

(No Model.)

2 Sheets—Sheet 1.

P. AMBJÖRN.
WHEEL.

No. 530,983.

Patented Dec. 18, 1894.

FIG. 1 —

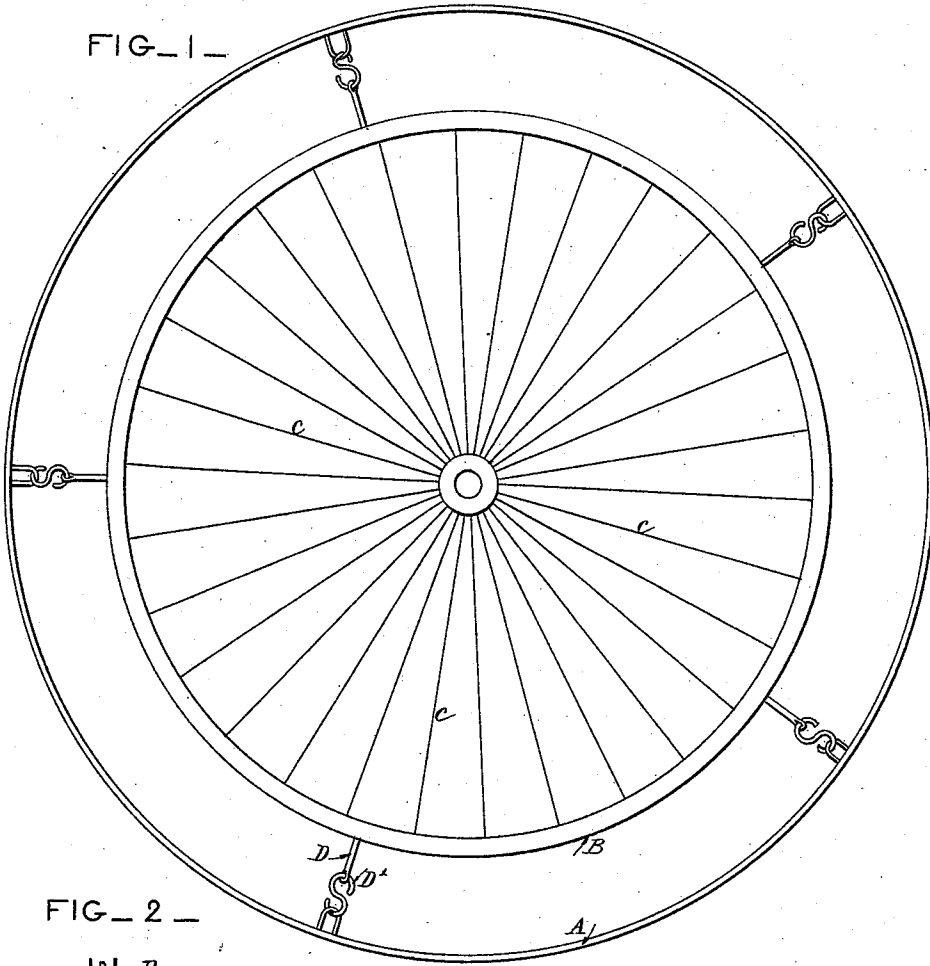


FIG. 2 —

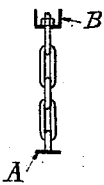


FIG. 3 —

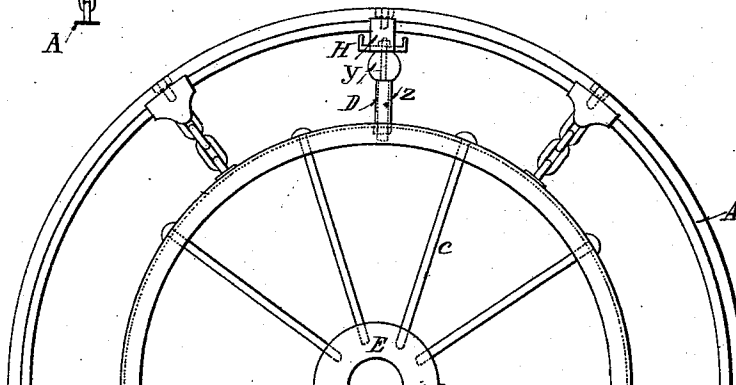
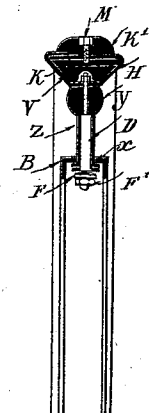


FIG. 4 —



J. J. Laurin } Inventor *Pierre Ambjörn Comte de France*
Edgar Watkin } Witnesses.

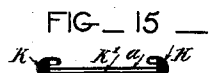
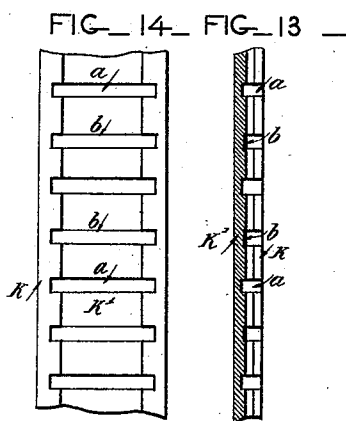
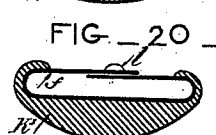
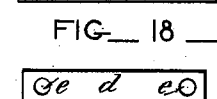
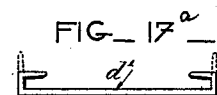
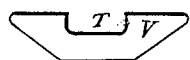
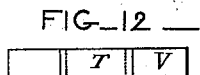
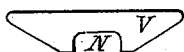
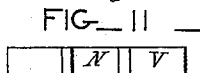
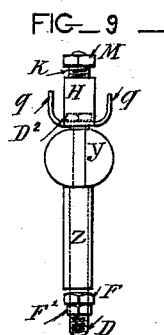
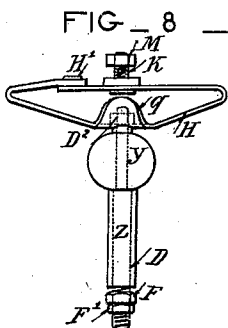
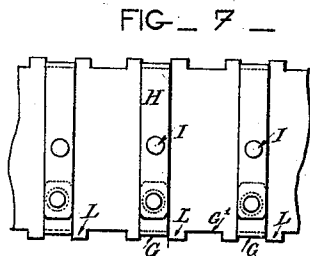
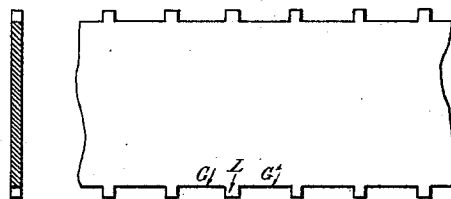
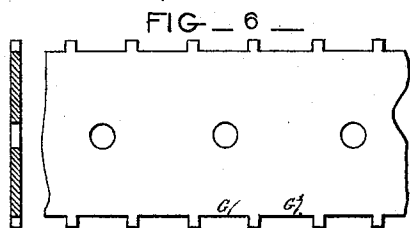
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No. 530,983.

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Forger Laurum
Edgar Wattis

Inventor
Pine Ambjörn Comte de Sparre
Witnesses.

UNITED STATES PATENT OFFICE.

PIERRE AMBJÖRN, OF PARIS, FRANCE.

WHEEL.

SPECIFICATION forming part of Letters Patent No. 530,983, dated December 18, 1894.

Application filed March 12, 1894. Serial No. 503,274. (No model.) Patented in France March 9, 1893, No. 228,504; in England April 21, 1893, No. 8,105, and in Belgium July 1, 1893, No. 105,351.

To all whom it may concern:

Be it known that I, PIERRE AMBJÖRN, Comte de Sparre, civil engineer, a subject of the King of Sweden and Norway, and a resident of 16 Place de la Madeleine, Paris, in the Republic of France, have invented certain new and useful Improvements in Wheels for Velocipedes and other Carriages for Common Roads, (for which I have obtained Letters Patent of France for fifteen years, No. 228,504, dated March 9, 1893; of Belgium, No. 105,351, dated July 1, 1893, and of Great Britain, No. 8,105, dated April 21, 1893,) of which the following is a specification.

My invention relates to that kind of wheels for velocipedes and other carriages in which concentric rims are employed. Hitherto such concentric rims have been connected together by means of springs but according to my invention I dispense with the use of such springs and connect the concentric rims, the outer one of which is flexible, and the inner one rigid, by means of rods, rings or chains. The outer rim is made of spring steel or other suitable flexible material, such for example as rolled brass, wood, or the like, and the inner rim is U-shaped in cross section and is connected to the hub by means of spokes in the usual manner. In the inner side of the outer rim are fixed three or more eyes on hooks to which are hooked the rods or chains having screw threaded ends which pass through holes in the inner rim, the rods or chains being held in tension by means of nuts which bear against the inner surface of the inner rim. The outer rim is thus drawn toward the center of the wheel and at the same time the two rims are held apart at a given distance which is adjusted by means of the nuts upon the rods.

In the accompanying drawings, Figure 1 is a side elevation of a wheel constructed according to my invention, and Fig. 2 is a section through the double rim of the same. Figs. 3 and 4 are respectively an elevation and a transverse section of a modified form of wheel. The details are illustrated in Figs. 5 to 12. Figs. 13 to 20 are views illustrating an india-rubber tire for the flexible rim of

my improved elastic wheel and various methods of connecting it to the rim.

A (Figs. 1 and 2) is the flexible rim, B the rigid rim concentric therewith and D the rods which I employ for connecting the said rims together, the rods having screw threaded ends as shown, passing through the rigid rim B and attached by rigid rings, hooks or chains D' to eyes fixed at intervals round the flexible rim A. Each of the rods D is secured to the rim B by one or more nuts F, F' which serve to regulate the tension of the flexible rim A and at the same time maintain the two rims A and B at a given distance apart.

The flexible rim A may be made of spring steel or other flexible material, such for instance as rolled brass or wood. The transverse section of the rigid inner rim B is preferably of U-shape and is connected to the hub E of the wheel by the spokes c, c.

In my improved wheel the rigid rods D, hooked or attached to the inner part of the flexible rim A, may be of metal or other suitable material such as wood, horn or bone and the rings, links or chains may be composed of different materials in order to avoid the rattling or clinking which would be produced by two hard bodies moving against each other for example. Some of these links may be made of hemp and others of metal.

In order not to diminish the strength of the flexible rim A by making holes therein which might cause a rupture, I can connect the rods D to the rim A by making on one or on both sides of the rim A notches or recesses G (Figs. 5, 6 and 7) of a depth and width equal respectively to the depth and width of a transverse band or belt H, Figs. 7 and 8, of metal or other suitable material having its two ends riveted or hooked together at H' so that it cannot slide over the rim A during the rotation of the wheel. Through a hole which I form inside at the middle of the belt H passes the screw threaded rod D secured by a nut D² inside the belt, while the other end of the said rod which passes through a hole x made in the rigid rim B is secured by the nut or nuts F, F', thus uniting the two rims A and B. At the middle of the outer part of the belt is

screwed or riveted a small screw threaded stud K which serves by means of a nut M to secure a protecting band or tire K' of india-rubber, leather, gutta-percha or other similar material on the outer rim. I can replace the stud K and the nut M by a simple screw inserted in the belt H. Between this belt H and the inner periphery of the rim A I interpose a block V (Figs. 8 to 12) of wood, metal or other resisting material in which is made a notch or recess N serving to receive the nut D² of the rod D. When instead of rods such as D I employ chains for uniting the two rims I make in the block V a notch or recess T (Fig. 12) which allows of the passage of the first link of the chain.

On the rod D and against the belt H is placed a ball or washer Y of india-rubber, gutta-percha or other elastic material, which has for its object to hold the nut D² in constant contact with the inner part of the belt H for preventing it from shaking about and producing a rattling noise during the traveling of the vehicle. The block is secured in place by cheeks q q on the belt H.

The rod D is covered with a tube or jacket Z, of metal, wood, india-rubber or other suitable material sometimes, provided with a collar or flange formed with it and placed between the ball Y and the nut F in order to prevent a rattling of the screw threaded part of the rod D against the side of the hole x in which this rod moves when the flexible rim A approaches or recedes from the rigid rim B by reason of the shocks produced when encountering obstacles on the road during the traveling of the wheel.

Between the notches or recesses G (Figs. 5, 6 and 7) made in the edges of the rim A I make intermediate notches or recesses G' of the same depth as the others, but their width is regulated in such a manner that there only remains between the notches G and G', teeth L sufficiently strong to hold the belts H. By this arrangement the width of the rim is regular in its narrowest part, its strength is retained and it is not exposed to the risk of becoming broken.

When I employ the india-rubber outer tire K' (Figs. 13, 14 and 15) it is provided with transverse notches or grooves a corresponding to the width and thickness of the bands H. These bands are located in the grooves a so as to prevent the tire K' from sliding over the rim A. The tire K' is held transversely

by cheeks k, k, molded with it on each side throughout its circumference and which clip the edges of the rim A.

To prevent the rim A from leaving the tire through shocks or friction, I employ small clips d (Figs. 18 and 19) provided with studs or buttons e, e, which hold the cheeks k, k of the tire K', or clips d' having their ends pointed and turned inward at a right angle the points passing through the cheeks k, k over which they are then pressed down, (Fig. 17^a.)

I can if required dispense with the clips d or d', and in this case the tire is provided with transverse grooves b, b between the grooves a, a but of less depth than them, and sufficient to receive bands f of strong fabric (Fig. 20) cemented to the tire and the ends of which are united inside the rim by suitable clips or fasteners l.

I claim as new and desire to secure by Letters Patent—

1. In a wheel, in combination with an outer flexible rim, provided with suitable notches along its edges, of transverse bands or belts inserted in such notches and intermediate devices connecting said bands with the hub, substantially as set forth.

2. In a wheel, in combination with an outer flexible rim and blocks resting against the same, transverse bands or belts placed around the rim and the blocks, and intermediate devices connecting said bands with the hub, substantially as set forth.

3. In a wheel provided with an inner and an outer rim, spokes extending through the inner rim to the hub, rods uniting said rims, and elastic jackets and elastic balls placed over the rods, substantially as set forth.

4. In a wheel, in combination with an outer rim and a protecting tire, transverse belts placed around such rim, and screw-threaded studs extending from such belts for the purpose of securing the tire, substantially as set forth.

5. In a wheel, in combination with an outer rim a protecting tire, transverse clips or bands for confining such rims and tire in contact with each other, substantially as set forth.

In witness whereof I have hereunto set my hand in presence of two witnesses.

PIERRE AMBJÖRN.

Witnesses:

GEORGES LAUVENT,
EUGÈNE WATTIER.