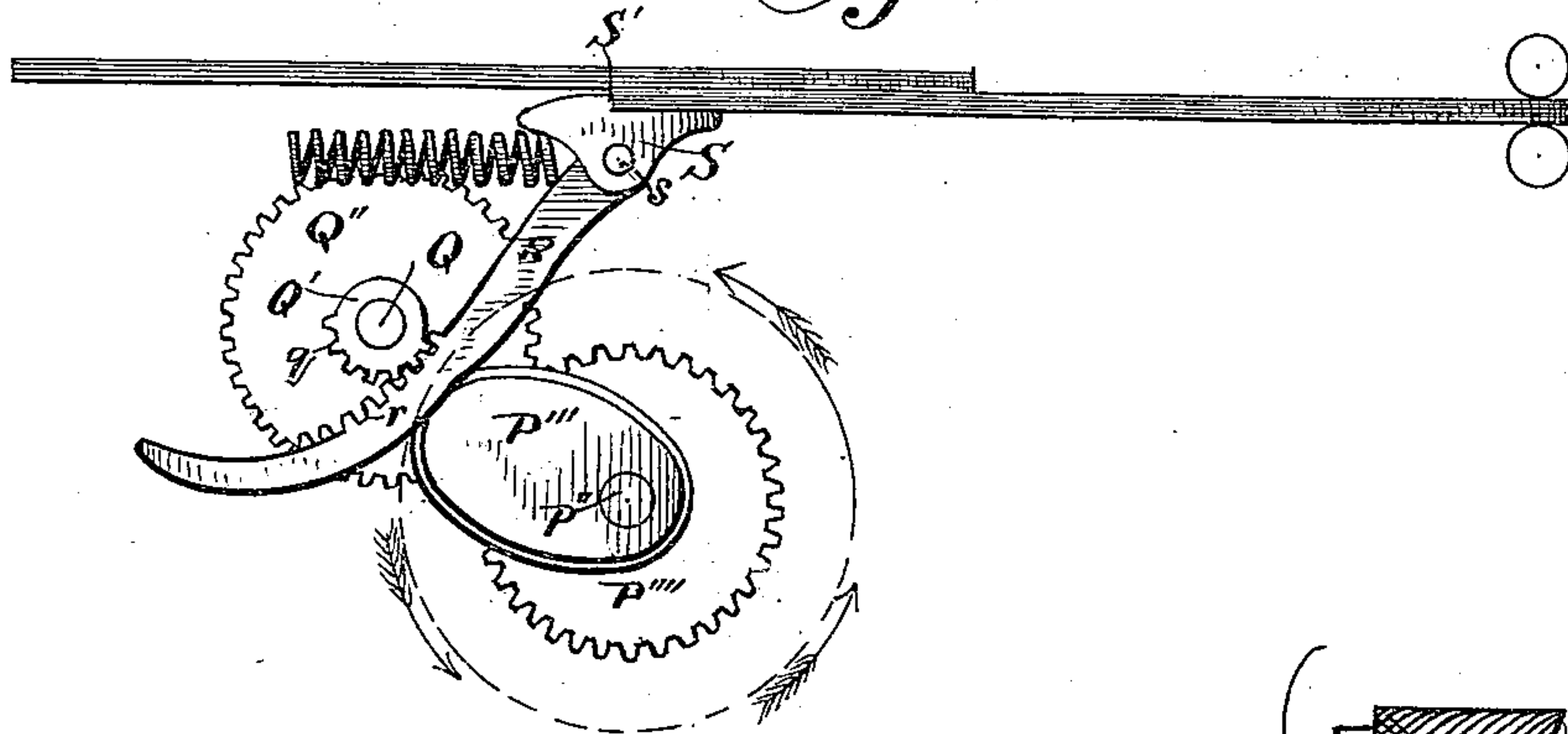
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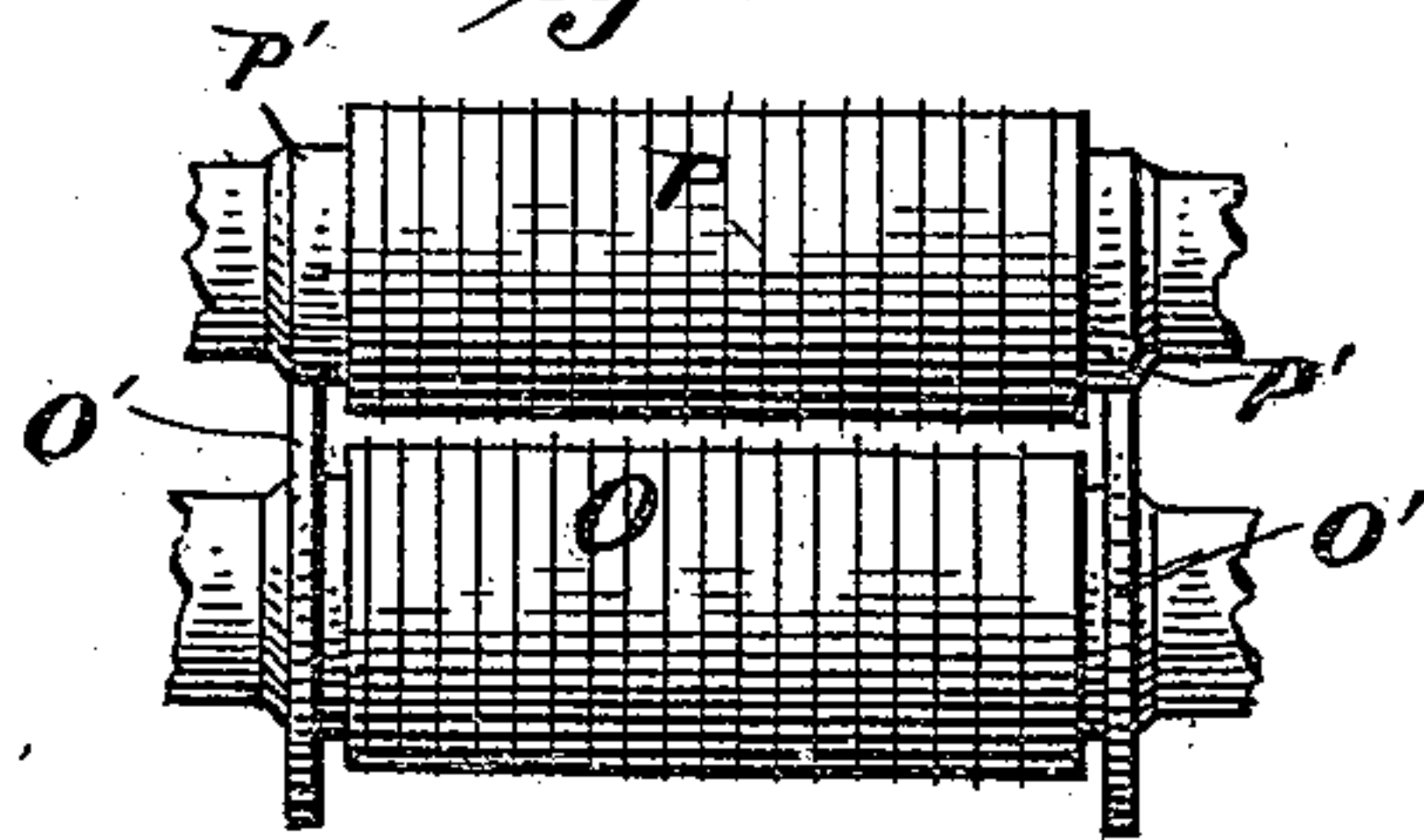
*Fig. 5.*



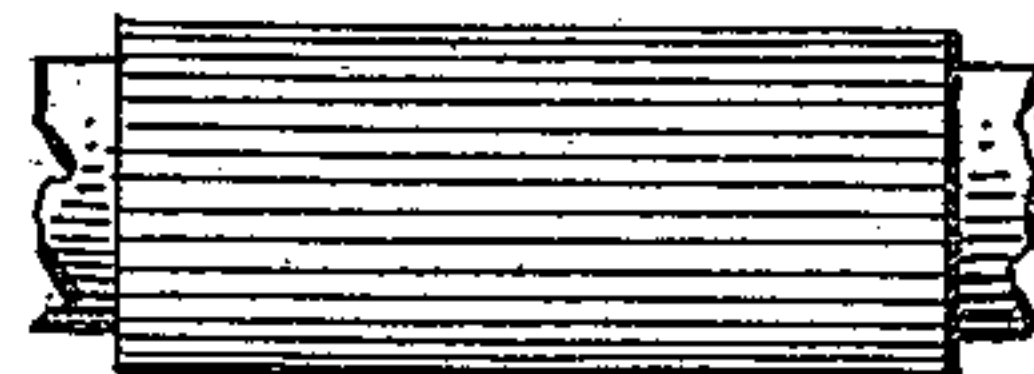
*Fig. 6.*



*Fig. 3.*



*Fig. 4.*



WITNESSES

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# UNITED STATES PATENT OFFICE.

GEORGE T. WALKER, OF NAPA CITY, CALIFORNIA.

## ROLLS FOR ROLLING NAIL-PLATES.

SPECIFICATION forming part of Letters Patent No. 355,848, dated January 11, 1887.

Application filed November 25, 1885. Serial No. 1-3,964. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE T. WALKER, of Napa City, in the county of Napa and State of California, have invented certain new and useful Improvements in Rolls for Rolling Nail-Plates; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

My invention relates to rolls and their connections for rolling nail-plates, and has for its object to furnish such rolls with proper feed devices, with side grooves for producing a rib on each side of the plate out of which the heads of the nails are made, and with projections or grooves in their faces of such contour as to form grooves or projections in the nail-plate, which, when the nail is cut therefrom, will lie in directions not parallel with the length of the nail to roughen it, and thus increase its holding capacity.

With these objects in view I have constructed the devices herein shown, in which my invention consists, and the specific points of novelty of which I shall afterward specifically set forth in the claims.

In the drawings, Figure 1 is a view in side elevation of a rolling-mill for nail-plate strips containing my improvements. Fig. 2 is a view in elevation of the delivery side of the rolling-mill. Figs. 3 and 4 are views in detail of modified forms of rolls which I intend to use as finishing-rolls in a regular train of nail-plate rolls to shape my improved plate. Fig. 5 is a detail view showing in side elevation the devices by which the plates are fed forward until grasped by the feed-rolls, the parts being shown in the positions they assume at the beginning of the stroke; and Fig. 6 is a similar view of the same parts in the position they assume at the end of their stroke.

Referring to the drawings by letters, in which like letters of reference mark the same parts wherever they occur in the several figures, A A are the main frame-pieces, on which the whole superstructure rests. These frame-pieces are secured to the floor in order to economize space. In the drawings I have

shown these frame-pieces A with a part broken out, as at *a'*. The housings or side frames are properly and rigidly connected together by tie-bolts A' and upper cross-bars, A'', such cross-bars being secured thereto by bolts *a''*. Mounted in these housings is a pair of rolls, an upper one, B, and a lower one, C, their shafts being marked, respectively, B' and C', and they are connected so as to move in unison by means of the gear-wheels C'' and B''. These rolls are driven from any suitable power through the medium of a suitable pulley, as at D, on the shaft of roll C.

The rolls B C are formed with projecting rings or small circumferential ribs *b c*, for the purpose of impressing grooves, serrations, or indentations in the nail-plates rolled between them, and have, further, near each edge, grooves *b' c'*, which, in connection with side rolls, to be hereinafter explained, form the head-ribs on said plates.

The roll C is mounted in rigid bearings, while the bearings of the roll B are adjustable up and down, as desired, in any well-known manner, to regulate the distance between the faces of the rolls, and thus regulate the thickness of the plate rolled as well as the width of the head-ribs on each side thereof.

E and F are the side rolls, which lie horizontally and are mounted on vertical shafts in the housings. Their surfaces are plain, and when properly adjusted with relation to rolls B C they roll the side or head edges of the nail-plate, which is substantially of double-T form, to fit the openings between the rolls, as shown in Fig. 2. These rolls E and F are adjustable to or from rolls B and C, to adjust the thickness of the head-ribs on the plates, by means of draw-wedges *e f*, which operate to throw the boxes in which the rolls are journaled in this direction. It is not deemed necessary to show such boxes in detail, as they may be made of any ordinary well-known construction, and are mounted in suitable guideways in the frames or housings.

On the ends of the shafts C', opposite to that on which the gear-wheel C'' is mounted, is a gear-wheel, G, which meshes with a pinion, *g*, (an "idler," so called,) which in turn engages a gear, H, on a shaft, *h*, which carries a feed-roll, *h'*, being the lower one of a pair, the upper one of which, *i'*, is mounted on a shaft, *i*,



driven by a gear, I, engaging gear H, as aforesaid.

J j j' and K k k' represent other feed-rolls driven from the gear H, that gear and gear J being connected by an idler, J', and gears J and K by an idler, K', to cause all the feed-rolls to rotate in the same direction. The shafts h i j k and rolls h' i' j' k' are shown in dotted lines in Fig. 1. These feed-rolls are all in front of rolls B and C, and two guide or delivery rolls, turning by contact with the plate as it emerges from between the rolls, are shown at L and M in Figs. 1 and 2.

N is a box in which a pile of strips to be rolled and formed, as before described, is placed, and these plates are automatically pushed forward until gripped by rolls h' i' by the following mechanism:

P'' is a shaft to be mounted under the plate-box, and has a cam, P''', upon it. It has also a gear-wheel, P''', which engages a gear-wheel, Q'', on a shaft, Q, which is also provided with a mutilated pinion, Q'.

R is a lever or arm having teeth r, to engage the teeth q on the mutilated pinion on the shaft Q. At the upper end of this lever is pivoted at s a pawl, S, having a tooth, S', to engage the rear edge of the lower plate of the pile in the plate-box. A spring, T, serves normally to hold the pawl back in its rear position, and in position to engage the edge of the plate to be fed. The lower end of the lever R passes downward between the shaft P'' and Q, and is by the revolution of these shafts thrown downward and backward, thus throwing the pawl S forward and carrying the lower plate with it until grasped by the feed-rolls. The teeth of the mutilated pinion engage the corresponding teeth on the lever and carry it down, while the revolution of the cam brings it in contact with the lower end and throws it back, and consequently throwing the upper end and its pawl forward, as before stated. As soon as the last of the teeth of the mutilated pinion have passed beyond the teeth on the bar, the cam having also passed out of contact with it, the spring T comes into play and draws the pawl back to position, the lever R sliding over the plain or untoothed portion q'.

V V are burners located under the feed-box, so that their flame may impinge and heat the plates therein.

The rolls hereinafter described are for the especial purpose of manipulating what are known as "strips," being small sections of rolled plate, cut off transversely of sufficient width to form a complete nail-plate, such plates being stored, as before stated, in a box, N. I also propose to roll the full sheet as it comes from the sheet or plate rolls into a plate from which to cut large spikes, known as "bolt-spikes," without reheating. For this purpose I have devised the rolls O P, as shown in Fig. 3. These rolls are formed with ribs, as are rolls B C, for serrating or grooving the plate, but are differently shaped other-

wise, the roll O having a collar, O', and the roll P with a groove, P', on its edge, the latter construction being substantially that of roll B, while the former dispenses with the side rolls, E and F. These rolls, being for operation on much larger sheets, are much heavier and stronger than rolls B and C. I have stated that rolls O and P and B and C are furnished with ribs to form serrations in the plates, and have shown such ribs circumferential and straight around these rolls. It will be remembered, however, that these ribs may be arranged in many different ways, as in diagonal straight lines or diagonal curved lines, or either of these shapes crossed in net-work form, as shown in Fig. 4, the object being to so form the plate as to properly roughen the nail cut from it, it being only necessary that the grooves or serrations therein do not lie in lines parallel to the length of the nail. I desire it also to be understood that the same effect may be produced by forming the rolls with grooves instead of ribs, so that the plates will be formed with ribs or projections instead of grooves or serrations.

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

1. In combination, the top and bottom rolls having side or corner grooves and ribbed or grooved surfaces, with the side rolls, substantially as set forth.

2. In combination, a rigid roll and an adjustable roll, each having ribs or grooves, as specified, for indenting or raising ribs on a nail-plate, as set forth.

3. In combination, a pair of rolls having grooves to form the head-ribs of a nail-plate, and grooves or projections to form ridges or serrations on a nail-plate, as set forth.

4. A pair of nail-plate rolls having suitable feed-rolls and provided with a device to deliver plates *seriatim* to said feed-rolls, as set forth.

5. A pair of nail-plate rolls having suitable feed-rolls, and provided with a device to deliver the lower plate of a pile to said rolls, as set forth.

6. A pair of nail-plate rolls having suitable feed-rolls, in combination with an automatic feed mechanism which delivers plates *seriatim* from the bottom of a pile to the feed-rolls, as set forth.

7. In combination, the plate-box, the spring-actuated pawl and lever, and the shafts Q and P'' geared together, the former having mutilated pinion and the latter a cam, as set forth.

8. In combination with the plate-box, a gas-pipe provided with suitable burners and located beneath the box, as set forth.

In testimony that I claim the foregoing as my own I hereto affix my signature in presence of two witnesses.

GEORGE T. WALKER.

Witnesses:

S. BRASHEARS,  
F. R. HARDING.