June 4, 1929. S. COLEMAN 1,716,210

STOVE

Filed Sept. 22, 1927 3 Sheets-Sheet 1

Fig 1

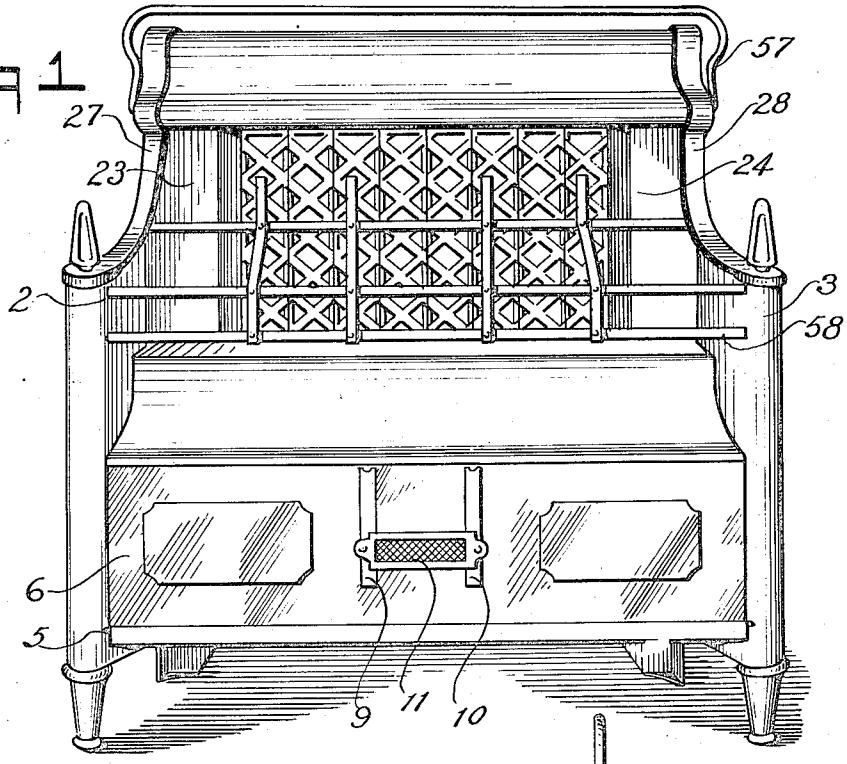


Fig 2

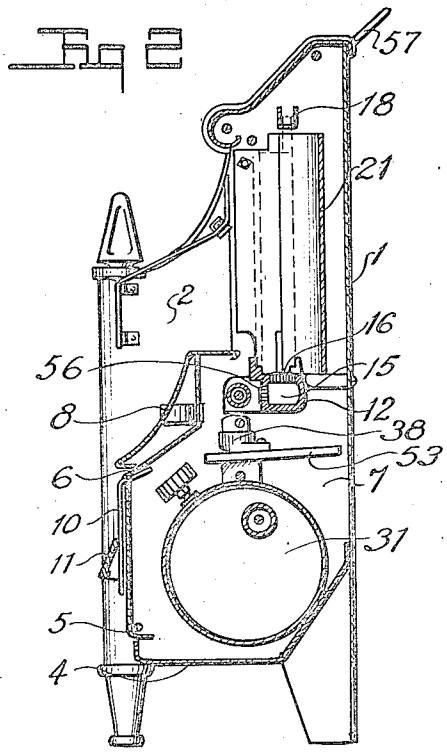
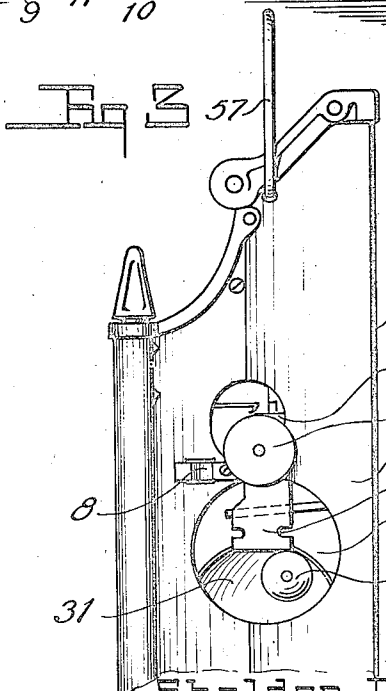


Fig 3



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STOVE

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Fig 4

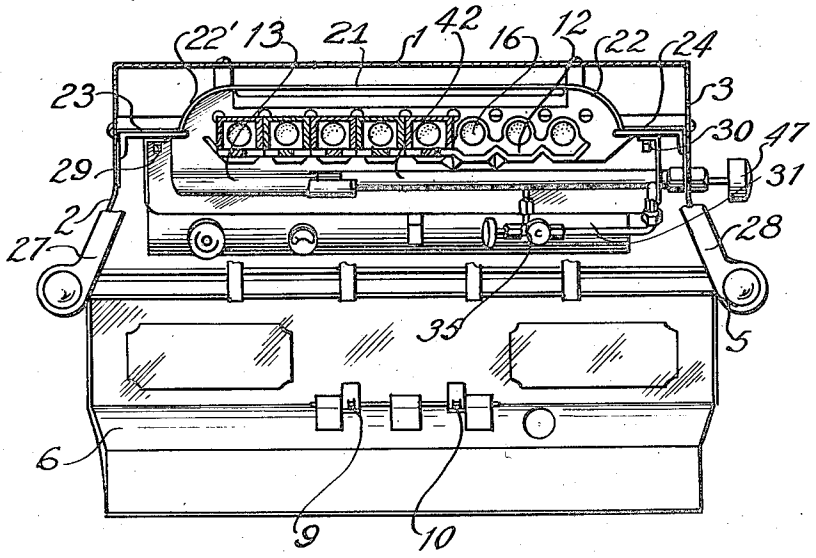
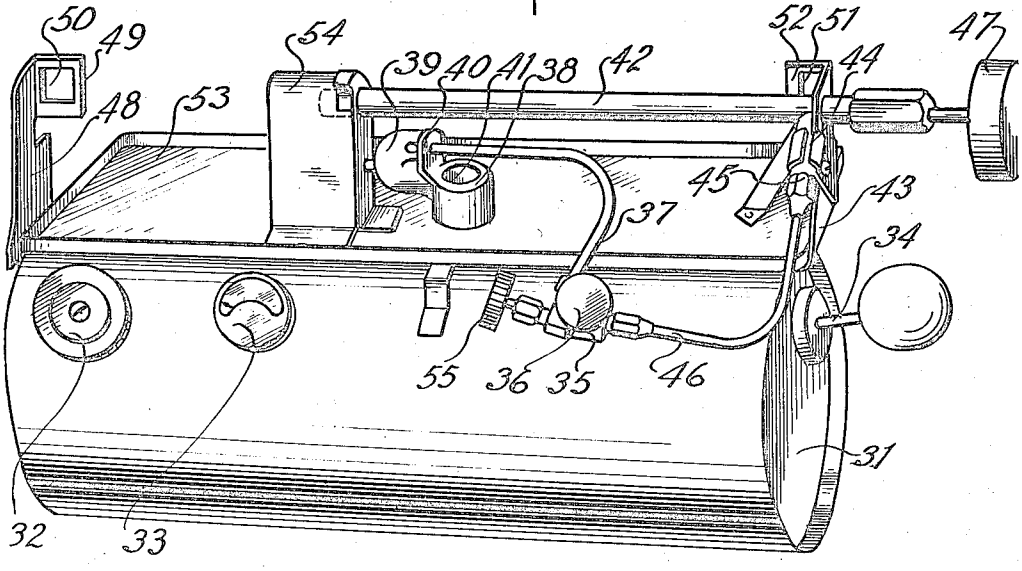


Fig 5



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STOVE

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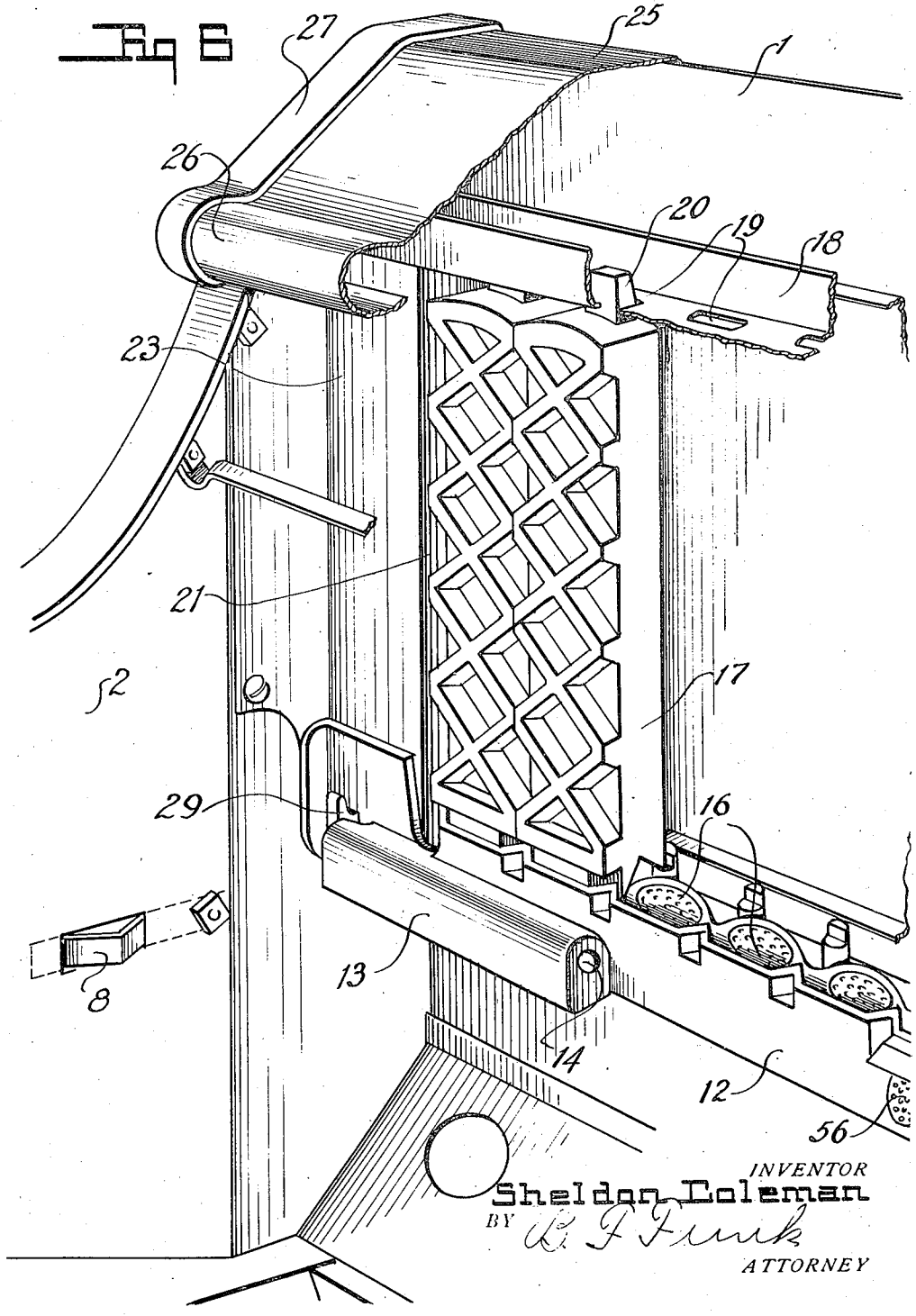
Fig 6



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Patented June 4, 1929. 1,716,210

UNITED STATES PATENT OFFICE.

SHELDON COLEMAN, OF WICHITA, KANSAS, ASSIGNOR TO COLEMAN LAMP AND STOVE CO., OF WICHITA, KANSAS, A CORPORATION OF KANSAS.

STOVE.

Application filed September 22, 1927. Serial No. 221,241.

This invention relates to heating stoves in which fuel is converted from the liquid phase to the vapor phase before it enters the burner. In such stoves a heat responsive vaporizer, commonly called a generator, communicates with a tank containing liquid fuel under pressure. My invention has to do particularly with providing a unit consisting of the tank and vaporizer so constructed and so co-lined with the stove casing that it may be conveniently applied to the stove casing to aline the generator with the burner inlet and be easily removable so that the tank can be filled with liquid fuel independent of the casing. According to my invention, the entire unit can be introduced laterally into the casing, preferably through the front so that the unit will be visible when in place, thus making it possible to examine the valves, gage, etc., without removing the unit from the casing, and in so constructing the stove and unit, I have found it expedient to make certain improvements in the general construction of the stove, all of which will be specifically referred to hereinafter, reference being had to the accompanying drawings in which:

Fig. 1 is a front view of a stove constructed in accordance with my invention.

Fig. 2 is a cross-sectional view through the casing, showing the tank in place.

Fig. 3 is an end view of the stove.

Fig. 4 is a horizontal section through the radiant heaters, the unit being shown in elevation with the door swung to open position.

Fig. 5 is a perspective view of the removable unit and

Fig. 6 is an enlarged view of the upper part of the casing, showing how the units are attached and how the upper portion of the stove is constructed.

The casing is illustrated as having an open front. It consists of a back 1 with two sides 2 and 3 diverging toward the front and a bottom 4. The two sides are held against spreading at the forward portion by a tie-rod 5 which serves as a hinge for the front door 6, which closes the unit containing chamber 7. The door or closure may, if desired, be a part of the unit. That is, the door may be fastened to the unit so that it will come away from the stove when the unit is removed. The edges of the door are shown as adapted to engage the spring friction latches 8 in the sides 2 and 3 of the casing and the door is provided with a handle consisting of the two side-bars 9 and 10 hinged at their upper ends to the door 6 and connected by the cross-bar 11. When the door is swung to open position, the two bars 9 and 10, of the handle, rest on the floor and form a support for the door. When the door is closed, the bars lie close against the door, as clearly seen in Figures 1 and 2. In the upper part of the casing is a burner casting 12 which extends from end to end of the casing and which is secured to the casing. The burner per se is not new, so any suitable burner form may be employed. The burner casting has an off-set mixing chamber 13 with a vapor inlet 14 at one end so that vapor from the generator, to be hereinafter referred to, may enter the mixing chamber, the velocity of the vapor drawing air into the mixing chamber as is common with such burners. The mixing chamber communicates with a vapor space 15 in the burner casting in rear of the mixing chamber and at the top of the casting are burners 16, the casting being trough-shaped at its upper portion to receive the radiants 17 of suitable refractory material. The radiants per se constitute no part of my invention. They are supported at their upper ends by a perforate channel-shaped bridge 18, the holes 19 of which receive the lugs 20. A sheet of metal 21 extends entirely across the casing in the back, having forwardly curved portions 22 and 22′ and straight end portions 23 and 24 to form a reflector, a heat insulator and to enhance the appearance of the stove. The sheet 21 is preferably constructed of some bright metal to enhance the appearance of the stove. An over-hanging top sheet 25 is secured to the back sheet and to the sides 2 and 3 and at its front edge, it is provided with a curved bead 26 and secured at its edges by two strips 27 and 28 which extend down to the front edges of the sides 2 and 3. The casting 12 is provided with two outstanding hooked-shaped supports 29 and 30 to which the removable unit may be attached when it is in functional position.

The removable unit is shown as consisting of a tank 31, having a normally closed filler opening 32 and a pressure gage 33 of approved construction to show the pressure in the tank. A built-in pump 34 is indicated in Fig. 5 for pumping air on the body of liquid fuel but other means may be employed for introducing the air. An outlet connection

35 is provided for the tank 31, having a valve 36 therein which controls the flow of fuel from the tank. A pipe 37 leads from the connection 35 to a preheater 38 consisting of a hood 39 with an air hole 40 in one side, the hood having a return bend discharging into a priming cup 41 beneath the vaporizer of generator 42. The vaporizer or generator is fastened to an upstanding brace 43, in the form of a bracket, through which the vaporizer or generator 42 passes and it carries a clamp 44 which clamps the nipple 45 rigid with the generator so that the generator is held in place. The nipple communicates with the connection 35 through a pipe 46 and when the valve 36 is opened, passage of fluid through the generator 42 will be controlled by the needle valve 47 in a well understood manner. At the end opposite the bracket member 43 is a bracket member or hanger 48, having an off-set portion 49 with an opening 50 corresponding to a similar opening 51 in the off-set portion 52 of member 43 so that the lugs or supports 29 and 30 may be received in the openings whereby the unit may be hung within the casing to put the unit in such position that the generator will aline with the vapor inlet of the burner. Generally, the unit will be hung from the lug 30 and from the part of the burner surrounding the vapor inlet. Whether the unit is actually alined and supported by the lugs 29 and 30 or by the burner at the vapor inlet, the principle remains the same. The brackets 43 and 48 support a drip-pan which extends the length of the tank 31 and which supports the preheater 38 and the support 54 for the discharge end of the generator 42. Therefore, when the unit is in place, the front end of the generator 42 will aline with the vapor inlet opening 14, of the mixing chamber 13, of the burner casting 12.

To ignite the burner of the stove, the valve 36 should be turned about one turn to the left. Then the flame from one or two lighted matches, held in the left hand, can be applied to the pipe 37 just over the cup 41. When the matches have about been consumed, the operator may open the valve 55 with the right hand, igniting the fuel at the preheater so that a hot blast will be impinged upon the generator 42. It is recommended that the hot blast be permitted to impinge the generator 42 for about one and a half minutes. The main fuel or needle valve 47 may then be opened. The fuel may now be ignited at the radiants. When the radiants are lighted, the valve 55 may be closed and since the burner casting 12 is provided with burners 56, in rear of the generator 42, the generator 42 will be maintained at a temperature sufficiently high to vaporize the incoming fuel and since the valve 47 will control the amount of fuel passing into the burner casting, the amount of heat generated by the stove can be regulated. The casing may be provided with a handle or bail 57 and an appropriate guard 58 above the door 6 and in front of the radiants.

The end 3 of the casing is provided with two holes 59 and 60 so that access to the pump 34 and to the valve 47 may be had when the unit is in operative position within the casing.

In order to remove the tank to fill it, it will be necessary only to close all the valves and unhook the brackets 43 and 48 from the supporting means shown as lugs 29 and 30.

By introducing the removable unit from the front instead of through the end of the casing, the front of the stove will always be unobstructed. There is a material advantage in this because such stoves are often put in fireplaces, so if the unit had to be removed from the end, the whole casing would of necessity have to be removed to operate the generator valve, etc.; whereas with my invention the valve and pump can be operated without disturbing the casing.

What I claim and desire to secure by Letters-Patent is:—

1. A stove comprising a casing having a fuel tank receiving space, a burner in the casing having a fuel inlet, a unit removably associated with the casing adapted to be introduced through an opening in the casing into the tank receiving space, said unit comprising a tank to contain liquid under pressure, a vapor generator having connection with the tank and means for locating the unit within the space in the casing so that it will be at least partially supported from the burner.

2. A stove comprising a casing having a fuel tank receiving space, a burner in the casing having a fuel inlet, a unit removably associated with the casing adapted to be introduced through an opening in the casing into the tank receiving space, said unit comprising a tank to contain liquid under pressure, a vapor generator having connection with the tank and means for locating the unit within the space in the casing so that it will be at least partially supported from the burner adjacent to the fuel inlet.

3. A stove comprising a casing, a burner in the casing having a vapor inlet, a unit removably associated with the casing, the unit comprising a tank to contain liquid under pressure, a vapor generator provided with an outlet having valved connection with the tank, a heat insulating plate associated with the stove and located between the burner and the tank when all parts are in cooperative relation and means to aid in effecting positive alinement between the outlet of the generator and the vapor inlet.

4. A stove comprising a casing, a burner in the casing having a vapor inlet, a unit

removably associated with the casing, the unit comprising a tank to contain liquid under pressure, a vapor generator provided with an outlet having valved connection with the tank, a heat insulating plate associated with the stove and located between the burner and the tank when all parts are in co-operative relation and means associated with the burner to aid in effecting positive alinement between the outlet of the generator and the vapor inlet.

5. A stove comprising a casing, a burner in the casing having a vapor inlet, a unit removably associated with the casing, the unit comprising a tank to contain liquid under pressure, a vapor generator provided with an outlet having valved connection with the tank, a heat insulating plate associated with the stove and located between the burner and the tank when all parts are in cooperative relation and means comprising outstanding lugs associated with the burner to aid in effecting positive alinement between the outlet of the generator and the vapor inlet.

6. A stove comprising two main members one of which is a casing having a burner therein provided with an inlet, and the other a removable unit comprising a tank and a generator having valve communication with the tank, one of the members having an insulating plate which when the two members are in co-operative relation will be located between the burner and the tank and a preheater for the generator associated with the removable unit.

7. A stove comprising two main members one of which is a casing having a burner therein provided with an inlet, and the other a removable unit comprising a tank and a generator having valve communication with the tank, one of the members having an insulating plate which when the two members are in co-operative relation will be located between the burner and the tank and a preheater above the insulating plate and adjacent to the generator.

8. A stove comprising two main members one of which is a casing having a burner therein provided with an inlet, and the other a removable unit comprising a tank and a generator having valve communication with the tank, one of the members having an insulating plate which when the two members are in co-operative relation will be located between the burner and the tank and a preheater supported by the insulating plate.

9. A stove comprising a casing, a burner therein having a vapor inlet, and a removable unit in the casing comprising a tank, a generator having valved communication with the tank, means for positively alining the discharge end of the generator with the vapor inlet of the burner and means associated with the burner to partially support the removable unit within the casing.

10. A stove comprising a casing, a burner therein having a vapor inlet, and a removable unit in the casing comprising a tank, a generator having valved communication with the tank, means for positively alining the discharge end of the generator with the vapor inlet of the burner and means associated with the burner adjacent to the vapor inlet to partially support the removable unit within the casing.

11. A stove comprising a casing having a fuel tank receiving space, a burner in the casing having a fuel inlet, a closure associated with the casing for normally closing said space, a unit removably associated with the casing, the unit comprising a tank to contain liquid under pressure, a vapor generator having valve connection with the tank, the unit being bodily movable laterally into the tank receiving space through the front of the casing to aline the generator with the vapor inlet in the burner, the unit being partially supported by the burner adjacent to the vapor inlet opening thereof and additional means associated with the casing for alining the generator with the fuel inlet of the burner.

12. A stove comprising a casing having a front door opening, a door for normally closing the opening, a burner within the casing having a vapor inlet, a removable unit comprising a tank to receive fuel under pressure, a generator and valve connections between the generator and the tank, the unit being removably insertable through the front of the casing and suspended from the portion of the burner about the vapor inlet and by an additional support associated with the casing.

13. A stove comprising a casing, a burner in the casing having a vapor inlet, a unit removably associated with the casing, the unit comprising a tank to contain liquid under pressure, a vapor generator having valve connections with the tank and means connecting the vapor generator to the tank, the unit being movable laterally into the casing through the front thereof to aline the generator with the vapor inlet in the burner and partially supported by that part of the burner adjacent to the vapor inlet.

14. A stove comprising a casing having a back wall and two lateral forwardly extending end walls, a door hinged at its bottom secured to the end walls so that the door will swing downwardly to uncover a space within the casing, a burner fixed to the casing within the space, radiants supported above the burner, a removable tank structure insertable through the front of the casing and having a bracket to engage a part of the burner to hang the tank from the burner, a generator carried by the tank to discharge into the burner and valved connections between the tank and the generator.

In testimony whereof I affix my signature.

SHELDON COLEMAN.