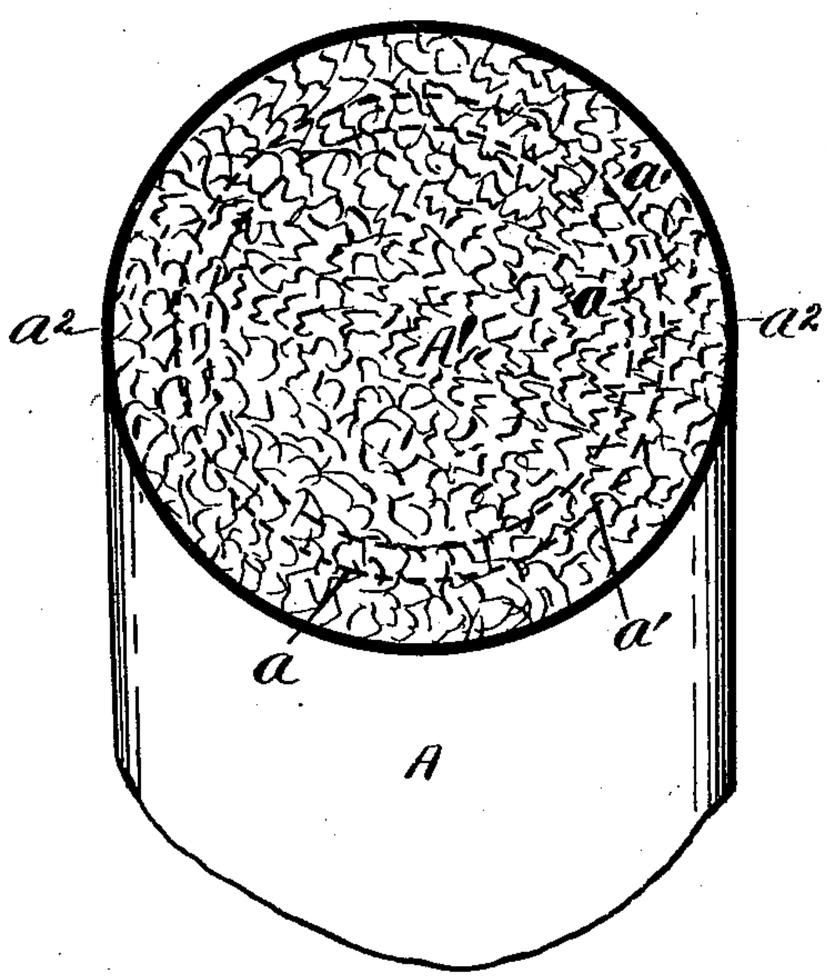
(No Model.)

L. BAECKER.

BICYCLE TIRE.

No. 599,888. Patented Mar. 1, 1898.



WITNESSES

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LOUIS BAECKER, OF DETROIT, MICHIGAN, ASSIGNOR OF ONE-HALF TO CHARLES B. ANDREWS, OF SAME PLACE.

BICYCLE-TIRE.

SPECIFICATION forming part of Letters Patent No. 599,888, dated March 1, 1898.

Application filed July 12, 1897. Serial No. 644,188. (No model.)

To all whom it may concern:

Be it known that I, LOUIS BAECKER, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Bicycle-Tires and other Articles of Manufacture and the Process of Manufacturing the Same; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, which forms a part of this specification.

My invention is designed to provide a new article of manufacture adapted for various uses, the same having special reference to the construction of a bicycle-tire, although I do not limit myself solely to the application of my invention to form tires, as my invention contemplates the formation of other articles also in the manner hereinafter specified.

My invention consists of articles of manufacture and the process of their construction, as hereinafter described and claimed, and illustrated in the accompanying drawing, the description and drawing having reference more specifically to the construction of a bicycle-tire.

The drawing is a view partly in elevation and in cross-section.

I carry out my invention as follows:

In the formation of my improved articles of manufacture—as a bicycle-tire, for instance—I employ a mass of pulp matter made of any suitable fiber, preferably a capillary fiber of any proper material—as hair, for example—said fiber being worked in any desired manner into irregular, crimped, curled, or felted condition. The fiber worked into such a condition is then suitably compressed into required shape to form the desired article, as a bicycle-tire, the compression not only shaping the fiber into desired form, but also aiding to make the fiber impervious. After desired compression the article is made furthermore impervious by being treated with a suitable solution adapted for that purpose—as, for example, with a solution of sodium or potassium silicate—the article being treated by such solution in any proper manner—as, for example, by immersion of the article in said solution. The solution may penetrate the fiber to any desired extent to render the same perfectly impervious and to hold the compressed fiber in compressed condition. After the article has been so treated by a proper solution my invention contemplates making it waterproof by immersing the article in or coating the article with paraffin or oil or other suitable preparation adapted for that purpose. The article, as a bicycle-tire, may then be finished by polishing the exterior of the fiber so treated, or, as in the case of a bicycle-tire, by application to the exterior thereof of a suitably-prepared gum, as gum-gutta.

As illustrated in the accompanying drawing, A denotes a tire formed in accordance with my invention, the interior or body of which, as indicated at A′, is formed of fiber, preferably of capillary fiber, in the manner hereinbefore described. When the fiber has been shaped and compressed into required form and density, it is treated with the solution to make it impervious. The solution may be caused to penetrate to the body or fiber any required distance toward the center. Thus, for example, said solution might penetrate the tire from the exterior to the dotted line, (indicated at *a*.) Obviously the less said solution penetrates the article the more resilient will it be, and for the manufacture of tires I prefer that the solution should only penetrate part way to the center or only sufficient to secure the object in view. The paraffin, oil, or analogous material may also penetrate the tire any required distance—as, for example, to the outer dotted line, (indicated at *a*′.) For an exterior coating of the same suitably-prepared gum is employed. The same may be of any required thickness on the exterior of the fiber, the same being indicated in the drawing, for example, at a^2. The fiber so treated for other purposes may be shaped as required. It may be flattened, for example, into a sheet or layer for certain uses.

When used for the manufacture of bicycle-tires, the tire is made practically punctureless, while it is also a solid tire of superior durability. A tire so made may also be made of

lighter weight than tires commonly in use, while, also, a tire so made may possess a very good degree of resilience. A tire so made has no valves, requires no inflation, and obviously will not be liable to injury and consequent repairs, as in the case of pneumatic tires. At the same time a tire so made is not liable to slip. These points of advantage make a tire so formed very superior to those heretofore in common use.

I would have it understood that I do not limit myself solely to the use of a solution precisely such as I have described; but my invention contemplates the use of any suitable solution which may assist in making the tire impervious and firm.

It will be understood that the compression of the fiber together with its treatment by a suitable solution, as a solution of sodium or potassium silicate, will render the tire impervious to puncture of tacks, particles of glass, or analogous material.

What I claim as my invention is—

1. An article of manufacture formed of fiber worked into crimped, curled or analogous condition, said fiber being compressed and treated with a solution of silicate as described to render the article impervious on its exterior, and with a solution of paraffin to make the article waterproof, substantially as set forth.

2. An article of manufacture formed of capillary fiber worked into crimped, curled or analogous condition, said fiber being compressed and treated with a solution of silicate as described, to render the article impervious on its exterior, and with paraffin to make the article waterproof, said solutions only partially penetrating said article leaving the interior resilient, for the purpose set forth.

3. A solid bicycle-tire formed of fiber worked into crimped, curled or analogous condition, said fiber being compressed and treated with a solution of silicate to render the tire impervious and also with paraffin to render the tire waterproof, said tire provided with an exterior covering of prepared gum, for the purpose set forth.

4. The herein-described process of constructing a solid bicycle-tire consisting of working capillary fiber into irregular, crimped or curled condition compressing the same to form the tire, then treating the fiber with a solution penetrating the fiber and rendering it impervious on its exterior, the tire being also treated with paraffin to render it waterproof, for the purpose set forth.

5. A resilient solid bicycle-tire made of capillary fiber worked into crimped, curled or analogous condition, said fiber being compressed and treated with a solution of silicate, and with paraffin, substantially as and in the manner set forth.

In testimony whereof I sign this specification in the presence of two witnesses.

LOUIS BAECKER.

Witnesses:
N. S. WRIGHT,
MARY HICKEY.