103,537

PATENT SPECIFICATION

Application Date, Feb. 4, 1916. No. 1688/16.
Complete Left, Aug. 4, 1916.
Complete Accepted, Feb. 1, 1917.

PROVISIONAL SPECIFICATION.

Improvements in the Construction of Small Wheels suitable for Constructional Toys, Model Building, and the like.

I, FRANK HORNBY, of Meccano Limited, Binns Road, Liverpool, Manufacturer, do hereby declare the nature of this invention to be as follows:—

This invention relates to improvements in the construction of the lighter class of small wheels such as flanged disc wheels for use in the construction of toys, models or the like. Such types of wheels have been manufactured by forming the plate of the wheel of two flanged discs reversed back to back, a boss formed from a length of bar or rod being rivetted to the wheel plates. Such a construction is open to many disadvantages and chiefly in that the wheel cannot be so economically manufactured by reason of the fact that the boss does not lend itself to being produced by a stamping operation. The present invention is particularly directed to the provision in such a type of wheel, of a boss which shall be capable of being stamped and thus ensure a considerable economy in manufacture.

According to this invention the wheel proper is made up of two similar disc plates, the peripheries of which are flanged with, preferably, a plain beveled type of flange, or the flange may be concave or of other section. In building the wheel two such flanged discs are reversed so that the assembled flange disc plates form a wheel having a groove on its periphery. The boss of this wheel is formed by a U-piece, stamped up from strip or the like and bent into a U-shape, the feet of the U-piece being rivetted into apertures punched in the disc plates, thus securing the boss in position on the wheel and rivetting the disc plates together in the one operation. The bearing of the wheel is formed by a central eye in the disc plates and an aperture axially in line with the eye of the wheel, formed in the crown or top of the U-piece. A tapped hole is formed in one of the side limbs of the U-shaped boss to receive a pinching screw for use in gripping the wheel to a spindle or rod, if desired. The side limbs of the boss may be curved cylindrically to approximate somewhat to the cylindrical character of the usual boss formed from metal rod, and in order to ensure that the valley of the peripheral groove of the wheel formed by the abutting flanges shall be tightly closed when the disc plates are assembled and rivetted together, the die by means of which the disc plates are set up may be so fashioned as to produce a slight annular ridge at the base of the flanges on the sides of the disc plates which will be in contact when the wheel is built up.

[*Price 6d.*]

Such a type of wheel being constructed entirely by stamping processes may be very economically manufactured.

Dated this 2nd day of February, 1916.

For the Applicant,
A. J. DAVIES,
Patent Agent by Examination,
37, Moorfields, Liverpool.

COMPLETE SPECIFICATION.

Improvements in the Construction of Small Wheels suitable for Constructional Toys, Model Building, and the like.

I, FRANK HORNBY, of Meccano Limited, Binns Road, Liverpool, Manufacturer, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to improvements in the manufacture of the lighter class of small wheels such as flanged disc wheels for use in the construction of toys, models or the like. Such types of wheels have been manufactured by forming the plate of the wheel of two flanged discs reversed back to back, a boss formed from a length of bar or rod being rivetted to the wheel plates. Such a construction is open to many disadvantages and chiefly in that the wheel cannot be so economically manufactured by reason of the fact that the boss does not lend itself to being produced by a stamping operation.

Frictional driving wheels for toys have also been manufactured by providing two circular side plates of sheet metal between which was clamped a disc of friction material, bearings for the wheel being formed by bulging out the discs centrally and perforating them, and the side plates being clamped together by projections on one plate passing through and engaging in perforations in the other plate. And an armed socket element for constructional toys has been formed with an extended bearing at the centre by fitting to the socket piece a cap having tongues, which, when bent down, engaged the sockets and distanced the cap therefrom, a perforation in the cap registering with a perforation in the socket element to form the bearing.

According to this invention the wheel proper is made up of preferably two similar disc plates which may be so fashioned at their peripheries that together they form a flange or groove, the boss of the wheel being stamped up from a piece of strip metal into a U-shape, the feet of the U-piece entering apertures in the disc plates and serving to rivet the plates together, the bearing of the wheel being formed by apertures in the centre of the disc plates and in the crown of the U-piece. A pinching screw may be threaded into the boss for gripping the wheel to a rod or the like.

A wheel constructed in accordance with this invention is illustrated in the accompanying drawings, in which Fig. 1. is a front view of one of the disc plates, Fig. 2. being a section through two such plates relatively reversed, and Fig. 3. a section showing the reversed plates assembled in position for rivetting together. Fig. 4. is a view of the blank strip from which the boss of the wheel is formed, Figs. 5, 6, and 7, being side, end, and plan views respectively of the boss when stamped up and provided with a pinching screw, Fig. 8. is a side view of the complete wheel, and Fig. 9. a front view thereof.

In carrying out the invention the wheel is made up of preferably two similar

disc plates 1, the peripheries of which are flanged with, say, a plain bevelled flange 2, as shown, although the flange may be concave or of other cross section. In building the wheel two such flanged discs are reversed as shown in Fig. 3., so that the assembled flanged disc plates 1 form a wheel having a groove 3 on its periphery, the disc plates are punched with central circular apertures 4 and side apertures 5, which latter ultimately form rivet holes for securing the plates together when assembled. The boss of the wheel is formed by a U-piece, 6, Fig. 5, stamped up from a strip blank 7 and bent as shown in Figs. 5, 6, and 7, into a U-shape, the feet 8 of the U-piece being rivetted into the apertures 5 of the disc plates, thus securing the boss in position on the wheel, and rivetting the disc plates together in the one operation. The bearing of the wheel is formed by the central eye 4 in the disc plates and a circular aperture 9 axially in line with the eye 4 of the wheel, the aperture 9 being in the crown or top of the bent U-piece. A tapped hole is formed in one of the side limbs of the U-shaped boss to receive a pinching screw 10 for use in gripping the wheel to a spindle or rod when desired. The side limbs of the boss may be curved cylindrically as shown in Figs. 6, and 9, to approximate somewhat to the cylindrical character of the usual boss formed from metal rod, and in order to ensure that the valley of the peripheral groove 3 of the wheel formed by the abutting flanges 2 shall be tightly closed, as shown in Fig. 3., when the disc plates are assembled and rivetted together, the die, by means of which the disc plates 1 are set up, may be so fashioned as to produce a slight annular ridge 11 at the base of the flanges on the sides of the disc plates which will be in contact when the wheel is built up and the disc plates rivetted together. Such a type of wheel being constructed entirely by stamping processes may be very economically manufactured.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. The improved method of manufacturing small wheels such as those for use in the construction of toys, models, or the like, in which the boss of the wheel is made from strip metal, stamped up into U-form, the feet of the boss element serving as rivets by means of which the boss is secured to the wheel.

2. A wheel as claimed in Claim 1. in which the wheel body is built up from two similar disc plates the peripheries of which when assembled form a flange, the U-shaped boss being secured to the discs and the latter being held together by projections on the feet of the boss forming rivets.

3. In a wheel, constructed as described in Claim 2., forming the flanged discs with annular ridges near their peripheries which are adapted to be closely engaged when the discs are rivetted together, substantially as, and for the purpose described.

4. The improved construction of small wheels suitable for constructional toys, model building, and the like, substantially as described and shown in the accompanying drawings.

Dated this 2nd. day of August, 1916.

For the Applicant,
A. J. DAVIES,
Patent Agent,
37, Moorfields, Liverpool.

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Fig. 2.

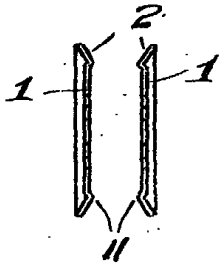

Fig. 1.

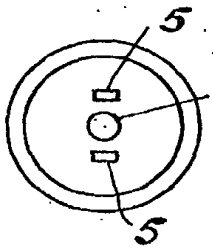

Fig. 3.

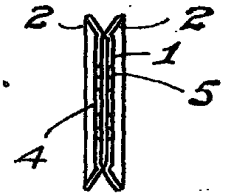

Fig. 4.

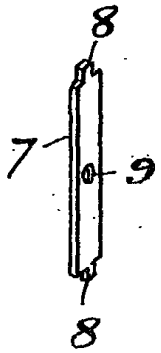

Fig. 5.

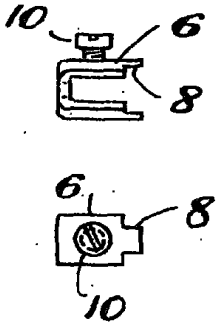

Fig. 6.

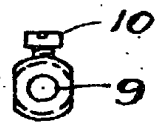

Fig. 7.

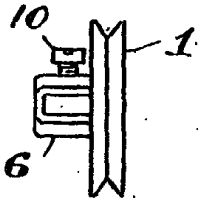

Fig. 8.

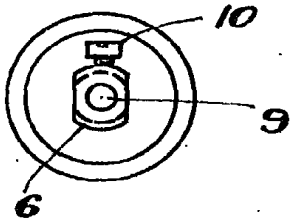

Fig. 9.

Malby & Sons, Photo-Litho.