

R. C. FRAMPTON.

BURNER.

APPLICATION FILED JUNE 19, 1908.

908,236.

Patented Dec. 29, 1908.

2 SHEETS—SHEET 1.

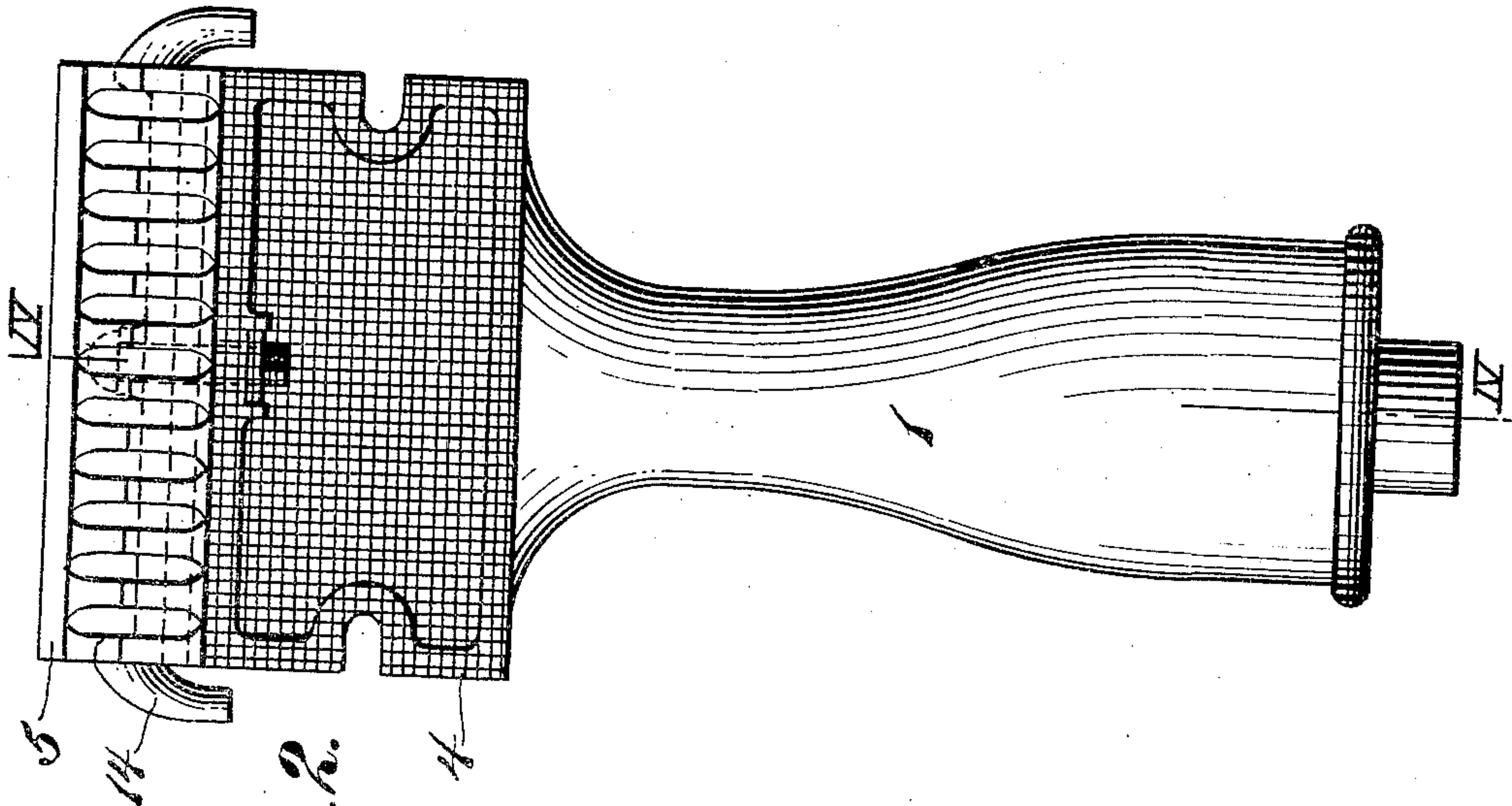


Fig. 2.

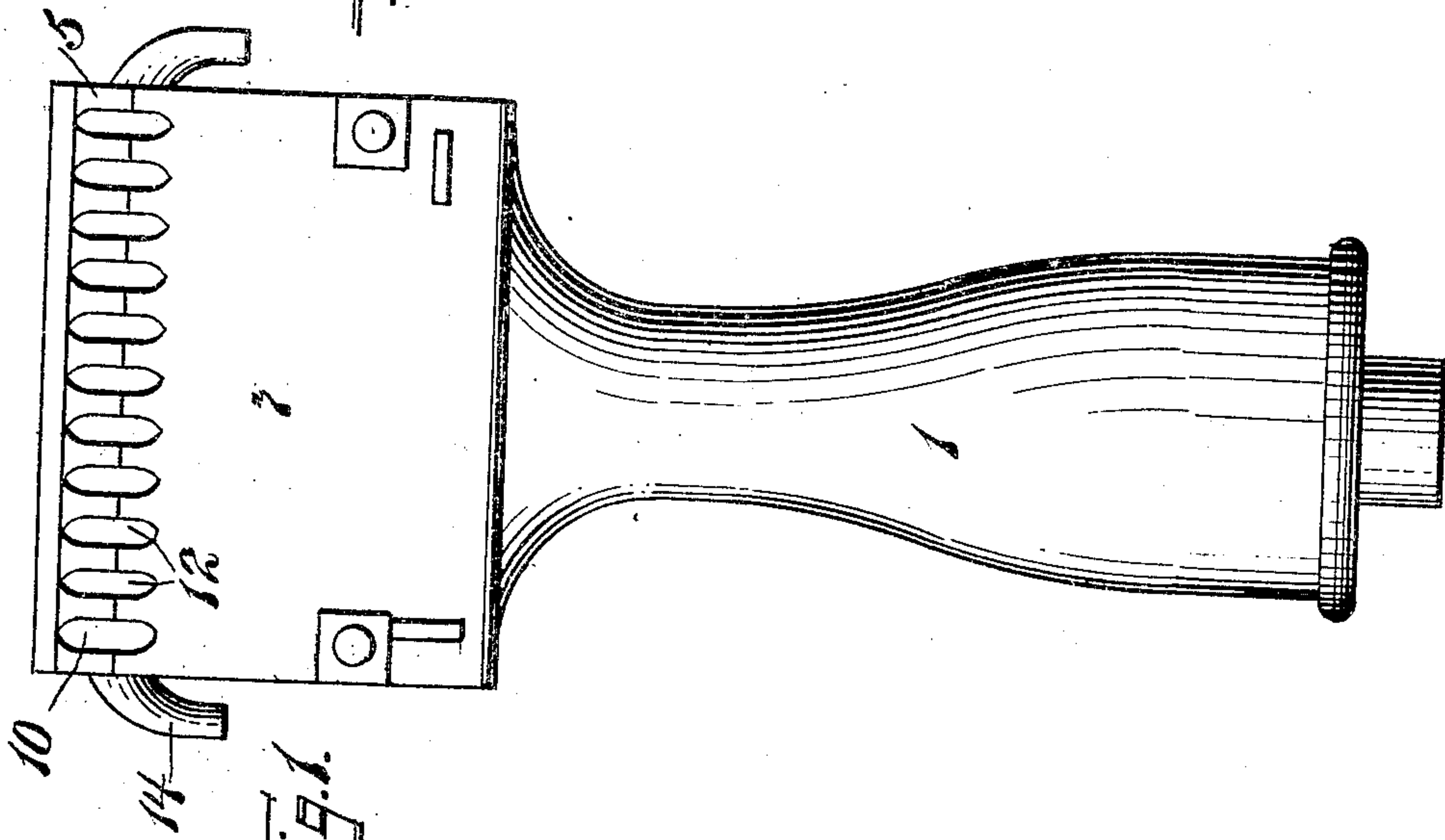


Fig. 1.

WITNESSES

Harvey L. Lechner
L. C. Bradley

INVENTOR

Reynolds C. Frampton
by atty Paul Synnistrudt

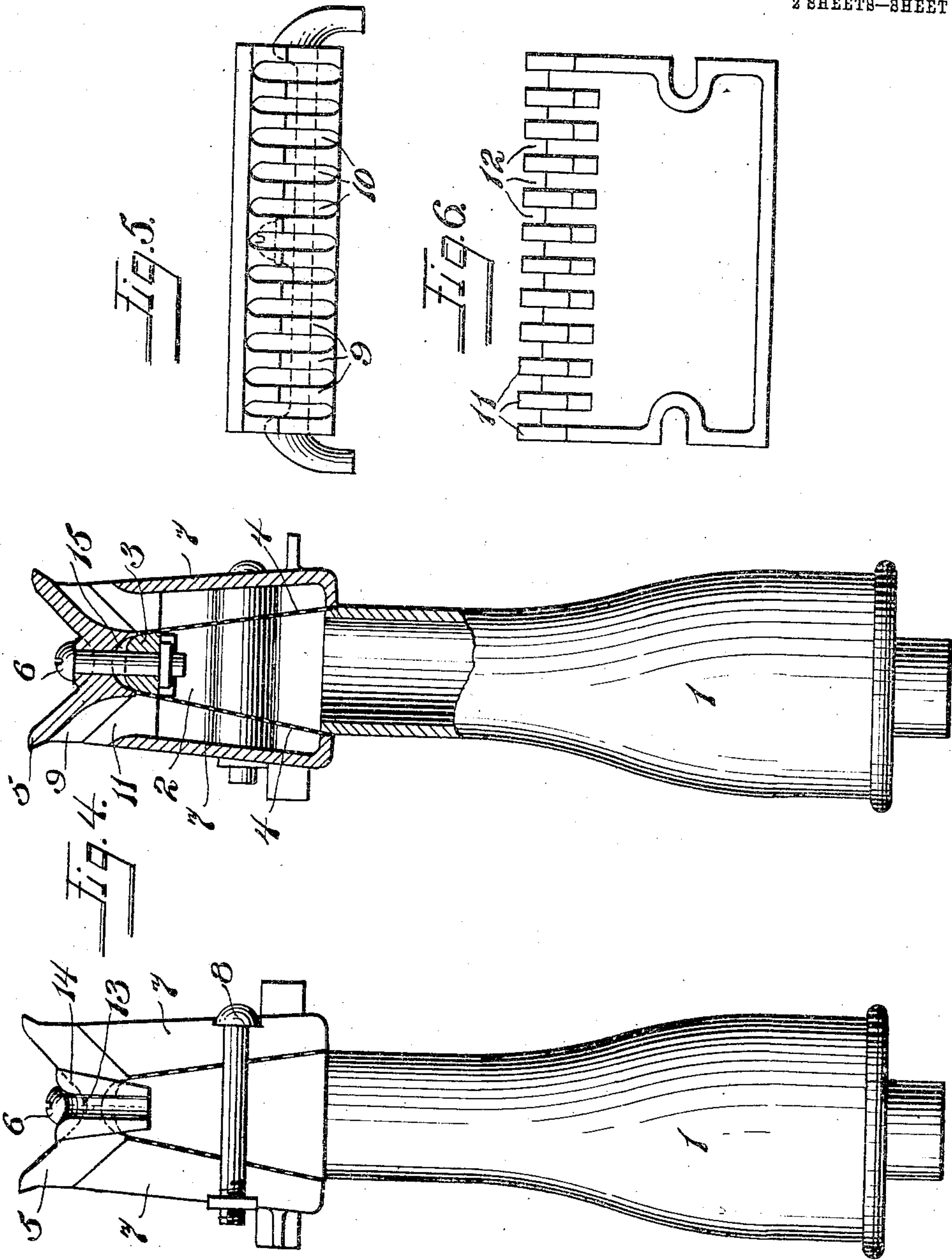
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Fig. 3.

INVENTOR
Reynolds C. Frampton
By Atty Paul Symmetrecht

UNITED STATES PATENT OFFICE.

REYNOLDS C. FRAMPTON, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO PITTSBURG WATER HEATER COMPANY, OF ALLEGHENY, PENNSYLVANIA, A CORPORATION OF NEW JERSEY.

BURNER.

No. 908,236.

Specification of Letters Patent.

Patented Dec. 29, 1908.

Application filed June 19, 1908. Serial No. 439,280.

To all whom it may concern:

Be it known that I, REYNOLDS C. FRAMPTON, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Burners, of which the following is a specification.

The invention relates to burners of the general type shown in the patent to Buerkle, No. 637,850, issued Nov. 28, 1899, used primarily in instantaneous water heaters, and has for its objects; the provision of a burner wherein improved means are provided for preventing undue heating of the cap plate and the perforate plates employed; the provision of a burner wherein a thorough combustion is insured and all danger of back-flash is avoided; and the provision of improved means for protecting the perforate plates and joints from condensation from the heater coils and utilizing such condensation for preventing over heating of the burner parts. One embodiment of the invention is illustrated in the accompanying drawings, wherein:

Figure 1 is a side view of the burner,

Figure 2 is a similar view with the side plates removed,

Figure 3 is an end view of the burner,

Figure 4 is a transverse section through the burner on the line IV—IV of Figure 2,

Figure 5 is a side view of the cap plate, and

Figure 6 is a face view of one of the side plates.

Referring to the drawings, 1 is the body portion of the burner, in which the gas and air are mixed and which is designed to be seated upon the supply pipe in the usual manner and which may be of any approved form, 2 is the elongated discharge chamber having closed ends, and the top wall 3, 4—4 are a pair of perforate burner sheets, which may be either of woven gauze or sheet metal pierced with a plurality of small holes, 5 is the cap plate which is secured in position on the top wall 3 by means of the screw bolts 6, and 7—7 are side plates which are clamped in position by means of the transverse screw bolts 8—8.

The cap plate 5 is provided on each side with the sets of teeth 9, thus giving a plurality of grooves 10, while the upper edge of each of the side plates 7 is provided with a corresponding series of teeth 11 and passages

12 so arranged that when the side plates are secured in position the passages or grooves on the side plates and cap plate register as indicated in Figure 1. The cap plate is made in the approximate V shape in cross section shown in Figure 4, with the lower portion of the recess in the top of the cap extending to the point 13 (Figure 3), and the ends of the recess are partially closed by the members 14, so that a certain amount of condensation may collect in the recess and cool the cap plate. The end pieces 14 extend downwardly at each end of the burner as indicated in Figures 1 and 2, and are provided with grooves so that the overflow from the condensation collected in the top of the cap is carried down to a point below the joints between the cap plate and side plates. In order to still further provide for the cooling the cap plate and the upper edges of the perforate plates 4, the air passage 15 is provided (Figure 4) along the under side of the cap, and the side plates 7 together with their teeth 11 engage the outer edges of the perforate plates 4 and serve to clamp such plates securely in position over the sides of the discharge chamber 2.

It will be seen from the foregoing that provision is made for preventing over heating of the upper portions of the burner and for preventing the flame from the burner from working back adjacent the perforate plate 4. The cap plate 5 because of its shape exposes a large area to the cooling action of the air, and this together with the cooling by means of the condensation collecting in the upper portion of the cap and the cooling by means of the circulating channels, prevent the cap plate and consequently the teeth from attaining an unduly high temperature, so that the liability of the gas below the teeth 9 and 11 being ignited is reduced to a minimum. The arrangement of the opposing teeth 9 and 11, is also advantageous, as it provides a large amount of thin metal to absorb the heat of the flame and prevents its burning down into the space between the perforate plate and the side plates, and the placing of the teeth partly in one member and partly in the other renders the casting of such teeth easier and safer, as the height of the separating ridges of sand in the mold is thus reduced by substantially a half.

Having thus described my invention and

illustrated its use, what I claim as new and desire to secure by Letters Patent is the following:—

1. In combination in a burner, a discharge chamber having closed ends and top and opposite perforate sides, a side plate secured over each perforate side and spaced away therefrom, and a cap plate secured to the top of the chamber and extending laterally over the upper edges of the side plates.
2. In combination in a burner, a discharge chamber having closed ends and top and opposite perforate sides, a side plate secured over each perforate side but spaced away therefrom to permit the passage of gas between the side and plate and provided on its upper edge with a plurality of inclined grooves, and a cap plate extending over the upper edges of the side plates and provided with a plurality of grooves arranged to register with the inclined grooves of the side plates.
3. In combination in a burner, a discharge chamber whose walls comprise two opposing perforated side sheets, a top wall and end walls, a pair of side plates secured over the perforate sheets and spaced away therefrom, and a cap plate secured to the top wall and extending to a position adjacent the upper edges of the side plates.
4. In combination in a burner, a discharge chamber whose walls comprise two opposing perforate side sheets, a top wall and end walls, a pair of side plates secured over the perforate sheets and spaced away therefrom, and a cap plate secured to the top wall and extending to a position adjacent the upper edges of the side plates, the cap plate and top wall being provided at their meeting surfaces with an interposed circulating air channel.
5. In combination in a burner, a discharge chamber whose walls comprise two opposing perforate side sheets, a top wall and end walls, a pair of side plates secured over the perforate sheets and spaced away therefrom, and a cap plate secured to the top wall and extending to a position adjacent the upper edges of the side plates and provided with a recessed top for holding a predetermined amount of water and having over-flow means.
6. In combination in a burner, a discharge chamber whose walls comprise two opposing perforate side sheets, a top wall and end walls, a pair of side plates secured over the perforate sheets and spaced away therefrom, and a cap plate secured to the top wall and extending to a position adjacent the upper edges of the side plates and provided with a recessed top for holding a predetermined amount of water and having a downwardly extending over-flow channel at its end.
7. In combination in a burner, a discharge chamber whose walls comprise two opposing perforate side sheets, a top wall and end walls, a pair of side plates secured over the perforate sheets and spaced away therefrom, and a cap plate approximately V shaped in cross section secured to the top wall and extending to a position adjacent the upper edges of the side plates.
8. In combination in a burner, a discharge chamber whose walls comprise two opposing perforate side sheets, a top wall and end walls, a pair of side plates secured over the perforate sheets and spaced away therefrom, and a cap plate approximately V shaped in cross section secured to the top walls and provided with teeth on its outer surfaces adjacent the upper edges of the side plates.
9. In combination in a burner, a discharge chamber whose walls comprise two opposing perforate side sheets, a top wall and end walls, a pair of side plates secured over the perforate sheets and spaced away therefrom, and a cap plate approximately V shaped in cross section secured to the top wall and extending to a position adjacent the upper edges of the side plates, and means at the ends of the cap plate for holding any condensation therein collected until a predetermined level is reached.
10. In combination in a burner, a discharge chamber whose walls comprise two opposing perforate side sheets, a top wall and end walls, a pair of side plates secured over the perforate sheets and spaced away therefrom, and a cap plate approximately V shaped in cross section and grooved along its lower edge secured to the top wall and extending to a position adjacent the upper edges of the side plates.
11. In combination in a burner, a discharge chamber whose walls comprise two opposing perforate side sheets, a top wall and end walls, a pair of side plates secured over the perforate sheets and spaced away therefrom, and a cap plate secured to the top wall and extending to a position adjacent the upper edges of the side plates and provided with a recessed top having at the end a downwardly extending conducting means for carrying condensation to a point below the cap.
12. In combination in a burner, a discharge chamber having closed ends and top and opposite perforate sides comprising a perforate sheet of metal bent over the said top, a side plate secured over each perforate side and spaced away therefrom, and a cap plate secured over the said top and extending laterally to a position adjacent the upper edges of the side plates.

In testimony whereof I have hereunto signed my name in the presence of the two subscribed witnesses.

REYNOLDS C. FRAMPTON.

Witnesses:

J. C. BRADLEY,
DOERING BELLINGER.