

(No Model.)

G. W. MILLER.

CAR WHEEL.

No. 363,838.

Patented May 31, 1887.

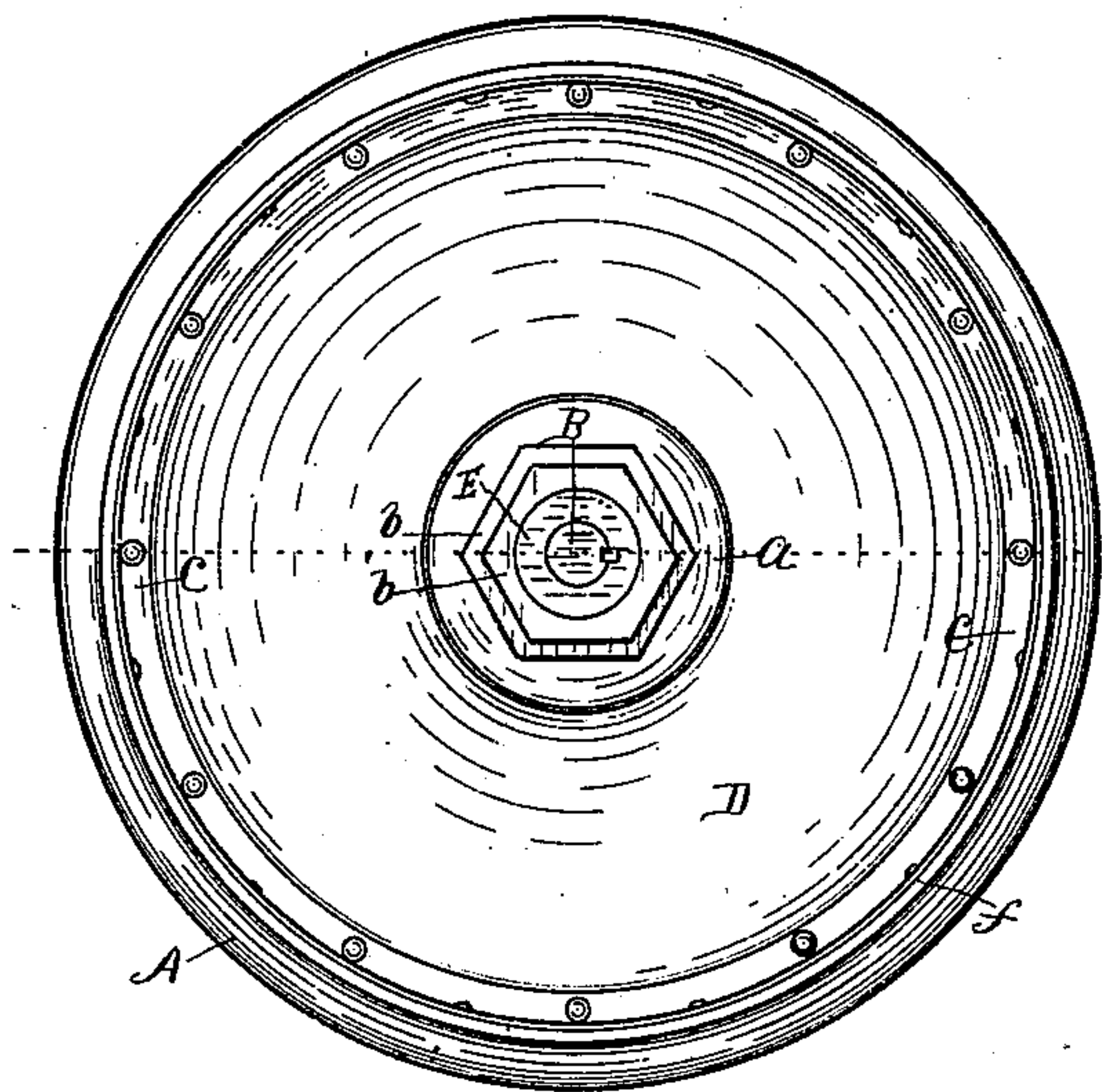


Fig. 1

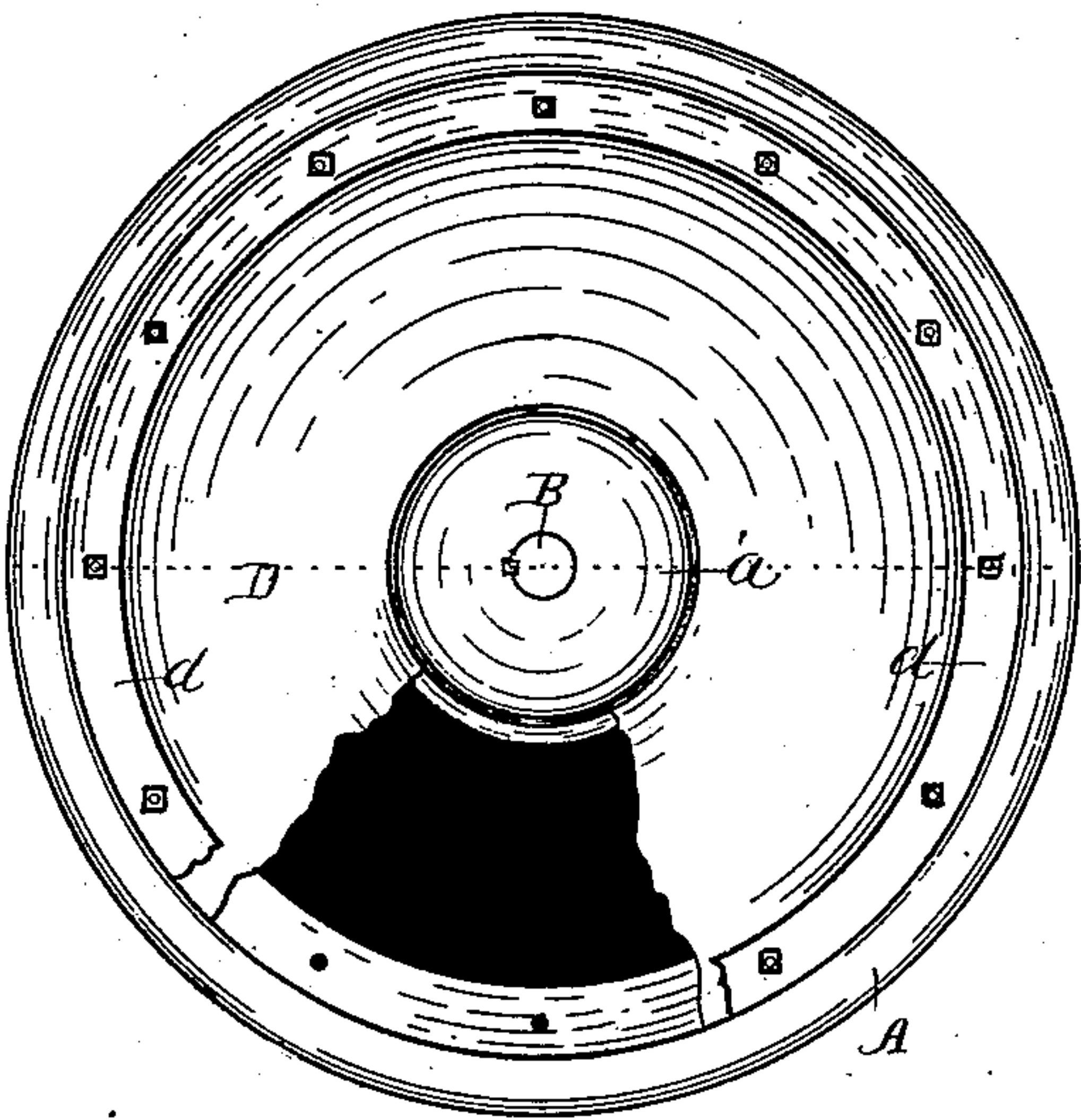


Fig. 2

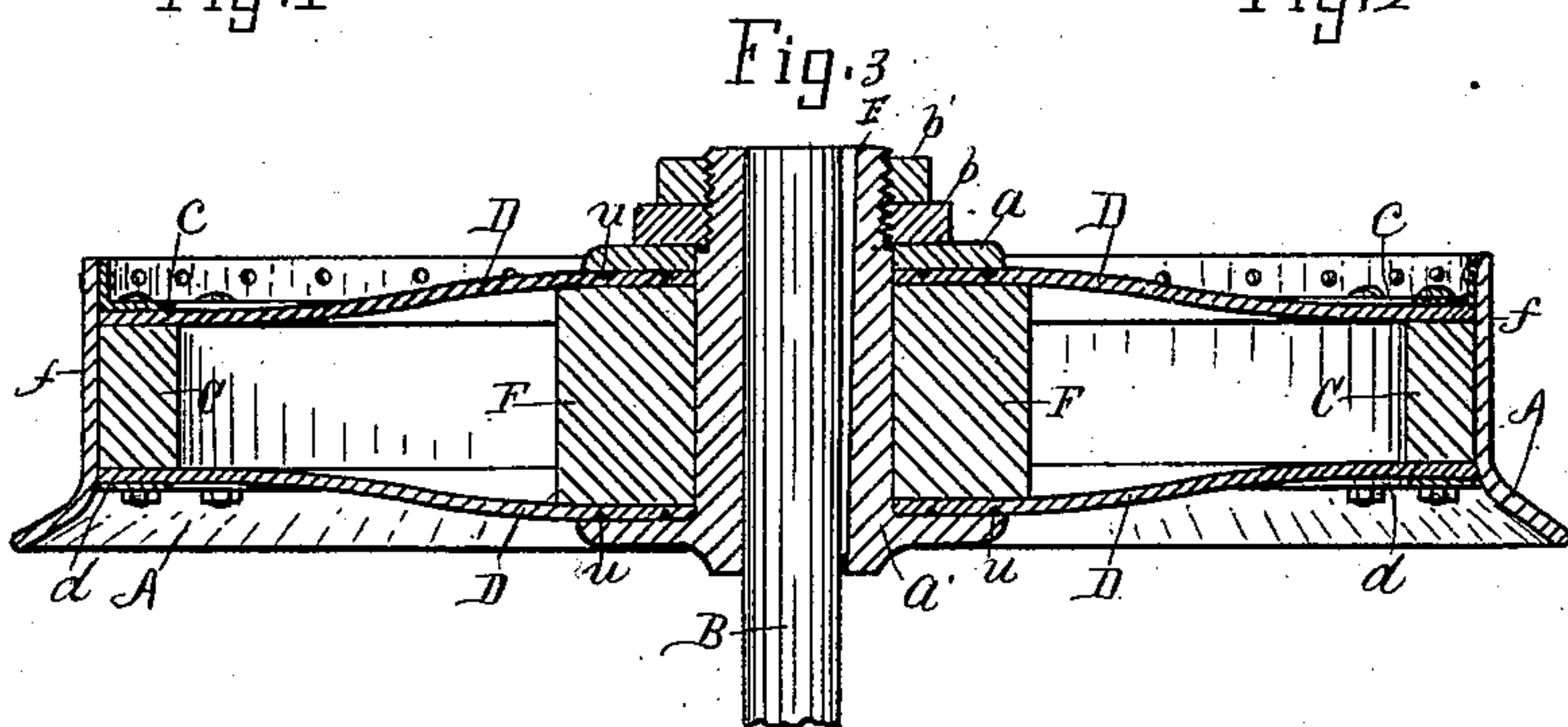


Fig. 3

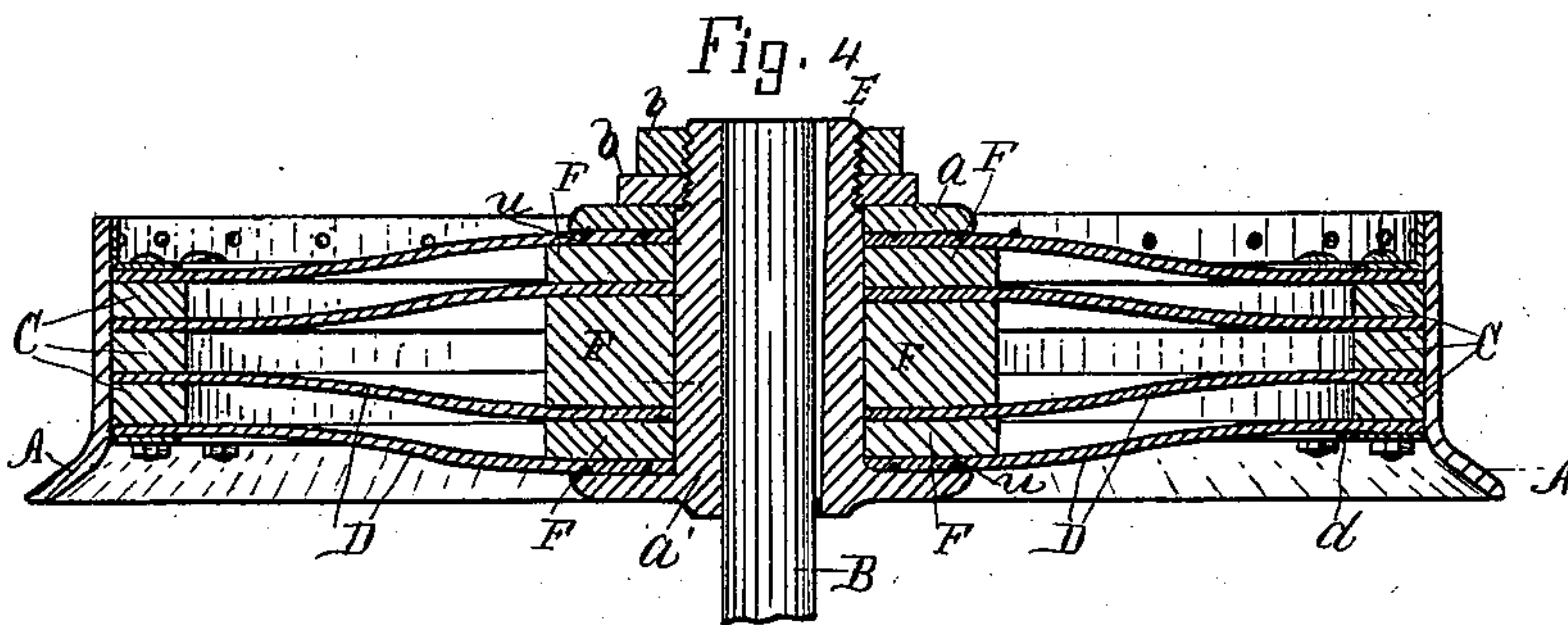


Fig. 4

Witnesses  
John B. Perkins  
Lewis Harris

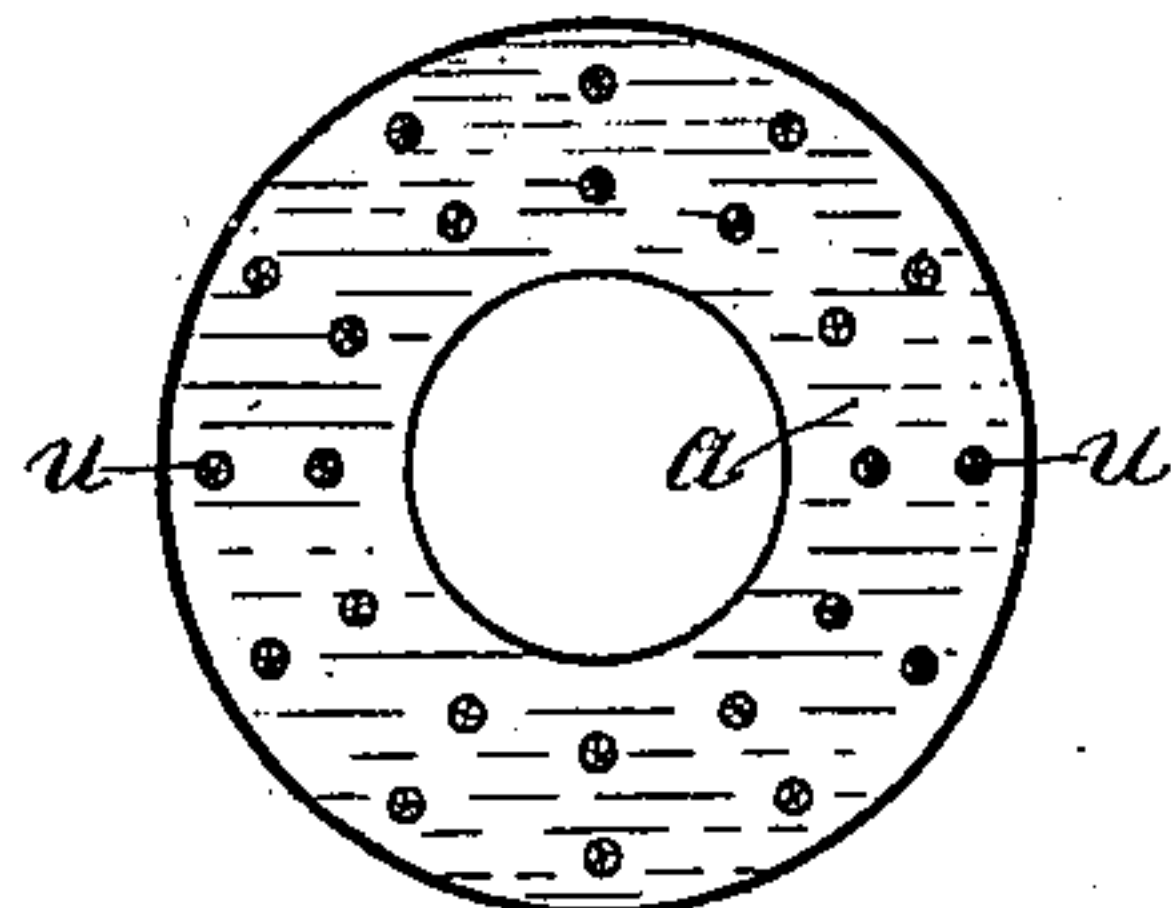


Fig. 5

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# UNITED STATES PATENT OFFICE.

GEORGE W. MILLER, OF KALAMAZOO, MICHIGAN.

## CAR-WHEEL.

SPECIFICATION forming part of Letters Patent No. 363,838, dated May 31, 1887.

Application filed September 17, 1886. Serial No. 213,776. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. MILLER, a citizen of the United States, residing at Kalamazoo, county of Kalamazoo, State of Michigan, have invented a new and useful Car-Wheel, of which the following is a specification.

This invention has for its object to construct a car-wheel having the separated disks between the hub and rim composed of compressed paper or pulp. Other objects will appear in the following description and claims.

In the drawings forming a part of this specification, Figure 1 is a view looking against the outer side of the wheel; Fig. 2, a view looking against the inner side of the wheel, parts being broken away; Fig. 3, a section on the dotted line in Figs. 1 and 2; Fig. 4, a like section in which more pulp disks appear; and Fig. 5 is a plan of a lettered detail, hereinafter described.

Referring to the letters of reference marked on the drawings, *f* is the ordinary wheel-rim with flange *A*. At *c* is shown a right-angled stop fitting the inner face of the rim *f*. By "right-angled" is meant that this stop has two sides, one of which sides is secured to the rim of the wheel, and the other of said sides extends at right angles toward the hub of the wheel, thus forming a stop, shoulder, or abutment for one of the disks *D* to fit against at its outer edge. Such a stop can be conveniently made separate from the rim, and when secured in place is strong and effectual for the use intended, which will more fully appear below.

A suitable number of disks *D* may be employed. In Fig. 3 two are shown, while in Fig. 4 there are four of said disks. These disks are separated from each other at outer edge by wooden rings *C*, and are separated near the hub by wooden rings *F*. A proper number of the rings *C* *F* is used, according to the number of disks *D*, Figs. 3 and 4. The ring *F* is wider than the ring *C* in Fig. 3, thus separating the disks near the hub *E* farther apart than at the rim *f*, to cause the disks *D* to stand bracing to each other. So is the central ring, *F*, in Fig. 4, wider than the rings *C* in said figure, so that the two sets of disks are farther apart at the hub; but all this is subject to variation.

The hub *E* has a right-angled flange, *a'*, at one end. This flange *a'* has sharp projections or spurs *u* on its inner face, as has also the washer *a*, Fig 5.

In making the wheel the design is that the rings *F* will be blocks of wood in the form of wheels until there is a hole bored through them to receive the hub *E*, which boring is to be done after the rings *F*, or properly (at this stage) blocks, and disks *D* are in place; but of course the hole for the hub may be made before the parts are put together.

By screwing the nuts *b* on the threaded end of the hub *E* the disks and alternating rings *F* are firmly clamped between the flange *a'* and the washer *a*. The spurs pierce the face of the outer disks. It may not be necessary to always employ the spurs, as the design is to glue the rings *C* *F* and the disks *D* where they engage each other.

At *d* is shown a circular ring fitted against the face of the outer edge of the disk, on the side of the wheel opposite to the right-angled stop *c*. Clamping-bolts are passed through the stop *c*, ring or rings *C*, disks *D*, and ring *d*, as shown in the drawings, thus firmly securing these parts together, and also securing them to the rim *f*, from the fact that the stop *c* is secured to said rim. The disks *D* are made of paper or paper-pulp, or pulp made from any suitable material properly compressed and hardened. Disks in lieu of spokes thus made are preferable to wood-veneer disks and metal disks, owing to their lightness, cheapness, non-susceptibility to the action of the weather, and for many other reasons not necessary to enumerate.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A car-wheel having the separated disks between the rim and hub composed of compressed paper or pulp, substantially as set forth.

2. In a wheel, the combination of compressed paper or pulp disks, wheel-rim, and the circular stop right-angled in cross-section, made separate from the wheel and secured to the inner face of the wheel-rim, substantially as set forth.

3. A wheel consisting of a rim having the right-angled stop secured thereto, a hub hav-

ing the end flange and threaded end, the washer and clamping-nuts, separated disks, separating-rings at the rim and at the hub, a ring at the rim on the side of the wheel opposite the stop, and the clamping-bolts at the rim, substantially as set forth.

4. A wheel composed of a rim having the right-angled stop, the hub having the end flange, the hub-washer and clamping-nuts, a series of separated disks between the rim and hub composed of compressed paper or pulp,

separating-rings at the hub and at the rim, and the washer-ring and clamping-bolts at the rim, substantially as set forth.

In testimony of the foregoing I have hereunto subscribed my name in presence of two witnesses.

GEO. W. MILLER.

Witnesses:

LEVI HARRIS,  
JOSEPH E. KELLOGG.