May 6, 1930. E. R. ZADEMACH 1,756,965

NOZZLE CONSTRUCTION

Filed July 27, 1927

Fig. 1.

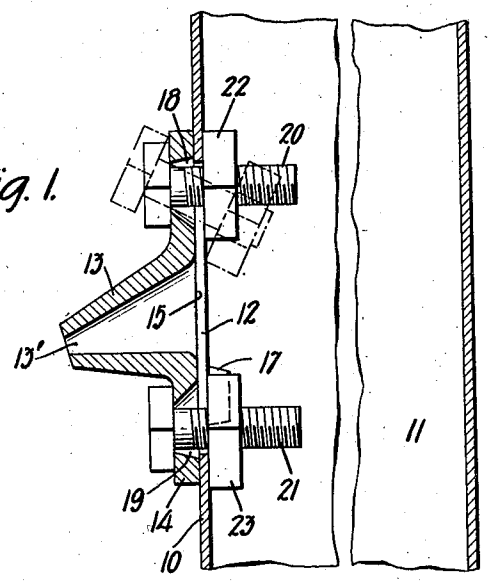
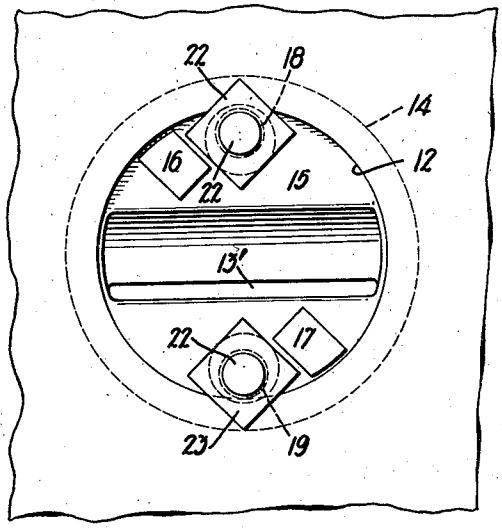


Fig. 2.



Inventor

Erich R. Zademach

by Moses and Holt

Attorneys

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ERICH R. ZADEMACH, OF ELIZABETH, NEW JERSEY

NOZZLE CONSTRUCTION

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The present invention relates to nozzles and to means for adjustably mounting such nozzles in desired positions.

The invention is particularly adapted for use in fastening nozzles onto air chests, boxes, or conduits used with blowers, the interiors of which are inaccessible, so that it is impossible to work inside and use ordinary tools in tightening and clamping the nozzles in place.

An object of the present invention is to provide a clamping means whereby such removable parts may be readily fastened or clamped to a supporting element without the necessity of obtaining access to the rear or back side of the same.

A more particular object of the invention is to provide clamping means of the nature above referred to, wherein it is unneccessary to perform any special work on the supporting plate, other than to provide a hole of standard configuration.

Other and further objects of the invention will appear as the description proceeds.

The accompanying drawings show, for purposes of illustration, one of the many possible embodiments in which the present invention may take form, it being understood that the drawings are illustrative of the invention, rather than limiting the same.

In these drawings:

Figure 1 is a sectional view through a nozzle showing fragments of an air chest or chamber; and

Figure 2 is a fragmentary view showing the rear surface of the plate 10 with the nozzle mounted thereon.

In the drawings, the reference character 10 indicates a plate, or the side wall of a chamber of container 11, such, for example, as an air chest for use with a blower. The rear or back side of the plate 10, or interior of the chamber 11 is ordinarily inaccessible, or may, as contemplated by the present invention, be merely difficult of access.

The plate 10 forms a supporting element, and is provided with a conveniently shaped aperture 12, here shown as being circular. A second element to be supported thereon is indicated in the form of a nozzle member 13, which may conveniently take the form of a casting. This nozzle member 13 has a round flange or base portion 14 somewhat larger than the hole 12 so as to overlie the front face of the plate 10. The nozzle also has preferably a long slot like opening 13, arranged to produce a jet at an oblique angle with respect to the plate. The shape and direction of the nozzle opening may, of course, be varied in any way desired. The rear face 15 of the nozzle member 13 is provided with rearwardly projecting lugs 16 and 17 which may be passed through the hole 12 in the front plate 10. These lugs are adjacent holes 18 and 19 in the flange 14 of the nozzle member, and these holes, instead of being ordinary cylindrical drillings or cored holes, are preferably made of special shape such as shown in the drawings. As indicated, these holes are of a more or less conical configuration but are not symmetrical with respect to the perpendicular.

These holes are provided for the purpose of receiving clamping means, which may be in the form of stud bolts 20 and 21, each of which carries a nut as indicated at 22 and 23. The holes 18 and 19 are so shaped that one can move a bolt, with nut attached, to the dot and dash line position indicated in the upper part of Figure 1 and can similarly move the lower bolt to place it in a diagonal position. When the bolts are brought to such position, it will be obvious that the nuts may be passed through the hole 12 in the front plate 10. As soon, however, as one turns the head of the bolt to tighten the bolt, the corresponding nut will engage with the adjacent lug so that it cannot turn. Further tightening of the bolts brings the parts to the position shown in full lines in the drawing.

It will be noted that the hole 12 may be a rough unfinished hole, and that the lugs 16 and 17 form a ready means of centering the nozzle member in place. One can easily adjust the angular position of the nozzle to the desired position so as to orient the jet to the desired angle and then tighten up the bolts. The bolts may be reversed to place the bolt-head inside, and in any case, the nuts, or the bolt-heads, will overlie the inner in-

accessible face of the plate 10 and will securely fasten the parts together. It will of course be obvious that the invention is not limited to the use of two bolts as a greater number may be used where desired, and also that the invention may be applied in the mounting of devices in places where the holes in the supporting plate are of various shapes.

The adaptability of the invention to use with circular holes in the chest or plate to which the nozzles are to be applied is, however, a feature of very substantial value. The circular holes can all be stamped by a single die with no other requirement than that they be correctly located. There is no need for orientation of the die in stamping nor for any preliminary calculation or patterning based on the angular positions in which the nozzles are finally to be secured, because the nozzles can be secured in any adjusted position required.

What I claim is:

1. In combination, a chest including a wall having a circular aperture therein, a nozzle member having a flange fitted in sealing engagement with the outer face of the wall bordering the aperture, and having its outer face positioned by such engagement in substantial parallelism with the rear wall surface bordering the aperture, lugs carried by the nozzle member and extending rearwardly through the aperture, the nozzle member having holes through the flange thereof adjacent the lugs, and clamping couples each including a bolt passed through one of the holes and a nut threaded thereon at the opposite side of the flange from the head of the bolt, the facing surfaces of the bolt head and the nut being substantially parallel, each couple being tiltable in its hole to permit passing the portions of the couples to the rear of the nozzle through the aperture in the plate, whereby such portions may be projected through the aperture and then behind the rear surface of the supporting plate, the nozzle may be oriented, and the parts may be directly clamped together by tightening of the clamping couples.

2. In combination, a chest including a plane supporting wall having a circular aperture therein, a nozzle member having a plane flange fitted in sealing engagement with the portion of the outer face of the wall bordering the aperture, and having its outer surface positioned by such engagement in substantial parallelism with the rear wall surface bordering the aperture, the nozzle member having bolt holes through the flange thereof, and clamping couples each including a bolt having its shank passed rearwardly through one of the holes and a nut threaded on the shank at the rear of the flange, the facing surfaces of the bolt head and the nut being substantially parallel, each couple being tiltable in its hole to permit passing the nut through the aperture in the plate, whereby the nut may be projected through the aperture and then behind the rear surface of the supporting plate, the nozzle may be oriented, and the parts may be directly clamped together by tightening of the clamping couple.

3. In combination, a supporting plate having a circular aperture therein, a nozzle member having a circular flange fitted in sealing engagement with the outer face of the plate bordering the aperture, and having its outer face positioned by such engagement in substantial parallelism with the rear surface of the plate bordering the aperture, lugs carried by the nozzle member and extending rearwardly through the aperture, the nozzle member having holes through the flange thereof adjacent the lugs, and clamping couples each including a bolt passed through one of the holes and a nut threaded thereon, the facing surfaces of the bolt head and the nut being substantially parallel, each hole through the flange being shaped to permit tilting of the clamping couple radially of the nut, and the associated lug being of such scant height relative to the length of the bolt shank that the nut when positioned at the inner end of the bolt may clear the associated lug and avoid interference with the tilting of the clamping couple, whereby the nuts may be projected through the aperture and then behind the rear surface of the supporting plate, the nozzle may be oriented, and the parts may be directly clamped together by tightening of the clamping couples.

4. In combination, a supporting plate having an aperture therein, a nozzle member having a flange adapted to fit against the face of the plate bordering the aperture, the nozzle member having holes through the flange thereof, clamping couples each including a bolt passed rearwardly through one of the holes and a nut threaded on the rear end thereof, each couple being tiltable in its hole to permit passing the nut through the aperture in the plate whereby the nut may be projected behind and engaged with the rear face of the supporting plate and the parts may be clamped together by tightening of the clamping couple, and rearwardly projecting lugs carried by the nozzle, one adjacent each hole and positioned and formed to arrest rotation of the associated nut with a diagonal of the nut projecting substantially radially of the nozzle.

5. In combination, a supporting plate having an aperture therein, a nozzle member having a flange adapted to fit against the face of the plate bordering the aperture, the nozzle member having holes through the flange thereof, clamping couples each including a bolt shank passed through one of the holes and clamping members consisting of a bolt head and a nut threaded on the bolt shank, each couple being tiltable in its hole to per-

mit passing the clamping member of the couple situated to the rear of the nozzle through the aperture in the plate, whereby such clamping member may be projected behind and engaged with the rear face of the supporting plate and the parts may be clamped together by tightening of the clamping couple, and rearwardly projecting lugs carried by the nozzle, one adjacent each hole and positioned and formed to arrest rotation of the associated clamping member with a substantial portion thereof engaging the rear surface of the plate.

6. In combination a nozzle chest having a plane wall plate provided with a circular opening, a nozzle having an annular portion seated in sealing engagement with the plate and having a jet portion projecting obliquely from the plate when the nozzle is so seated, and means carried by said annular portion and arranged to be passed through the opening and into engagement with the rear marginal face of the plate bounding the opening and manipulatable from the front of the plate to clamp the nozzle against the plate in any desired position of angular adjustment of the nozzle.

7. In combination, a nozzle chest having a wall provided with a substantially circular opening, a nozzle having an annular portion bearing continuously against the wall and rotatable about the center of the opening while maintaining continuous bearing relationship with the wall and having a jet portion projecting obliquely away from the wall, and means carried by said annular portion arranged to be passed through the opening and into engagement with the rear marginal face of the wall bounding the opening and manipulatable from the front of the wall to clamp the nozzle against the wall in any desired position of angular adjustment of the nozzle.

In testimony whereof I have affixed my signature to this specification.

ERICH R. ZADEMACH.