(No Model.)

B. H. GEDGE.

WHEEL.

No. 458,573. Patented Sept. 1, 1891.

Fig. 1.

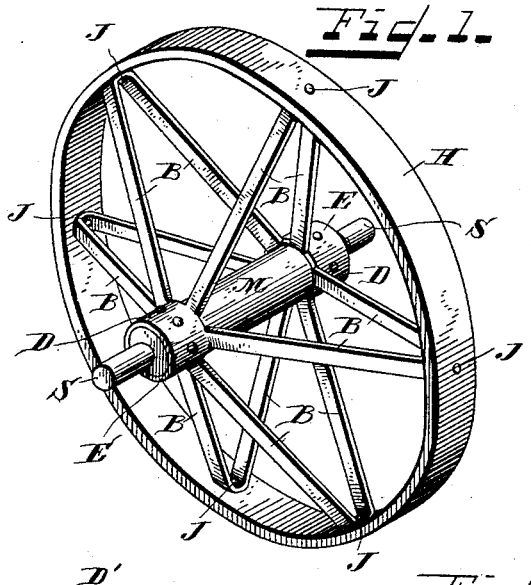


Fig. 2.

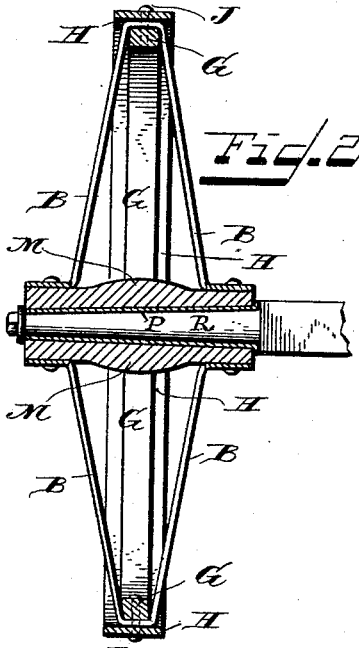


Fig. 3.

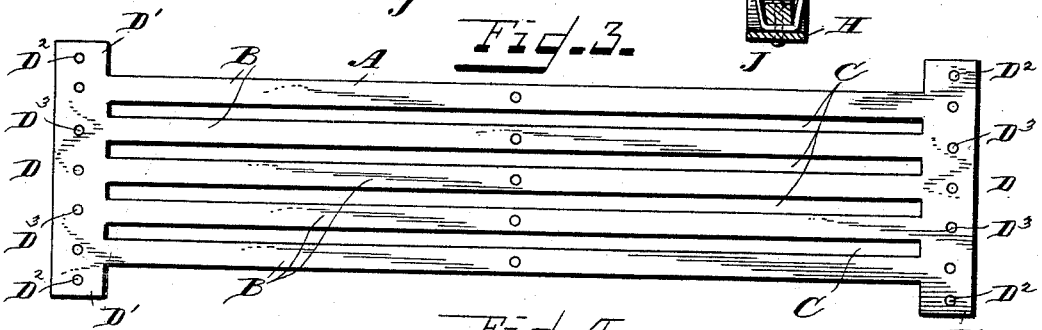


Fig. 4.

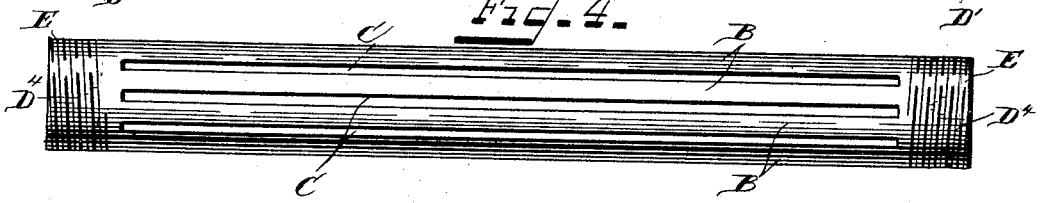
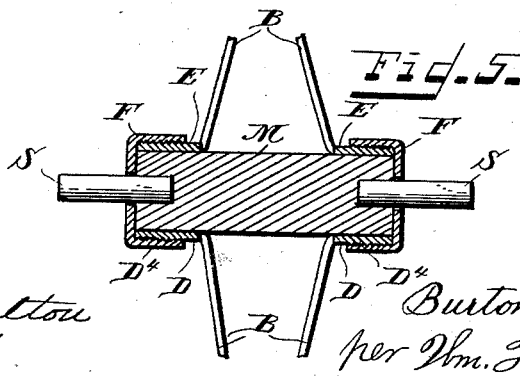


Fig. 5.



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UNITED STATES PATENT OFFICE.

BURTON H. GEDGE, OF ANDERSON, INDIANA.

WHEEL.

SPECIFICATION forming part of Letters Patent No. 458,573, dated September 1, 1891.

Application filed February 26, 1891. Serial No. 382,850. (No model.)

To all whom it may concern:

Be it known that I, BURTON H. GEDGE, a citizen of the United States, and a resident of Anderson, in the county of Madison and State of Indiana, have invented certain new and useful Improvements in Wheels, of which the following is a specification.

The nature of my invention and the advantages arising from the conjoint or separate use of the several features of the same will be apparent from the following description and claims.

In the accompanying drawings, making a part of this specification, and to which reference is hereby made, Figure 1 is a view in perspective of a wheel illustrating my invention. Fig. 2 is a vertical diametrical section of said wheel, but showing an axle-box in the hub instead of the spindle shown in Fig. 1. Fig. 3 is a plan view of the blank after being cut in accordance with my invention and before being bent to form the spokes and hub-rings. Fig. 4 is a view of a pipe cut according to my invention before being bent to form the spokes and hub-rings; and Fig. 5 is a vertical transverse section of a hub, hub-rings, caps, and spokes, only portions of the latter being shown.

In making the spokes and hub-rings according to the preferred form—viz., that shown in Fig. 1—I take a flat blank A or sheet of metal, and by means of cutting-dies first cut the blank, as shown in Fig. 3. The blank thus cut consists of the several strips B, separated by the alternate intervening openings C. All of the strips at one end join the terminal cross-piece D, and at the other end of the strips is another terminal cross-piece D. The strips B and terminal strips D, being cut from one blank, are in one piece. Each terminal strip D is now bent up and around into the form of a ring and the ends D′ D′ thereof lapped over each other and riveted together by a rivet passed through the holes D^2 D^2 of the strip. The strips D and longitudinal strips E will now have assumed a tubular form. The ends of this tubular structure are now pressed toward one another, the strips B being bent outward from the axis of said tubular structure. This last-named operation is continued until the structure has assumed the shape shown in Fig. 1—that is to say, each of the strips B will have assumed the shape of a letter V, the apex or point of the V being at the mid-length of the strip and each strip being at an angle to the strips D, which latter now respectively constitute the rings E. Each strip B is at its apex riveted or otherwise suitably secured to the rim H of the wheel. This rim will usually be of metal, and may constitute the tread of the wheel. When desired, a felly may be combined with the strips B and the rim H. In such event a desirable mode of effecting such combination is by locating the felly G within and at the apex of each of the strips and securing together the felly and rim and strips B at a given point by a common bolt or rivet J. The apex of each of the strips B is preferably somewhat flattened or truncated, as shown, thereby forming a broad support in a lateral direction for the rim H. This recess thus formed at the apex of the strip is a convenient place for the location of the felly. The hub-rings E E are passed onto a cylindrical hub and are then drawn apart until the strips (spokes) B are straightened and drawn taut, when the rings are secured in position by suitable means. The hub will, among other reasons, on account of economy of manufacture, preferably be made of wood. In such case a simple and desirable mode of connecting the rim to the hub will be by spiking, nailing, or screwing the rings D to the hub H by passing the spikes, nails, or screws through the holes D^3 of the rings E and into the hub. It may be here remarked that the said holes D^3 may, and usually will, be punched in the rings E when the same are flat strips D of the blank A, and at the same time that the openings C, &c., are cut in the blank.

In many instances, as in the case of wheelbarrows, &c., the hub M will be provided with the well-known spindle S S, continuous, or more commonly in two parts, one part being inserted in one end of the hub and the other part in the other end of the hub, substantially as shown in Fig. 5.

Where the wheel is employed in certain classes of running-gear, as those of road-carriages, &c., the hub will usually be provided with an axle-box of any desired form. In the drawings, Fig. 2, one well-known description of such box is shown, and is indicated by

the letter P. This figure also shows the axle R therein.

A more expensive yet feasible mode of constructing the strips B and hub-rings E consists as follows: A metallic tube, preferably common gas-pipe, of the desired length, is taken and longitudinal slots or openings C are cut therein, thus forming the strips B and leaving at each end a ring E. The rings E are then approximated and the strips B bent out into substantially the form shown in Fig. 1. On the ends of the tubular structure of Fig. 4 may be cut or otherwise formed the screw-threads D^4. These may be formed either before the slits C are made or at any subsequent stage of manufacture prior to the time when the rings E, after being placed on the hub, are to be drawn apart. After the rings are on the hub the rings are drawn as far apart as they can well be by hand. The outer edge of each ring will now have reached the adjacent end of the hub M. The caps F are now screwed onto the rings E, and as the head of each cap bears against the adjacent end of the hub the rings are thus forcibly drawn apart, and until the outer edges of each ring bear against the head of the adjacent cap. Such a device affords a novel and convenient means for separating the hub-rings and tightening the strips B and securely and permanently holding the hub-rings apart.

My invention is very easy of manufacture and economical of cost. The construction it provides is an exceedingly simple and durable one. It imparts great strength to the wheel into whose construction it enters. Of course in case other spokes not integral with the said rings are interposed between the said spokes B this will not do away with the value of that portion of the spokes and hub-rings which are integral according to my invention, as the latter will naturally be the strongest part of the spoke-frame, and will be the main and best connection between the hub and the peripheral portion of the wheel.

While the various features of my invention are preferably employed together, one or more of the said features may be employed without the remainder, and in so far as applicable one or more of said features may be used in connection with wheels other than the one herein specifically described.

What I claim as new and of my invention, and desire to secure by Letters Patent, is—

1. A wheel having its spokes and hub-rings integral and made from a blank having the strips B and intervening spaces C and terminal cross-strips D, substantially as and for the purposes specified.

2. The process of forming the spokes and hub-rings of a wheel, consisting in taking a blank sheet and forming the longitudinal openings C therein and the strips B and cross-strips D, and bending the same into a tubular structure, and securing the same in that form, and then approximating the end rings E and bending out the strips B, causing the latter to be bent at their mid-length, and securing the strips at the latter point to the peripheral or outer part of the wheel and the rings E to the hub, substantially as and for the purposes specified.

3. A wheel having its hub-rings and spokes integral, every two spokes from opposite hub-rings being integrally united at their apex and there united to the peripheral portion of the wheel, substantially as and for the purposes specified.

4. A wheel having its hub-rings and spokes integral and made from a tube or tubular structure, slits C being formed therein and terminal rings being present, substantially as and for the purposes specified.

5. A wheel having the spokes B and the hub-rings integral, opposite spokes from the hub-rings meeting at an apex and there riveted or otherwise secured to the peripheral portion of the wheel, substantially as and for the purposes specified.

6. A wheel having the spokes B and the hub-rings integral, opposite spokes from the spokes meeting the peripheral portion of the wheel and there bent horizontally, thereby forming between them a flat portion meeting the peripheral portion of the wheel and secured to the latter, substantially as and for the purposes specified.

7. In a wheel, the hub-rings E and spokes B, integral therewith and secured to the peripheral portion of the wheel, and the hub M, on which are the rings E, the latter having the screw-thread D^4 and the screw-caps F respectively united to the respective rings E, substantially as and for the purposes specified.

BURTON H. GEDGE.

Attest:
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