No. 860,119. PATENTED JULY 16, 1907.

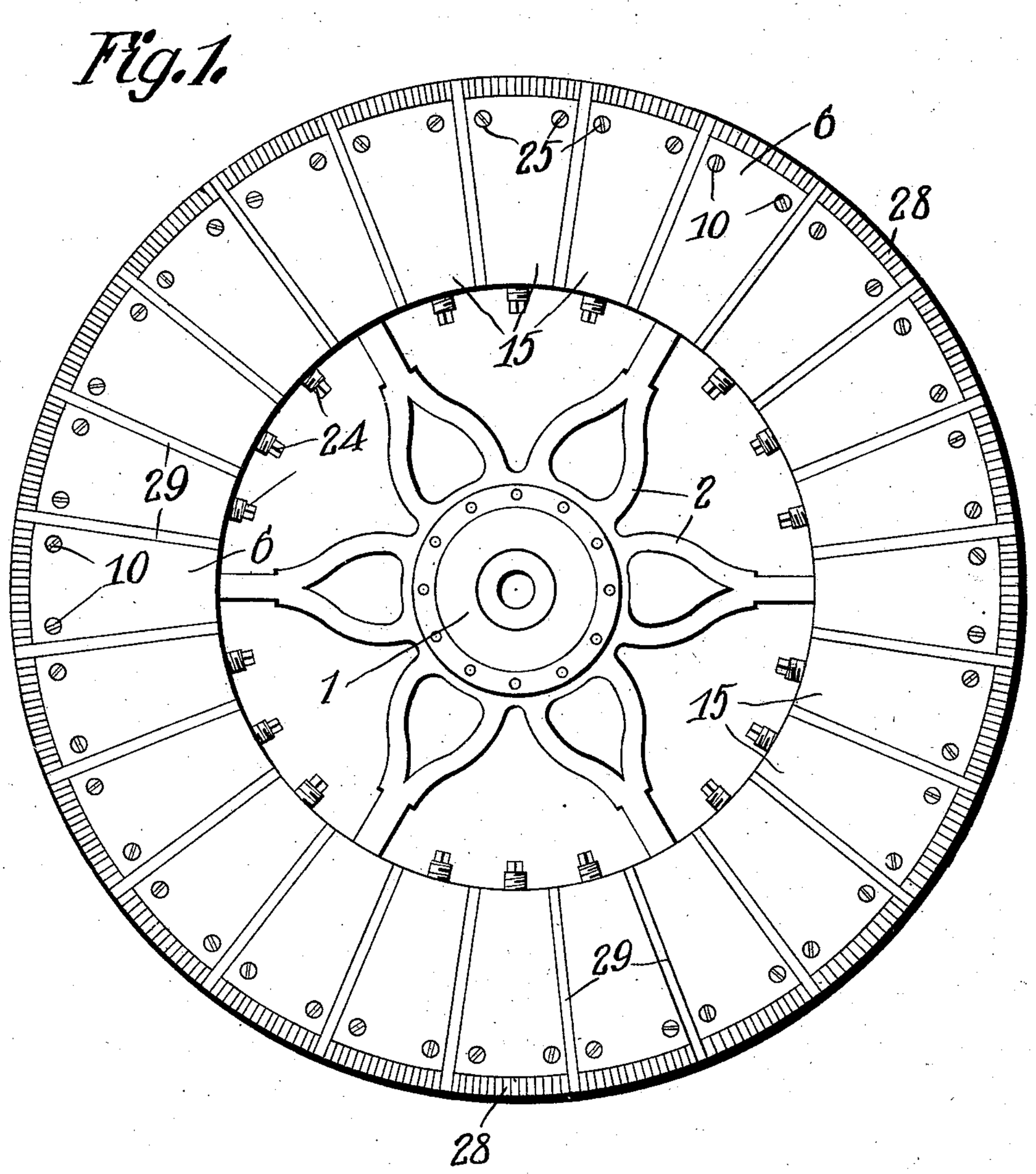
C. M. BELL & F. E. NOEL.

TRACTION WHEEL.

APPLICATION FILED JULY 30, 1906.

2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:
E. K. Stewart
Hubert D. Lawson.

Carroll M. Bell and
Frederick E. Noel,
INVENTORS
By Cushman & Co.
ATTORNEYS

No. 860,119. PATENTED JULY 16, 1907.

C. M. BELL & F. E. NOEL.

TRACTION WHEEL.

APPLICATION FILED JULY 30, 1906.

2 SHEETS—SHEET 2.

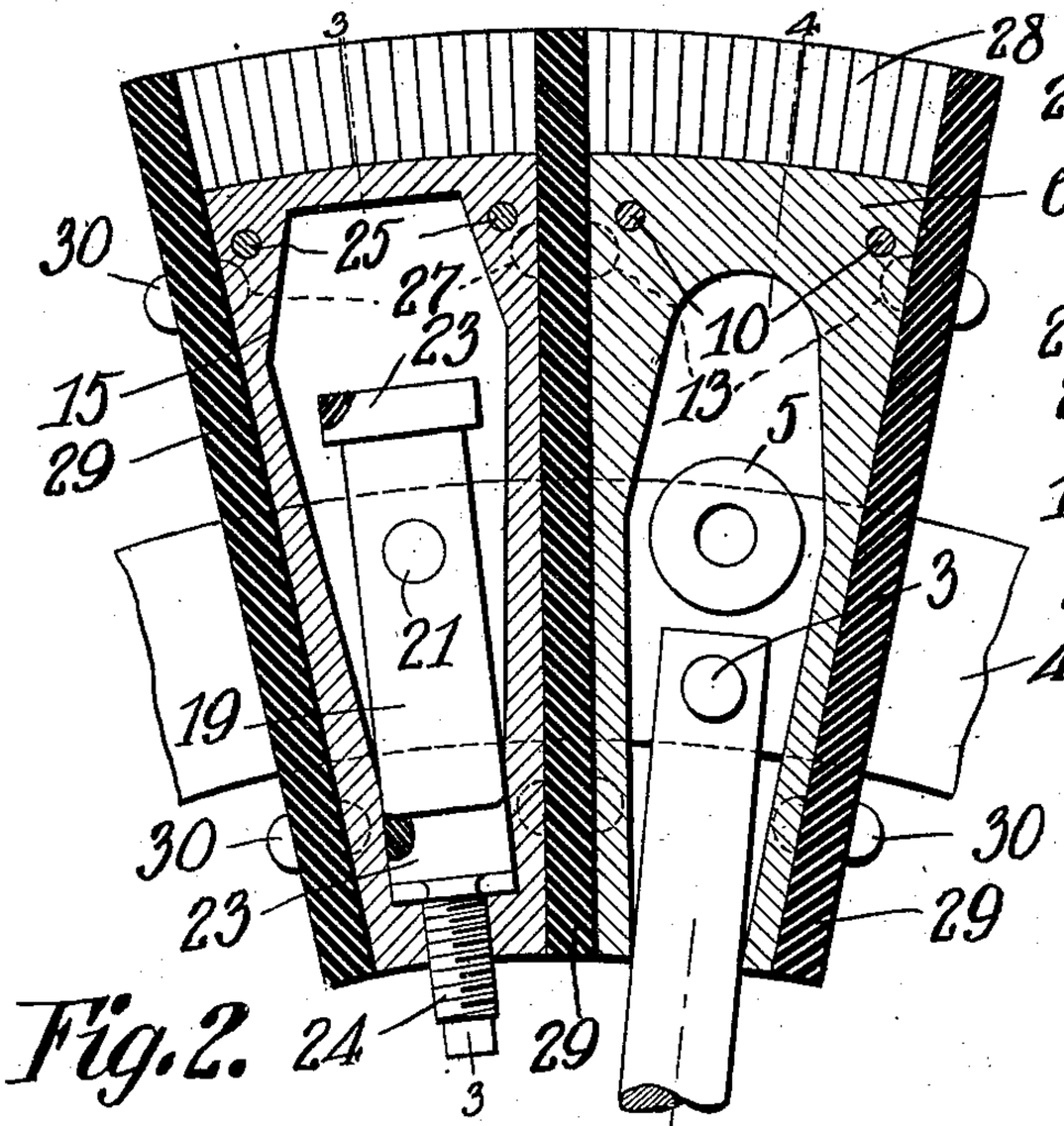


Fig. 2.

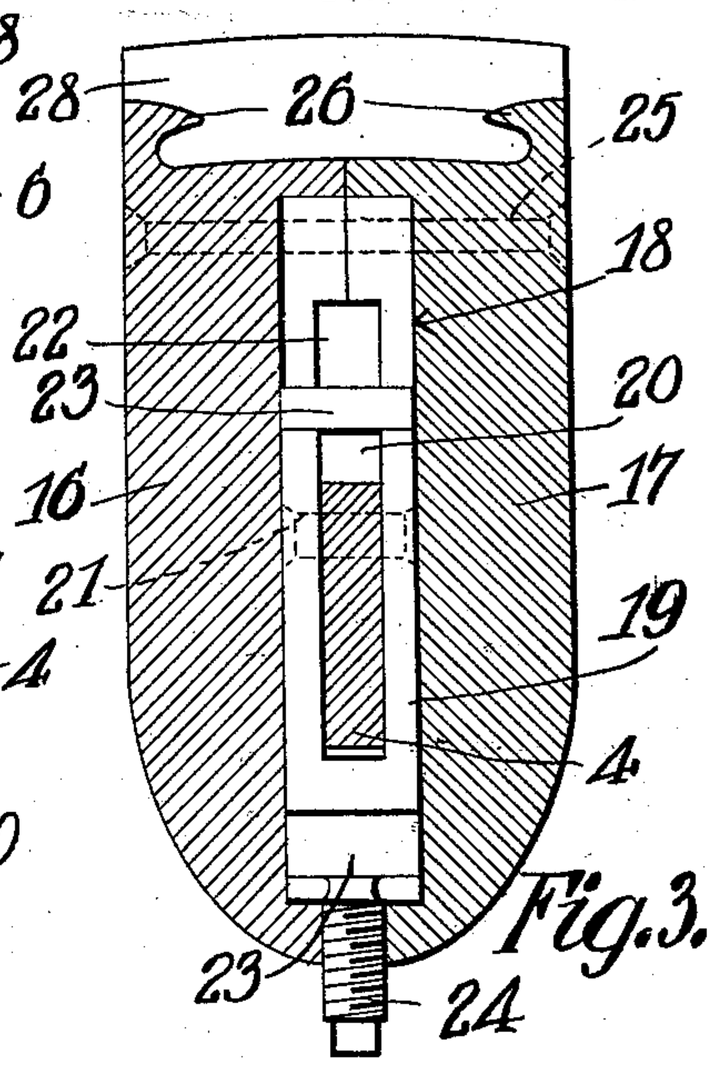


Fig. 3.

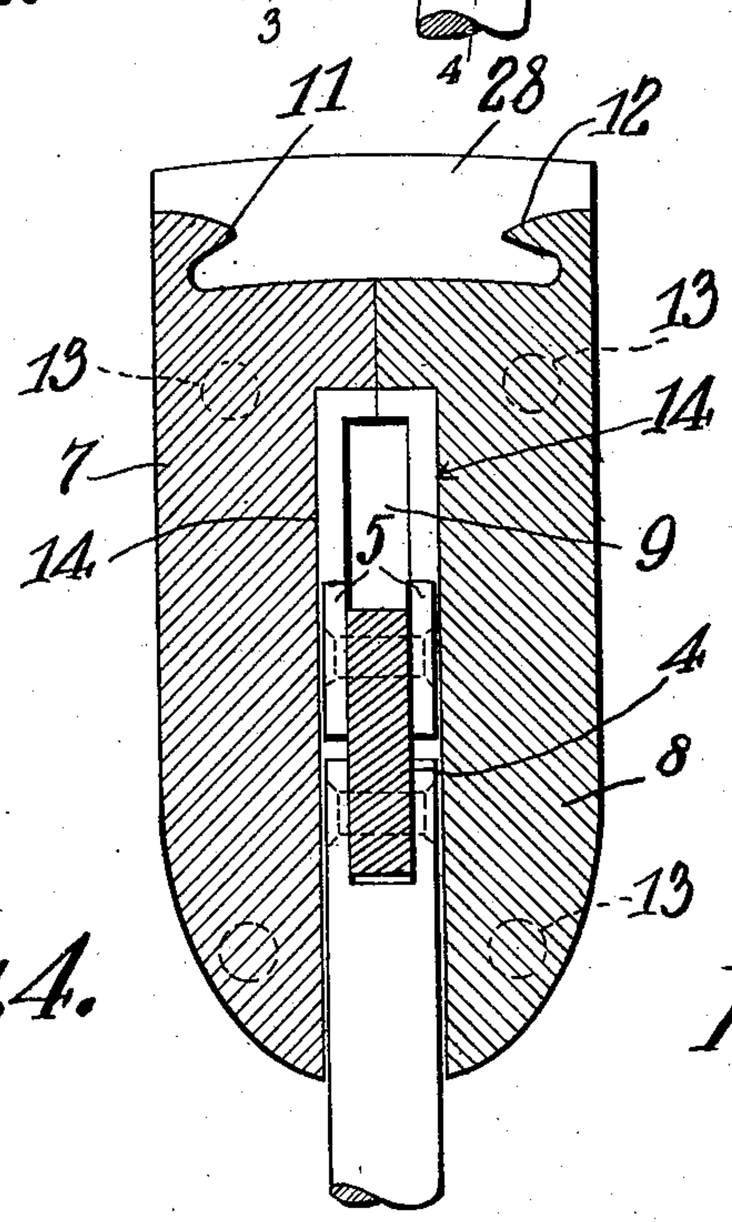


Fig. 4.

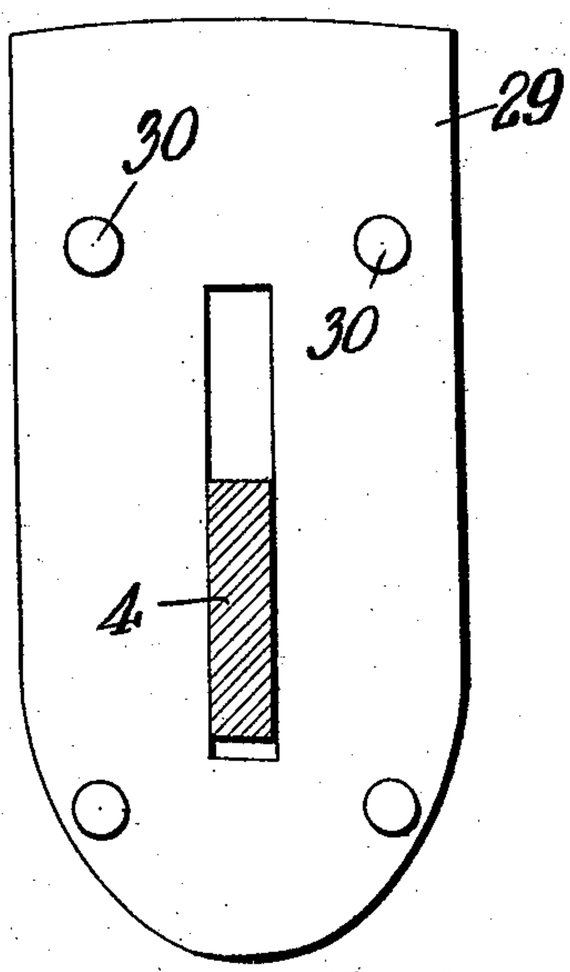


Fig. 5.

WITNESSES:
E. K. Stewart
Hubert D. Lawson.

Carroll M. Bell and
Frederick E. Noel,
INVENTORS
By C. A. Snow & Co.
ATTORNEYS

UNITED STATES PATENT OFFICE.

CARROLL M. BELL AND FREDERICK E. NOEL, OF GOODLAND, INDIANA.

TRACTION-WHEEL.

No. 860,119. Specification of Letters Patent. Patented July 16, 1907.

Application filed July 30, 1906. Serial No. 328,427.

To all whom it may concern:

Be it known that we, CARROLL M. BELL and FREDERICK E. NOEL, citizens of the United States, residing at Goodland, in the county of Newton and State of Indiana, have invented a new and useful Traction-Wheel, of which the following is a specification.

This invention relates to traction wheels and is particularly designed for use in connection with automobiles of various constructions.

The object of the invention is to provide a wheel made up principally of metallic sections so disposed as to produce a resilient or cushioning action simulating that produced by pneumatic tires such as are ordinarily employed.

Another object is to provide a wheel of this character which will not be injured by sharp objects contacted thereby, and which is made up of sections any one of which can be easily removed and replaced in the event of wear or breakage.

A still further object is to provide a wheel of this character, the operation of which will not be retarded or otherwise affected by accumulations of mud, etc., thereon.

With the foregoing and other objects in view, the invention consists of a circular ring constituting the rim of the wheel and to which the spokes are connected at desired intervals. Segmental blocks are mounted radially upon this rim, and so constructed as to slide longitudinally thereon, and between these blocks are disposed cushioning devices which serve to hold the blocks normally spaced apart predetermined distances, but which will contract or be compressed whenever one or more of the blocks is subjected to inward pressure. Means are arranged within each of the segmental blocks for limiting the longitudinal movement thereof in both directions. The tread of the wheel is made up of leather or other material which will not be easily affected by rough or sharp surfaces over which the wheel may move, and is adapted to be held in place by jaws formed integral with the blocks.

The invention also consists of certain other novel features of construction and combinations of parts which will be hereinafter more fully described and pointed out in the claims.

In the accompanying drawings is shown the preferred form of the invention.

In said drawings:—Figure 1 is a side elevation of the wheel; Fig. 2 is a section through two of the segmental blocks; Fig. 3 is a section on the line 3—3, Fig. 2; Fig. 4 is a section on the line 4—4, Fig. 2; and Fig. 5 is a transverse section through the ring, showing one of the blocks in elevation.

1 is a hub of any desired construction and having spokes 2 radiating therefrom and riveted, bolted, or otherwise secured, as at 3, to a circular ring or rim 4 which is of uniform thickness. Rollers 5 are journaled upon the rim 4 in alinement with each spoke 2. Each roller, together with the outer end of the adjoining spoke 2, is inclosed within a segmental block 6 made up of two similar oppositely disposed sections 7 and 8 having recesses in their adjoining faces which are adapted to register to form openings 9 through which the ring 4 loosely extends. These openings are of greater length than the width of the ring 4 so that a certain amount of longitudinal movement of the block 6 upon the ring is permitted. The two sections of the block are secured together as by means of the bolts 10, and formed upon the side edges of the outer ends of the two sections 7 and 8 are inwardly extending flanges or jaws 11 and 12. A suitable number of recesses 13 are formed within the beveled or inclined faces of the blocks 6, and are for the purpose hereinafter more fully set forth. Elongated recesses 14 are formed in the adjoining faces of the two sections 7 and 8 and the rollers 5 and the ends of the spokes 2 are adapted to work within these recesses. The walls of said recesses 14 are inclined and rounded so that the rollers 5 can travel smoothly thereon.

Interposed between the blocks 6 are a number of segmental blocks 15, which are similar in construction, and each of which is made up of two similar sections 16 and 17 having registering elongated recesses 18 therein in which are fitted longitudinally slotted guide strips 19. The ring 4 extends through the slots 20 in these strips and is connected to the strips by means of bolts or rivets 21 extending therethrough. Recesses 22 are formed in the sections 16 and 17 at opposite sides of the recesses 18 and the ring 4 extends loosely through them. These recesses are similar to the corresponding ones formed in the sections 7 and 8 so that longitudinal movement of each block 15 upon the ring 4 is permitted. Rubber cushions 23 are formed upon the ends of each guide 19 and a set-screw 24 is adjustably mounted within the inner end of each of the blocks 15, and serves to limit the longitudinal movement of said blocks upon the guide 19. The sections 16 and 17 are secured together by means of bolts 25 in the same manner as are the sections 7 and 8 of the blocks 6, and inwardly extending flanges 26 are formed upon the side edges of the outer end of each block 15 and are adapted to aline with the corresponding flanges or jaws on the blocks 6. Each block 15 has recesses 27 in its beveled or inclined faces, which are designed for the purpose hereinafter set forth.

A tread or tire made up of a desired number of leather sections 28 is arranged upon the outer ends of the blocks 6 and 15 and is adapted to fit snugly upon the jaws or flanges 11, 12 and 26, and to extend thereunder, so that after the sections constituting all of the blocks have been fastened together, it becomes impossible to remove the tread sections. The blocks 6 and 15 are all spaced apart desired distances by cushions 29 which

are interposed therebetween and formed of rubber or other resilient material. Each cushion has projections 30 thereon which are adapted to fit within the recesses 13 and 27 so as to prevent longitudinal movement of the cushions independently of the blocks between which they are interposed. These cushions may be placed upon the ring 4 in any preferred manner preferably by slitting the cushions.

As will be readily understood, when the wheel is subjected to no inward pressure the cushions 29 will hold all of the blocks spaced apart their proper distances, and when so arranged, the guides 19 contact with the set or stop screw 24. When, however, one or more of the blocks is subjected to inward pressure, the cushions between said blocks are compressed and the blocks are caused to move longitudinally upon their guides 19 until limited by the outer cushions 23 on the guides coming into contact with the outer ends of the recesses 18. This limit of the movement of the blocks, however, will rarely be reached unless a portion of the wheel be subjected to sudden, violent pressure. Should inward pressure be directed against any one of the blocks 6, said block will be retarded in its movement by the rollers 5 contacting with and traveling upon one of the inclined walls of the recess 14.

It will be seen that by interposing the cushions between the blocks constituting the wheel, a result similar to that obtained by the use of pneumatic tires is produced, with the further advantage that it becomes impossible to injure the wheel by running over sharp or uneven surfaces. Moreover, by interposing the cushions between the blocks no interstices are produced in which mud, gravel, etc., can accumulate and interfere with the resilient action of the wheel.

Should any one of the blocks become injured or worn, or should it be desirable to replace the tread 28 in one or more of them, said block or blocks can be detached simply by removing the bolts 10 and 25.

The preferred form of the invention is set forth in the foregoing description, but we do not limit ourselves thereto, as we are aware that modifications may be made therein without departing from the spirit or sacrificing the advantages thereof, and we therefore reserve the right to make such changes as fairly fall within the scope of the invention.

What is claimed is:

1. In a wheel the combination with a rim; of a tire comprising a plurality of segmental blocks all portions of said rim being concealed by the blocks and cushioning devices, each block surrounding and slidably mounted upon the rim, and cushioning devices interposed between the blocks.

2. In a wheel the combination with a rim; of a tire comprising a plurality of segmental blocks, each block surrounding and slidably mounted upon the rim along the radius thereof, a tread engaged by the blocks, and cushioning devices interposed between the blocks and surrounding the rim.

3. In a wheel the combination with a rim; of a tire comprising a plurality of segmental blocks, each block surrounding and movable longitudinally upon the rim, and cushioning devices interposed between the blocks surrounding and movable upon the rim.

4. In a wheel the combination with a non-yielding rim; of a tire comprising sectional segmental blocks, each block surrounding and movable longitudinally upon the rim, a plurality of tread sections engaged by each block, and combined spacing and cushioning devices interposed between the blocks and surrounding and movable upon the rim.

5. In a wheel the combination with a block; of a tire comprising a plurality of segmental blocks, each block surrounding and movable along the radius of the rim, combined spacing and cushioning devices interposed between the blocks and surrounding and movably mounted on the rim, and means within each block for limiting the movement thereof.

6. In a wheel the combination with a rim; of a tire comprising a plurality of segmental blocks, each block surrounding the rim and movable thereon along the radius thereof, said blocks completely concealing the rim.

7. In a wheel the combination with a rim; of a plurality of segmental blocks loosely connected, each block surrounding the rim and movable along the radius thereof, combined spacing and cushioning devices interposed between the blocks and surrounding and movable upon the rim, and means within the blocks for independently limiting the movement thereof.

8. In a wheel the combination with a rim; of a plurality of segmental blocks loosely connected, each block surrounding the rim and movable along the radius thereof, combined spacing and cushioning devices interposed between the blocks and surrounding and movable upon the rim, means mounted within the blocks for independently limiting the movement thereof, and a cushioning device within one of the blocks.

9. In a wheel the combination with a non-yielding rim; of a tire comprising a plurality of segmental blocks, each block surrounding the rim and movable radially thereon, and combined spacing and cushioning devices interposed between and engaging the blocks, said devices surrounding and movable upon the rim.

10. In a wheel the combination with a rim; of a tire comprising segmental blocks, each block surrounding and movable radially upon the rim and consisting of oppositely disposed recessed sections, and means for securing the sections together, and combined spacing and cushioning devices interposed between and engaging the blocks, each of said devices surrounding and being movable upon the rim.

11. In a wheel, a tire comprising a plurality of sectional segmental blocks, combined cushioning and spacing devices interposed between and engaging the blocks, jaws integral with the block sections, a sectional tread interposed between and engaged by the jaws, and means for clamping the jaws upon the tread sections.

12. In a wheel, a rim comprising a ring, segmental blocks movable radially upon the ring, each block consisting of oppositely disposed recessed sections and means for securing the sections together, combined spacing and cushioning devices interposed between and engaging the blocks, a guide upon the ring and within the recesses in one of the blocks, and means in said block for contacting with the guide to limit the movement of the block.

13. In a wheel, a rim comprising a ring, segmental blocks movable radially upon the ring, each block consisting of oppositely disposed recessed sections and means for securing the sections together, combined spacing and cushioning devices interposed between and engaging the blocks, a guide upon the ring and within the recesses in one of the blocks, means in said block for contacting with the guide to limit the movement of the block, and cushions upon the guide.

14. In a wheel, the combination of a hub, spokes radiating therefrom and a ring secured to the spokes; of a plurality of radially movable blocks loosely mounted upon the ring, the end of each spoke being surrounded by a block, rollers upon the ring adjacent to each spoke, each roller being loosely inclosed within one of the blocks, guides secured to the ring, each guide being disposed within one of the blocks, stop devices within the blocks for contacting with the guides, and combined spacing and cushioning devices interposed between the blocks.

In testimony that we claim the foregoing as our own, we have hereto affixed our signatures in the presence of two witnesses.

CARROLL M. BELL.
FREDERICK E. NOEL.

Witnesses:
THOMAS E. HARTLEY,
MOSES MORIN.