

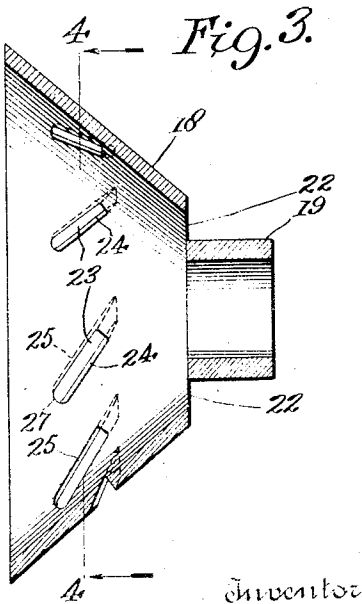
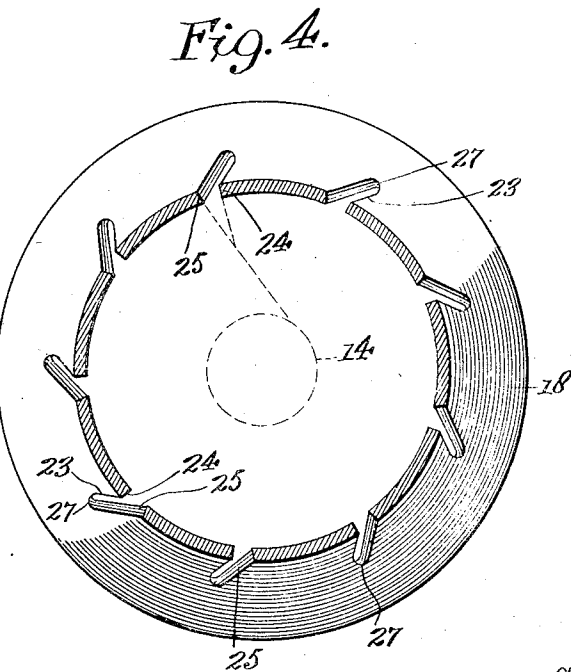
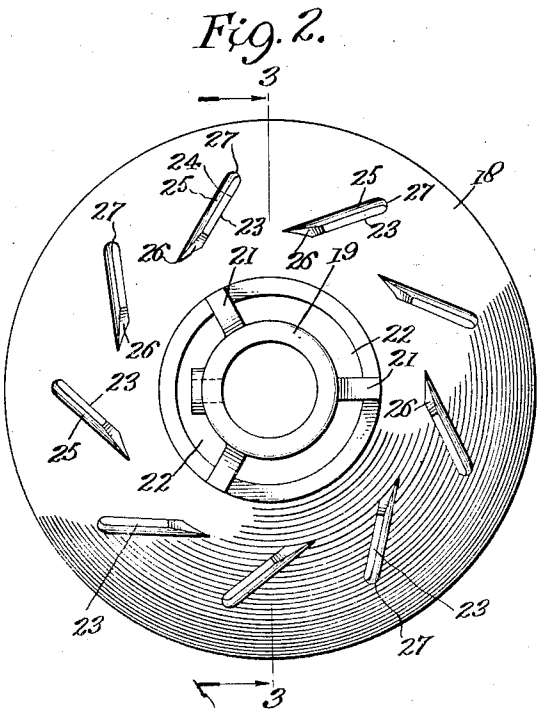
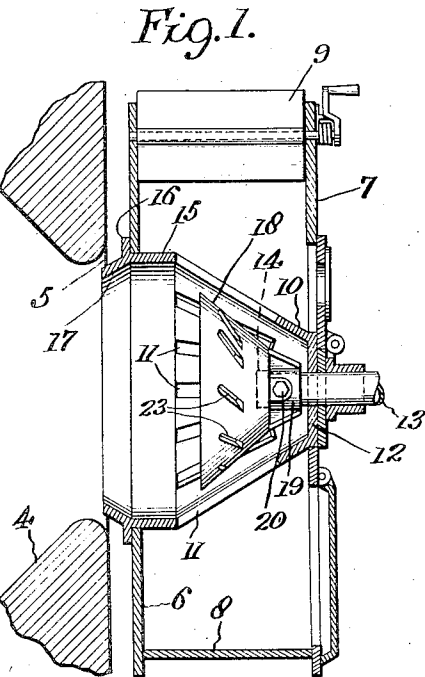
July 19, 1927.

C. SCHEUERMANN

1,636,616

BURNER CONE

Filed Sept. 25, 1926



Inventor
Charles Scheuermann
by *Wilkinson & Giusta*
Attorneys.

Patented July 19, 1927.

1,636,616

UNITED STATES PATENT OFFICE.

CHARLES SCHEUERMANN, OF MOBILE, ALABAMA.

BURNER CONE.

Application filed September 25, 1926. Serial No. 137,708.

This invention relates to burner cones and has for an object to provide an improved air-inlet cone whereby the oxygen-supplying air to the burner will be subjected to both a rotating and axial movement in the direction of the projected flame with the result that the combustion will be more complete.

Another object of the invention resides in providing an improved cone with angular slots therein for setting up in the incoming air a whirling action to cause a quicker, more efficient and intimate mixture of the gases and oil and consequently a hotter flame with greater economy of fuel.

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be more particularly pointed out in the claims appended hereto.

In the drawings, wherein like symbols refer to like or corresponding parts through the several views,

Figure 1 is a section taken through a burner construction and fragmentary furnace front, showing the improved cone in elevation;

Figure 2 is a plan view of the improved cone on an enlarged scale;

Figure 3 is a section taken on the line 3—3 in Figure 2; and

Figure 4 is a section taken on the line 4—4 in Figure 3.

Referring more particularly to the drawings, 4 designates a furnace front having the opening 5 therein through which the flame is directed. An air casing composed of the inner and outer walls 6 and 7 and the transverse joining wall 8 is provided as usual in front of the furnace opening 5 and the space within the air casing is adapted to receive air from the atmosphere under the control of the dampers 9. In the casing is an outer air cone 10 having slots 11 therein which extend axially of the burner nozzle or in the direction of projection of the flame. The outer cone 10 is made with the end wall 12 at its small end adapted to fit about the fuel supply pipe 13 which carries upon its inner end the burner head 14.

At its wider end the outer cone 10 is made with a cylindrical portion 15 having at its outer edge the outwardly extending flange 16 for engaging against the outer face of the wall 6 of the casing, it being understood that this wall 6 is provided with an opening through which the cylindrical portion 15

passes. The outer cone terminates in a conical lip 17 bridging the gap between the furnace front and the adjacent wall 6 of the casing.

The inner air cone is designated generally at 18 and is shown more particularly in Figures 2, 3 and 4. This air cone is closed at neither end but is provided at its smaller end with a projecting sleeve 19 adapted to embrace the fuel supply pipe 13 and to be secured thereto as by the set screw 20. The cone can be adjusted axially about the burner and also longitudinally of the pipe 13 to bring it to different positions with respect to the projected conical flame from the burner 14. The outer diameter of the sleeve 19 is less than the diameter of the smaller opening of the inner cone as indicated in Figures 2 and 3 and spaced arms 21 connect such sleeve with the small end of the cone leaving wide circumferential spaces 22 between the arms for the free passage of air. The outer cone has greater slant height than the inner cone. In other words, the outer air cone 10 has a much greater base angle than the inner cone 18. The inner cone is placed within the outer cone and with its smaller end disposed in spaced relation to the end wall 12 of the outer cone and with its conical surface exposed partially to the outer slots 11 whereby to direct the incoming air through these outer slots to the enclosed space adjacent the end wall 12 whereby such air may pass through the circumferential slots 22 and pass to the head of the burner 14. These currents of air will pass axially of the burner and directly into the conical flame projected therefrom. The inclination of the inner cone 18 will direct the air to the smaller end of this inner cone. The inner cone 18 is also provided with the air slots 23. These air slots are angular with respect to radii and with respect to the axis of the cone and burner and they are elongated whereby to admit the air in sheets which sheets intersect the projected axis of the burner and supply pipe at an angle to such axis. Such slots 23 are traced by substantially straight lines upon the surface of the cone and they subject the air entering through such slots to a whirling or rotating effect. As shown in Figure 4 the inner wall 24 of each slot 23 is radial while the opposite outer wall 25 is arranged on an inclination to the radial in which the inclination is from

a wider outer slot opening to an inner narrower slot opening. This causes the air to be condensed as it enters the slot and it accelerates the velocity of the air. The wall 24 would tend to direct the air in a substantially straight path toward the axis and base of the cone; in other words, inwardly toward the flame and in the direction of the flame. The opposite outer slot wall 25 will tend to deflect the air generally toward the base of the cone on account of the elongation of this wall on a conical surface, but it will deflect the air off the axis of the cone as indicated by the dotted lines in Figure 4 and against the stream of air coming down from the abrupt or right angular wall 24. This will have a rotating effect upon the air about the conical sheet of flame which extends very close to the inner wall of the inner cone 18. This effect will tend to centralize the flame and to prevent it from coming in contact with the cone 18 and consequently the cone 18 will be kept cooler and its life will be for this reason longer. The end walls 26 of the slots 23 which are next the truncated apex of the cone are also inclined from the outer surface inwardly toward the base of the cone for the purpose of forcing the air in the general direction longitudinally of the slots 23 giving an impetus to the air in the direction of the projected flame and thus adding force to the flame. These end walls 26 are elongated in construction and on account of their presence on the surface of the cone they will also tend to set up a rotating effect in the air currents.

It will be noted that the slots 11 in the outer cone are substantially straight while the slots 23 in the inner cone 18 are diagonal. This construction insures the air coming in through the slots 11 striking relatively large areas of the inner cone 18 without permitting the air to pass directly from one slot into another. In other words, the air is circulated over the surface of the inner cone 18 thus further serving to keep this cone cool. The outer end walls 27 of the slots 23 are abrupt or substantially right angular to the cone surface to check the outwardly directed and condensed air sheets and cause them to be deflected downwardly into the flame and not to escape along the space between the flame and cone.

The air is thus subjected to a whirling motion and the flame is kept from the sides of the inner cone 18 and is caused to burn in the center and thereby a quicker, better and more efficient atomization and combustion is caused to take place in the burner tip. The better mixture of the gases and oils makes for a greater saving of the fuel and furthermore, the combustion is attended with less smoke. The device is particularly applicable to the Coen flame cones.

It will be obvious that many changes in the construction, combination and arrangement of parts could be made, which could be used without departing from the spirit of the invention, and I do not mean to limit the invention to such details, except as particularly pointed out in the claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent of the United States is:

1. A burner construction comprising an outer slotted cone, a burner therewithin, and an inner slotted cone within the outer cone and about the burner, said inner cone having end openings therein for receiving air through the slots of the outer cone, and the inner cone flaring toward the outer cone to restrict the passage between the cones.

2. A burner construction comprising an outer slotted cone, a burner therewithin, an inner cone extending about said burner and within the outer cone, said inner cone having diagonal slots therein, said slots each having one side wall disposed radially and having the other side wall sloping inwardly toward said radial wall.

3. A burner construction comprising an outer slotted cone, an inner slotted cone, a burner extending within both cones, said inner cone having slots extending there-through and traced on substantially straight lines on the conical surface, said slots having abrupt end walls toward the wider end of the cone and sloping end walls toward the smaller end of the cone, said slots being wider on the outer surface of the cone and gradually narrowing toward the inner surface of the cone, one side wall of each slot being sloped to give the entering sheet of air a rotating effect within the cone.

CHARLES SCHEUERMANN.