No. 653,281. Patented July 10, 1900.

C. A. BRINLEY & E. G. BUDD.

SHEET METAL PULLEY.

(Application filed Jan. 27, 1899.)

(No Model.)

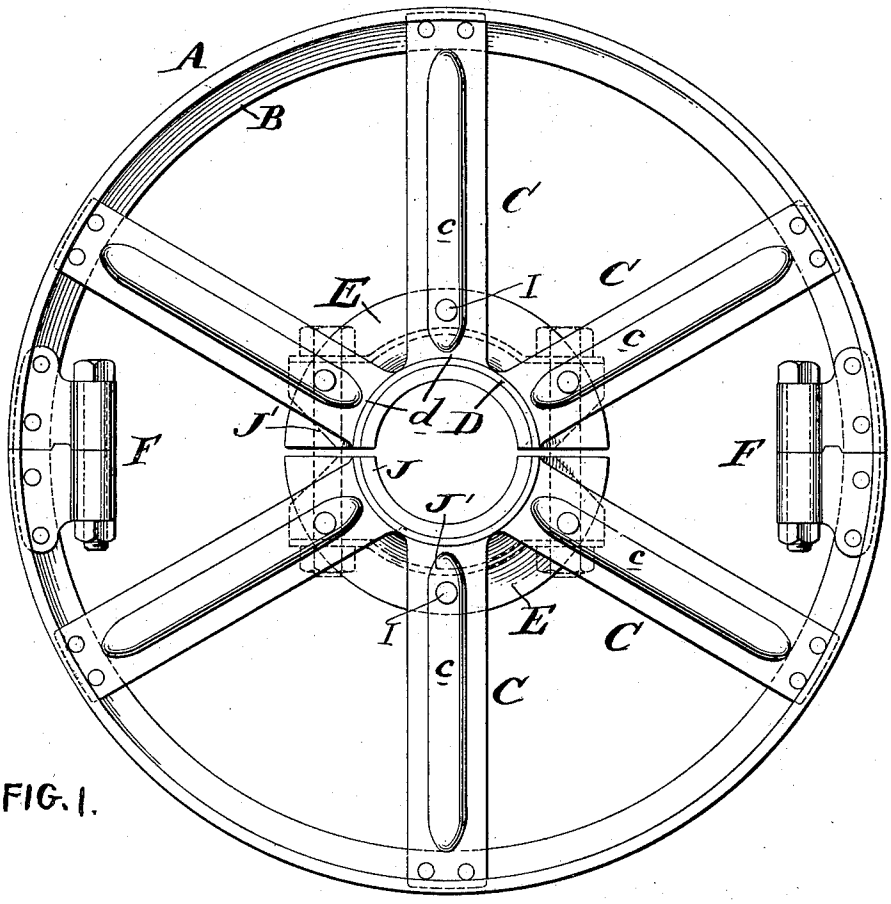

FIG. 1.

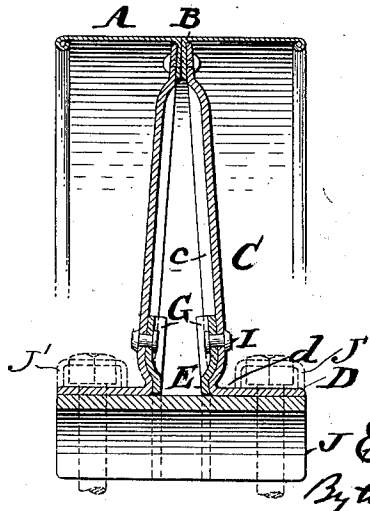

FIG. 2.

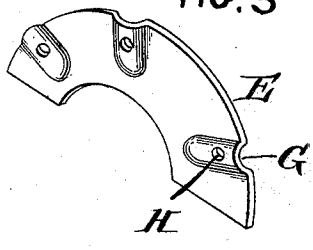

FIG. 3

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UNITED STATES PATENT OFFICE.

CHARLES A. BRINLEY AND EDWARD G. BUDD, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNORS TO THE AMERICAN PULLEY COMPANY, OF PENNSYLVANIA.

SHEET-METAL PULLEY.

SPECIFICATION forming part of Letters Patent No. 653,281, dated July 10, 1900.

Application filed January 27, 1899. Serial No. 703,530. (No model.)

To all whom it may concern:

Be it known that we, CHARLES A. BRINLEY and EDWARD G. BUDD, of the city and county of Philadelphia, in the State of Pennsylvania, have invented an Improvement in the Manufacture of Sheet-Metal Pulleys, of which the following is a specification.

Our invention has reference to the manufacture of sheet-metal pulleys; and it consists of certain improvements, which are fully set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

Our improvements have special reference to the manner of reinforcing the spoke-arms adjacent to the hub portion, whereby great torsional effects upon the hub shall not rupture or tear the metal at the juncture of the spoke-arms with said hub.

Our improvements relate more particularly to the character of sheet-metal pulley set out in Letters Patent No. 595,559, dated December 14, 1897, in which a sheet-metal rim is connected to a hub portion by radial sheet-metal spokes, terminating in the center in curved portions which make up the hub, there being substantially three radiating arms to each semicircular curved portion constituting a semihub-section. The semihub-sections so formed are clamped together by suitable hub-clamps, as illustrated in the aforesaid patent.

Our present improvements are specially designed with reference to strengthening the connection of the radial spoke-arms with the hub portions, and this we accomplish by employing semi-annular plate-sections fitted to the rear or inner faces of the spoke-arms and to which they are bolted or riveted. Furthermore, we prefer to form projections or irregular portions upon these semi-annular reinforcing-pieces, which are adapted to fit into or upon the corrugated portions of the radial arms adjacent to the hub portion, the result of this being that strains in the plane of revolution of the wheel are sustained by extended irregular surfaces in contact between the said reinforcing semi-annular plates and the radial arms.

Our invention will be better understood by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of a sheet-metal pulley with the hub-clamps indicated in dotted lines. Fig. 2 is a vertical sectional elevation of the upper part of the same, and Fig. 3 is a perspective view of one of the semi-annular reinforcing-plates.

A is the sheet-metal rim and is provided with the annular internal flange B, to which the spoke-arms C are riveted. The spoke-arms C of each section radiate from a semicircular curved hub portion D and may be reinforced by ribs or corrugations *c*, which preferably do not extend quite to the semicircular part D, so as to leave the portions *d* with the single bend—namely, that between the parts D and *c*. By arranging the corrugations in the manner herein set out the spoke-arms C and the semicircular parts D are materially strengthened over that resulting from the construction heretofore employed, which was to extend the corrugations *c* down into the body of the semicircular portion D. There are four sets or sections of radial spoke-arms and semicircular upper portions C D, two sets thereof being opposed to each other, as in Fig. 2, to correspond to one half of the split pulley and similarly the other two to constitute portions of the other half of the said split pulley.

From the nature of the construction, due to the special manufacture of sheet-metal pulleys of the character here under consideration, the metal at the juncture between adjacent arms C C is relatively weak, and in the use of pulleys where great torsional strain results in the operation of the machinery it is found necessary to reinforce the spoke-arms adjacent to the hubs, and this we accomplish by employing semi-annular plates E, which are fitted up against the inner faces of the spoke-arms adjacent to the hub. The semi-annular portions E are provided with projecting portions or corrugations G, which fit into the recesses formed by the corrugations *c* in the spoke-arms, and the said plate E is secured to the spoke-arms by rivets or

bolts I, which pass through apertures H. The rivets I hold the surfaces of the plate E and the spoke-arms firmly in contact, as indicated in Fig. 2, and hence any strain put upon the spoke-arms C is transmitted to the semi-annular plate E not only through the rivets I, but also through the irregular connection secured by the fitting of the projections G into the recesses formed by the corrugations *c* in the spoke-arms. It is evident, however, that the projections G and the corrugations *c* of the spoke-arms may be dispensed with, if so desired, or either of them may be omitted; but in practice we prefer to employ said projections and corrugations as illustrated. By the construction here shown it is evident that the spoke-arms are firmly connected and reinforced adjacent to the hub, so that there is no danger of rupturing the metal at the juncture of the spoke-arms with the semicircular portions D.

J are semicylindrical hub portions which directly receive the shaft and are suitably secured to the semicircular flanges D by riveting. The two halves of the pulley are secured together by rim-bolts F, which maintain the half-rims of the pulley in perfect alinement. The pulley is clamped upon the shaft by means of the hub-clamps J′, (indicated in dotted lines,) said hub-clamps drawing the two semicircular hub portions toward each other and causing them to grip firmly upon the shaft.

We would also point out that while it is preferable to locate the semi-annular plates E between the two sets of spoke-arms constituting one-half of the pulley, as indicated in Fig. 2, it is quite evident that said plates might be arranged upon the outer faces of said spoke-arms or upon both faces, if so desired.

The minor details of construction may be modified without departing from the principles of our invention. Hence while we prefer the construction shown as excellently adapted in practice to accomplish the results desired we do not limit ourselves thereto, since our improvements comprehend, broadly, the employment of curved plates adjacent to the inner ends of the spokes and to which they are firmly secured, whereby the strain upon one spoke is directly transmitted to the others.

Having now described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a sheet-metal pulley, the combination of radial spoke-arms formed integral with a semicircular hub-piece and from which they radiate and separated throughout their length beginning at the hub-piece, and a semi-annular plate secured directly to each of the radial arms adjacent to the semicircular hub-piece whereby torsional strain between the shaft and rim of the wheel shall be distributed between the several spoke-arms.

2. In a sheet-metal pulley, the combination of radial spoke-arms formed integral with a semicircular hub-piece and from which they radiate and separated throughout their length beginning at the hub-piece and further being provided with corrugations or ribs in the direction of their length, a semi-annular plate secured directly to each of the radial arms adjacent to the semicircular hub-piece and having a series of raised portions formed in the face thereof adapted to the curvature or irregularity of the corrugations in the spoke-arms, and rivets or bolts passing through the corrugations of each of the spoke-arms and each of the raised portions of the semi-annular plate for firmly securing them together, whereby torsional strain between the shaft and rim of the wheel shall be distributed between the several spoke-arms.

3. In a sheet-metal pulley, the combination of the rim portion with a series of radial spoke-arms united at their inner ends integrally with a semicircular hub portion arranged substantially at right angles to said radial spoke-arms and in which the said spoke-arms are formed with ribs or corrugations *c* which terminate at a short distance from the semicircular hub portion so as to leave a small space *d* between said corrugations and the semicircular hub portion whereby the bend between said hub portions and the spoke-arms is not weakened by the additional bends of the corrugations.

In testimony of which invention we have hereunto set our hands.

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EDWARD G. BUDD.

Witnesses:
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