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C. W. SINCLAIR

2,154,016

METHOD OF FORMING BRAKE DRUMS

Filed June 29, 1936

2 Sheets-Sheet 1

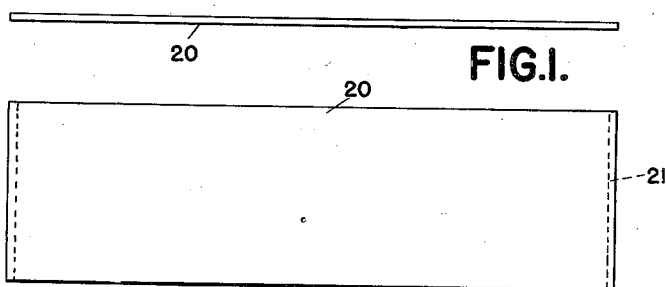


FIG. 1.

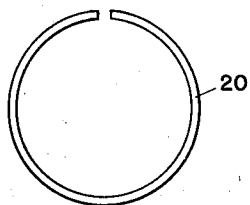


FIG. 2.

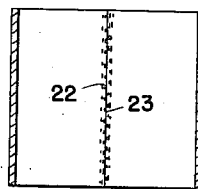


FIG. 3.

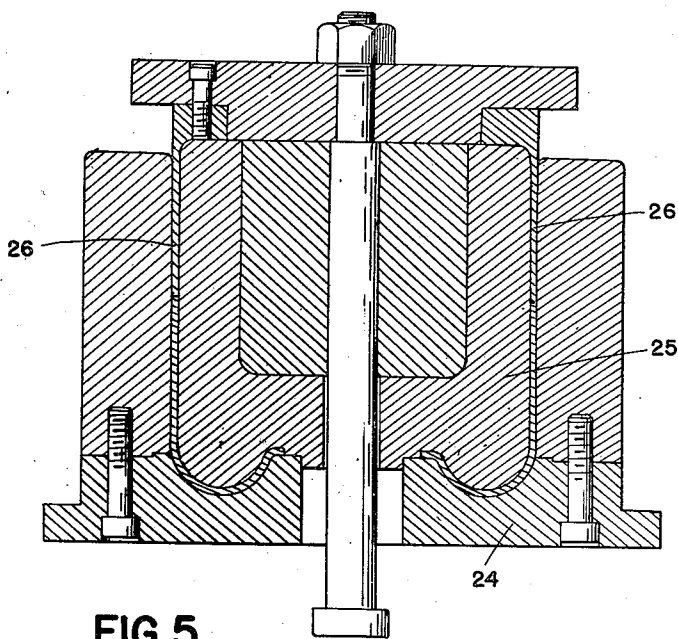


FIG. 4.

INVENTOR  
CHARLES W. SINCLAIR  
BY *Whittemore, Hulbert & Kenney*,  
ATTORNEYS

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C. W. SINCLAIR

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2 Sheets-Sheet 2

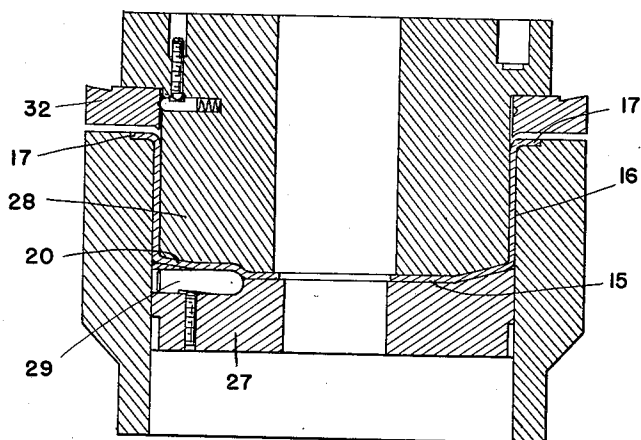


FIG. 6.

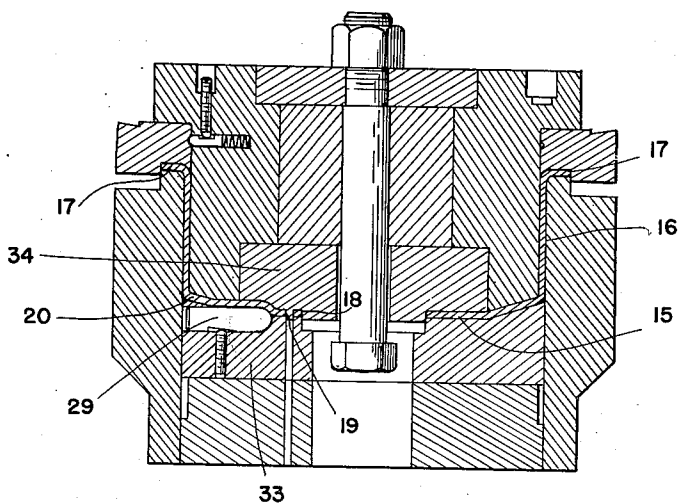


FIG. 7.

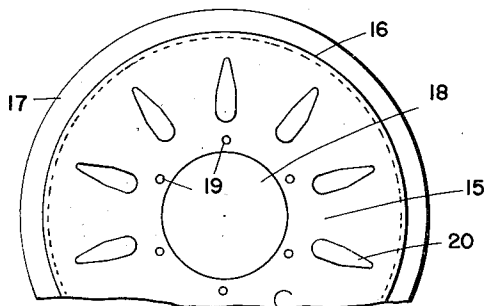


FIG. 8.

INVENTOR  
CHARLES W. SINCLAIR

BY *Whittemore Hulbert & Belknap*  
ATTORNEYS

## UNITED STATES PATENT OFFICE

2,154,016

## METHOD OF FORMING BRAKE DRUMS

Charles W. Sinclair, Detroit, Mich., assignor to  
Kelsey-Hayes Wheel Company, Detroit, Mich.,  
a corporation of Delaware

Application June 29, 1936, Serial No. 88,022

3 Claims. (Cl. 29—152.2)

This invention relates to the manufacture of brake drums and more particularly to the formation of drums from flat stock.

One of the objects of the invention is to facilitate the forming of a substantially cylindrical brake drum provided with a radial flange or web for bolting on purposes, from a flat rectangular blank, thus avoiding waste of stock.

Another object of the invention is to simplify the operations incident to the manufacture of brake drums and to minimize manufacturing costs. Other objects will be apparent from the following description, taken with the accompanying drawings, in which

Fig. 1 is an edge elevation of a blank from which the brake drum is formed;

Fig. 2 is a plan view of the blank;

Fig. 3 is an edge elevation of the blank after being bent to tube-like form;

Fig. 4 is a cross sectional view of the blank shown in Fig. 3 after its edges are welded;

Figs. 5, 6 and 7 are sectional views illustrating successive steps in the pressing and finishing of the brake drum; and

Fig. 8 is a partial plan view of the finished drum.

The brake drum shown in the drawings comprises a generally radial web portion 15, an axial braking surface flange portion 16, and a peripheral radial reinforcing flange 17. The web is apertured centrally thereof at 18 and is provided with a plurality of openings 19 for bolts or other securing means employed to fasten the brake drum to a wheel hub or wheel body. The web is also provided with pressed ribs 20 to strengthen the drum.

A preferred method of forming the brake drum just described includes starting with a flat sheet metal rectangular blank or strip 20' of uniform gauge shown in Figs. 1 and 2. The ends of the blank are first sheared along the lines 21 in Fig. 2, to a predetermined length, after which the strip is bent to form a substantially cylindrical tube-like member having its ends welded, as indicated at 22. The weld flash is then trimmed to provide a smooth surface on the inside and outside of the blank along the weld line 23 in Fig. 4.

As shown in Fig. 5, one end of the cylindrical blank is first pressed between dies 24 and 25 to form a curled flange at one edge portion thereof. The other edge of the blank is prevented from flowing by die rings 26 so that the metal at the curled portion flows radially inward in a gradually curved path, thus obviating weakened sections therein. By so curling the blank the flow of metal during the subsequent pressing operation is facilitated, thus insuring uniform contraction and upsetting of the metal in the curled

portion of the blank. Following curling, the curled portion of the blank is flattened and further upset by dies 27 and 28 to the form shown in Fig. 6, wherein the web of the drum is substantially transverse to the axis of the cylindrical blank, although a portion thereof is slightly conical adjacent the brake ring portion of the drum to provide clearance with respect to the wheel with which the brake drum is associated. Inserted in the lower die are a plurality of spaced cylindrical plugs 29 forming auxiliary dies which press ribs 20 in the web of the drum. Ring 32 on the upper die bends the upper edge of the blank to form an outwardly radial reinforcing flange 17 on the drum.

The final step is shown in Fig. 7, and consists in trimming the inner and outer peripheral edges of the blank, that is, the edges of the reinforcing flange and the aperture in the web by means of dies 33 and 34. If desired, bolt holes may either be punched in the blank at the time the blank is trimmed, or in a subsequent operation.

The method described permits the use of flat stock in fashioning the brake drum, thus eliminating to a great extent waste of material and resulting in an inexpensive article. The metal is pressed in a series of steps that insure a strong and substantial brake drum made from sheet metal and one which is readily adapted for use on motor vehicles.

What I claim as my invention is:

1. The method of forming sheet metal brake drums which comprises bending a sheet metal strip into tube-like form, integrating the ends thereof by welding, curling one cylindrical edge portion of the blank towards the axis of the blank, bending the other edge portion of the tube-like blank to form a flange extending transversely of and away from the axis of the blank, and then flattening the curled portion of the blank.

2. The method of forming sheet metal brake drums which comprises curling one edge portion of a sheet metal tube like blank in a direction toward the axis of the blank on a radius determined to locate the free edge of the curled portion axially between the extremities of the blank and thereafter flattening the curled portion of the blank to form the web of the brake drum.

3. The method of forming a brake drum from a sheet metal cylindrical blank which comprises bending one end portion of the blank inwardly toward the axis of the blank, flattening the inwardly bent portion of the blank, and supporting the inner and outer surfaces of the cylindrical side walls of the blank during the bending and flattening operations to avoid distortion of the side walls while the end aforesaid of the blank is being formed.

CHARLES W. SINCLAIR.