

April 23, 1940.

R. F. ANDLER ET AL

2,197,912

DEFLECTOR FOR CLOSE COUPLED OIL BURNERS

Filed July 20, 1937

2 Sheets-Sheet 1

FIG. 1

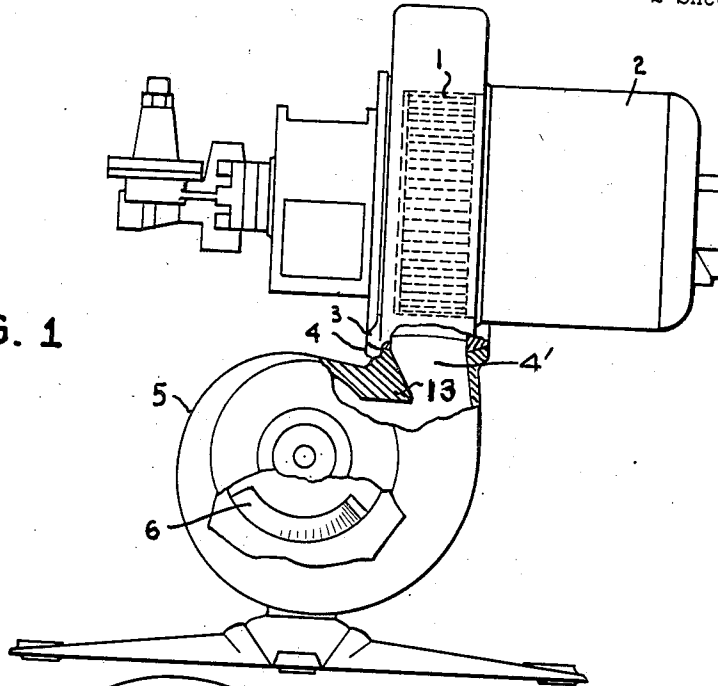
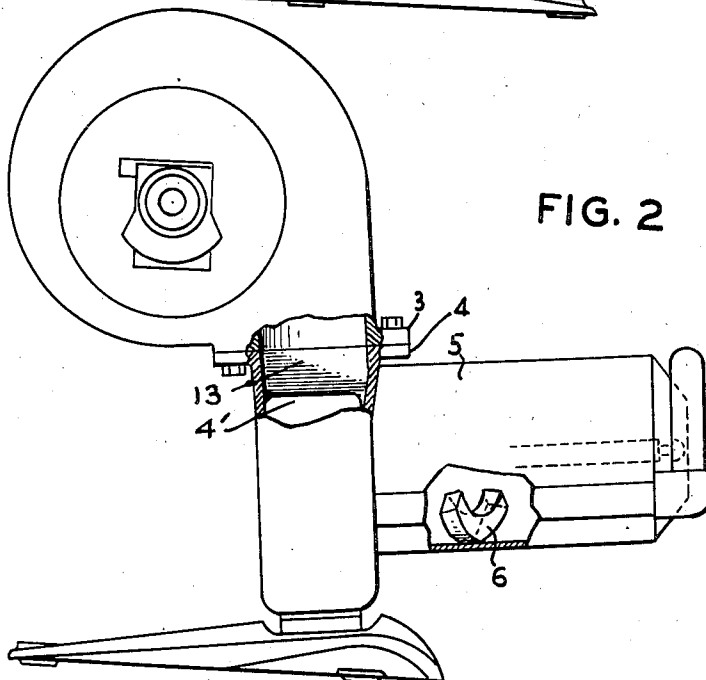


FIG. 2



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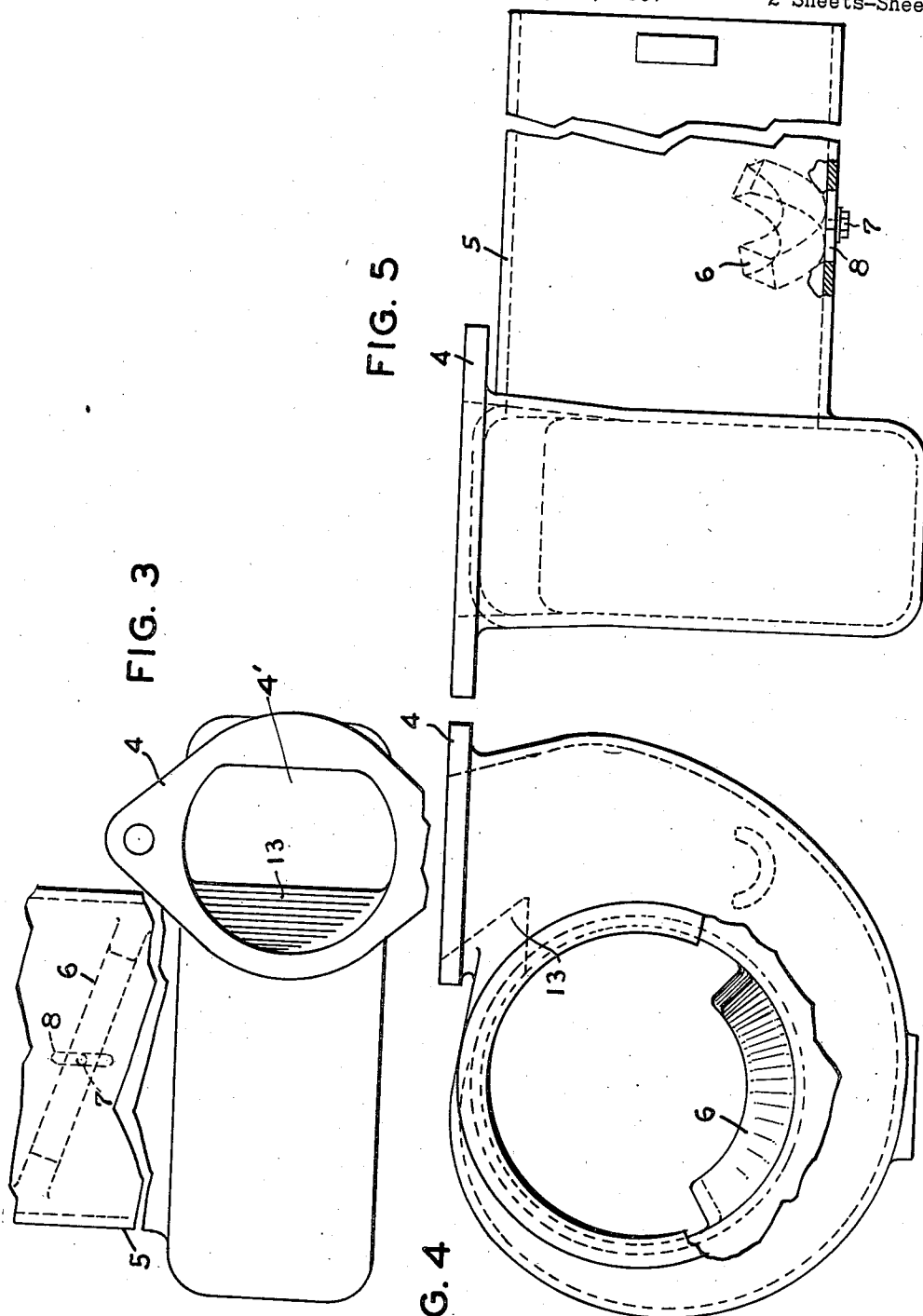


FIG. 4

FIG. 5

FIG. 3

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UNITED STATES PATENT OFFICE

2,197,912

DEFLECTOR FOR CLOSE COUPLED OIL
BURNERS

Robert F. Andler, Rutherford, and Louis W. Schroeder, Passaic, N. J., assignors to Electrol Incorporated, Clifton, N. J., a corporation of Delaware

Application July 20, 1937, Serial No. 154,548

4 Claims. (Cl. 158—1.5)

Our invention relates to that type of oil burner which produces a ball flame. It is the tendency of the industry to condense the oil burners as much as possible and eliminate as many parts as can be done without disturbing the efficiency or interfering with the proper combustion. In burners of this type it has been customary to discharge the air from the blower into an air duct which has sufficient length to cause the air to proceed around the scroll case of the air receiver as a solid circular column of air. As this solid column of air proceeded in the ever narrowing scroll, air was forced into the blast tube uniformly around its circumference, thus giving a symmetrical fire. In an endeavor to do away with the air duct we directly connected the blower housing to the air receiver as shown in the copending application of Robert F. Andler, Serial No. 153,714 filed July 15, 1937, but we found that the air leaving the fan had various directions and eddy-currents, and the air when entering the air receiver would flow directly from the flange or inlet into the air receiver in more or less straight lines, without taking the proper whirling direction around the scroll case. Due to the fact that this air entered the blast tube tangentially, there was a slight amount of rotation, but the air stream was not uniform and the greater amount of air affected the right side of the flame, making it short, while the left side of the flame, not receiving sufficient air, was long and smoky. In a close coupled burner we have found that it is desirable to provide a projection on the inlet port. This has the effect of directing the air stream to the outer periphery of the scroll.

The object of our invention is to provide means which will permit the direct connection of the air receiver to the blower housing yet produce an air stream of uniform velocity and thus ensure a symmetrical flame.

Our means of accomplishing the foregoing object may be more fully comprehended by having reference to the accompanying drawings, which are hereunto annexed and are a part of this specification and in which:

Fig. 1 is a front elevation of an oil burner employing our improved deflector, a portion being shown in section;

Fig. 2 is a side elevation of the same;

Fig. 3 is a detail view of the scroll case and air tube showing our deflector in dotted lines;

Fig. 4 is a detail view of scroll case and air tube partly broken away showing our deflector in end elevation;

Fig. 5 is a detail view of the scroll case and air tube showing in dotted lines our deflector in perspective.

Similar reference numerals refer to similar parts throughout the entire specification.

As shown in the drawings the fan or blower 1 is directly connected to an electric motor 2 in the customary manner. The flange 3 of the blower housing is directly connected to a flange 4 formed on the blast tube 5 thus forming an air inlet port 4' which leads into the said tube 5 tangentially. This as stated imparted a whirling or gyrating movement to the air stream notwithstanding the fact that this air was whirling or gyrating, yet the movement of the air stream was not uniform. We discovered that by placing a deflector 6 on the inside of the blast tube 5 that it would interrupt the high velocity stream and slightly change the angle of advancement of a portion of this stream in such a manner that when the gyrating annulus reached the end of the blast or air tube, it was uniform in velocity and the fire was symmetrical. This deflector 6 is mounted inside of the blast tube 5, being secured by a cap screw 7, which passes through a slot 8, formed in the wall of the blast tube 5, as clearly shown in Figs. 3 and 5 of the drawings, as more clearly seen in the detail views consists of a curved member, square or rectangular in cross section, formed in a segment of a helix and curved to coincide with the curvature of the inside of the blast tube. It may be secured to the blast tube in any suitable or convenient manner as desired. It should be located approximately midway of the length of the blast tube. It may be found desirable in some situations to have the deflector 6 adjustable to meet varying conditions. This can be done by means of an adjusting screw as clearly seen in Fig. 5. We have found in practice that the provision of the deflector 6 in the air tube 5 will ensure a uniform velocity of the air stream without in any manner interfering with the proper combustion and will produce a very symmetrical flame in the combustion chamber.

Having described our invention, what we regard as new and desire to secure by Letters Patent is:

1. In a close coupled oil burner having a blower, a blast tube directly connected thereto, an oil supply tube in said blast tube, a nozzle on said supply tube positioned to discharge an oil spray from the blast tube, said blast tube being directly and tangentially connected to the discharge of said blower to cause the air stream

to assume a gyrating annular form in the blast tube; and a single deflector secured to the inner surface of said blast tube, said deflector being square in cross section, curved to conform to the curvature of the blast tube and formed as a segment of a helix which extends partially around the wall of said tube.

2. In a close coupled oil burner having a blower, a blast tube directly connected thereto, an oil supply tube in said blast tube, a nozzle on said supply tube positioned to discharge an oil spray from the blast tube, said blast tube being directly and tangentially connected to the discharge of said blower to cause the air stream to assume a gyrating annular form in the blast tube; a single deflector secured to the inner surface of said blast tube, said deflector being square in cross section, curved to conform to the curvature of the blast tube and formed as a segment of a helix which extends partially around the wall of said tube, and adjustable means to secure the deflector in position in said blast tube.

3. In a close coupled oil burner, having a blower, a blast tube directly connected thereto, an oil supply tube in said blast tube, a nozzle on said supply tube positioned to discharge an oil spray from the blast tube, said blast tube being

connected directly and tangentially to the discharge of said blower to cause the air stream to assume a gyrating annular form in the blast tube; and a single deflector secured to the inner surface of said blast tube, said deflector being curved to conform to the curvature of said tube and formed as a segment of a helix which extends partially around the wall of said tube.

4. In a close coupled oil burner having a blower, a blast tube directly connected thereto, an oil supply tube in said blast tube, a nozzle on said supply tube positioned to discharge an oil spray from the blast tube, said blast tube being connected directly and tangentially to the discharge of said blower to cause the air stream to assume a gyrating annular form in the blast tube; and a single means curved to conform to the curve of the blast tube secured to the inner surface thereof, said curved means being shaped to form a segment of a helix which extends partially around the wall of said tube and a cap screw to secure said means in place, said screw passing through a slot formed in the blast tube whereby the position of the said means can be altered.

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