

No. 624,054.

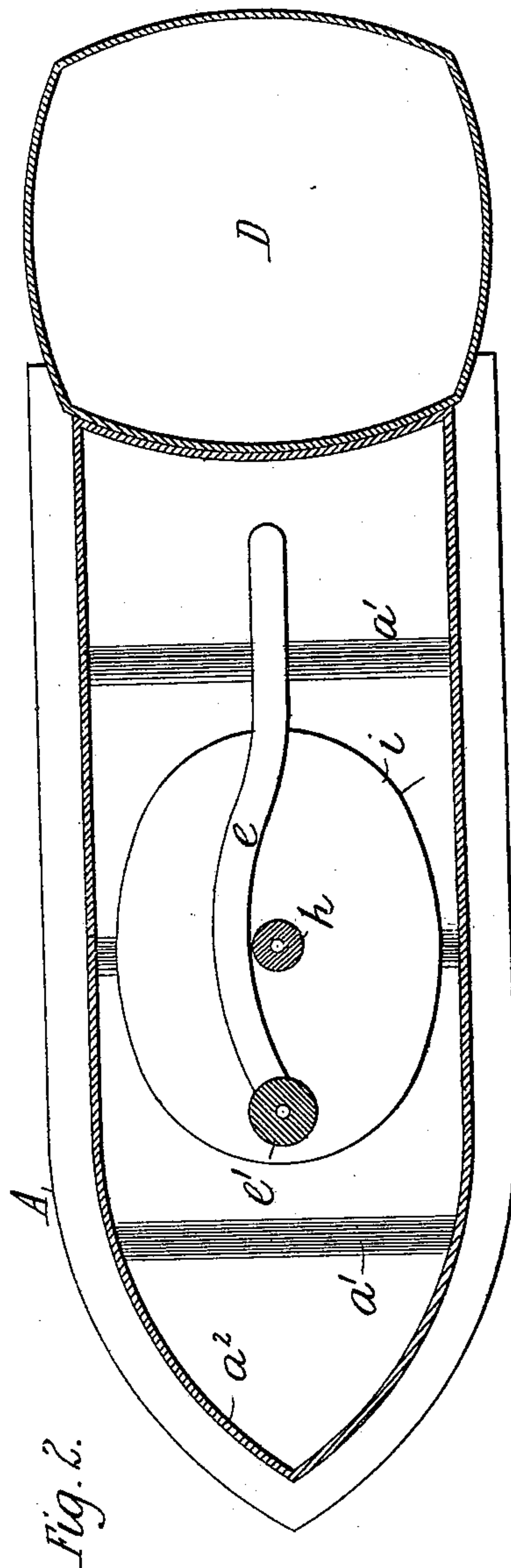
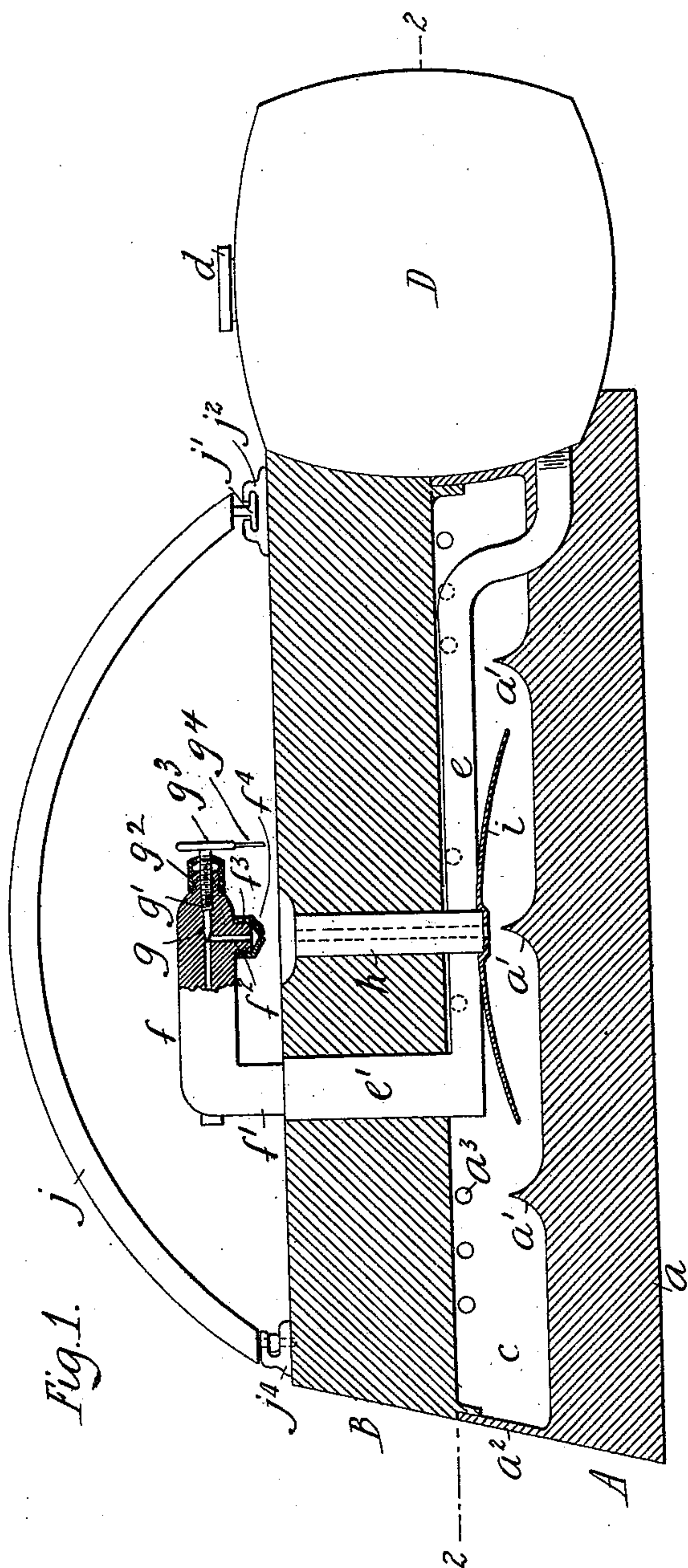
Patented May 2, 1899.

F. G. LAWRENCE.  
SELF HEATING SAD IRON.

(Application filed Dec. 22, 1897.)

2 Sheets—Sheet 1.

(No Model.)



WITNESSES  
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INVENTOR

Frank G. Lawrence

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Fig. 4.

*WITNESSES*

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# UNITED STATES PATENT OFFICE.

FRANK G. LAWRENCE, OF CHICAGO, ILLINOIS.

## SELF-HEATING SAD-IRON.

SPECIFICATION forming part of Letters Patent No. 624,054, dated May 2, 1899.

Application filed December 22, 1897. Serial No. 663,016. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK G. LAWRENCE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Self-Heating Sad-Irons; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to sad-irons of the type which are known as "self-heating;" and it consists of certain new and useful improvements which are directed more especially to the means for generating and regulating the heat, the objects being to secure a uniform controllable temperature throughout the base or smoothing portion of the iron and to insure economy, cleanliness, and general efficiency.

The following description is directed to the details of construction and operation of my improved sad-iron, and reference is made therein to the accompanying drawings, in which—

Figure 1 is a vertical longitudinal sectional view of a self-heating sad-iron embodying my invention. Fig. 2 is a sectional plan view taken on line 2 2 of Fig. 1. Fig. 3 is a vertical longitudinal sectional view of a self-heating iron of the goose type embodying my invention, showing a modification; and Fig. 4 is a sectional plan view taken on line 4 4 of Fig. 3.

Referring first to the construction shown in Figs. 1 and 2, A denotes the base or smoothing portion of the iron, provided with the under smoothing-surface *a* and on its upper side with transversely-disposed ridges *a'* *a'*, having concave sides, the purpose of which will presently appear. The upper portion or top B of the iron rests on and is secured in any suitable manner to a flange *a*<sup>2</sup>, which extends upwardly from the base, and between the base and top is a chamber *c*, inclosed by the flange and having communication with the outer air through openings *a*<sup>3</sup> *a*<sup>3</sup> in the upper portion of the flange. At the rear end of the iron is mounted a reservoir D for containing gasoline or other liquid hydrocarbon oil supplied from time to time through an opening in the top thereof controlled by a screw-plug *d*. In

the lower portion of the reservoir is an outlet to which is secured one end of a pipe *e*, which pipe is provided with an offset and extends forwardly in the upper portion of the chamber to a point beyond the center of the iron, where connection is made with a vertical tube or passage *e'*. To the upper end of said tube or passage is secured one end *f'* of a tube *f*, which tube is of L form and is provided with a vertical discharge-outlet *f*<sup>2</sup>, controlled by a valve *g*. The valve is of the turning-plug type and has a threaded portion *g'* engaging a threaded aperture in the tube *f*. *g*<sup>2</sup> is a stuffing-box to preclude escape of gas. The valve is manipulated by a disk handle *g*<sup>3</sup>, which may be supplemented by an extension handle or arm *g*<sup>4</sup>. At the discharge-outlet *f*<sup>2</sup> is a threaded boss *f*<sup>3</sup>, to which is secured a nozzle *f*<sup>4</sup>, having a fine orifice. This nozzle may be of any desired length. This nozzle *f*<sup>4</sup> discharges into a tube or passage *h*, the lower end of which constitutes the burner. Secured to the lower end of this tube is a deflector-plate *i*, which extends forwardly and rearwardly, as shown, and is concave on its under side. The purpose of said deflector will appear in the following description of the operation.

To secure the initial vaporization of the liquid, the iron is placed upon or in contact with a stove or other heater, the result being that the pipe *e* is raised in temperature to a sufficient degree to vaporize the liquid contained therein. The valve is now opened and the generated vapor passes under pressure from the valve-opening, to and through the passage *h*, to the burner, where, being ignited, it furnishes the heat-generating flame. One of the ridges *a'* is located directly in line with the passage *h*, the result being that the flame is divided and deflected equally in both directions. The employment of the deflector-plate and the additional ridges insures the breaking up of the flame and its equal distribution throughout the entire area of the top of the base to secure a uniform temperature throughout. The flame, in addition to supplying heat for the above purpose, also maintains in the pipe *e* a temperature sufficient to vaporize the liquid, and until the valve is closed and the supply of vapor cut off the generation of the vapor and the heat



is continuous. Obviously the size of the flame and the consequent degree of heat may be readily controlled by manipulation of the valve.

5 Referring now to Figs. 3 and 4, which show a tailor's goose embodying my invention, it will be observed that but few modifications are made, and such modifications are principally due to the increase in the size of the  
10 iron as compared with the size of the domestic iron above described. In the construction now to be described the generating-pipe *e* is connected at one end with the reservoir and at its other end with the vertical tube or pas-  
15 sage *e'*, as in the previous arrangement; but to enlarge the capacity of the pipe for the increased generation of the vapor said pipe is materially lengthened by giving the same the form of a triangle, as at *e''*. Obviously other  
20 forms may be given to obtain the increase in length. This triangular portion of the pipe is located in proximity to the heater, with the result that a comparatively large body of liquid is constantly being brought into con-  
25 tact with the heat, with the result of a large increase in the generation of vapor. Such an arrangement is necessary owing to the fact that in lieu of the single burner employed in the above-described construction I find it of  
30 advantage to employ two burners and a separate deflector for each burner. The burners, which are shown at *h' h'*, are in the nature of lateral branches from the tube or passage *h*, a deflector-ridge *h''* being disposed centrally  
35 with said passage to divide the body of vapor. The vapor may discharge from the open ends of the burners *h'* or said ends may be closed and burner-perforations provided.

In Figs. 3 and 4 I have shown each deflec-  
40 tor-plate *i'* as provided with a depending deflector-ridge *i''*, the purpose of which is to divide and spread the flame and distribute it as much as possible over the entire area of the upper surface of the base.

45 I have shown a different form of handle for each of the constructions described, the handle *j* for the domestic iron being of arched form and removably connected at each end to the iron top. This handle *j* carries at one  
50 end a T-shaped hook *j'*, which is caused to engage a plate-socket *j''* on the top, while the other end has a shouldered lug adapted to engage a hook on a plate *j'''*, secured at the other end of said top. In the goose-iron the handle  
55 *k* is straight, and one end is provided with a projection adapted to removably engage a recess in the upper end of an arm *k''*, secured to the iron top. At the other end of said top is an arm *k'''*, which has at its upper end a socket  
60 *k''''* to receive the lower reduced end of a projection *k'''''*, carried by the handle. *k''''''* is a hook-catch pivotally secured to a lug *k'''''''* on the arm

*k''''''''* and adapted to engage a headed pin or screw *k'''''''''* on the handle to secure the latter to place. The lug *k''''''''''* is perforated to receive a  
65 screw by which the reservoir is secured to the iron.

It will be understood that in order to bring a greater quantity of the oil into close prox-  
70 imity to the heat, and thereby increase the generation of vapor, I may use the triangular form of the supply-pipe *e* (shown in Figs. 3 and 4) in both forms of my improved self-heating sad-iron or that intended for domes-  
75 tic use, as well as that intended for tailors' purposes.

I claim as my invention—

1. In a self-heating sad-iron or the like, the combination of a base provided at its upper side with a plurality of transversely-disposed  
80 deflecting-ridges, a top, an inclosed chamber between the top and base, a reservoir carried by the sad-iron, a pipe leading from the reservoir into said chamber and passing from the chamber through the top, a tube connected  
85 with said pipe, a portion of said tube extending parallel to said top and having at its under side a discharge-opening controlled by a valve, a passage through the top, the upper  
90 end of said passage being in line with the discharge-opening, and the lower end of said passage constituting the burner, and a deflector-plate concaved at its under side, the edges  
95 of said plate being adjacent to the deflecting-ridges, substantially as and for the purpose set forth.

2. In a self-heating sad-iron or the like, the combination of a base provided at its upper side with a plurality of transversely-disposed  
100 deflecting-ridges, a top, an inclosed chamber between the top and base, a reservoir carried by the sad-iron, a pipe leading from the reservoir into said chamber and passing through the said top, a tube connected with said pipe  
105 and having a portion thereof extending parallel to the top and provided at its under side with a discharge-opening controlled by a valve, a tube passing through said top, the opening of the tube being in line with the dis-  
110 charge-opening, said tube having at its lower end branch portions longitudinally disposed, the ends of said branch portions constituting the burners, and deflector-plates at the ends of said branch portions, said plates being each  
115 concaved at its under side and provided at its under outer edge with a deflector-ridge, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK G. LAWRENCE.

Witnesses:

C. W. SCHWEICHLER,  
A. J. TURNBULL.