

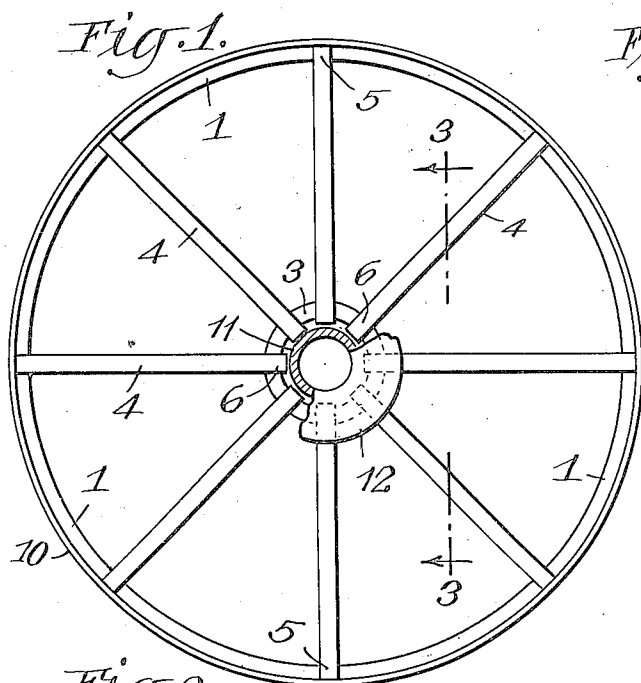
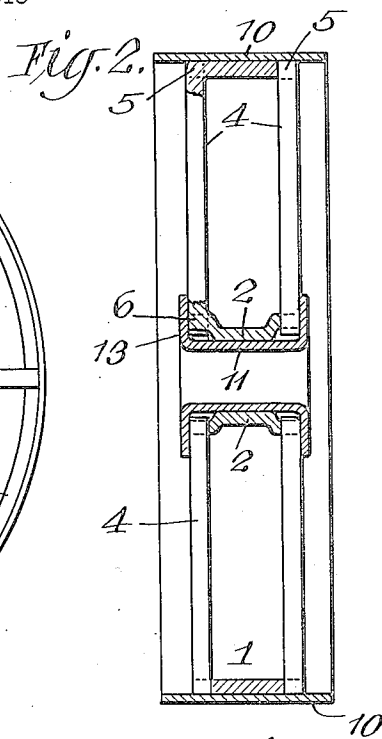
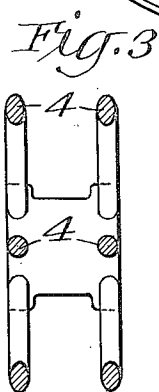
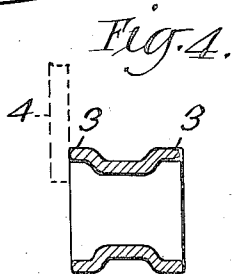
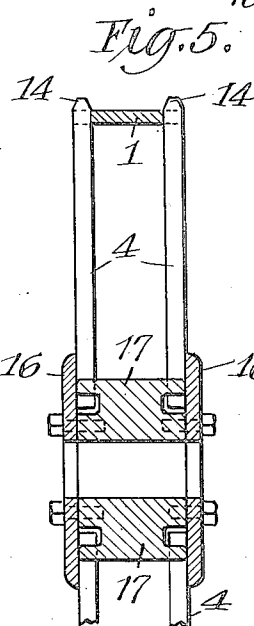
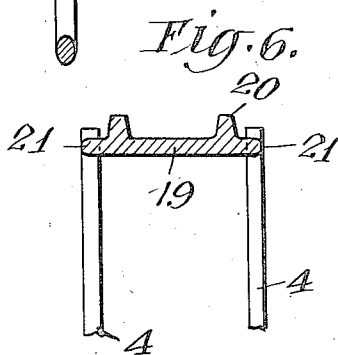
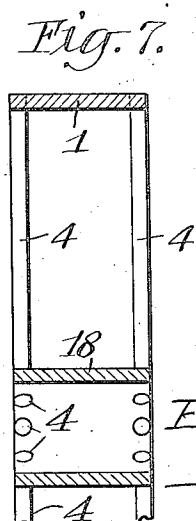
Apr. 17, 1923.

1,452,036

E. FULDA

WELDED STEEL WHEEL

Filed Nov. 23, 1918



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BY
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UNITED STATES PATENT OFFICE.

EDWARD FULDA, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO
BETHLEHEM STEEL COMPANY, OF BETHLEHEM, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

WELDED STEEL WHEEL.

Application filed November 23, 1918. Serial No. 263,901.

To all whom it may concern:

Be it known that I, EDWARD FULDA, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Welded Steel Wheels, of which the following is a specification.

This invention relates to the construction of metal wheels particularly steel wheels comprising rim, hub and spokes welded together.

The object of the invention is to produce a simple, cheap metal wheel which can be easily and quickly made and of such construction that it can be as readily made for a light as for a heavy duty wheel.

The assembling of wheels made in accordance with this invention is the same for the heavier type wheels such as for light trucks and tractors as for the lighter wheels for trailers, pulleys and barrows. All that is necessary is to increase the size of the parts which can be done at no additional expense except weight of material.

To these ends the invention consists in the simplified construction of metal wheel hereinafter more particularly described and then specified in the claim.

In the accompanying drawings:

Fig. 1 is a side elevation of a wheel constructed in accordance with this invention.

Fig. 2 is a diametric cross-section through the same.

Fig. 3 is a cross-section on the line 3—3 of Fig. 1.

Fig. 4 is a longitudinal cross-section through the form of hub shown in Figs. 1 and 2.

Fig. 5 is a cross-section through a modified form of wheel.

Fig. 6 illustrates a modification in the form of rim which may be employed.

Fig. 7 is a cross-section through a wheel constructed along further modified lines.

Referring to the drawings, 1 indicates the metal rim. Said rim is of the general form of a cylinder or section of cylinder the axis of which coincides with the wheel axis and having its edges at the opposite ends presented for the side or cross-welding thereto of spokes crossing said edge. In the form shown in Figs. 1, 5 and 7 the rim is a plain cylinder or annulus forming a section of a

plain cylinder and may be formed from a plain, flat band having its ends properly secured together. As will be presently seen, however, said cylinder or annulus forming a section of a cylinder may take other forms provided it presents at its opposite ends similar edges for the cross welding of the spokes. 2 indicates a metal hub. Said hub is also of general cylindrical form and constitutes a hub barrel or constituent part thereof. The edges of said barrel or cylinder 2 also present at opposite ends edges for the side or cross-welding of the spokes crossing said edge at the hub part of the wheel. Said cylindrical hub or barrel may take various forms consistently with my invention provided that it present at its opposite edges the proper ridge or edge for the side welding of the spoke and as will be presently seen. In the particular form shown in Figs. 1, 2, 3 and 4 the outer ends or edges 3 are offset and have a greater diameter than the main body part 2 and are preferably rounded as shown.

4 indicates the spokes of the wheel which are formed of wire or rods according to the strength and type of wheel desired. The spokes may each be a separate length of metal as shown in the drawings or they may be in zigzag form constituting a continuous spoke element. Then again adjacent spokes may be formed from one piece. Any desired number of spokes may be provided. For a light, cheap wheel the spokes may be arranged on but one side but preferably in most cases, a set of spokes are arranged on each side of the rim and hub.

The rim and hub may be of the same width or considered as cylinders may have the same axial length to make a straight-sided wheel as shown in the drawings or the rim may be of greater or less width or axial dimension than the hub to make a wheel having a dishd spoke element as desired, this feature forming no part of the present invention.

In assembling the wheel the wires or rods forming the spokes are placed in side contact with and intersect the edge of the rim 1 at the points 5 (as indicated in dotted lines in Fig. 2) and the end or edge 3 of the hub 2 at 6 and in this position are electrically welded to said rim and said hub, the welding operation preferably being continued to force the spoke into the edges of the rim and

hub until their outer surfaces or lines are flush with the edges of the rim and hub between the spokes.

The welding may be done in any suitable type of electric welding machine and, as will be readily understood by those skilled in the art, all the spokes may be welded at one time or they may be welded separately or each weld may be separately made. Owing to the limited contact between the parts the welding is very quickly accomplished and a very strong union is attained due to the thorough coalescence of the metal at the joints.

The ends of the spokes 4 beyond the rim 1 may, after welding be trimmed off flush with the periphery of the rim and an additional tread 10 of any desired width shrunk or otherwise secured to the rim. The tread 10 may be flat as shown or may take the form of a tire holding rim of any character.

The inner ends of the spokes preferably fall short of the inner diameter of the main part 2 of the hub owing to the offset ends 3 and therefore, in the form shown in Fig. 1, do not have to be trimmed off. If desired an inner hub sleeve 11 terminating in flanges or plates 12, 13 bearing on the outer surfaces of the spokes may be employed to conceal the inner ends of the spokes as well as any roughness resulting from the welding operation.

If desired the outer projecting ends of the spokes instead of being trimmed off may be formed into traction points 14 as shown in Fig. 5.

Referring to Fig. 5, the hub shown here is also in the form of a cylinder, but its walls being thicker than those of the hub barrel or cylinder shown in Fig. 1, permit an annular ridge 15 to be formed in the material at each end of the barrel near or at the periphery thereof, which presents an edge answering the same purpose as the edge of the cylinder having a thinner wall and a solid metal hub 17 having an annular ridge 15 formed in each end face and to which ridge the inner ends of the spokes 4 are welded.

If desired plates 16 may be secured to the hub to conceal the ends of the spokes and the welds and to provide a finish for the wheel.

In Fig. 7 the hub is a straight metal cylinder or barrel 18 to the end edges of which the spokes 4 are welded as previously described. In this case the ends of the spokes are trimmed off flush with the inner periphery of the hub barrel or cylinder 18.

In Fig. 6 the rim 19 is of general cylindrical form but in cross-section is channel-shaped and presents the outwardly projecting ribs 20 for strengthening or other purposes, but its edges 21 present at opposite ends of the cylinder ridges for the side-welding of spokes crossing the same and to which the spokes 4 are welded as heretofore described.

It will be understood that the invention is not limited to the exact details of construction and arrangement of parts as shown and described but various modifications and equivalents may be resorted to without departing from the scope of the invention as expressed in the appended claim.

What I claim as my invention is:—

A metal wheel comprising a rim of general cylindrical form presenting at the opposite ends of the cylinder annular edges for side-welding of spokes crossing the same, a hub barrel consisting of a metal cylinder presenting at its opposite ends annular edges for side-welding of spokes thereto, and a plurality of wires or rods forming the spokes and located on each side of the rim and hub, said wires or rods being side welded to the edges of both the rim and the hub barrel, the spokes at the welds being flush with the plane of the edge of the part to which they are joined.

Signed at New York, in the county of New York and State of New York, this 21st day of November A. D. 1918.

EDWARD FULDA.

Witnesses:

C. F. TISCHNER,
GEORGE E. BROWN.