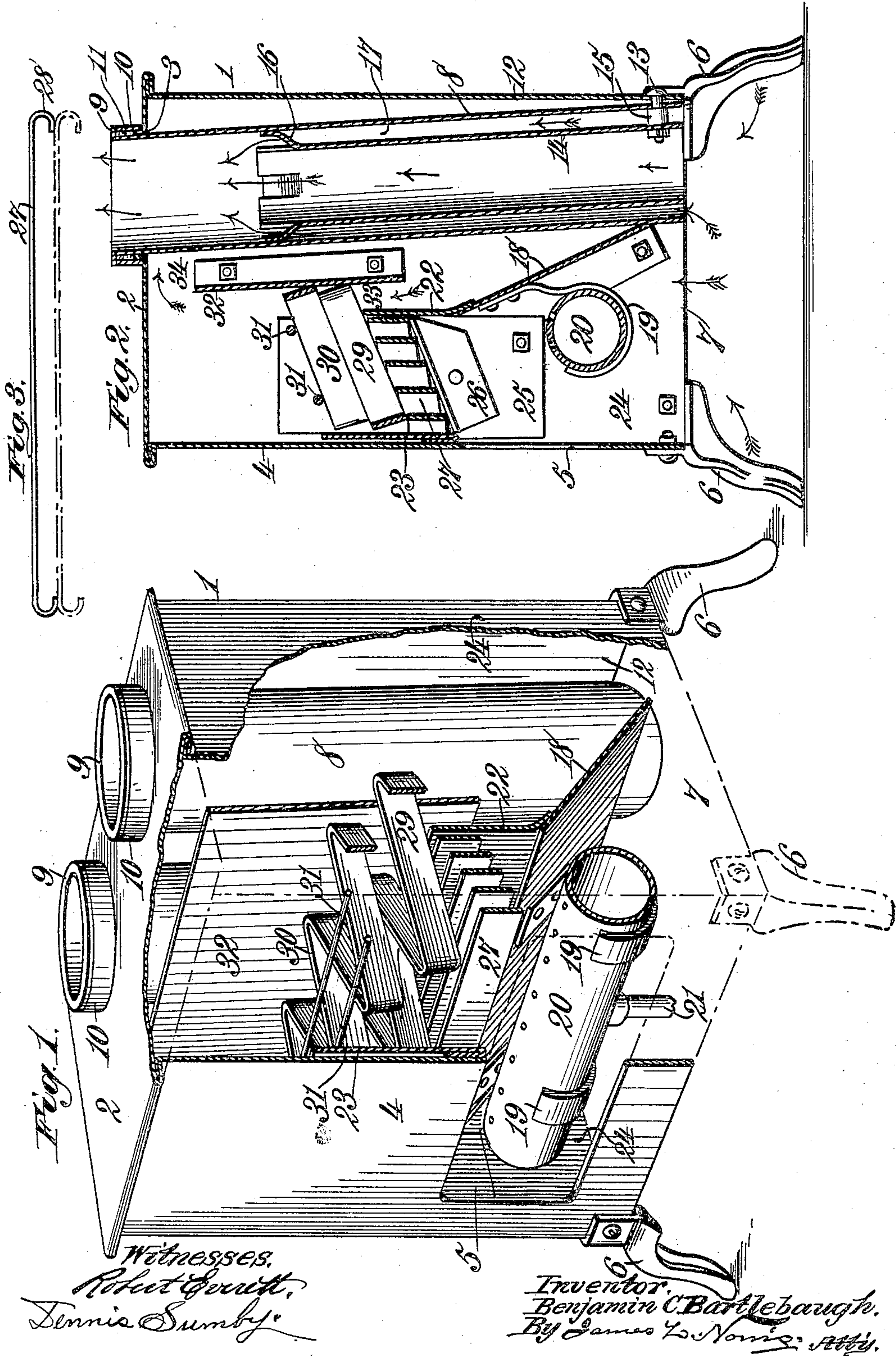


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PATENTED DEC. 18, 1906.

B. C. BARTLEBAUGH.
GAS HEATING STOVE.
APPLICATION FILED FEB. 28, 1906.



UNITED STATES PATENT OFFICE.

BENJAMIN CALVEN BARTLEBAUGH, OF BENWOOD, WEST VIRGINIA.

GAS HEATING-STOVE.

No. 838,936.

Specification of Letters Patent.

Patented Dec. 18, 1906.

Application filed February 28, 1906. Serial No. 303,514.

To all whom it may concern:

Be it known that I, BENJAMIN CALVEN BARTLEBAUGH, a citizen of the United States, residing at Benwood, in the county of Marshall and State of West Virginia, have invented new and useful Improvements in Gas Heating-Stoves, of which the following is a specification.

This invention relates to gas heating-stoves, and aims to provide a stove of such class with means, as hereinafter set forth, which when the stove is in operation causes a perfect combustion of all the gas, so as to prevent loss or escape of the gas, and at the same time does away with all obnoxious odors when using the stove. Furthermore, said means is also adapted to take up the soot and moisture contained in the gas, so that the gummy substances given off from the ordinary gas-heater, and which generally collect upon the curtains, fixtures, and furniture of a room, are destroyed. Said means is furthermore adapted to prevent the stove from giving off moisture which causes the windows to sweat, as is the case with the ordinary gas heater or stove, and said means is furthermore adapted to convert the moisture contained in the gas into vapor or steam.

The invention further aims to provide a stove with a partition-wall which is arranged in such relation with respect to the burner as to cause the circulation of the hot air so that the air will be returned in the path of the flame, consequently increasing the temperature of the air.

The invention further aims to provide a gas heating-stove with means, as hereinafter more specifically referred to, for causing hot air to be rapidly discharged therefrom.

The invention further aims to provide a gas heating-stove which shall be simple in its construction, efficient in its use, strong, durable, and comparatively inexpensive to manufacture.

With the foregoing and other objects in view the invention consists of the novel construction, combination, and arrangement of parts hereinafter more specifically referred to, and illustrated in the accompanying drawings, which form a part of this specification, and wherein is shown the preferred embodiment of the invention; but it is to be understood that changes, variations, and modifications can be resorted to which come within the scope of the claims hereunto appended.

In the drawings, wherein like reference

characters denote corresponding parts throughout the several views, Figure 1 is an elevation of a gas-stove in accordance with this invention broken away, showing the interior elements thereof. Fig. 2 is a longitudinal sectional view of a gas-stove in accordance with this invention, and Fig. 3 is a detail.

Referring to the drawings by reference characters, 1 denotes an inclosing casing having a top 2, provided with a pair of openings 3. The lower portion of the front wall 4 of the casing 1 is cut away, as at 5, and the said casing 1 is supported above the floor of a room or above the bottom of the fireplace through the medium of the feet 6, so that passages 7 at the bottom of the stove for the incoming air will be provided.

Within the casing 1 is arranged a pair of air-conducting tubes 8, which are supported so that the said tubes 8 will extend toward the front of the heater—that is to say, inclining forwardly from bottom to top. Each of the tubes 8 is slightly greater in length than the height of the casing 1, and the said tubes 8, at the upper end thereof, extend through the openings 3 in the top of the casing, and each of said tubes 8 at its top is formed with a flange 9, resting upon a collar 10, fixed to the top 2 of the casing, and interposed between the tube 8 and the collar 10 a suitable packing 11 may be provided. Each of the tubes 8 at its lower end is secured to the bottom of the rear wall 12 of the casing 1 through the medium of the holdfast device 13, and said device 13 also acts as a means for securing an air-conducting tube 14, of less diameter and of less length than the tube 8, within the said tube 8. A spacing-collar 15 is provided on the holdfast device 13 for retaining the lower end of the tube 14 a suitable distance from the tube 8, and the tube 14 at its upper end is retained a suitable distance from the tube 8 through the medium of the protuberances 16, which are sprung out of the tube 14 and bear against the inner face of the tube 8. By setting up the tube 14 with respect to the tube 8 in a manner as stated an air-passage 17 is provided. The function of the arrangement of the tube 14 within the tube 8 is to prevent delay in the escape of the hot air from the tube 8, as it has been found unless a means is provided within the tube 8 to break what may be termed the “rolling” of the heat therein the hot air is delayed in its escape. The tube 14 is provided to prevent

the delay of the escape of air. The intense heat attacks the tube 14, and as said tube does not extend to the top of the tube 8 the heat comes together, it may be said, at the top of the tube 14. This forms a sort of siphoning action, which causes the air in the tube 14 to be drawn out very rapidly. As the tube 14 does not extend down to the floor, cold air enters the tube 14 at the bottom, and owing to the action of the heat the air is caused to rise and pass out of the tube 14 at the top, and, as before stated, owing to the fact that the tube 14 is not of the same length as the tube 8 the action of the heat at the top of the tube forms what may be termed a "siphoning" action, causing the hot air to be discharged very rapidly from the stove out of the tubes 8.

Arranged within the casing 1 is an upwardly-extending inclined partition-plate 18, which also acts as a fireback or shield for the flame and, further, forms a suspension medium for the supporting-brackets 19, which carry a gas-burner 20 in the form of a tube, and communicating with said gas-burner 20 is a gas-supply pipe 21. The partition-plate 18 also acts as a means for directing the flame toward the gas-consuming element, which will be hereinafter referred to. The gas-burner 20 is arranged within the casing 1 in parallelism with the opening 5, but at a point removed therefrom. The plate 18 has secured to the top thereof a vertically-extending partition-plate 22, which also acts as a fireback or shield and is arranged to extend substantially in parallelism with the shield 23, secured to the inner face of the front wall 4 of the furnace.

Secured to the inner face of the side walls 24 of the casing 1 are reinforcing, as well as protecting, plates 25, and attached to each of the said plates 25 is a forwardly and downwardly extending inclined supporting member 26 for the heat-absorbing and gas-consuming element which consists of a lower, an intermediate, and an upper section. Said lower section consists of a plurality of horizontally-extending bars 27, having their ends bent in a forward manner, as at 28, so as to form spacing means for the bars, the rear bar abutting against the plate 22. The bars 27, when mounted in operative position, incline downwardly from rear to front. The intermediate section 29, as well as the upper section 30, consists of a zigzag bar, one mounted upon the other, and the said bars 29 30 project rearwardly from the bars 27 and over and at a point removed from the plate 22. The bars 29 30, as well as the bars 27, are retained in a superposed position through the medium of the holding wires or rods 31, secured to the plates 25.

Arranged at the rear of the heat-absorbing and gas-consuming element is what may be termed a "medium" for causing the circula-

tion of hot air. Said medium consists of a partition-plate 32, secured to the side walls 24. The lower portion of said plate 32 is positioned at the rear of the plate 22, so as to form a passage 33 directly below the rear end of the bars 29 and 30, the rear end of said bars 29 and 30 abutting against the plate 32. The height of the plate 32 is such that it terminates at a point removed from the top wall 2, so as to form a passage 34. The said plate 32 is arranged slightly forward of the air-conducting tubes 8.

When the stove is in operation, the flame is adapted to pass through the openings or passages formed between the bars 27, 29, and 30 of the heat-absorbing and gas-consuming element. This causes the sections of the heat-absorbing and gas-consuming element to become red-hot or, rather, brought to a state of incandescence. After the sections of the heat-absorbing and gas-consuming element are brought to a state of incandescence they cause a perfect combustion of all the gas, or, in other words, burns up all the gas, so that nothing is lost, and converts all the gas into heat. The bars 27, 29, and 30 collect the soot and destroy all the moisture which is contained in the gas, so that the gummy substances that are given off from the ordinary gas-heater and which generally collect upon curtains, fixtures, and furniture of a room are destroyed, and, furthermore, owing to the fact that all the moisture is consumed in the gas it causes a creation of what may be termed a "dry heat," thereby preventing the stove from giving off moisture, which causes the windows to sweat, as is the case with an ordinary gas-stove, as all the gases are consumed through the medium of the heat-absorbing and gas-consuming element. The stove when in use is free from obnoxious odors, and also an increase in the amount of heat is obtained.

Not only does the heat-absorbing and gas-consuming element perform the functions as stated, but it also creates a draft which aids the fire in burning. As the lower section of said element slopes backward and upward, as shown, the flame of the gas and the heat coming off of the burner as it rises enters the first and second openings between the bars 27, which are arranged in proximity to the plate 22, and as the openings formed by the bars 27 drop lower in front of the flame of the gas and as the flame travels upward said action creates a draft which aids the flame in action and also prevents the flame from licking out of the opening 5 at the front of the heater. After the flame and heat pass up through the gas-consuming element it follows the partition-plate 32 to the top thereof and then through the passage 34, then downward on the rear side of the plate 32 until it comes to the lower end of the said plate and bottom of the heat-absorbing and gas-consuming ele-

ment. Then owing to the arrangement of the passage 33 the heat passes up through the passage 33 and then through the upper sections of the heat-absorbing and gas-consuming element. This circulation will continue as long as the stove is in operation. It will be evident, owing to such circulation, that the temperature of the heat is increased. Owing to the arrangement of the plate 22 the flame and heat as they leave the burner do not interfere with the circulation of the heat, or, in other words, do not interfere with the manner of increasing the temperature of the heat, as stated.

During the circulation of the heat in a manner as stated the tubes 8 and 14 both become hot, consequently heating the air which passes through said tubes, and the hot air will be rapidly discharged from the tube 8 in a manner as hereinbefore stated. As the gas flame and heat pass up through the heat-absorbing and gas-consuming element the latter causes the watery part of the gas to be turned into vapor or steam, and as it follows on in the circuit of heat and passes up through the element a second time the vapor or steam is converted into a dry atmosphere or heat.

Owing to the inclined manner in which the tubes 8 and 14 are positioned the upper portions of the outer tubes stand in close proximity to the partition 32, so that the heat absorbed thereby from the gas absorbing and consuming element will tend to heat the tube 8 in connection with the hot air which passes over the top of the partition 32. Furthermore, the inclining of the tubes in the manner as stated when the stove is set upon the hearthstone or in the fireplace causes the discharge of the heat into the room in a direction away from the mantel.

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

1. A gas heating-stove comprising a casing, a plurality of outer and inner air-tubes arranged therein and extending forwardly at an inclination, a heat-absorbing and gas-consuming means mounted within the casing and arranged forwardly of the tubes near the top thereof and adapted to cause heating of the tubes, and a burner arranged below said means.

2. A gas heating-stove comprising a casing, a plurality of outer and inner air-tubes arranged therein and extending forwardly at an inclination, a heat-absorbing and gas-consuming element mounted within the casing forwardly and at the upper portion of said tubes, a burner arranged below said element, and a partition interposed between said tubes and the said element and forming a passage between the top edge thereof and the top wall of the casing.

3. A gas heating-stove comprising a heat-

absorbing and gas-consuming element arranged in operative relation with respect to the gas-burner and comprising a pair of zigzag members, one arranged above the other and having the bends of one member alternately disposed with respect to the bends of the other member.

4. A gas heating-stove comprising a heat-absorbing and gas-consuming element arranged in operative relation with respect to the gas-burner and comprising a pair of zigzag members with the bends thereof extending from front to rear of the stove and with the bends of one member alternately disposed with respect to the bends of the other member, one arranged above the other, said element further comprising a plurality of spaced bars extending parallel with respect to the front of the stove and arranged below said zigzag members.

5. A gas heating-stove comprising a plurality of outer air-tubes, a plurality of inner air-tubes, said inner tubes of less length than said outer tubes, means for spacing the inner tubes from the outer tubes, a shield arranged within the casing, a partition arranged within the casing forwardly of and at the upper portion of said outer tubes and forming in connection with the shield, a passage, said partition further forming a passage at the top thereof, a heat-absorbing and gas-consuming element having a portion arranged in front of said shield and the remaining portion extending over said shield and positioned in front of said partition, and a burner suspended from said shield and arranged below said element.

6. A gas heating-stove comprising an inner and an outer air-tube, said inner tube terminating at a point removed from the outer end of said outer tube, a gas-burner, a shield arranged within said casing and provided with means for suspending the burner, an inclosing casing for said tubes and burner, said casing having an opening in its top through which projects said outer tube, and said casing having the lower portion of its front cut away, and means secured to the casing and to the tubes for connecting the tubes together and for retaining the tubes within the casing.

7. A gas heating-stove comprising an inner and an outer air-tube, said inner tube terminating at a point removed from the outer end of said outer tube, a gas-burner, a shield arranged within said casing and provided with means for suspending the burner, an inclosing casing for said tubes and burner, said casing having an opening in its top through which projects said outer tube, and said casing having the lower portion of its front cut away, means secured to the casing and to the tubes for connecting the tubes together and for retaining the tubes within the casing, and a heat-absorbing and gas-consuming element arranged at the front of said inner tube and above said burner.

8. A gas heating-stove comprising a heat-absorbing and gas-consuming element, said element consisting of a plurality of spaced bars gradually sloping downward from rear
5 to front, and a pair of zigzag members mounted upon said spaced bars and projecting from the rear thereof.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

BENJAMIN CALVEN BARTLEBAUGH.

Witnesses:

WM. BARTENG,

F. E. BARTLEBAUGH.