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R. JÜRGENSEN.

APPARATUS FOR CARBONIZING WOOD, PEAT, AND THE LIKE.

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Fig. 1.

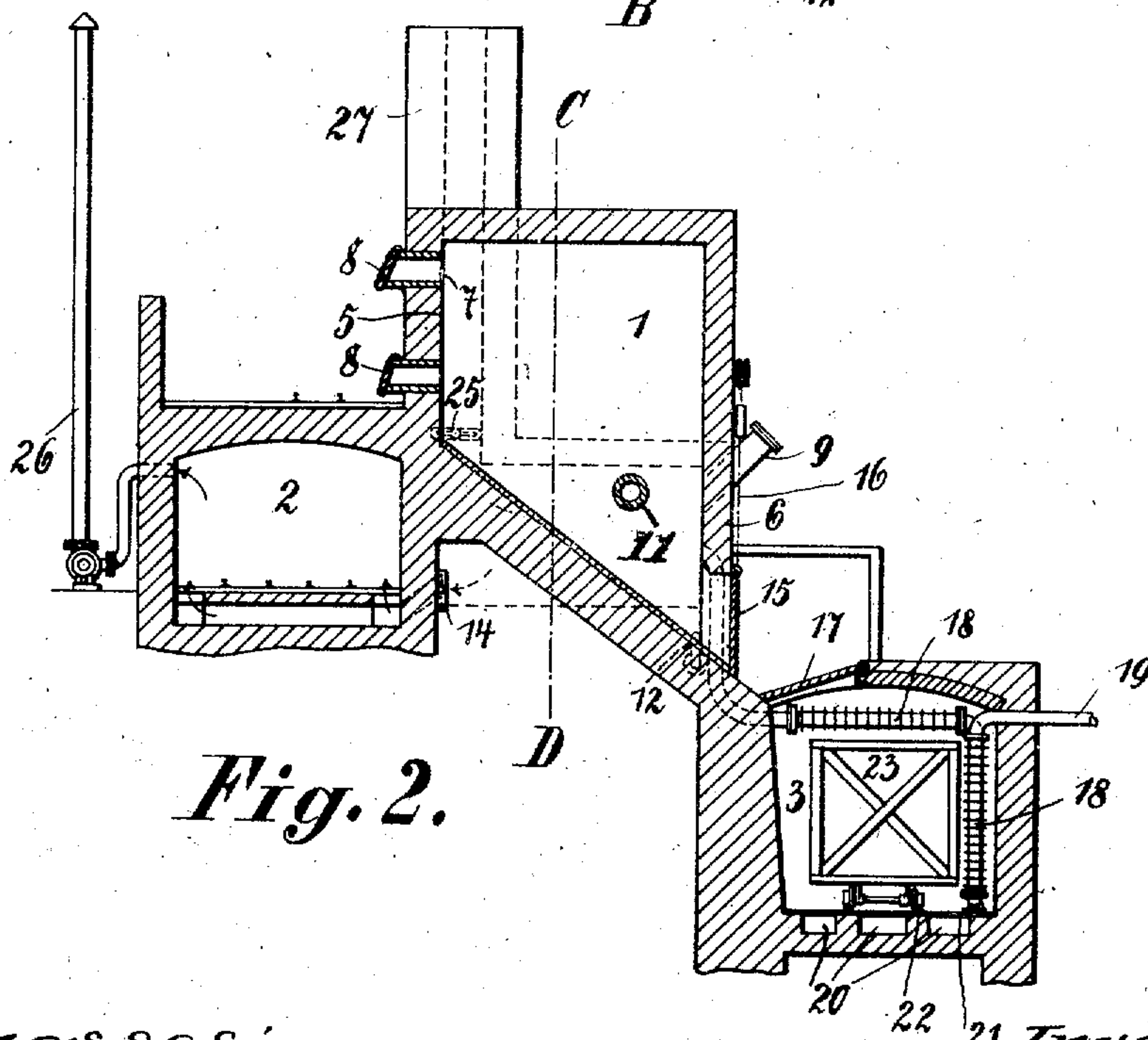
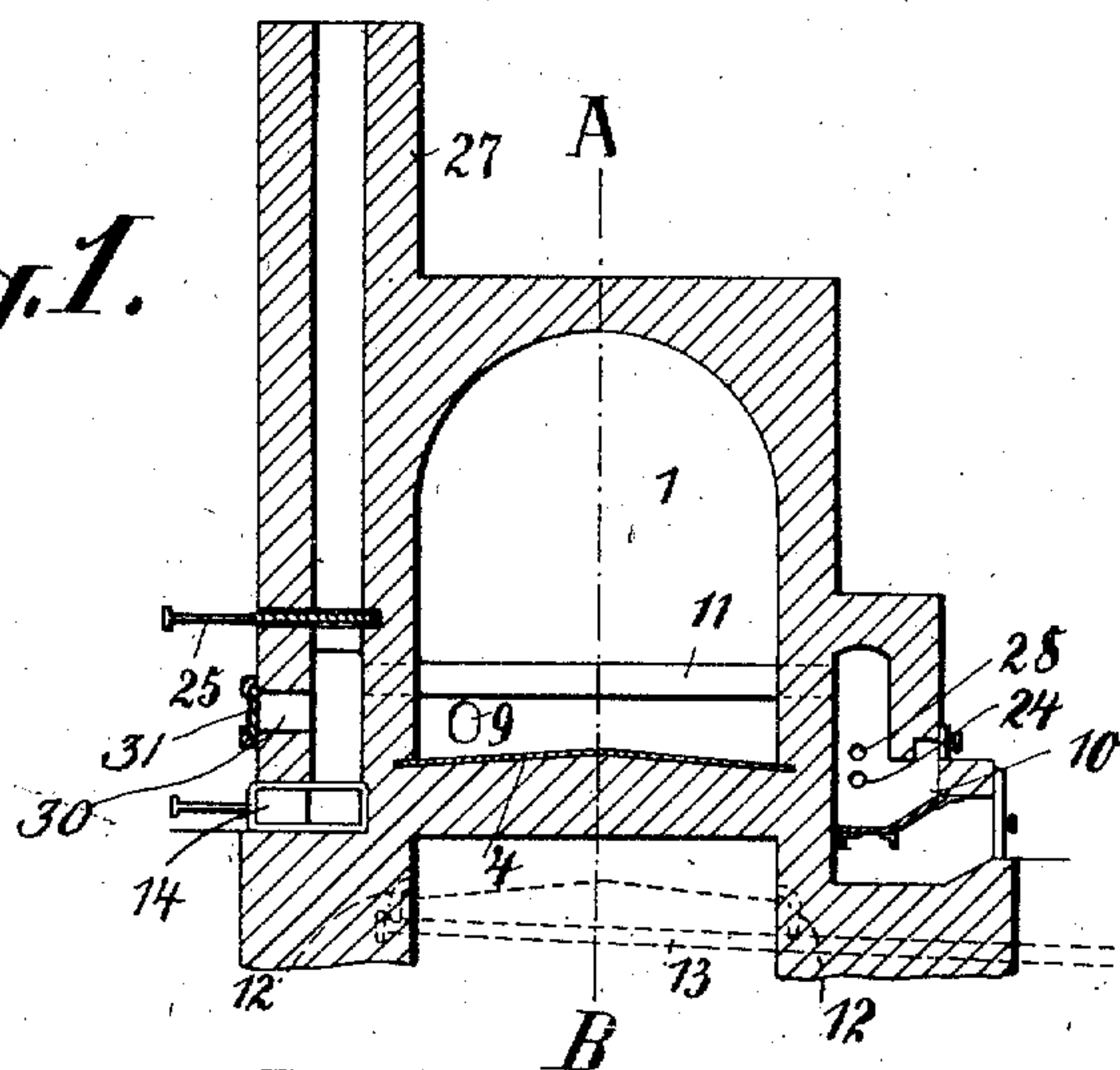


Fig. 2.

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APPARATUS FOR CARBONIZING WOOD, PEAT, AND THE LIKE.

No. 860,483.

Specification of Letters Patent.

Patented July 16, 1907.

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To all whom it may concern:

Be it known that I, ROLOF JÜRGENSEN, doctor of philosophy, chemical engineer, and resident of 5 Karlsasse, Prague-Zizkow, Austria-Hungary, have invented certain new and useful Improvements in Apparatus for Carbonizing Wood, Peat, and the Like, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

10 The object of this invention is to so improve the construction and arrangement of the parts of the apparatus as to completely and effectually utilize the products of distillation during the process of carbonization of wood, and the like in kilns.

15 In the accompanying drawings:—Figure 1 represents a vertical section taken on the line C D of Fig. 2; Fig. 2 is a vertical section taken on the line A B of Fig. 1.

Referring to the drawings, 1 designates the carbonizing chamber, 2 the drying chamber, and 3 the cooling chamber. The carbonizing chamber is provided with an inclined bottom 4 extending from approximately the center of one wall 5 to the lower end of the opposite wall 6. The bottom is also preferably inclined from its center to the two walls at angles to the walls 5 and 6 of the retort. In the upper part of said chamber are two openings 7 which serve for introducing the material to be carbonized, and are provided with suitable closures, as flat valves 8.

9 indicates a pipe adapted to convey the gases contained in the products of distillation to a suitable cooling arrangement, not shown.

The heating means consists of a furnace 10 arranged on the outside and lower third part of the retort, the heat being communicated to the said retort by a horizontally arranged pipe 11. At the lower extremity of the retort and at each side of the inclined bottom are pipes 12 having pipe 13 common to both, for use in receiving and carrying to a suitable collecting chamber, not shown, tar, which is an especially valuable product obtained during the carbonizing of fur wood.

The drying chamber 2 located at one side of the retort serves to predry the material to be carbonized and is heated by a suitable mixture of burned gas and air admitted from pipe 11 by the slide door 14.

45 Separating the carbonizing chamber from the cooling chamber is a slide door 15 operated by a chain 16. The cooling chamber 3 is still further cut off from the carbonizing chamber by means of a door 17. In the cooling chamber are arranged closed pipes 18 of a great radiation surface, through which the permanent gases circulate coming from the condenser through pipe 19. Channels 20 are formed in the bottom of said chamber and are covered by iron plates 21 with tracks 22 mounted thereon. The channels are in communication with the open air and serve to further cool the contents of

the cooling chamber, the air having free access to the channels.

The operation of my improved apparatus is as follows:—The material such as wood, peat, lignite, and the like to be carbonized is first thoroughly dried in chamber 2. It is then discharged through the openings 7 into the carbonizing chamber 1, where it is carbonized, the tar or like residuum resulting from such process being carried off by pipe 13. After the foregoing process has been completed the slide doors 15 and 17 are opened thereby causing coke or other substance to automatically slide down to the cooling chamber 3, being deposited either directly upon the floor of said chamber or upon cooling cars 23. In the former case the material falls down on iron plates 21, beneath which the cold air is circulated in channels of brick work 20. The non-condensed gases are admitted from the condenser through pipe 19 and by passing the pipes 18 are heated to such a degree that they may be easily inflamed on entering the furnace through pipe 24. In consequence of the high preheating of these gases the heat required for the carbonization is reduced in a manner hitherto unknown.

The burned gases give off the greatest part of their heat to the heating pipes 11 in the retort; are then mixed with air introduced in any suitable way and passed by the slide door 14 to the drying chamber 2. These gases are then drawn off by means of any mechanical contrivance, preferably an exhaust fan 26, and passed to the open air. If these gases are not to be used for predrying the material, slide door 14 is closed and door 25 opened, and in this way are passed through chimney 27 to the open air.

The chimney 27 is provided with a hole or channel 30 which is in communication with the open air and may be closed by a slide door 31. It is obvious that upon the slide door 31 being opened the air will be drawn in through the hole or channel 30 by exhaust fan 26, then mixed with the gases of combustion, and finally passed to the drying chamber. In this way the gases of combustion may be cooled, if they are hotter than required, by drying the material to be treated. If it is desired to lessen the amount of labor and avoid the formation of dust, the burned or decomposed material may be deposited in suitable iron cars 23 and cooled in a manner as hereinbefore described, thence conveyed to a store chamber without further manipulation. The brick-work channels 20 are open at both ends in order to keep air circulating for cooling purposes.

Having thus described my invention, what I desire to secure by Letters Patent, is:—

1. A coking furnace, consisting of a carbonizing chamber, a cooling chamber and a drying chamber, said retort being in interrupted communication with the chambers, and means for automatically discharging the contents of the same, consisting of a bottom inclined in the direction of its length and from the center to both sides in

the direction of its width, in combination with a slide door arranged at the bottom thereof and at its outlet.

2. A coking furnace consisting of a carbonizing chamber, a cooling chamber, and a drying chamber, said cooling chamber being provided with a plurality of radiation pipes in communication with the furnace.

3. A coking furnace consisting of a carbonizing chamber, a cooling chamber, and a drying chamber, said drying chamber being provided with a plurality of channels opening to the atmosphere.

4. A coking furnace consisting of a carbonizing cham-

ber, a cooling chamber, and a drying chamber, said carbonizing chamber being provided with a plurality of horizontally arranged heating pipes, and valved connections between said pipes and the furnace and the drying chamber.

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

ROLOF JÜRGENSEN.

Witnesses:

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ARTHUR SCHWERZ.