

Oct. 19, 1943.

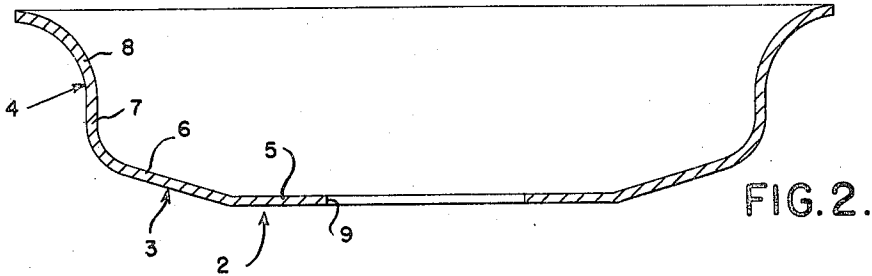
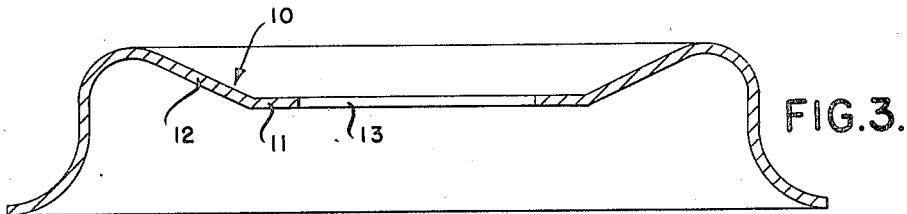
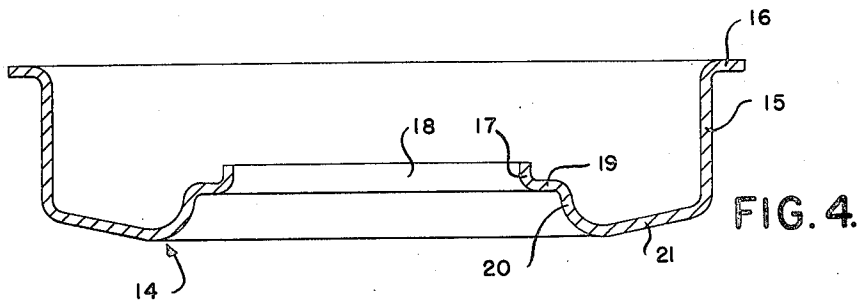
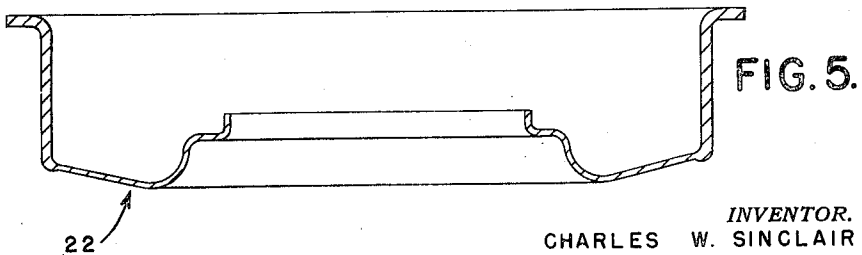
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2,332,175

METHOD OF FORMING BRAKE DRUMS

Filed July 14, 1941

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

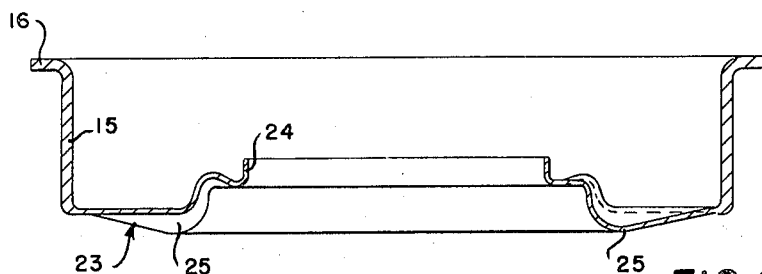


FIG. 6.

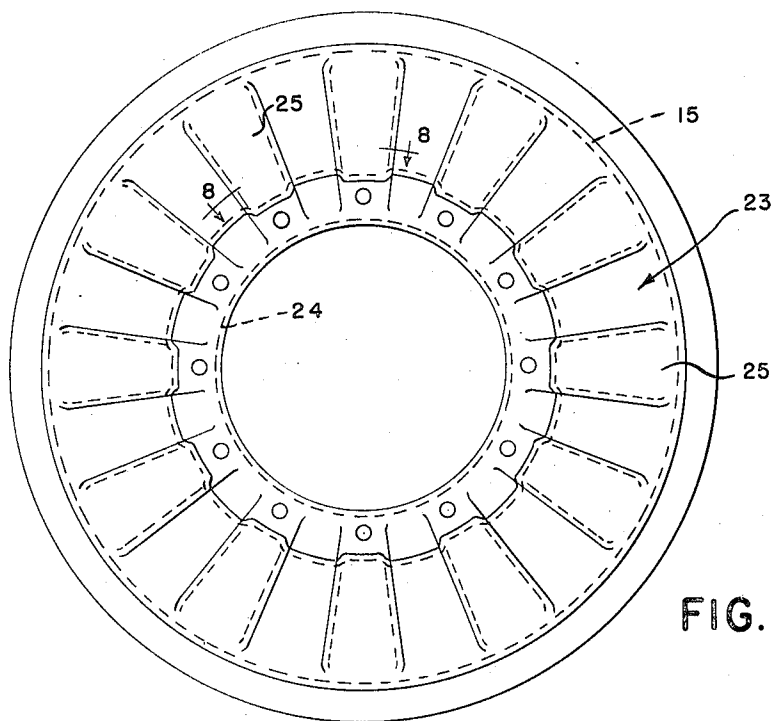


FIG. 7.

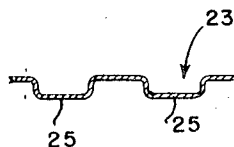


FIG. 8.

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METHOD OF FORMING BRAKE DRUMS

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Application July 14, 1941, Serial No. 402,407

1 Claim. (Cl. 29—152.2)

The invention relates to the manufacture of brake drums and refers more particularly to the method of forming brake drums from sheet metal of uniform gauge.

The invention has for one object to provide an improved method of forming a brake drum having a web of less thickness than the annular brake flange.

The invention has for another object to so form the brake drum that the steps in the method may be economically carried out.

These as well as other objects of the invention will become apparent from the following description, taken in connection with the accompanying drawings, in which

Figure 1 is a side elevation of a flat circular sheet metal blank of uniform gauge from which the brake drum is to be formed;

Figures 2, 3, 4 and 5 are sectional views illustrating successive steps in the manufacture;

Figure 6 is a sectional view illustrating the completed brake drum;

Figure 7 is an elevation thereof;

Figure 8 is a cross section on the line 8—8 of Figure 7.

In my method of forming brake drums, a flat circular sheet metal blank 1, shown in Figure 1, is used. The blank is formed of a suitable steel and has a sufficient thickness to form the annular brake flange of the completed brake drum. The blank 1 is subjected to a die-pressing step to form the bowled blank 2, shown in Figure 2. The blank 2 has the web 3 and the annular wall 4, the web being convex and extending axially beyond the annular wall. The web has the flat central portion 5 and the frusto-conical outer portion 6 which is connected to the annular wall by a gradual curve. The annular wall has the inner cylindrical portion 7 and the outer flared portion 8 which is gradually curved. After the bowling step has been completed the central hole 9 is formed in the central portion 5 preferably by a punch, the hole also being shown in Figure 2.

The blank is then subjected to a die-pressing step to depress the central portion of the web while maintaining the annular wall substantially unchanged, the blank 10 of Figure 3 being formed. The central portion 11 of the web is flat and located axially within the unchanged annular wall of the blank and the outer portion 12 of the web is frusto-conical and connects into the cylindrical portion of the annular wall by a return-bent gradual curve. During this step, the previously formed central hole allows the metal of the web to move radially outwardly so that notice-

able thinning of the web is avoided. After the depressing step the central hole 13 of larger diameter than the central hole 9 is formed in the central portion 11, preferably by a punch, the hole 13 being shown in Figure 3. The next step comprises forming and flanging the blank by a die-pressing step to produce the blank 14 of Figure 4. The step comprises fashioning the annular wall to produce the cylindrical portion 15 and the radially outwardly extending annular flange 16 at the outer or free end of the cylindrical portion. The diameter of the cylindrical portion 15 is preferably slightly less than the cylindrical portion of the annular wall of the blank 10. Also, during the forming and flanging step the web is fashioned to produce the axially extending annular flange 17 surrounding the central hole 13, the flat central portion 19 connecting at its inner edge into the annular flange 17 and located axially within the cylindrical portion 15, the substantially axially extending annular portion 20 connecting into the outer edge of the central portion 19, and the frusto-conical outer portion 21 connecting into the annular portion 20 and the cylindrical portion 15. The hole 13 is of larger diameter than the hole 13 and the outer portion 21 is convex.

The next step comprises reducing the thickness of the web by machining the same to produce the blank 22, illustrated in Figure 5, the cylindrical portion and annular flange of the annular wall remaining unchanged. During the machining, metal is removed from the outside faces of the flat central portion and the frusto-conical outer portion and also from inside the axial flange and the substantially axially extending annular portion connecting the central and outer portions. The metal at the inner end of the cylindrical portion of the annular wall is preferably retained to reinforce the junction between the cylindrical portion and the frusto-conical outer portion of the web.

The next die-pressing step comprises ribbing and restriking the blank 22 to produce the blank 23, illustrated in Figures 6, 7 and 8. During this die-pressing step the cylindrical portion 15 of the annular wall and the radially extending annular reinforcing flange 16 at the outer or free end of the cylindrical portion are maintained substantially unchanged. However, the portions of the web, with the exception of the central axially extending flange 24, are radially ribbed at 25, the ribs being formed by depressing the metal toward the outer or free end of the cylindrical portion 15.

What I claim as my invention is:

The method of forming a brake drum comprising the successive steps of die-pressing a flat circular sheet metal blank of uniform gauge to shape the same into a bowled blank having an annular wall and a web, punching the web of the bowled blank to form a central hole therethrough, die-pressing the punched bowled blank to depress the central portion of the web axially within the annular wall while maintaining the annular wall 10

substantially unchanged, die-pressing the resulting blank to shape a portion of the annular wall into a cylindrical portion and to shape the central depressed portion of the web into a generally axially extending annular flange and a generally radially extending flat portion connecting into the annular flange, then machining the web to reduce the thickness thereof, and finally die-pressing the machined web to rib the same.

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