This invention relates to heating apparatus, especially floor furnaces and it has particular reference to heat-insulating attachments for floor and wall registers for such heating apparatus.

The principal object of the invention is to provide an insulating material for wall and floor registers, especially the latter, consisting of a plate of high heat conducting material such as aluminum or the like, adapted to be suspended immediately below a register and in which is provided a plurality of openings. The dimension of these openings correspond to those of the register, but about the edges of the openings there are provided upturned flanges rising within the register openings a predetermined distance, whose purpose is to dissipate the heat of the furnace which would normally be absorbed by the metal of the register. The registers often become insufficiently hot - that - they present a hazard resulting in serious burns to the bare feet of persons accidentally stepping thereon and more especially to children playing on the floor.

Another object of the invention is to minimize or obviate the hazard above described by influencing the heated air of the furnace against actual contact with the metal of the floor register, thereby avoiding heating the latter to a degree where there is danger in coming into bodily contact with it. Moreover, the invention seeks to accomplish the foregoing in a simple and economical manner and without impairing in the slightest degree the efficiency of the heating plant.

With the foregoing objects as paramount, the invention has further reference to certain features of accomplishment which will become apparent as the description proceeds, taken in connection with the accompanying drawings wherein:

Figure 1 is a fragmentary perspective view of an insulating plate constructed according to the present invention.

Figure 2 is a fragmentary elevational view in vertical section showing a floor register under which is operatively suspended the insulating plate of the invention.

Figure 3 is a fragmentary plan view of a blank showing the manner in which the invention is formed.

Figure 4 is a view in perspective, showing a part of a register with the invention shown fragmentarily therebelow, and

Figure 5 is a fragmentary view of a floor furnace of the type on which the invention usually serves as an attachment.

Continuing more in detail with the drawing, reference is primarily made to Figure 5 wherein numeral 10 denotes the casing of a conventional floor furnace in which is mounted a heating element 11. A floor grille 12 is mounted on top of the housing 13 and is also of conventional and well known construction.

It is obvious that the heat rising from the heating element 11 will be absorbed by the metal register 12 which will be heated, in some cases to such degree that injury may result to anyone whose flesh may come into direct contact therewith. As far as is known, no provision has been herefore made to keep the register at such temperature that no danger, such as described, will be present when the furnace is operated at high temperatures.

As an effective insulating medium to accomplish the foregoing, the invention provides a plate 13 of aluminum or any other material of high heat conducting characteristics which is cut to a size equaling or slightly less than the area of a conventional register 12 and in the process, holes or interstices 14 are stamped therein. In stamping these holes, the four corners of each are slitted radially from the center as indicated at a in Figure 3 for the purpose to be hereinafter explained.

After completion of the blanking process, as described, the plate 13 is then placed under a forming die which performs the function of turning up the edges of the openings 14 along dotted lines b to form the flanges 15.

In order to predetermine the height of the flanges 15, the dimensions of the openings 14 are first determined. Obviously, the smaller the openings, the higher the flanges will be and their angularity with respect to the plane of the plate 13 may vary from approximately 45° to 90° or perpendicular, as conditions may require.

In mounting the insulating plate in relation to the underside of the register 12, care must be taken to insure proper spacing of these elements. The plate 13 should not touch the register at any point and while the flanges 15 are shown in Figure 2 as rising but a short distance into the areas bounded by the cross bars of the register 12, it is obvious that they may extend upwardly to a point nearly flush with the top of the register without interfering with the appearance or effectiveness of the latter if it is found that better results can be obtained thereby.

Any suitable means may be employed to sus-
pend the insulator under the register but for the purposes of illustration, small coiled springs are shown for this purpose in Figure 2, inasmuch as springs such as these are poor conductors of heat.

It is apparent from the foregoing that heat rising from the heating element of the furnace, as indicated by the arrows in Figure 2, will first contact the insulator plate 13 and will be diverted by the flanges 15 towards the centers of the openings of the register as it passes into the room.

For the most part, the heat causing an increase in temperature of the register will be that radiated from the insulator but by virtue of the high conducting characteristics of the metal of which the insulator is composed, such transfer of heat will always be at the minimum because of rapid dissipation thereof by the insulator. The obvious result will be that while the temperature and volume of air emerging from the register remains normal, the register itself will not become heated to such degree that it will present a hazard, resulting in burns to persons coming into bodily contact therewith.

While the foregoing description is specific concerning the manufacture of the insulator with the use of dies, it is obvious that the plate 13 may be also formed with holes and flanges by casting or by other manufacturing methods. Moreover, any type of material suitable for the purpose may be employed in producing the insulator.

Manifestly, the construction as shown and described is capable of some modification and such modification as may be construed to fall within the scope and meaning of the appended claims is also considered to be within the spirit and intent of the invention.

What is claimed is:

1. As a new article of manufacture, a floor furnace comprising a register grating, a plate of high heat conducting material, coiled springs for suspending said plate from said grating, said plate having holes therein corresponding to those of said grating, each embraced by flanges extending into the holes of said grating well below the top of the latter but out of contiguous engagement with the metal of said grating whereby to minimize temperature influence of heated air on said grating.

2. As a new article of manufacture, a floor and wall register including a grating, a plate having flanged apertures, spring means for supporting said plate below said register to dispose the flanges of said plate in the apertures of the grating but out of contiguity with the metal thereof whereby to insulate said grating against the high temperature influence of air passing through said apertures.

3. As a new article of manufacture, a hot air register including a grating and a plate composed of material having heat dissipating characteristics, spring means for supporting said plate below said hot air register, said plate being provided with holes corresponding to those of said register, each embraced by flanges extending into the holes of said register but out of contiguity therewith and adapted to minimize the high temperature influence of said air on said grating.

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