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[illegible]

Fig. 3. A plan view of a circular device. It features a central ring (14) and four curved segments (17) arranged around it. The outer boundary is labeled 20 and 21.

Inventor:
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UNITED STATES PATENT OFFICE.

ADOLF KLEIN, OF VIENNA, AUSTRIA-HUNGARY.

OIL-BURNER.

990,988.

Specification of Letters Patent.

Patented May 2, 1911.

Application filed January 6, 1909. Serial No. 470,915.

To all whom it may concern:

Be it known that I, ADOLF KLEIN, a citizen of Austria, residing at Vienna, in the Province of Lower Austria and Empire of Austria-Hungary, have invented certain new and useful Improvements in Oil-Burners, of which the following is a specification.

The present invention has for its object an oil burner adapted to economically utilize the caloric values of the liquid fuel.

The main feature of my invention is to consume the crude oil by exposing it to the progressive heating in such a manner that the various products of distillation or decomposition successively separate first the highly volatile light products, then the less volatile heavy products, and finally the very heavy products, which products are burned in the order of their generation, as stated in the specification which forms part of my application, Serial No. 470,914, filed January 6th, 1909.

In the drawings: Figure 1 is a vertical section of a burner, in which the liquid fuel is supplied from below. Fig. 2 is a horizontal section taken along the line A—B of Fig. 1. Fig. 3 is a top view of the burner.

The burners shown in Figs. 1 and 2 consist of a distributing block 1 with stepped annular spaces 4, 5, 6, 7, for the centrally supplied combustible. These annular spaces are formed by partitions 9 and are in communication with one another by apertures 8 which are, however, not in alinement with each other. The outermost annular space 6 is in communication with an annular distributing channel 12, which opens into the combustion space 19 by means of transverse passages 13.

The heat generated on combustion and radiated to the distributing block 1, effects a gradual decomposition of the centrally supplied combustible in such a way, that the most volatile products separate in the innermost space 4, whereas the less volatile, or heavier, products decompose in the successive annular spaces 5 and 6, until finally the heaviest products enter the burner cup 7. By virtue of the intercommunication of the various annular spaces with each other and with the combustion space, the separated products immediately flow in the order of their generation into the combustion space 19 of the burner, where they burn. The heat radiated therefrom, on the one hand, provides for the heating of the distributing

spaces and, on the other hand, for the heating of the heaviest products in the cup 7 and finally, for heating the air required for assisting the combustion.

The air reaches the burner from below through an orifice 15 and is conducted through a distributing chamber 16 to the heating space 17. This space is formed by the upper portion 3 of the burner and an annular partition 20, both of which are composed of good heat conductive material. The space 17 is in communication, by apertures 18 provided in the partition 20, with the combustion space 19. By this arrangement the air, while it is conducted to the combustion space, continuously changes its direction, a change of velocity occurring with each change of direction. The air thus will become thoroughly and uniformly heated.

The upper portion 3 of the burner covers the annular spaces 4, 5, 6, 7, incloses the air-heating space 17 and is provided with orifices 14, through which the various products of decomposition escape as a flame. By the upper portion 3 the temperature is effectively maintained so low that the heaviest products of decomposition which are contained in the cup 7 do not char.

In order to supply the air to the combustion space in an as highly heated condition as possible and thus prevent the heavy products of decomposition contained in the cup 7 from being cooled to below their ignition temperature, the portions of the burner which conduct the air as well as the upper portion 3 of the burner which contain the orifices 14, are constructed of a material being a good conductor of heat, for instance metal. In order to preserve the heat thus stored in the metallic portions, solely for the purpose of heating the air and the combustible, the upper portion 3 of the burner is completely covered with a substance 21, being a poor conductor of heat.

The upper portion 3 of the burner is fitted with a cap 22 of a refractory material, being a poor heat conductor. The conduit 11 for the combustible is also formed of a substance being a poor heat conductor.

I claim:

1. An oil burner, comprising a block, provided with a plurality of intercommunicating concentric annular distributing spaces, adapted to receive the liquid fuel, partitions separating said spaces and provided with apertures for the liquid fuel, a cap of

heat insulating material covering the said spaces, and a fuel supply conduit adapted to conduct the liquid fuel from below to the innermost of the said spaces, said conduit
5 being protected against radiation of heat.

2. An oil burner comprising a block, having a plurality of intercommunicating concentric annular distributing spaces adapted to receive the liquid fuel, annular partitions
10 separating said spaces and provided with apertures for the liquid fuel, a cap of heat-insulating material covering the said spaces, a fuel supply conduit adapted to conduct the liquid fuel from below to the innermost of the

said spaces, the said conduit being protected 15 against radiation of heat, a combustion chamber, a chamber for supplying air centrally from below around the said fuel supply conduit, and an annular air-heating space connecting the said air-supply chamber with said combustion chamber. 20

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

ADOLF KLEIN.

Witnesses:

WILHELM ZUGER,

ROBERT W. HEINGARTNER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
