Oct. 14, 1958 P. H. HUTT 2,855,698

CLOTHES DRIER DRUMS

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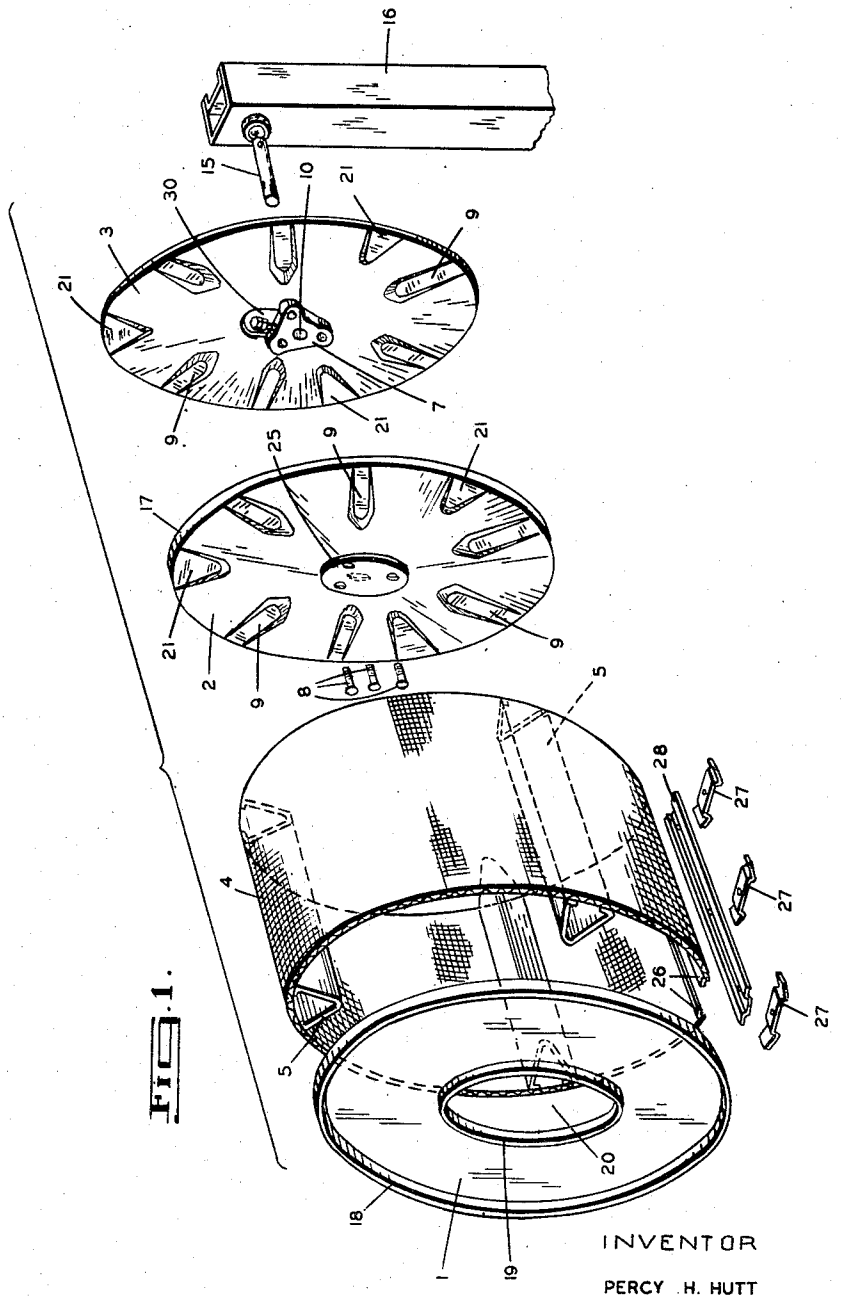


FIG. 1.

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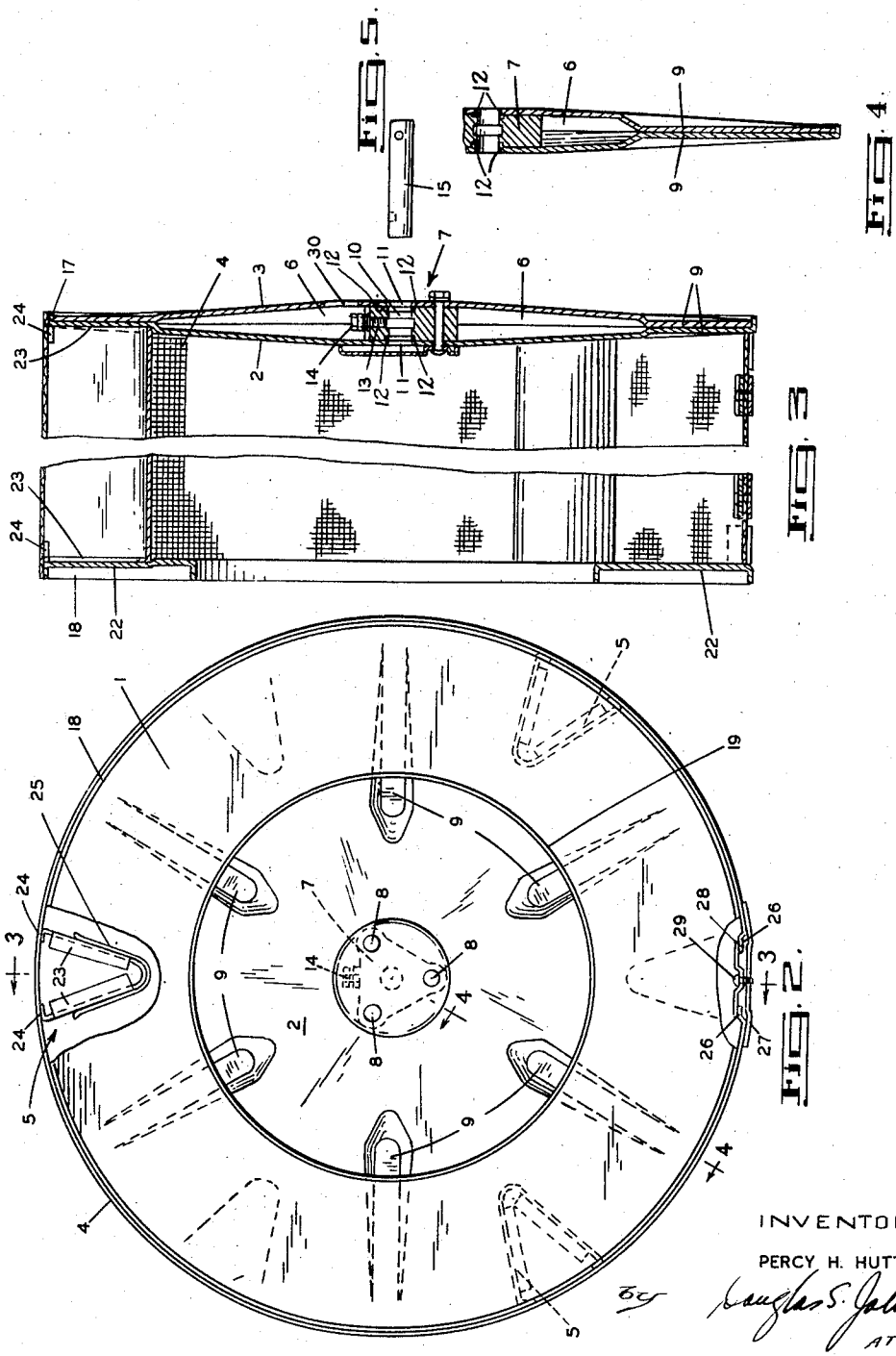


Fig. 2.

Fig. 3

Fig. 4

Fig. 5.

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CLOTHES DRIER DRUMS

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10 Claims. (Cl. 34—108)

This invention relates to improvements in clothes tumbling drums for clothes driers wherein the drum, which has a perforated peripheral wall, is supported as a cantilever member from one end to rotate about a horizontal axis and has a clothes receiving opening in the opposite end.

The principal object of the present invention is to provide a drum of this type of strong and rigid construction which can be supported as a cantilever member without sagging under loading to run true about its axis of rotation.

Another important object is to provide a drum as aforesaid which can be quickly, easily and economically assembled and in which the assembly operation will ensure drum accuracy.

A further important object is to provide a drum having maximum clothes capacity for a given drum diameter and providing maximum air flow area through the peripheral wall commensurate with requisite drum rigidity.

One of the principal features of the invention resides in the novel construction and arrangement of the rear wall assembly of the drum which provides for the cantilever mounting of the drum. In particular, according to the invention, the rear wall is formed of a pair of opposing relatively shallow conical plate-like members of sheet material arranged in base to base relation and between which is disposed a rigid mounting block, the conical members and block being assembled together by bolts, the conical members having flats formed therein to register and abut on assembly and the abutting portions of the members being welded together to provide a unitary rigid rear wall assembly.

According to the invention the front wall of the drum comprises an annular plate and the drum is provided with triangular-shaped baffles therein formed with end flanges, and the conical rear wall members are formed with abutting flats corresponding in shape to and against which the flanged baffle ends abut, the rear wall members being additionally welded together and to the baffle flanges at one end at such flats and the front wall being welded to the baffle flanges at the other end of the baffles to secure the front ring in concentric relation with the rear wall assembly, the baffles forming an additional support along with the front and rear walls for supporting the perforated peripheral wall.

It has been found that the effective capacity of the drum is dependent not on drum volume, but rather, on the volume defined between the inner extremities of the baffles and in this connection it is another feature of the invention to reduce baffle radial depth to the minimum, relative to drum diameter, required to effect clothes tumbling at normal speeds of drum rotation, thereby effectively increasing drum capacity.

As it is an advantage to employ baffles of triangular cross-section to assist in clothes tumbling and to prevent catching of the clothing, the reduction of the radial baffle depth, that is the height of the baffle triangle, enables the reduction of the triangular baffle base thus exposing

a larger surface area of the perforated peripheral wall to enable increased air flow through such wall.

Still another feature resides in providing a simple clean-out for the drum.

These and other objects and features of the present invention will become more apparent from the following description taken in conjunction with the accompanying drawings, in which:

Figure 1 is an exploded perspective of a drum constructed in accordance with the invention, and showing a typical mounting arrangement;

Figure 2 is a front elevational view, partly broken away, of the assembled drum;

Figure 3 is a broken away vertical sectional view taken on the line 3—3 of Figure 2;

Figure 4 is a section taken on the line 4—4 of Figure 2 of the rear drum wall; and

Figure 5 is an elevational view of a typical shaft on which the drum may be mounted.

With particular reference to Figure 1, it will be seen that the drum comprises an annular front wall **1**, a rear wall assembly comprising an inner shallow conical wall member **2**, and a corresponding outer or rear shallow conical wall member **3**, and a peripheral wall comprising a perforated or foraminous wrap-around sheet **4** provided with internal baffles **5**.

With reference to Figures 1 and 4, and particularly Figure 3, it will be seen that the conical rear wall members **2** and **3** are formed of sheet material and are disposed in opposing relation with their peripheries in contact to define a central chamber **6**, and arranged between these wall members **2** and **3** at the center within the chamber **6** is a spacer block **7**, shown of generally triangular formation. The conical wall members **2** and **3** are clamped to the opposite faces of the spacer block **7** by means of bolts **8**. Each of the conical wall members **2** and **3** has its sloping surface deformed inwardly from the perimeter to define flats **9**, and when the conical rear wall members are assembled, these flats register and abut as shown particularly in Figure 4, and the members are welded together at points throughout these flat surface portions.

The spacer block **7** forms the means of mounting the drum as a cantilever member, and to this end, it is provided with a bore **10** coaxial with the drum axis and the conical wall members **2** and **3** are formed with flanged openings **11** centered on the drum axis with the flanges **12** defining the openings **11** being inturned to project within the block bore **10**, the block being counterbored at the ends to receive these flanges so that they lie flush with the peripheral surface of the body of the bore. The block **7** is provided with a radially extending threaded bore **13** intersecting bore **10** to receive a set screw **14** adapted to lock the drum to a shaft **15** rotatably supported in a suitable upright **16** to support the drum for rotation about a horizontal axis.

The inner rear wall member **2** is formed with an outturned flange **17** and the front wall **1** is formed with a corresponding flange **18**, these flanges serving to stiffen the respective wall members, and as well, provide a convenient means for welding or otherwise suitably securing the peripheral wall **4** to the front and rear walls. Additionally, the front wall **1** is preferably provided with a stiffening flange **19** at its inner periphery to define the inlet **20**, through which clothing or other material may be deposited in the drum.

In addition to the provision of the flats **9** the rear wall members **2** and **3** are formed with further triangular shaped flats **21** which again, on assembly of the rear wall members, are arranged to register and abut. These flat surfaces **21** are located at spaced points around the periphery of the drum, and the front wall **1**

is preferably formed with corresponding triangular shaped depressions **22** registering with the flats **21**, and the baffles **5** which are of triangular formation extend between and are secured to the triangular shaped flat surfaces **21** and **22** of the rear wall assembly and front wall, respectively. To this end, the baffles **5** are formed to provide inturned flanges **23** at the ends thereof as best seen in Figures 2 and 3, and these flanges **23** are welded respectively to the surfaces or flats **21** and **22**.

In the welding of the baffle flanges to the rear wall flats **21**, the rear wall members **2** and **3** are additionally welded together to further strengthen and reinforce the rear wall assembly.

In addition to the end flanges **23**, the baffles **5** are provided with bottom flanges **24** which abut and are secured, as by welding, to the peripheral drum wall **4**. To seal the rear wall assembly, a cover plate **25** is disposed over the central opening **11** of the inner rear wall member **2**, and this plate is conveniently held in position by the bolts **8** which clamp the rear wall assembly together.

As seen particularly in Figures 1 and 2, the wrap-around sheet **4** forming the peripheral wall of the drum has its opposing ends **26** spaced apart and flanged and these ends are connected by axially spaced brackets **27** to which is secured a longitudinal ribbed cover plate **28** by means of suitable fasteners **29**. In normal use, the drum is rotated within a casing, not shown, and the cover plate **28** which is removable on removal of the fasteners **29** allows access from the interior of the drum to the enclosing housing to provide a clean-out for buttons or other particles which may find their way through the perforations of the peripheral drum wall.

In the assembly of the drum, the bolting together of the conical rear wall members **2** and **3** to clamp them to the rigid spacer block **7** serves to accurately locate these members in relative position with the flats **9** and **21** in abutting registration, and the flats, which add to the stiffness of the rear wall members which are economically formed of sheet material, form convenient means for welding the rear wall members together over a substantial area. The result is an extremely sturdy rear wall construction which will carry the peripheral wall **4** and the front wall **1** and hold the drum in its true cylindrical form under loading. The rigid spacer block **7** enables the drum to be positively and securely anchored as a cantilever member from the support shaft **15** to which the drum is clamped by the set screw **14**, the set screw being operated through a suitable access opening **30** in the outer of the rear wall members **3**.

In addition, the baffles **5** serve to add to the rigidity of the drum structure to hold same in true cylindrical form on rotation under loading.

It has been found according to the invention that the capacity of the drum is determined by the volume within the baffles **5** which comprises the effective drum volume and not the actual drum volume. Accordingly, the baffles **5** are formed to have a minimum radial depth to effect tumbling of the clothing on drum rotation at normal drum speeds. It has been found in practice that with a drum of 24½" in diameter, baffles of 2¼" in radial depth at a normal speed of the order of 50 R. P. M. provide the requisite tumbling action of the clothing and give the same effective drum capacity as is presently achieved with conventional drums of substantially larger diameters. That is, by having the radial depth of the baffles **5** within the range of $\frac{1}{10}$ to $\frac{1}{11}$ of the drum diameter maximum drum capacity is achieved.

It is to be pointed out that by reducing the radial extent of the baffles over those used in conventional driers, the width of the base of the triangular baffle formation is reduced, increasing the uncovered area of the perforated peripheral wall **4**, thus allowing increased air flow through the drum for more effective drying.

It will be understood that various modifications in details and in the arrangement of the parts may be made within the spirit of the invention without departing from the scope of the appended claims.

What I claim as my invention is:

1. A clothes receiving drum comprising a rear wall assembly, a front wall and a perforated peripheral wall secured to the periphery of said front and rear wall assembly, said rear wall assembly comprising a pair of shallow conical wall members arranged in opposing relation, a spacer block disposed centrally between said conical wall members, means clamping the central portion of said conical wall members to opposite faces of said block, the sloping surfaces of said conical wall members being deformed to provide a plurality of flat surface portions surrounding said block with the flat surface portions of the opposing wall members disposed in registering and abutting relation, and means securing said flat surface portions together, said spacer block being formed with a bore therethrough centered on the axis of said drum, and said conical wall members being formed with flanged openings therein centered on the drum axis and presenting inturned annular flanges projecting inwardly into said block bore at opposite sides of said block.

2. A drum for tumbling clother or the like comprising an annular front wall, a circular rear wall assembly, a perforate peripheral wall secured to the peripheries of said front and rear walls, and a plurality of baffles secured between said front wall and rear wall assembly adjacent to the peripheries thereof, said rear wall assembly comprising an inner shallow conical wall member sloping inwardly of the drum, and a corresponding opposing outer shallow wall member sloping outwardly to the rear of the drum, a spacer block disposed centrally between said conical wall members, and means clamping said inner and outer conical wall members on opposite faces of said block, the sloping surfaces of said conical wall members being deformed at intervals around said block to provide a plurality of flat surface portions with the flat surface portions of the opposing conical wall members being disposed in registering and abutting relation, and means securing said flat abutting surface portions together, said block being formed with a bore coaxial with said drum to receive a mounting shaft, at least said outer conical wall being formed with an opening therethrough registering with said bore, and at least said inner conical rear wall member being formed with additional deformed surface portions providing a plurality of flat surfaces adjacent to the periphery thereof, said baffles being secured to said rear wall assembly at said latter flat surfaces.

3. A drum for tumbling clothes or the like comprising an annular front wall, a circular rear wall assembly, a perforate peripheral wall secured to the peripheries of said front and rear walls, and a plurality of baffles secured between said front wall and rear wall assembly adjacent to the peripheries thereof, said rear wall assembly comprising an inner shallow conical wall member sloping inwardly of the drum, and a corresponding opposing outer shallow wall member sloping outwardly to the rear of the drum, a spacer block disposed centrally between said conical wall members, and means clamping said inner and outer conical wall members on opposite faces of said block, the sloping surfaces of said conical wall members being deformed at intervals around said block to provide a plurality of flat surface portions with the flat surface portions of the opposing conical wall members being disposed in registering and abutting relation, and means securing said flat abutting surface portions together, said block being formed with a bore coaxial with said drum to receive a mounting shaft, at least said outer conical wall being formed with an opening therethrough registering with said bore, said front wall being formed with a peripheral flange, and one of said inner and outer conical rear wall members being formed with a peripheral flange, said peripheral wall comprising a

foraminous sheet rolled about and welded to said peripheral front and rear wall flanges, with the ends of said sheet being spaced to provide an opening in the drum periphery, brackets connecting said spaced sheet ends, and a removable clean-out plate secured to said brackets at the inside of said peripheral drum wall.

4. A device as claimed in claim 1 in which said block bore is provided with a counter bore at opposite ends thereof to receive said inturned annular flanges, with said flanges lying substantially flush with the peripheral surface of the block bore.

5. A device as claimed in claim 1 in which said block is provided with a threaded bore therein extending radially of the drum and intersecting said block bore, and a set screw is disposed in said threaded radial bore.

6. A device as claimed in claim 5 in which the one of said conical wall members clamped to the face of said block disposed at the rear of the drum is provided with an access opening exposing said set screw.

7. A device as claimed in claim 1 in which a cover plate is provided on the inside face of said rear wall assembly to close said block bore and the flanged opening in the conical wall member disposed towards the inside of the drum, and the means for clamping said conical wall members to said block additionally clamps said cover plate in bore closing relation.

8. A device as claimed in claim 2 in which said latter flat surfaces are of triangular formation and said baffles are of triangular cross-section and are formed with inturned end flanges seating on said latter triangular flat surfaces and being welded thereto.

9. A device as claimed in claim 2 in which said outer conical rear wall member is formed with triangular flat surfaces corrsponding to and registering with the aforesaid triangular flat surfaces and in abutment therewith and said inner and outer conical wall members are additionally secured together at said triangular flat surfaces.

10. A device as claimed in claim 9 in which said baffles project radially inwardly from the peripheral drum wall and have a radial extent equal to $\frac{1}{10}$ to $\frac{1}{11}$ of the drum diameter.

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