Sept. 12, 1933. C. A. SAWTELLE 1,926,064

METHOD OF FORMING A BRAKE BAND

Filed June 17, 1929 2 Sheets-Sheet 1

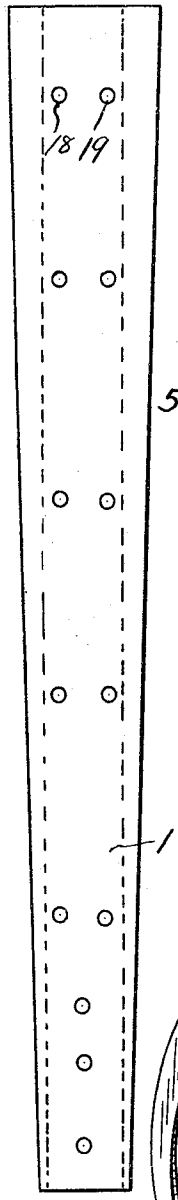


Fig. 2.

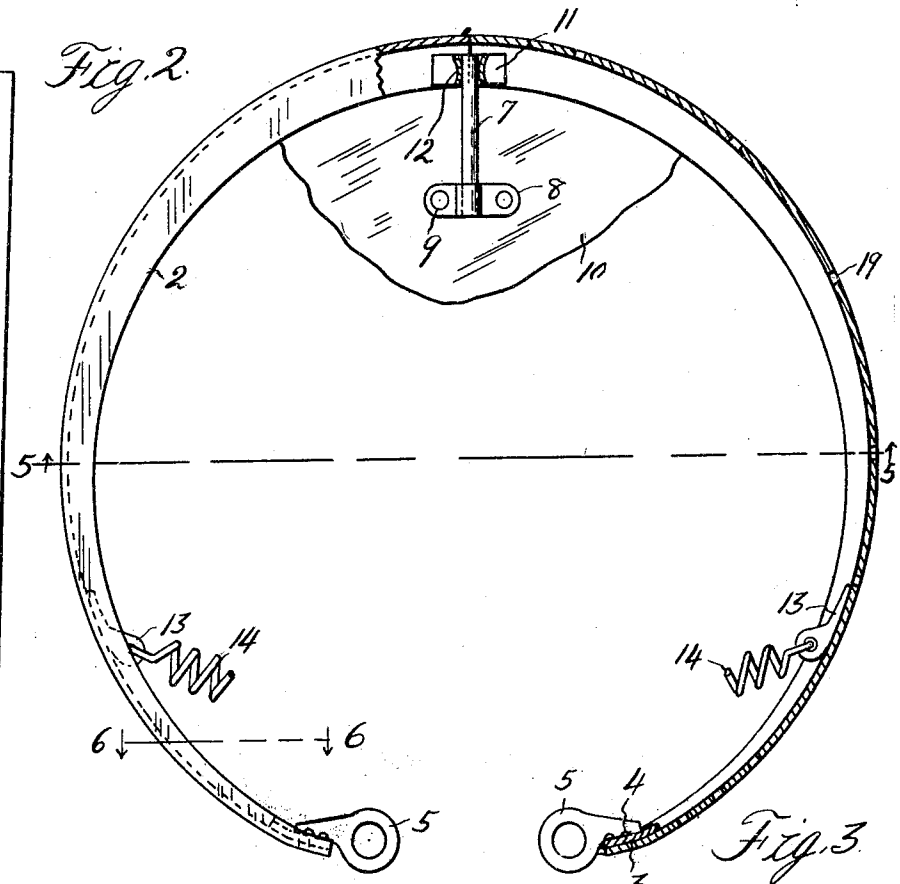


Fig. 3.

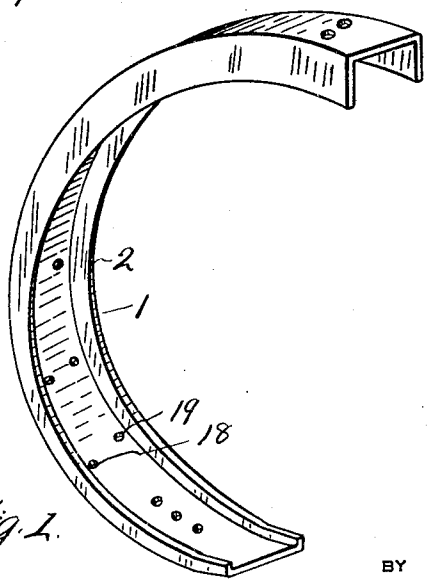


Fig. 1.

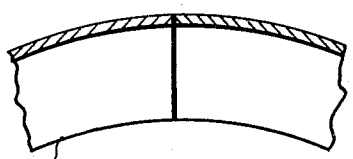


Fig. 3a

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Sept. 12, 1933. C. A. SAWTELLE 1,926,064

METHOD OF FORMING A BRAKE BAND

Filed June 17, 1929 2 Sheets-Sheet 2

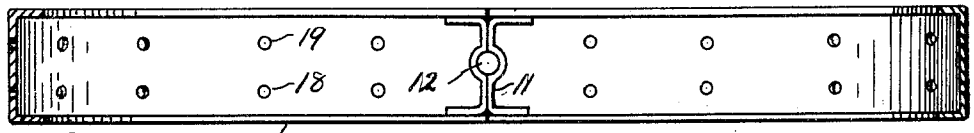


Fig. 5.

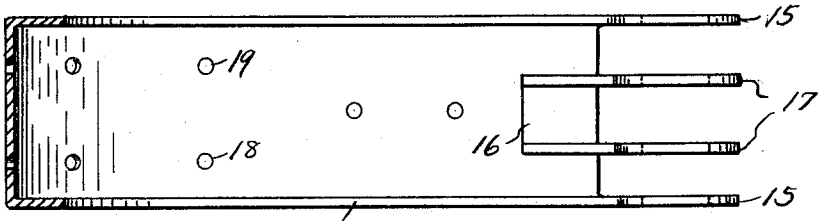


Fig. 9.

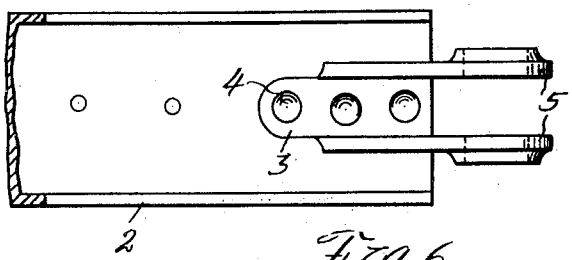


Fig. 6.

Fig. 4.

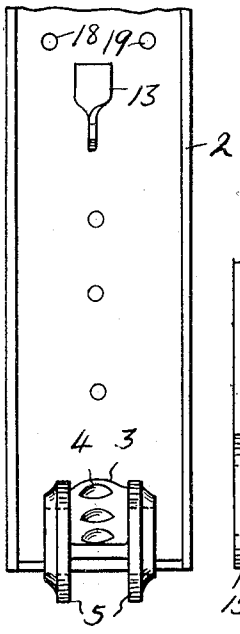


Fig. 8.

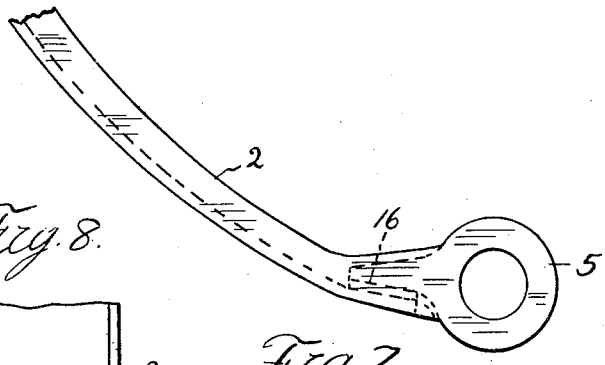
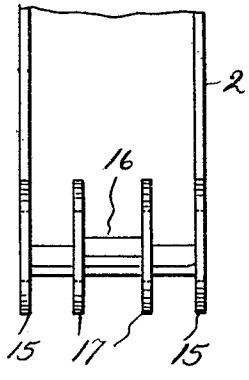


Fig. 7.



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METHOD OF FORMING A BRAKE BAND

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Application June 17, 1929. Serial No. 371,369

2 Claims. (Cl. 29—152.1)

This invention relates to brake bands, and particularly to brake bands varying in flexibility at different circumferential points. The present construction may be regarded as an improvement over that disclosed by my copending application filed Dec. 30, 1927 under Serial No. 243,529.

Said application shows a band for internal coaction with a brake drum, said band having an inwardly projecting circumferential rib or flange varying in its radial dimension from a minimum at the ends of the band to a maximum at a point substantially opposite said ends, whereby the center portion of the band is relatively stiff and flexibility is gradually increased from said portion to the band extremities, and an expanding force equally applied to the ends of the band acts with substantial uniformity upon the band throughout its circumference.

There is further disclosed in said copending application a flexible member for properly positioning and guiding the mid-portion of said band, affording said portion a slight circumferential play and effecting a return of said portion to its normal position upon discontinuance of a braking control.

It is an object of the present invention to provide a brake band of varied flexibility, as above described, having a number of structural features adapting said band to be stamped from sheet metal and tending to reduce its cost and add to its strength and reliability.

Another object is to overcome the difficulties involved in accurately forming a band of the described character by making the same from a pair of duplicate stampings connected by butt-welding.

A further object is to provide such a band with improved means for engagement by the aforesaid flexible positioning and guide member.

These and various other objects the invention attains by the construction hereinafter described and illustrated in the accompanying drawings, wherein:

Fig. 1 is a perspective view of one of a pair of the duplicate stampings which are joined to form the improved band.

Fig. 2 is a plan view of one of the blanks from which said stampings are produced.

Fig. 3 is a view in side elevation and partial section of the improved band, showing the positioning member engaging its mid portion, and portions of the springs which normally hold the band contracted.

Fig. 3a is a fragmentary sectional view of the butt-welded ends of the band halves.

Fig. 4 is an interior elevational view of an end portion of the band.

Fig. 5 is a horizontal sectional view of the same, taken upon the line 5—5 of Fig. 3.

Fig. 6 is a fragmentary interior view of an end portion of the band, partly in section as indicated by 6—6 of Fig. 3, and primarily showing a fitting upon said end portion for engagement by control mechanism, not shown.

Fig. 7 is an elevational view of an end portion of the band, disclosing a slight modification.

Fig. 8 is an interior elevational view of said modification.

Fig. 9 is an interior view of an end portion of the modified construction, viewed transversely to the showing of Fig. 8.

In these views, the reference character 1 designates a stamped sheet metal brake band, having the usual substantially circular form and spaced ends. The edge portions of said band are inwardly flanged to provide a channel cross-section, and the flanges 2 vary as to their radial dimension from a maximum at the mid portion to a minimum at the extremities of the band. Thus, the band is only slightly flexible at its mid portion and its flexibility is progressively increased from said portion to the band extremities.

To adapt said extremities for engagement by a suitable actuating mechanism, it is preferred to interiorly mount on each thereof, a fitting comprising a base 3, fastened in place by rivets 4 or the like, and further comprising a pair of parallel lugs 5 projecting beyond the band extremities and apertured for engagement by a pin or bolt (not shown).

In responding to a control mechanism engaging its ends, it is desirable that the band be free to undergo a slight circumferential bodily travel, and it is further desirable to engage the center portion of the band by positioning and guide means to prevent rattle and insure a normal concentricity of the band with the drum (not shown). These purposes are achieved by engaging a flexible rod 7 with the mid portion of the band, said rod extending radially inward and being rigidly carried at its inner end by a bracket 8 secured by bolts 9 or the like to the carrier plate 10 of the brake.

For engagement by said rod, there is mounted on the band between the mid portions of its flanges 2 a two-part socket member 11, consisting of a pair of U-shaped stampings welded together in a reverse relation, as best appears in Fig. 3, and having their parallel end portions welded to said flanges. The center portions of

said stampings are spaced apart to form a circular opening 12 radial to the band, adapted to freely receive the outer portion of the rod 7. To permit the latter to flex slightly in the opening 12, and thus afford the mid portion of the band a slight circumferential travel, it is desirable to slightly flare the end portions of the opening 12, as best appears in Fig. 1. By forming the member 11 of two stamped parts, each comprising one half of the socket wall, the desired flare may be imparted to said opening without a machining operation.

It is preferred to weld, or otherwise rigidly secure to the interior face of the band a pair of brackets 13, correspondingly spaced from the band extremities and serving as anchorages for a pair of coiled springs 14, effecting a normal contraction of the band.

In that modification of the invention illustrated in Figs. 7, 8, and 9, the band extremities are each formed with a pair of apertured lugs 15, preferably integral with the flanges 2 for engagement by a pin or bolt (not shown), to connect the band to its control mechanism, and a fitting 16 interiorly secured to each end of the band is formed with a pair of spaced lugs 17 apertured in registration with the lugs 15 to further engage such pin. Thus, the connecting pin or bolt engages the band at four points, establishing a strong and durable connection.

The described band is preferably formed by rigidly connecting two complementary sheet-metal stampings, such as is shown in Fig. 1, each comprising an arcuate half portion of the band. It is possible in a single pressing operation to form such a stamping from a suitable flat blank, as is illustrated in Fig. 2. Said blank is formed with a series of holes 18 suitable for engagement by the usual rivets to hold a liner in place and has also the holes 19 for fastening the fitting 3, 5 in place. The stamping of said blank from a metal sheet and the punching of the holes 18 and 19 may be accomplished in one operation. The two complementary halves are butt-welded together, as disclosed by Fig. 3.

By thus forming the band, its production is greatly facilitated and simplified, and its cost is considerably reduced. Furthermore, the formation of the band from two stampings connected by butt-welding minimizes the amount of scrap or waste metal. It is to be noted in this connection that while brake bands have heretofore been given a channel form, it has not been found feasible to produce such bands as stampings, and the method of their formation has been practically confined to rolling processes which are not suited to give either the accuracy of form or the stiffness of material resulting from the herein-described method of production.

The progressive increase in flexibility of said band from its mid portion to its ends secures the very important advantage of a uniform response of the band throughout its circumference to a braking force applied equally to the band extremities. This may be best understood by considering the band as comprising two connected levers, each approximately semi-circular. The leverage applied at the ends of the band acts upon the latter throughout its circumference, but the effective leverage decreases progressively from the mid portion to the ends of the band. The progressive decrease of flexibility from its mid portion to its ends counteracts this progressive reduction of leverage with the result that the expansive action of the band is circumferentially uniform.

While it will be apparent that the illustrated embodiments of my invention herein disclosed are well calculated to adequately fulfil the objects and advantages primarily stated, it is to be understood that the invention is susceptible to variation, modification, and change within the spirit and scope of the subjoined claims.

What I claim is:

1. The method of forming a brake band, consisting in forming two substantially duplicate sheet metal strips each of substantially one half the length of the completed band, and each gradually varying in width from end to end, bending said strips to complementary arcuate form and flanging their longitudinal margins inwardly, the bends of said flanges being substantially parallel to the longitudinal center lines of the strips, whereby said flanges vary in depth from end to end, abutting the ends at which the flanges are of maximum depth, and rigidly connecting the abutted ends.

2. The method of forming a brake band, consisting in forming two substantially duplicate sheet metal strips, each of substantially one half the length of the completed band, and each gradually varying in width from end to end, bending said strips to complementary arcuate form and flanging a longitudinal margin of each inwardly, the bend of said flanges being substantially parallel to the longitudinal center lines of the strips, whereby said flanges vary in depth from end to end, abutting the ends at which the flanges are of maximum depth, and rigidly connecting the abutted ends.

CHARLES A. SAWTELLE.