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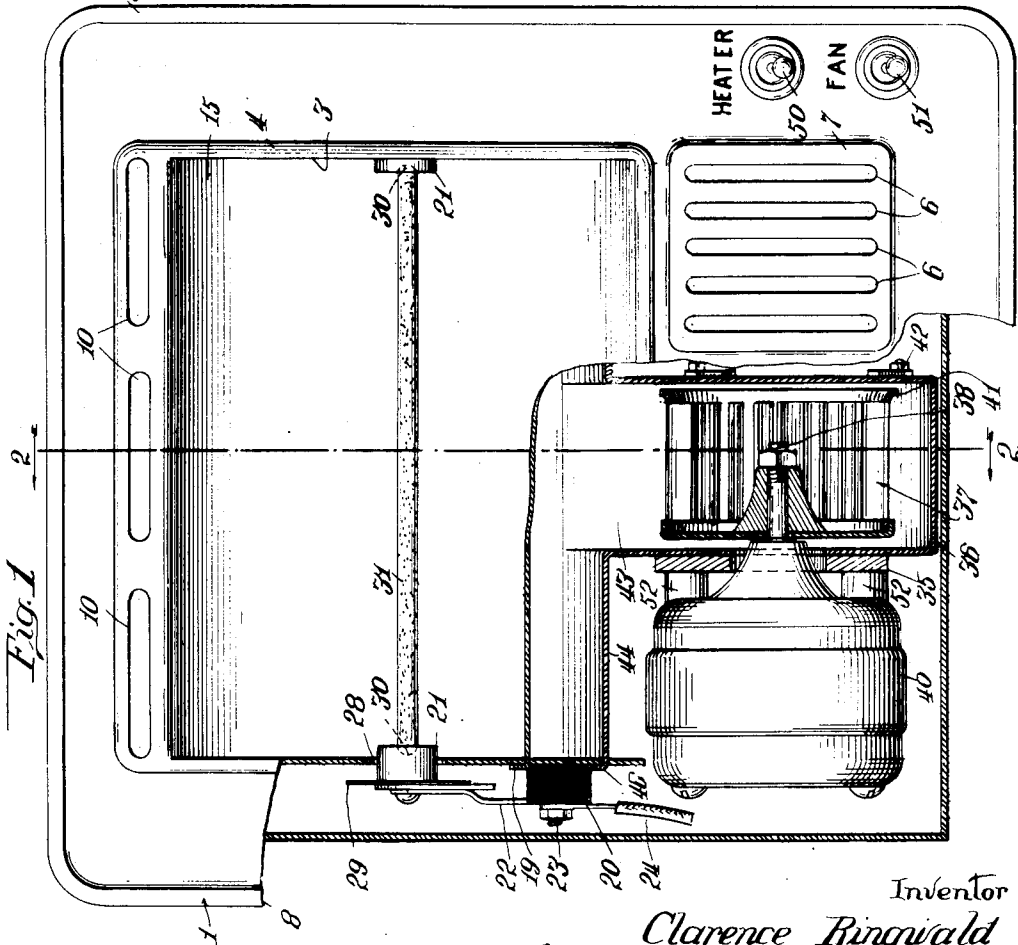
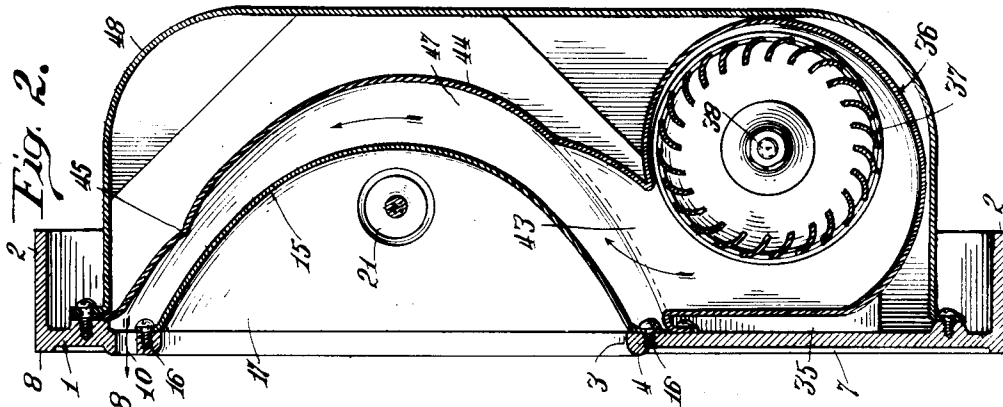
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HEATER

Filed July 18, 1935

4 Sheets-Sheet 1



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Fig. 9.

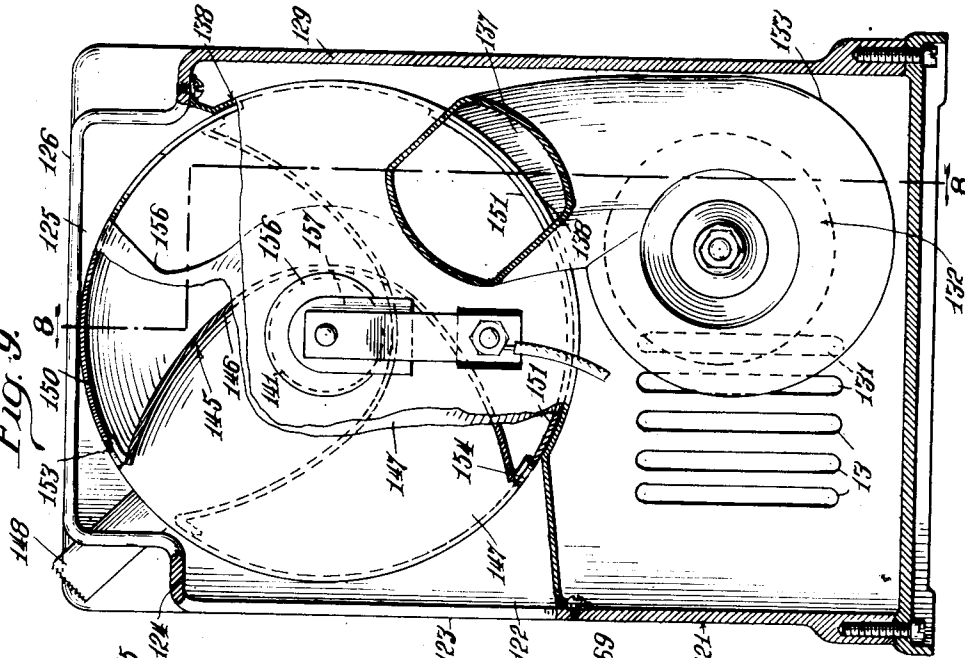


Fig. 4.

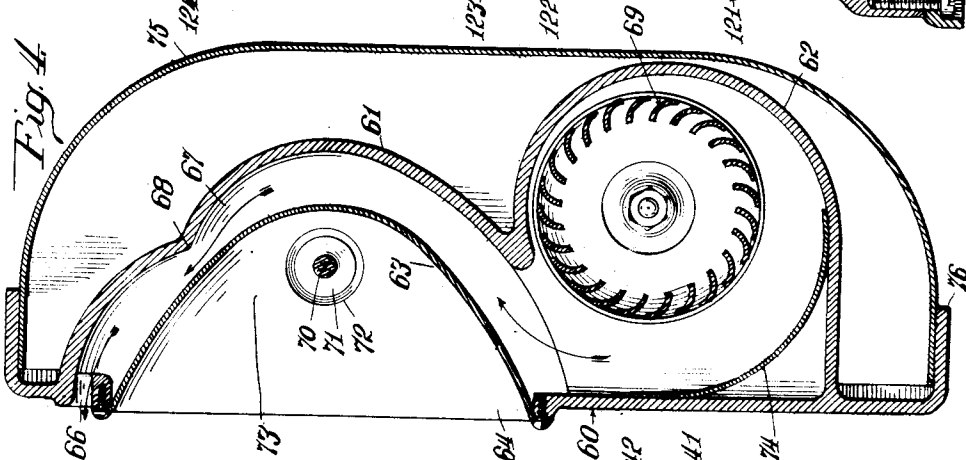
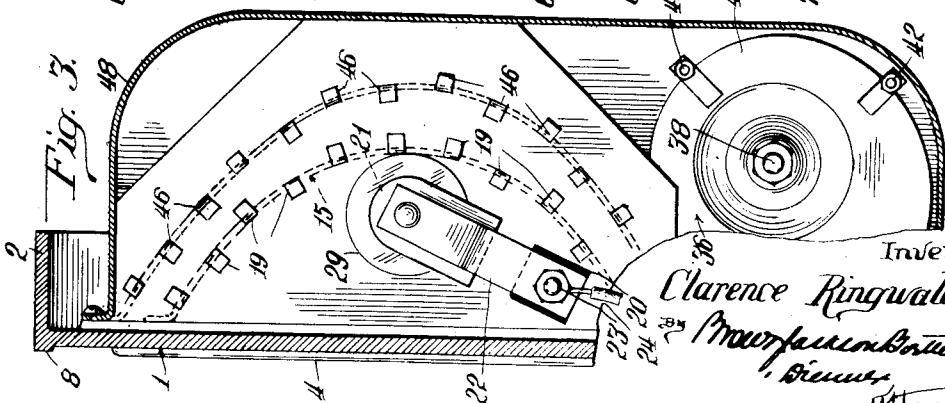


Fig. 3.



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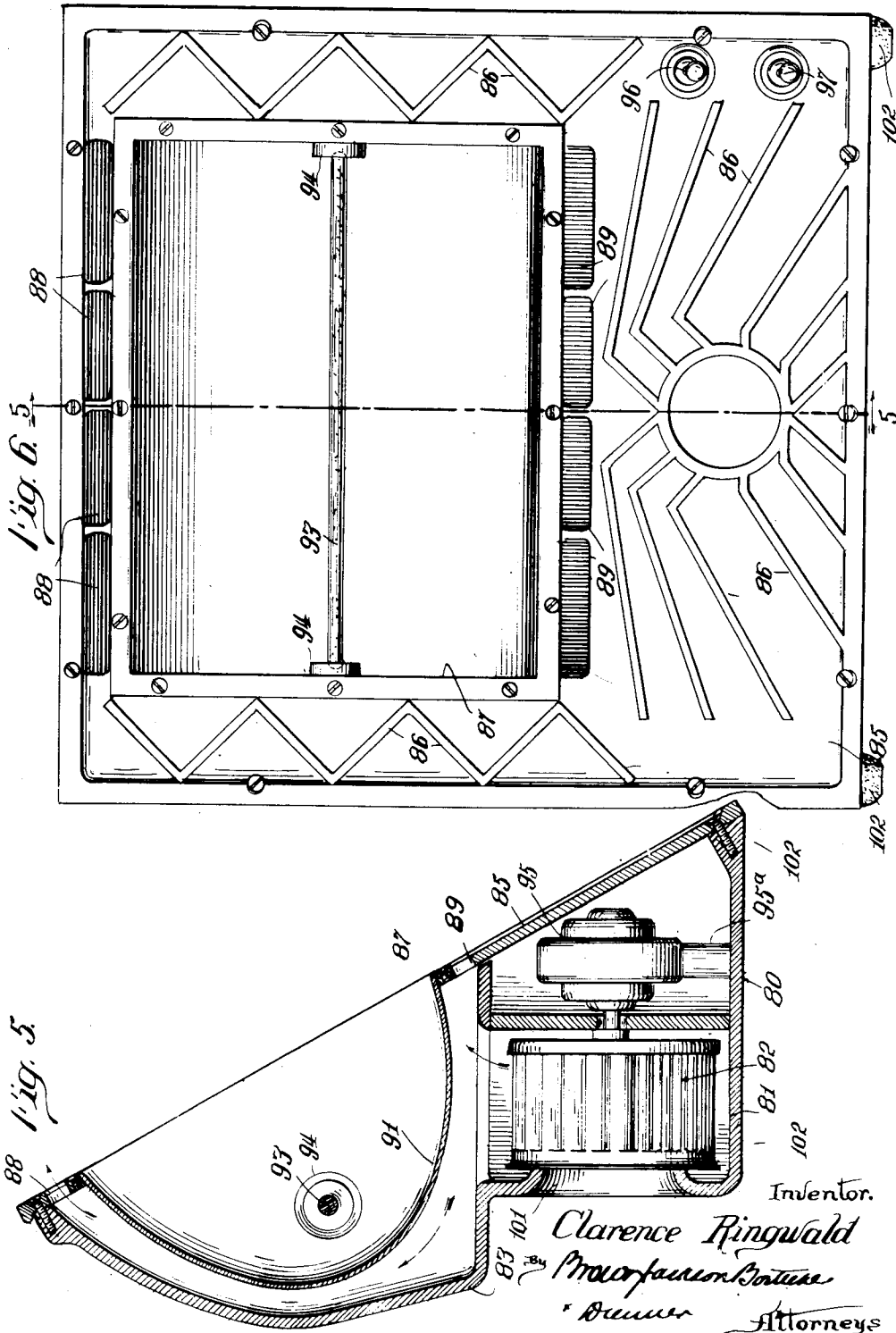
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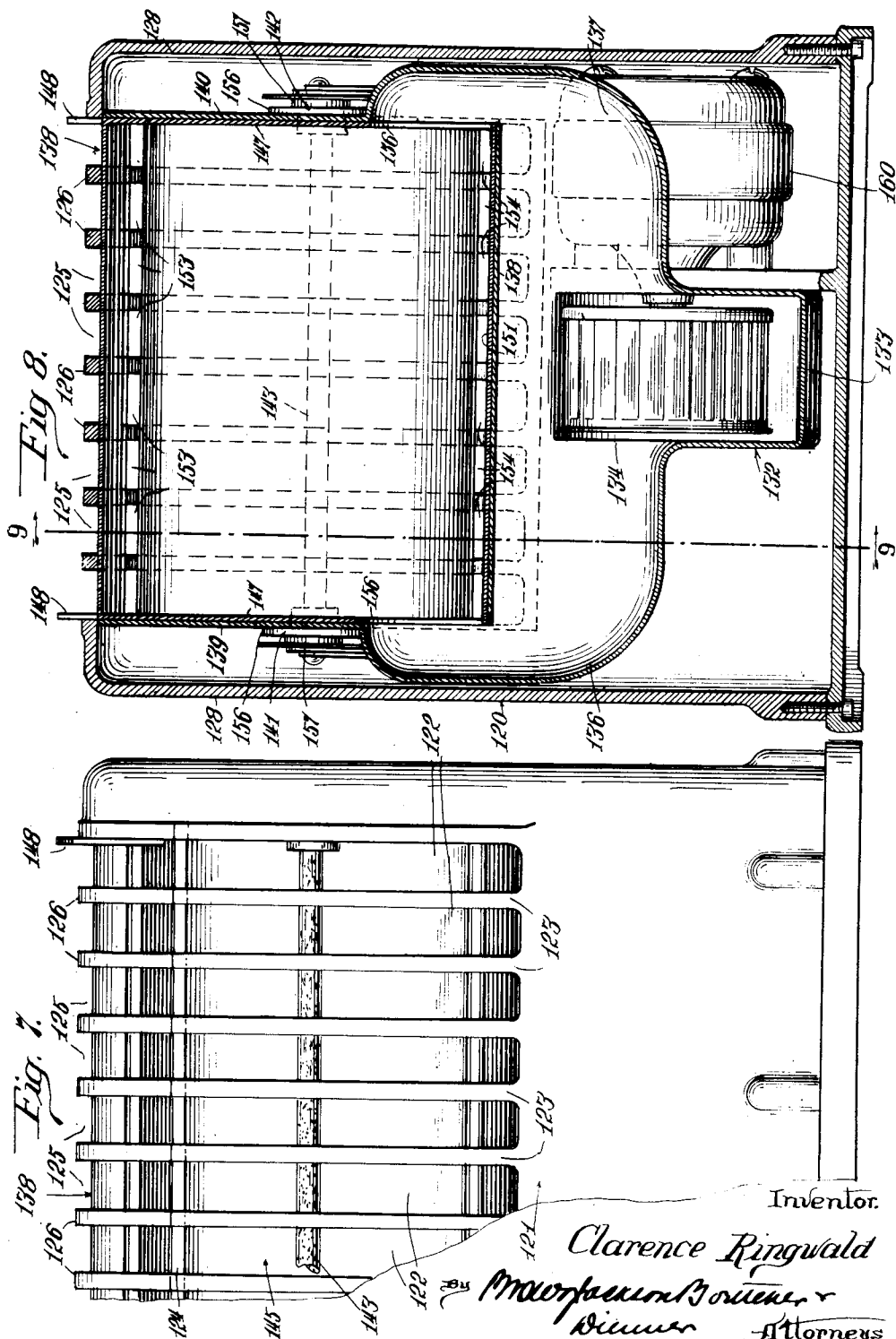
C. RINGWALD

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HEATER

Filed July 18, 1935

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UNITED STATES PATENT OFFICE

2,131,484

HEATER

Clarence Ringwald, Springfield, Ohio

Application July 18, 1935, Serial No. 31,984

21 Claims. (Cl. 219—39)

The present invention relates to heating devices and has for its principal purpose the provision of an improved heater of the radiant type so constructed and arranged to be operated at higher temperatures than heretofore possible, thereby improving the efficiency and effectiveness of the device. More specifically, it is an object of the present invention to provide a heater having a source of radiant heat together with a reflector of polished metal for concentrating the heat rays and means for cooling the reflector so as to prevent oxidation of the polished surface, thereby prolonging the life of the reflector and permitting the use of somewhat higher temperatures at the heat source.

A further object of the present invention is the provision of means for blowing a blast of air over the back of the reflector to cool the same, and an additional object of the present invention is to conduct this blast of air over all parts of the reflector and, finally, to direct the blast of air, now warmed by having been passed over the reflector, in the same general direction in which the reflector concentrates the radiant heat rays.

An additional object of the present invention is the provision of a compact unit of this type, embodying a source of radiant heat, a reflector therefor and means including a blower of the centrifugal type, preferably driven by a small electric motor, for directing a blast of air over the back of the reflector to cool the same.

A still further object of the present invention is the provision of a heater capable of throwing out radiant heat rays, which are very effective in heating, drying and similar operations, in connection with means which not only serves to keep the reflector cool, but, at the same time, serves to warm a blast of air which is directed in the same direction as the radiant heat rays and therefore can be relied upon to keep the air moving about the object or person in the path of the radiant heat rays, thereby increasing the comfort of the subject and preventing the building up of too high temperatures under the effect of the radiant rays.

Still further, another object of the present invention lies in the provision of a heating device embodying a reflector which is kept cool by the use of a blast of relatively cool air directed over the back of the reflector. In this way, the reflector is not subject to excessively rapid deterioration, as by oxidation, and, therefore, the efficiency of the same in concentrating the rays of radiant heat is greatly improved and the life of the device appreciably lengthened.

As is well known, the radiation or the amount of heat rays emitted varies as the fourth power of the absolute temperature of the surface of the body radiating heat. If, therefore, means is provided making it possible to employ as a source of heat a body which can be brought to a higher temperature than formerly, a comparatively great increase in the amount of heat rays which can be created is attained, since the emissive power of such body is thereby greatly increased.

These and other objects and advantages of the present invention will be apparent to those skilled in the art after a consideration of the following detailed description of the preferred structure, taken in conjunction with the accompanying drawings illustrating said structure.

In the drawings:—

Figure 1 is a front view of a heating device embodying the principles of the present invention;

Figure 2 is a vertical central section taken generally along the line 2—2 of Figure 1;

Figure 3 is a side view of the heater shown in Figure 1;

Figure 4 is a section, corresponding to Figure 2, taken through a modified structure also embodying the principles of the present invention;

Figure 5 is a central section, taken along the line 5—5 of Figure 6 and showing a third modified form of the present invention;

Figure 6 is a front view of the modification shown in Figure 5;

Figure 7 is a partial front view of a fourth form of the present invention;

Figure 8 is a rear view of the construction shown in Figure 7, being a section taken along the line 8—8 of Figure 9, showing the air ducts for conveying the blast of air into the air chamber at the back of the reflector; and

Figure 9 is a section taken approximately along the line 9—9 of Figure 8.

Referring now to the drawings, more particularly to Figures 1 to 3, the reference numeral 1 indicates the face plate or frame casting which constitutes the principal part of the front of the device, the frame casting including rounded marginal portions terminating in rearwardly directed flange sections 2. The face of the frame casting 1 is provided with a large aperture 3 disposed generally in the central portion thereof and preferably, although not necessarily, surrounded by a raised ornamental rib 4. The main opening 3 is disposed somewhat nearer the top of the frame casting 1 than at the bottom, which leaves sufficient space for two sets of air inlet openings 6 formed in the raised portion 7, in the bottom

lower part of the frame casting 1. An ornamental ridge 8 is formed around the edge of the face plate or frame casting 1 for decorative purposes, and adjacent the upper margin of the main central opening 3 are three air discharge passages 10 which will be referred to later.

A cylindrical parabolic reflector 15 is mounted over the opening 3 and has its outwardly facing surface highly polished. Preferably, although not necessarily, the reflector 15 is carried by parts to be described later, but if separately attached to the frame 1, it may be secured in place by screws 16 inserted through openings in the marginal portions of the reflector and threaded into holes formed in the face plate or frame casting 1. The reflector 15 includes planar end portions 17 formed of flat sheets and secured to the reflecting portion proper of the reflector 15, as best indicated in Figure 3, by tabs 19 or the like carried at the marginal edges of the reflector and inserted through openings in the planar sections 17 and clinched in place. Obviously, however, any other means could be used for securing the side or end portions of the reflector in place. Employing a cylindrical parabolic reflector permits the use of an elongated heating element which can be disposed in the focal line of the reflector as will be referred to later.

The side plates 17 carry insulating blocks 20 which serve as supporting means for sockets 21 carried at the outer end of springs 22. The inner ends of the springs opposite the sockets 21 are secured in place by bolts 23, which also afford a convenient attaching means for leads 24. The sockets 21 are formed of conducting material, as are the springs 22, and are extended through openings 28 in the end plates 17 of the reflector. Mica discs 29 serve to keep the sockets 21 and the springs 22 out of contact with the side plates 17 of the reflector. The sockets 21 are formed, as best shown at 30, to receive an elongated resistance unit 31 which serves as a source of radiant heat when energized, and, as stated above, the element 31 is supported in or along the focal line of the reflector 15. The principal function of the latter, by virtue of its highly polished surface, is to reflect the heat rays striking the same outwardly through the main opening 3 in the frame casting 1 in substantially parallel lines.

It is not necessary, of course, that the spring supporting means 21, 22 for the heating element 31 be carried upon the side portions of the reflector. If desired, the frame casting 1 itself may carry the supporting spring brackets. However, the arrangement illustrated facilitates not only the assembly of the device in the first instance, but also the removal or replacement of the heater element 31.

The reflector 15 is preferably formed of metal and highly polished, as suggested above, and it is well understood that a reflector of this type is highly efficient so long as the reflecting surface does not tarnish or oxidize. However, where elements which are heated to incandescence, the reflectors in such constructions are relatively short lived parts because the high temperatures to which they are subjected by virtue of the close proximity of the incandescent heating unit act to corrode and tarnish such surfaces quite readily. According to the principles of the present invention, provision is made for passing a blast of cooling air over the back of the reflector, and this is especially effective in reducing the temperature of the reflector and therefore preventing tarnishing or corrosion thereof. Furthermore, cooling the

reflector provides for the use of much higher temperatures than would otherwise be possible, producing greatly increased quantities of heat rays.

Moreover, the blast of air in passing over the back side of the reflector becomes heated by virtue of contact with the heated reflector and can be directed in the same direction as the radiant rays, thus doubling the usefulness of the device.

With this end in view, I provide a fin or supporting member 35 on the lower portion of the face plate or frame casting 1, preferably, but not necessarily, integral therewith, and on this plate I support a blower casing 36 having a vaned rotor 37 mounted on the shaft 38 of and driven by an electric motor 40. The intake side of the casing 36 includes a plate 41 fastened by studs 42 or the like to the main body of the blower casing. From Figure 2 it will be noted that, according to the principles of the present invention, the rotor 37 is a turbine-type impeller which has a higher efficiency and greater capacity for a given size than ordinary fans. This is an important advance in heaters and similar devices of this character, since space is more or less at a premium, especially where such heating devices are made portable.

The fan casing has a discharge outlet 43 which is secured to a wall 44 surrounding but spaced from the rear side of the reflector 15, as best shown in Figure 2. The wall 44 is curved about the reflector 15 and may be separately fastened to the frame by screws or the like, or it may be attached to the side plates 17 by means similar to that described above in connection with the reflector 15, as by forming tabs 46 on the wall 44 and projecting them through openings in the side plates 17, and in this case the screws 16 can be omitted, the reflector 15 and wall 44 assembled together. From Figure 2 it will also be noted that the space between the back of the reflector 15 and the wall 44 forms an air chamber 47 receiving the blast of air from the fan 36, and that the openings 10 serve as outlets for the air blast, directing the same in the same general direction that the reflector 15 projects the heat rays. A cover or closure 48 is provided for protecting the mechanism and embraces the reflector and air chamber in the back thereof, as well as the motor and impeller, and fits against the rear edges of the reflector side plates 17.

A constriction 45 is formed in the wall 44 approximately directly above the heating element 31 by bringing the wall 44 somewhat closer to the reflector at this point. The purpose of this arrangement is to provide, in effect, a restriction at this point, first, to insure that the blast of air from the fan will be distributed laterally in a uniform manner and, secondly, to secure a somewhat greater cooling action, due to the somewhat increased velocity of the air at this point, along the reflector 15 directly adjacent the constriction 45 which is directly above the heating element 31 and therefore subjected to the greatest heat. By virtue of this construction, the air is well heated and the flow thereof is uniform over all points of the reflector and issues from the three openings 10 at about the same velocity.

Air is supplied to the intake of the fan 36 through the front inlet openings 6, and the blast of air directed into the air chamber by the discharge duct 43 sweeps over the back side of the reflector 15 and emerges from the openings 10 in the same general direction as the rays are reflect-

ed by the reflector 15. However, in sweeping over the back side of the reflector 15, substantial amounts of heat are absorbed by the air, and the heated air, being thus forced outwardly in the same general direction as the heat rays themselves are reflected, serves to maintain a circulation of warmed air in and around the zone of operation into which the radiant rays are also directed.

Any suitable control means for the heater 31 and fan 36 may be provided, but preferably they are controlled by separate switch means indicated by the reference numerals 50 and 51. Preferably, although not necessarily, the motor 40 is mounted by suitable cushioning means 52, such as rubber, springs or the like, so that the unit will be substantially noiseless.

In operation, when the heater switch 50 is turned on, current is directed through the heating element 31 and the latter is thereby heated to incandescence. The radiation therefrom is collected and reflected by the polished surface of the reflector 15 and directed outwardly through the main opening 3 of the front plate or frame casting 1 in substantially straight line projection. So long as the reflecting surface of the reflector 15 remains in a highly polished condition, the efficiency of the reflector remains quite high. However, no device of this character is absolutely perfect and, therefore, a certain number of the heat rays are absorbed by the reflector, resulting in a rise in temperature. As is obvious, the higher the temperature of the heat source, the greater the number of heat rays emitted, and therefore the greater the number of them that are absorbed by the reflector. Heretofore, the reflector served as a limit the temperature to which the heat source could be operated, and if operated beyond this limit, the reflector quickly oxidized and tarnished. When the reflector begins to oxidize and tarnish the highly polished metal reflecting surface is destroyed so that where before only a small percentage of the heat rays were absorbed, now a substantial portion of them are absorbed and only a small percentage reflected. This results in the quick destruction of the effectiveness of the reflector. According to the principles of my invention, by operating the blower 36, and I provide suitable connections between the fan switch 51 and the motor 40 so that when the switch is turned on the motor is energized to drive the fan or blower rotor 37, the resulting blast of air which is drawn into the fan or blower and directed over the back of the reflector serves not only to keep the reflector cool, but, in addition, the air thus heated is directed outwardly through the openings 10 in the same general direction that the radiant heat rays are directed. Thus, the blast of air serves a double purpose, namely, keeping the temperature of the reflector down and thereby permitting the use of a higher temperature at the heat source, and second, utilizing the heat thus removed from the reflector in warming the blast of air which is directed in the same general direction as the radiant heat rays. This is especially advantageous in providing greater comfort, for the effect of the penetrating radiant heat rays is somewhat softened by the gentle blast of moving and warmed air. It is also to be noted that passing the blast of air on the back side of the reflector, where the material thereof is usually not highly polished and is therefore a good radiator, materially increases the efficiency of the device, so far as the moving

blast of air being able to quickly absorb heat from the back of the reflector is concerned.

When used as a drier, for example, the effect of the warm moving air, directed in the same general direction as the radiant rays, is to prevent the radiant heat from causing the subject to become too hot during the later stages of the drying, and the use of a blower of the centrifugal type produces straight line movement of the air without any whirling or circular motion, whereby the effectiveness of the directed air in reaching the zone acted on by the radiant heat rays is increased.

Figure 4 shows a slightly different modification of my invention, differing from the form described above in that the frame casting or face plate, indicated by the reference numeral 60 in Figure 4, has the back wall 61 and the rotor housing 62 both formed integral therewith, whereas in Figure 2 the back wall 44, forming in conjunction with the reflector 15 an air passageway or chamber, was preferably formed of sheet metal and mounted by screws or the like on the frame casting. In Figure 4 a reflector 63 of substantially the same material and formation as that described above is mounted by any suitable means in the central or main opening 64 in the front of the frame casting 60 desired. Directly above the main opening 64 in the frame casting 60 two or more air discharge openings 66 are provided, being arranged in a manner similar to the discharge openings 10 described above, and the air chamber or passageway 67 formed between the reflector 63 and the back wall 61 communicates with the openings 66 so that the blast of air from the blower 69, being directed upwardly in the direction of the arrows shown in Figure 4, serves to absorb heat from the back of the reflector to permit the use of a high temperature at the heating element 70.

The heating element 70 is carried in a pair of spring mounted sockets 71 extending, at least partially, through an opening 72 formed in the side walls 73 of the reflector. The back wall 62 forms the major portion of the lower housing, a portion thereof adjacent the front face of the frame casting being formed by a curved metal plate 74. As in the modification shown in Figures 1 to 3, switches are provided for separately controlling the blower 69 and the heating element 70. A cover or casing 75 may be disposed over the back wall 61 and the motor for driving the blower 69, if desired, and may be secured to the flange 76 formed on or carried by the front portion of the frame casting 60. However, the cover or casing 75 may be mounted in much the same manner as the cover 48 is mounted in Figure 2, and similarly the cover 48 shown in Figure 2 may be formed and mounted in a manner similar to the cover 75 shown in Figure 4.

It is to be noted that the back wall 61 of the frame casting 60, shown in Figure 4, is, like the back wall 44 described above, provided with a constriction 68 for the purpose of insuring a lateral distribution of the air from the blower 69, a somewhat greater cooling action for the reflector directly about the heating element 70, and a uniform velocity for the air issuing from the plurality of openings 66.

In Figures 5 and 6 I have shown another form of the present invention somewhat similar to that shown in Figure 4, in that the back wall, behind the reflector, and the blower housing are formed integral with the frame of the device. In the form shown in Figures 5 and 6, however, the front of the device is disposed in an inclined posi-

tion. The frame casting is indicated by the reference numeral 80 in its entirety and includes a section 81 serving as a blower housing for blower 82 and a back wall section 83. The front of the device is formed by a face plate 85 provided with suitable or desirable ornamental ridges 86 and a main central opening 87. At the upper and lower portions of the opening 87 are upper and lower air outlets 88 and 89, four at each side being shown.

The reflector is indicated by reference numeral 91 and is of the same form and construction as described above, and is secured to the face plate 85 about the opening 87, being secured thereto in any desired manner. Likewise, the heat unit or element 93 is carried in spring mounted sockets 94, as has been described previously. Also the motor 95 which drives the fan or blower 82 is mounted on or carried by the face plate 85 and is mounted thereon by means of cushioning blocks 95a or the like. A switch 96 for the heater is provided and a separate switch 97 controls the motor 95 for the blower.

The rotor 82 of the blower discharges air upwardly against the lower portion of the reflector through an opening 100 formed in the frame casting 80, a portion of the air passes outwardly through the lower openings 89 and the remainder is directed upwardly and passes around the major portion of the reflector 91, finally emerging at the upper outlets 88. The flow of the air is indicated by the arrows in Figure 5, and it will be observed that the air, after passing over and cooling the reflector 91 emerges from the two sets of openings 88 and 89 in the same general direction that the reflector 91 directs the radiant heat rays striking its polished reflecting surface. Air is drawn in by the blower 82 through an inlet opening 101.

This form of my invention may be mounted on a table or the like, and to this end feet 102 are provided. If desired, the back wall 83 of this form might also be provided with a constricting ridge to insure uniform distribution of the air blast.

In Figures 7, 8 and 9, I have shown another form of heating device which, while embodying the principles of the present invention, is so constructed and arranged that the reflector may be swung from a position directing the heat rays horizontally to a position directing them upwardly, the first position arranging the device for heating and the second position arranging the device for cooking.

The frame or housing is indicated in its entirety by the reference numeral 120 and embodies a front face 121 provided with a central opening 122 having a plurality of bars 123 arranged vertically and joined together at the upper margin of the main central opening 122 by web portions 124. The top portion of the housing 120 is formed in a similar manner, having an opening 125 serving the same purpose as the opening 122 and covered by a series of horizontally disposed bars 126. In each case the bars serve as a grille over the associated opening. The ends 128 of the housing 120 are closed, as is the back side 129, except that in one of the sides air inlet openings 131 are provided to supply air to the blower disposed in the lower portion of the housing 120. As best shown in Figures 8 and 9, the blower, indicated in its entirety by the reference numeral 132, embodies a blower casing 133 of sheet metal or similar construction having a discharge opening 134 and a discharge duct in the form of two

branches 136 and 137 leading to opposite ends of the casing 120, as best shown in Figure 9. A stationary cylindrical member 138 is fixedly carried within the casing 120 and has ends 139 and 140 which serve to support the spring mounted sockets 141 and 142 in substantially the same manner that the end walls of the reflector 15 in Figure 1 support similar sockets. These sockets 141 and 142 support a heating element 143 in the manner described above.

The reflector is indicated in its entirety by the reference numeral 145 and includes a cylindrical parabolic section 146 with end walls 147, all having highly polished reflecting surfaces. Secured to either or both of the side walls 147 of the reflector 145 are thumb pieces or levers 148, and the reflector also carries cylindrical shield walls 150 and 151 provided with air discharge openings 153 and 154, and the reflector 145 with the shield walls 150 and 151 are mounted within the cylindrical shell 138 for limited rocking movement about an axis which coincides with the resistance element 143 supported by the spring mounted sockets 141 and 142. The thumb pieces 148 are used for rocking the reflector from one position to another, and as best shown in Figure 8, any suitable means may be provided for rockably supporting the reflector unit 145. For example, collars 156 may be provided one at each end of the cylindrical shell 138, preferably in the end walls 139 and 140 thereof and surrounding the spring mounted socket at that end, and the end walls of the reflector units 147 have bushings 157 or the like journaled for rocking movement in the collars 156.

The shield walls 150 and 151 move in telescoping relation with respect to the cylindrical walls of the shell 138, so that whatever the position of the reflector may be, whether that shown in full lines in Figure 9 or that shown in dotted lines, the air from the blower 132 passes through the branch conduits 136 and 137 into both ends of the shell 138 and over the back of the reflector and out the discharge openings 153 and 154 in the same general direction that the reflector 145 directs the radiant heat rays emitted by the unit 143. In the position shown in full lines in Figure 9, the heat rays are directed horizontally, as is the air blast from the openings 153 and 154, but when the reflector unit is turned through 90 degrees to the position shown in dotted lines, both the air blast and the heat rays are directed upwardly. The end walls 147 of the rockable reflector unit are provided with openings 156 to receive the air blast from the branch conduits 136 and 137, and these openings are long enough to function in either position of the reflector. In the first position, the device may be used for cooking food, since by placing a suitable container on the upper bars 126, the upwardly directed heat may be used to cook food contained in the container. As best shown in Figure 8, the blower 132 is preferably driven by an electric motor 160, and, as in the previously described modifications, the heating unit and motor may be controlled by separate switches. However, in all of the modifications described above, one switch may be used for controlling both, or a master switch may be provided for controlling both the air blast and the heat units, with a separate switch for either or both of the units individually.

While I have shown and described above the preferred structure in which the principles of the present invention have been embodied, it is to be understood that my invention is not to be

limited to the specific details shown and described above, but that, in fact, widely different means may be employed in the practice of the broader aspects of my invention.

What I claim, therefore, and desire to secure by Letters Patent is:—

1. A heating device comprising, in combination, a source of radiant heat, a polished reflector therefor curved about said source to concentrate the rays thereof, means serving as a wall disposed in spaced relation around the back of said reflector, and means for directing a flow of cooling air between said reflector and wall means and in contact with the back of said reflector to prevent oxidation of the polished surface thereof, a portion of said wall means approaching the back of the reflector at certain points so as to serve as a restriction causing a uniform distribution of the air flow over the back of the reflector.
2. A heating device comprising, in combination, a source of radiant heat, a continuous polished reflector therefor, and means for directing a flow of air in contact with the back of the reflector to absorb the heat therefrom and to direct the same over the outer edge of the reflector to a point of utilization, there being air outlet openings disposed outwardly of the reflector to receive air directly from the back of the reflector, said openings facing in a direction to discharge the air flow away from the reflector.
3. A heating device comprising, in combination, a source of radiant heat, a polished reflector therefor, comprising a curved member having straight line parallel elements and being generally parabolic in section, said source of radiant heat comprising an elongated member disposed substantially in the axis of the curved reflector, a hood shaped similarly to said reflector and spaced rearwardly from the latter, and means for directing a flow of air between said reflector and hood and discharging the same outwardly between the adjacent edges of the reflector and hood to remove at least a portion of the heat absorbed by said reflector.
4. A heating device comprising, in combination, a casing having an opening therein, a curved reflector carried by said casing back of said opening and having a polished reflecting surface, a source of radiant heat carried by the casing adjacent said curved reflecting surface, means carried by the casing rearwardly of said reflector and forming in connection with the back thereof a chamber, the casing having openings laterally outwardly and at one side of said reflector and the opening back of which the reflector is carried, said last named openings communicating with said chamber, and a blower for forcing a blast of air through said chamber and out said openings.
5. A heater comprising, in combination, a face plate having an opening therein, a curved reflector disposed back of said opening and having a polished reflecting surface, a source of heat disposed within said reflector, an air opening formed in said face plate adjacent said first opening, a wall carried by said face plate curved about the reflector and spaced therefrom to embrace said air opening and to form in conjunction with said reflector an air chamber, a blower for discharging air through said chamber and out said air opening for the purpose of absorbing heat from the back of said reflector, and a constriction formed in said wall adjacent said air opening to distribute said air laterally along the reflector.
6. A heater comprising, in combination, a frame casting having an opening therein, a source

of radiant heat carried by said frame casting back of said opening, a curved reflector having a polished reflecting surface and disposed over said opening and embracing said heat source, means carried by said frame casting and curved about but spaced from said reflector to form in cooperation therewith an air chamber on the rear side of the reflector, a plurality of air openings formed in said frame casting spaced outwardly of said first named opening therein and communicating with said chamber, and a blower for forcing air through said chamber and over the rear side of the reflector and out said air openings, said air being discharged in the same general direction as but outwardly of the heat rays that are reflected out said first opening by said reflector.

7. A heating device comprising, in combination, a frame casting having a main opening therein, spring-mounted sockets disposed in insulated relation at each side of said opening, a reflector embracing said opening and having a polished reflecting surface, a resistance element serving as a source of heat disposed in said spring-mounted sockets adjacent said reflector, a shell carried by said frame casting spaced rearwardly from the back side of said reflector, air discharge openings formed in said frame casting adjacent said main opening and communicating with the space between said reflector and said shell, a blower of the centrifugal type carried by said frame casting and having a discharge duct opening into the space between said reflector and said shell, means for driving said blower, and means adjacent the latter and on the opposite side of said main opening from said plurality of air discharge openings for supplying air to said blower.

8. A heating device comprising, in combination, a frame casting having a main opening formed therein, a reflector secured to said frame casting around said opening, a source of heat disposed substantially at the focal point of said reflector, the latter serving to direct the heat rays from said source outwardly in substantially parallel directions, blower housing means formed integrally with said frame casting and including a portion curved about the rear side of said reflector but spaced therefrom to form an air chamber therebetween and the blower housing communicating with said chamber, means serving as air discharge openings communicating with said chamber at the side of said reflector opposite the discharge opening from said blower housing, and a blower of the centrifugal type disposed within said integral blower housing and serving to direct a blast of air over the back side of said reflector to cool the same, said air discharge openings directing said blast of air in substantially the same direction as the heat rays are directed by said reflector.

9. A heating device comprising, in combination, a frame member having an opening therein, a reflector disposed over said opening and comprising a right parabolic surface having parallel elements and planar ends, spring-mounted sockets carried by said ends in insulated relation and disposed in the focal line of said reflector, means serving as a source of radiant heat when energized disposed in said sockets, means carried by said frame member and embracing said reflector at the rear thereof in relatively closely spaced relation and forming in connection therewith an air passage along the back of the reflector, there being air discharge openings leading outwardly from said space, a blower housing connected with said last named means centrally of the reflector,

and a blower mounted in said housing for directing a blast of air across the back of the reflector to absorb heat therefrom, said air being discharged forwardly from said air discharge openings.

10. A heating device comprising, in combination, a source of heat, a polished reflector therefor pivotally mounted for swinging movement into either of two positions, a stationary blower, and conduit means leading from said blower to the reflector in either of its positions for directing a blast of air over the back of the reflector.

11. A heating device comprising, in combination, a frame member, a right parabolic reflector pivotally mounted therein for movement about an axis coincident with the focal line of said reflector, an elongated heating element mounted in stationary relation in said frame member and serving as a source of radiant heat disposed substantially along the focal line of said reflector, and means for directing a blast of air over said reflector to prevent the reflecting surface thereof from oxidizing under the high temperature of said heat source.

12. A heating device comprising, in combination, a supporting frame having two spaced outlets, a cylindrical parabolic reflector mounted for swinging movement from a position in front of one of said outlets to another position in front of the other outlet, a source of radiant heat disposed substantially in the focal line of said reflector, means swingable with said reflector for closing either of said outlets when the reflector is positioned in front of the other outlet, means cooperating therewith forming an air chamber on the rear side of said reflector, means serving as air discharge openings for said chamber, and a blower adapted to direct a blast of air through said chamber and out said air discharge openings for the purpose of cooling said reflector.

13. A heating device comprising, in combination, a supporting frame having a central opening therein, a cylindrical parabolic reflector disposed over said opening, means carried by said frame rearwardly of said reflector and cooperating in conjunction therewith to form an air chamber, air discharge passageways in said frame communicating with said chamber and providing for the discharge of air therefrom, a blower of the centrifugal type carried by said frame with its axis parallel with respect to the plane of the frame and the focal axis of said reflector, a source of radiant heat disposed in said reflector, and means including a motor having its axis of rotation in alignment with said blower axis and connected with the latter to discharge a blast of air through said chamber on the rear side of said reflector to absorb heat from the latter.

14. A heater comprising, in combination, a face plate having an opening therein, a curved reflector disposed back of said opening and having a polished reflecting surface, a source of heat disposed within said reflector, an air opening formed in spaced relation in said face plate relative to said first opening, a wall carried by said face plate curved about the reflector and spaced therefrom to embrace said air opening and to form in conjunction with said reflector an air chamber, and a blower for discharging air through said chamber and out said air opening for the purpose of absorbing heat from the back of said reflector.

15. A heating device comprising, in combination, means serving as a frame member having a generally disposed main opening therein, spring-mounted sockets disposed in insulated relation at

each side of said opening, a reflector embracing said opening and having a polished reflecting surface, and a resistance element serving as a source of heat disposed in said spring-mounted sockets adjacent said reflector.

16. A heating device comprising, in combination, means serving as a frame member having a main opening therein, spring-mounted sockets disposed in insulated relation at each side of said opening, a reflector embracing said opening and having a polished reflecting surface, a resistance element serving as a source of heat disposed in said spring-mounted sockets adjacent said reflector, a shell carried by said frame member spaced rearwardly from the back side of said reflector, air discharge openings formed in said frame member adjacent said main opening and communicating with the space between said reflector and said shell, and a blower carried by said frame member and having a discharge duct opening into the space between said reflector and said shell.

17. A heating device comprising, in combination, a frame member having a main opening formed therein, a reflector secured to said frame member around said opening, a source of heat disposed in operative relation in said reflector, blower housing means formed integrally with said frame member and including a portion curved about the rear side of said reflector but spaced therefrom to form an air chamber therebetween and the blower housing communicating with said chamber, means serving as air discharge openings communicating with said chamber, and a blower disposed within said integral blower housing and serving to direct a blast of air over the back side of said reflector to cool the same.

18. A heating device comprising, in combination, a frame member, a right parabolic reflector pivotally mounted therein for movement about an axis coincident with the focal line of said reflector, and an elongated heating element mounted in stationary relation in said frame member and serving as a source of radiant heat disposed substantially along the focal line of said reflector.

19. A heating device comprising, in combination, a supporting frame having two spaced outlets, a reflector mounted for swinging movement from a position in front of one of said outlets to another position in front of the other outlet, a source of radiant heat disposed in said reflector, means swingable with said reflector for closing either of said outlets when the reflector is positioned in front of the other outlet, stationary means cooperating with the reflector in forming an air chamber on the rear side of said reflector, said chamber having an air discharge opening facing in the same direction as said reflector, and a stationary blower adapted to direct the blast of air through said chamber and out said air discharge opening for the purpose of cooling said reflector.

20. A heating device comprising, in combination, a casing, a curved polished reflector supported in the upper portion thereof and facing laterally outwardly, a source of radiant heat mounted adjacent said reflecting surface, said casing having an opening through which the heat rays, reflected by said reflector, may pass and other openings outside said reflector, a hood carried by the casing and surrounding the back of said reflector, and means in the lower portion of said casing and communicating with the space between the hood and reflector for directing a

blast of air therebetween and out said other openings so as to cool the reflector.

21. A heating device comprising, in combination, a source of radiant heat, an elongated
5 polished reflector therefor curved about said source to concentrate the rays thereof and having generally parallel elements, means serving as a wall disposed in spaced relation around the back
10 of said reflector, and means disposed at a point intermediate the ends of said elongated reflector

for directing a flow of cooling air between said reflector and wall means and in contact with the back of the reflector to prevent oxidation of the polished surface thereof, a portion of said wall means extending lengthwise of said reflector and
5 approaching the back of the latter so as to serve as a restriction causing a distribution of the air flow from said point generally laterally toward the ends of the reflector.

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