(No Model.) 2 Sheets—Sheet 1.

W. A. SMITH & I. A. WESTON.

WHEEL.

No. 380,358. Patented Apr. 3, 1888.

Fig. 8.

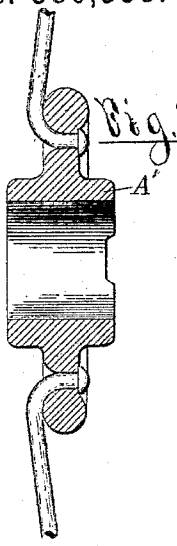


Fig. 1

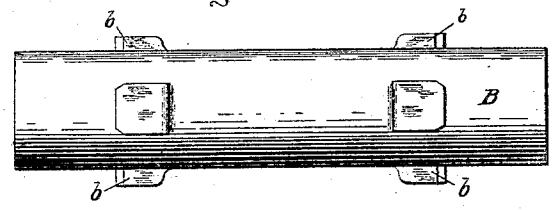


Fig. 9

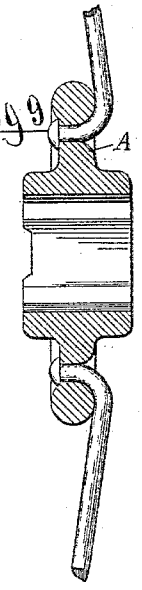


Fig. 2

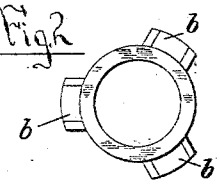


Fig. 3

Fig. 12.

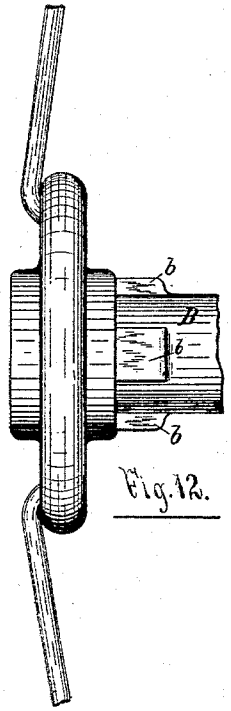


Fig. 10.

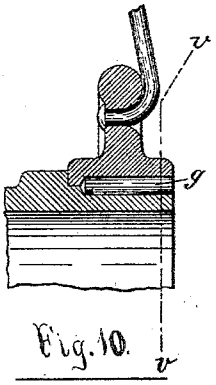


Fig. 11

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(No Model.) 2 Sheets—Sheet 2.

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WHEEL.

No. 380,358. Patented Apr. 3, 1888.

Fig. 4

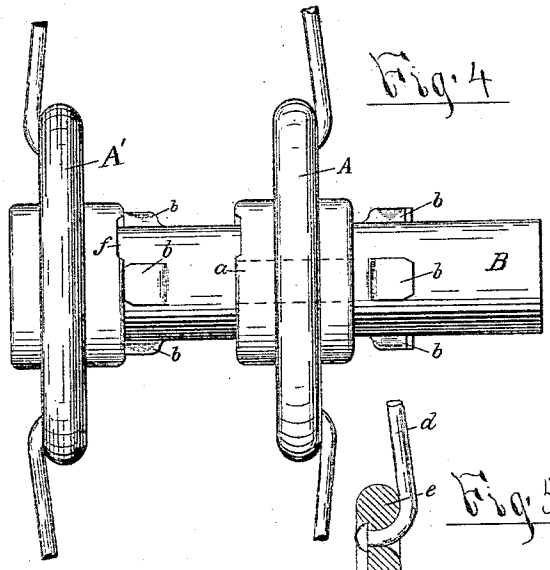
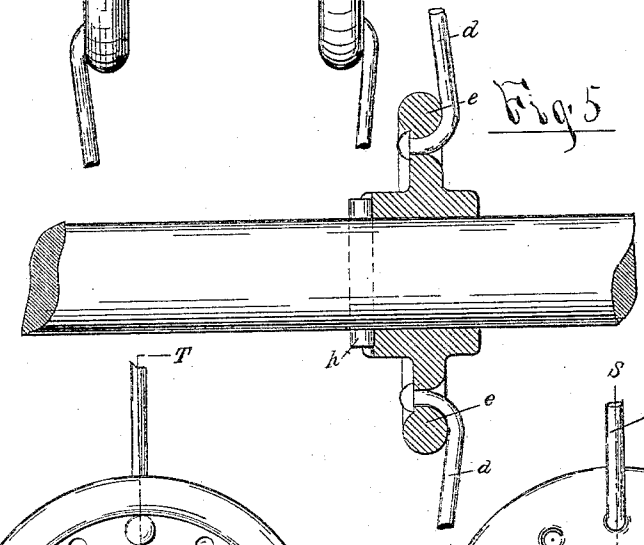


Fig. 5



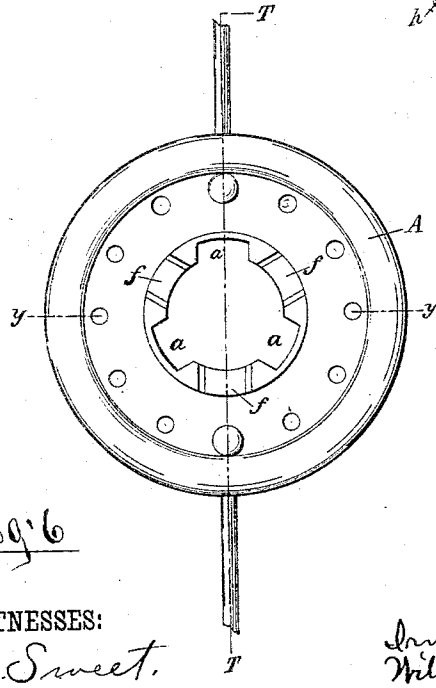


Fig. 6

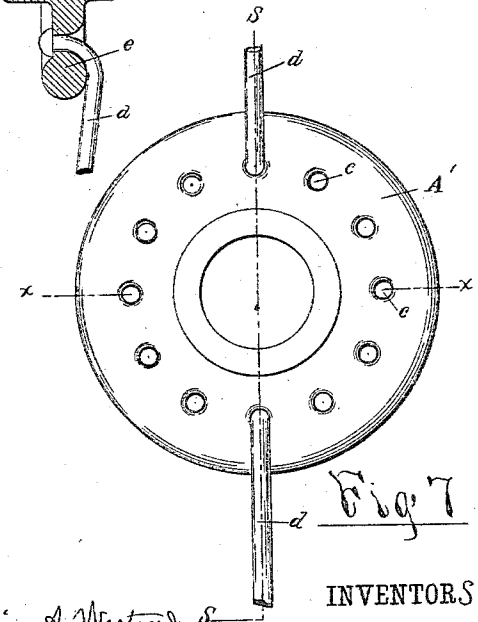


Fig. 7

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UNITED STATES PATENT OFFICE.

WILLARD A. SMITH AND IRVING A. WESTON, OF SYRACUSE, NEW YORK; SAID SMITH ASSIGNOR TO SAID IRVING A. WESTON, AND HENRY D. WESTON, OF JAMESVILLE, NEW YORK.

WHEEL.

SPECIFICATION forming part of Letters Patent No. 380,358, dated April 3, 1888.

Application filed June 22, 1887. Serial No. 242,109. (No model.)

To all whom it may concern:

Be it known that we, WILLARD A. SMITH and IRVING A. WESTON, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Wheels, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to new and useful improvements in that class of wheels known as "suspension-wheels," such as are commonly used upon bicycles, tricycles, &c.

The object of our invention is to produce a simple, strong, and rigid wheel, and at the same time one that can be easily and quickly put together without the use of skilled labor and expensive machinery.

Our invention consists in the several novel features of construction and operation which are hereinafter described, and are specifically set forth in the claim hereunto annexed.

In the drawings, Figure 1 is an elevation of the sleeve. Fig. 2 is an end view of the same. Fig. 3 is a side elevation of the sleeve with the two spoke-disks in place and one manner of locking the disks apart on the sleeve. Fig. 4 is a like view of the same parts, the spoke-disks not spread apart or locked upon the sleeve. Fig. 5 is a sectional elevation of an axle and a spoke-disk mounted thereon and locked by a transverse pin. Fig. 6 is a plan view of the inside face of a spoke-disk having slotways opening into the bore of the disk and in the face of it. Fig. 7 is a plan view of the outer face of the spoke-disk without slotways. Fig. 8 is a vertical section of the disk shown in Fig. 7 on line S S. Fig. 9 is a similar section of Fig. 6 on line T T. Fig. 10 is a vertical section on line W W of Fig. 11, and shows a pin-lock to lock the spoke-disk on the axle. Fig. 11 is a sectional elevation of the construction shown in Fig. 10 on line V V. Fig. 12 is a side elevation of sleeve and spoke-disks held thereon.

A and A′ are disks made to fit the sleeve B, and are made with a circular row of holes, *c*, to receive the ends of the spokes *d*. These holes are made bell-mouthed on their outer side, so as to make a curved surface over which the spokes draw. By making the holes of this form we obtain a surface curved to conform to the bend in the spoke, and also curved in the transverse direction, forming practically a perfect seat to receive the draw of the spokes. One or both of these disks are made with internal slotways, *a*, longitudinal to the hub of the disk, so that they may readily slide over the lugs *b* on the sleeve, as shown in Fig. 4.

In putting this wheel together the spokes are headed and bent, as shown in the drawings, and are then inserted through holes *c* in the disks and drawn through (irrespective of the hub center or sleeve) and riveted or otherwise fastened to the rim or felly. After the spokes are all in place and fastened to the rim the disks are comparatively near together, as shown in Fig. 4, and with no tension on the spokes. The next operation is to insert the sleeve B and spread the disks apart, thus bringing a tension on the spokes and rim. After the disks have been spread far enough for one or both to pass over the shoulders *b* the disks can then be turned partly around until the ends of the lugs *b* come into the recesses *f*, made to receive them, all as shown in Fig. 3 of the drawings.

The notches *f* may be dispensed with as a means for holding the disks from turning on the sleeve by simply putting in one or more dowel or retaining pins, *g*, as shown in Fig. 10. The shoulders *b* may be made with lips, as shown in Figs. 1, 2, and 4, or may be made plain, as shown in Fig. 12. We can also dispense with the recesses *f* in the face of the hub of the spoke-disk.

It will be observed that the utility of our invention consists in one mechanism and devices for producing the strain upon the wire spokes and rim to obtain the necessary rigidity.

We are aware that suspension-wheels have heretofore been made having disks adapted to slide and be held apart on the axle or sleeve; hence we do not claim such construction, broadly.

Having described our invention, what we claim is—

In a suspension-wheel, spoke-disks for re-

ceiving the ends of the spokes provided with bell-mouthed perforations to receive the draw of the spokes, all substantially as shown, and for the purpose set forth.

In testimony whereof we have hereunto signed our names, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 30th day of December, 1886.

WILLARD A. SMITH.
IRVING A. WESTON.

Witnesses:
C. W. SMITH,
C. E. HUCK.