

W. MELAS.
EQUALIZING OIL BURNER.
APPLICATION FILED JUNE 26, 1914.

1,160,929.

Patented Nov. 16, 1915.

FIG. III.

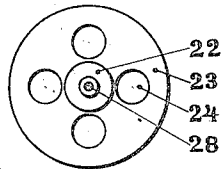


FIG. I.

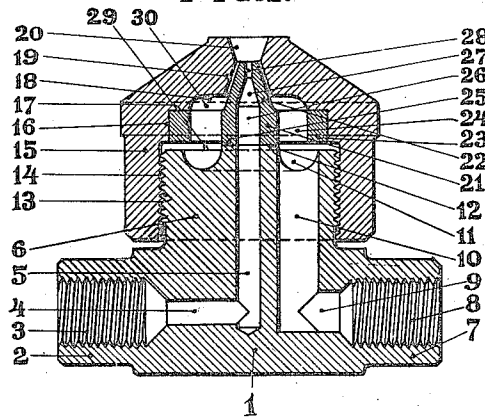
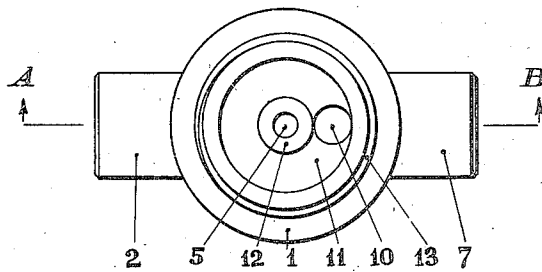


FIG. II.



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WILLIAM MELAS, OF RIDLEY PARK, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO
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EQUALIZING OIL-BURNER.

1,160,929.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM MELAS, a citizen of the United States, residing at Ridley Park, in the county of Delaware and State of Pennsylvania, have invented certain new and useful Improvements in Equalizing Oil-Burners, of which the following is a specification.

In the practice of oil atomization with high pressure air, the latter is usually furnished by compressors of the reciprocating type or by positive pressure blowers and the air current thus produced is of a pulsating nature. The installation of air tanks reduces the magnitude of said pulsations but does not eliminate them, and, as a consequence, the air finally furnished to the burners has not a steady pressure, but one which varies between a certain maximum and minimum, which variations are constantly re-occurring in a certain time-interval; moreover, the magnitude of said pulsations, or the difference between maximum and minimum pressure is not constant, but varies in the measure as the compressor is taxed. This unsteadiness of pressure causes an unsteady working of the burners supplied with air which is most undesirable and is in many cases deleterious. This unsteadiness is especially marked in installations of a temporary nature, where it is impracticable to install large equalizing tanks, as is for instance the case in erection work for buildings, bridges or field repair work, etc. Work of this character is invariably done with small portable furnaces and these furnaces are usually handled by men who are not skilled firemen. It is, therefore, desirable to have a burner construction which is especially adapted for such work and handling and in order to meet the furnace conditions it is the object of my invention to provide a burner of small and compact construction. Furthermore, in order to meet the air supply conditions, to provide a burner which produces a steady spray when supplied with a pulsating air current. Furthermore, in order to meet the conditions of handling, to provide a burner which is simple in construction, which can be easily cleaned if necessary and which does not need any re-adjustment when re-assembled after cleaning.

The Figures I, II and III of the accompanying drawing illustrate my invention.

In the drawing Fig. I is a vertical section through the burner along line A B of Fig. II and viewed as indicated by the arrows. Fig. II is a top view of the burner body; the nozzles being removed. Fig. III is a top view of the oil nozzle.

In the drawing 1 is the burner body, having an oil inlet 2, tapped as indicated by 3 to receive an oil supply pipe (not shown). The bore 4 communicates with the tapped bore 3 and with the axial bore 5 which ends at the upper face of the cylindrical body-extension 6. The burner body 1 has also an air inlet 7 tapped as indicated by 8 to receive an air supply pipe (not shown). The bore 9 communicates with the tapped bore 8 and with the bore 10 which terminates in a circular groove 11, cut in the upper face of 6. The portion between bore 5 and the inner face of groove 11 is somewhat raised above the upper face of the body-extension and forms an annular seat 12, which is faced off accurately and at right angles to the axis of 6.

The body-extension 6 is provided with an external thread 13 which is engaged by an internal thread 14, cut in the lower part of the air nozzle 15. The part of the air nozzle above the thread is recessed. The recess has a cylindrical face 16 concentric with the threaded bore and an upper face 17 at right angles thereto and to the axis of thread. Above the recess face 17 is a chambered portion 18, which has an axial, inwardly flaring bore 19, which bore is joined by an outwardly flaring bore 20.

21 represents an oil nozzle, having a conical portion 22, at the base of which extends the circular flange 23 fitting the recess in air nozzle. Flange 23 has a number of openings 24. The central portion of nozzle 21 is extended somewhat below the lower face of flange 23, which extension is faced accurately and at right angles to the nozzle axis and forms the nozzle seat 25 against seat 12 on the upper face of body extension. The center portion of oil nozzle 21 is provided with the axial bores 26 and 28, which are of different diameters and which are joined by a conical bore 27.

The burner in Fig. I is shown with the parts assembled and in working position. It will be seen that a lower air chamber 29 is formed between upper face of body-extension 6 and lower face of flange 23, which is

in communication through holes 24 with an upper air chamber 30; the latter being formed by the upper face of flange 23 and the chambered portion 18 in air nozzle. The presence of these chambers insures a steady working of the burner with a pulsating current of air. The air, passing through bore 10 into the comparatively large chamber 29, expands, thereby decreasing the magnitude of the pulsations. The air pulsations in chamber 29 have a certain re-occurring maximum and a certain re-occurring minimum pressure in a certain time-interval or period, and, by properly proportioning the passages 24 and the upper equalizing chamber 30, the pulsations in the upper chamber 30 can be made to occur one half of a period later than those in the lower chamber so that a maximum in the lower chamber would correspond with a minimum in the upper chamber and vice versa. This has the effect of complete pressure equalization in the upper chamber, and thus a steady, non-pulsating current of air will emit from the annular opening between bore 19 and nozzle 22. This steady current of air, again will produce a steady, non-fluctuating spray by the mechanical action on the oil stream emitting from bore 28.

The cleaning of the nozzles in case of carbonization, or stoppage caused by impurities carried with the air or oil, can eas-

ily be effected by unscrewing the air nozzle which action detaches both the air and oil nozzle, simultaneously from the burner body. The original relative position of the nozzles, governing the effective air outlet area, is not changed by re-assembling the nozzles after cleaning, and, consequently the burner does not need any re-adjustment.

Having thus described the purpose, usefulness and working of my invention, I desire to secure by Letters Patent:

In an oil burner the combination of a burner body, having a threaded cylindrical body extension; an annular groove in the upper face; an air inlet and an air outlet in said burner body, the air outlet terminating within the groove aforementioned; an oil inlet and an oil outlet in said burner body, the oil outlet terminating in the center of the upper face, whereby an annular seat is formed; an air nozzle threaded to engage the threads of the body extension, having a recessed seat and an outlet; and an oil nozzle having a perforated base flange fitting said seat in the air nozzle and said annular seat on the body extension.

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

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Witnesses:

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