

(No Model.)

3 Sheets—Sheet 1.

C. K. WELCH.
PNEUMATIC TIRE.

No. 580,070.

Patented Apr. 6, 1897.

Fig. 4.

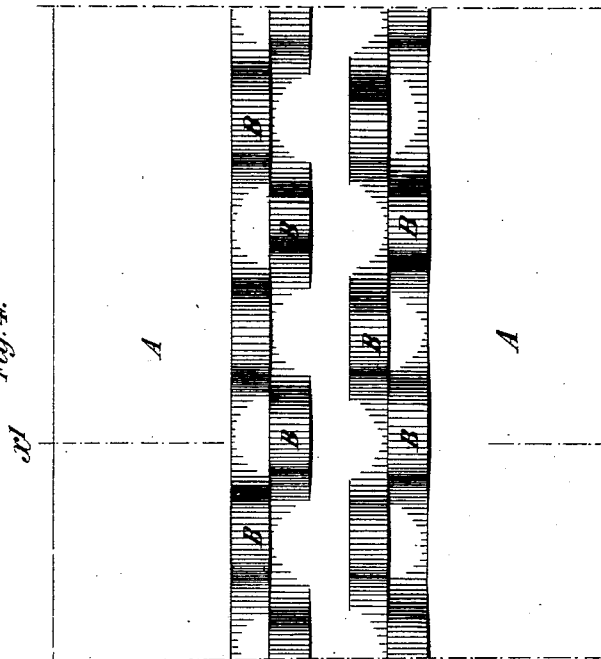


Fig. 5.

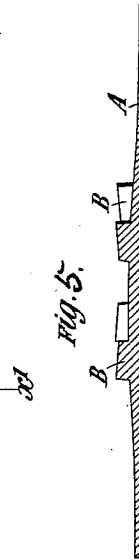


Fig. 1.

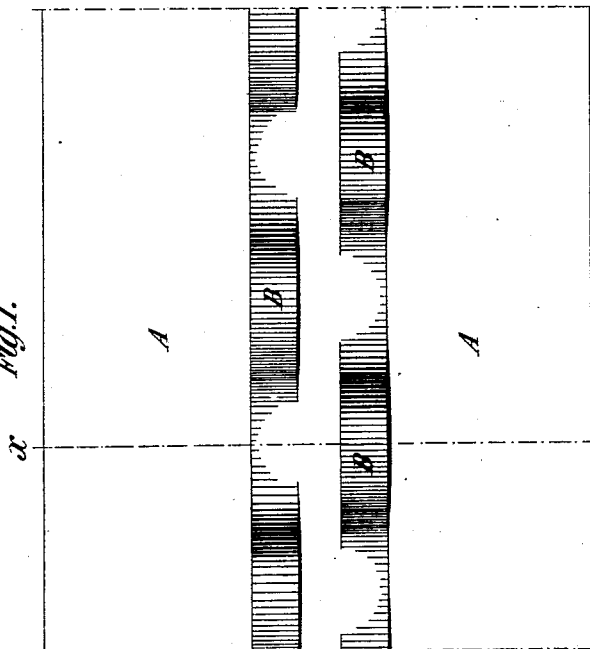


Fig. 2.



Fig. 3.



Witnesses:

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Charles H. Welch

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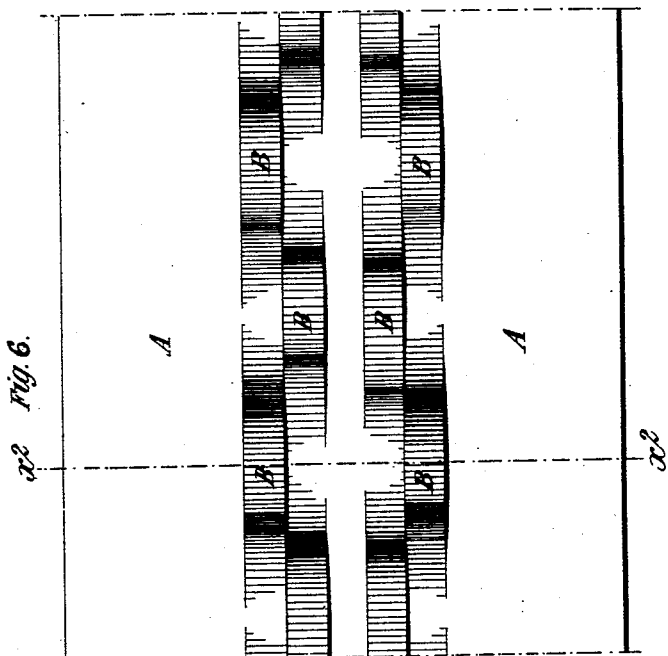
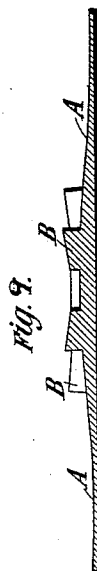
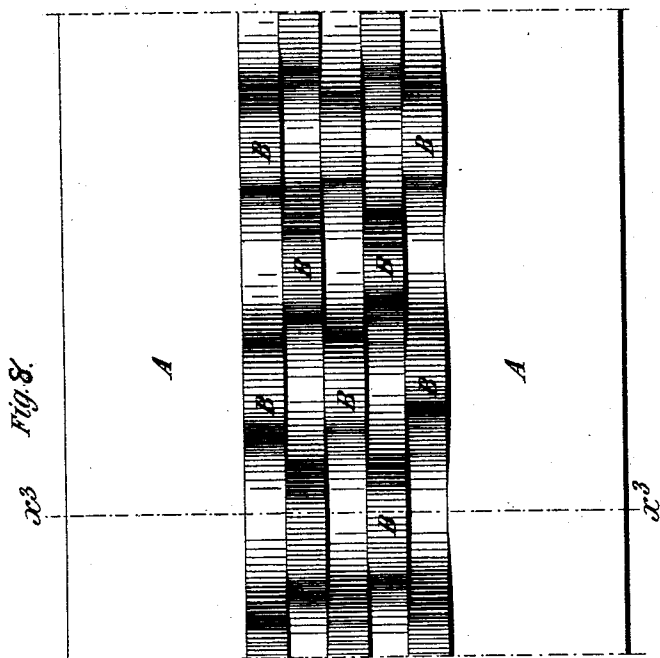
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Witnesses:

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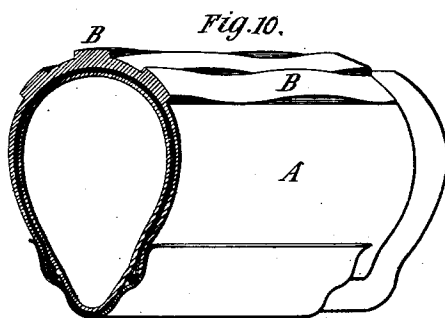
(No Model.)

3 Sheets—Sheet 3.

C. K. WELCH.
PNEUMATIC TIRE.

No. 580,070.

Patented Apr. 6, 1897.



Witnesses:

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UNITED STATES PATENT OFFICE.

CHARLES KINGSTON WELCH, OF COVENTRY, ENGLAND.

PNEUMATIC TIRE.

SPECIFICATION forming part of Letters Patent No. 580,070, dated April 6, 1897.

Application filed November 28, 1894. Serial No. 530,263. (No model.) Patented in England May 10, 1894, No. 9,294; in France November 9, 1894, No. 242,745; in Belgium November 9, 1894, No. 112,647; in Austria November 9, 1894, No. 45/97; in Spain November 9, 1894, No. 16,531; in Switzerland November 14, 1894, No. 9,365; in Germany November 15, 1894, No. 89,052; in Italy December 10, 1894, XXIX, 37,616, and LXXIV, 14; in Canada December 19, 1894, No. 47,771; in Russia January 10, 1895, No. 25,017; in Sweden January 14, 1895, No. 6,532; in Norway January 14, 1896, No. 4,207, and in Denmark July 18, 1896, No. 648.

To all whom it may concern:

Be it known that I, CHARLES KINGSTON WELCH, engineer, a subject of the Queen of Great Britain, residing at Coventry, England, have invented certain new and useful Improvements in and Relating to Pneumatic Tires, of which the following is a specification, reference being had to the accompanying drawings.

I have obtained patents for this invention in the following countries: Great Britain, No. 9,294, dated May 10, 1894; France, No. 242,745, dated November 9, 1894; Belgium, No. 112,647, dated November 9, 1894; Germany, No. 89,052, dated November 15, 1894; Denmark, No. 648, dated July 18, 1896; Austria, No. 45/97, dated November 9, 1894; Italy, Vol. XXIX, 37,616, and LXXIV, 14, dated December 10, 1894; Canada, No. 47,771, dated December 19, 1894; Spain, No. 16,531, dated November 9, 1894; Switzerland, No. 9,365, dated November 14, 1894; Sweden, No. 6,532, dated January 14, 1895; Russia, No. 25,017, dated January 10, 1895, and Norway, No. 4,207, dated January 14, 1896.

My invention relates to pneumatic tires, and has for its object to construct an improved cover for the same for preventing the side slip to which said tires are liable. Such covers are now well known under the name of "non-slipping" covers and are of very many different designs, in some of which projections or ridges are formed on the tread-surfaces of the cover across or along the same.

The improvement subject of my present invention consists in a molded cover for pneumatic tires provided with continuous parallel ridges of varying height, so as to form undulating crests with the highest points of adjacent ridges alternating in position, and also in forming these ridges circumferentially on the tread or wearing surface of the tire-cover with intermediate smooth or plain surfaces or spaces between them.

In the accompanying drawings, Figure 1 is a plan of a portion of a tire-cover constructed according to my invention. Fig. 2 is a sec-

tion on line xx of Fig. 1. Fig. 3 is a side view of Fig. 1. Fig. 4 is a plan of a modified form of tire. Fig. 5 is a section of the same on line $x'x'$. Fig. 6 is a plan of another modification. Fig. 7 is a section of the same on line x^2x^2 . Fig. 8 is a plan of a further modification. Fig. 9 is a section of the same on line x^3x^3 . Fig. 10 is a perspective view of a portion of a tire constructed in the manner illustrated in Fig. 6.

Like letters of reference indicate the same parts throughout the several figures of the drawings.

A is the plain portion of the cover, and B B are the continuous undulating ridges running circumferentially along the cover and molded thereon.

Referring now to Figs. 1, 2, and 3, the cover is shown as provided with two rows of projections B B, one row on either side of the tread portion of the cover. The said projections are preferably slightly wedge-shaped in transverse section, as is readily seen from Fig. 2, and are also placed alternately on the two sides of the tread portions of the cover, as shown.

In Figs. 4 and 5 is shown a cover having four rows of projections, the two rows nearest the median line of the cover being arranged similarly to those shown in Fig. 1, and the two outer rows of projections alternating with those of the adjacent row.

In Figs. 6 and 7 is shown a cover also having four rows of projections and very similar to that shown in Figs. 4 and 5, except that the projections in the two inner rows are placed opposite each other and alternate with those in the two outer rows.

In Figs. 8 and 9 is shown a cover similar to that shown in the preceding figures, except that the portion of the tread intermediate to the double rows in lieu of being flat is wavy.

Fig. 10 shows the cover of Fig. 8 as applied to a finished tire.

I sometimes make the projections of harder rubber than the remaining portions of the cover.

Instead of each projection being rounded at the top, as shown in the drawings, the said projections may each consist of two inclined planes forming an obtuse angle at the top, 5 and between said projections a similar angular depression may be formed.

My improved non-slipping cover may be applied to any description of tire. For use with single-tube tires and those which are already 10 provided with covers I employ a band of rubber with projections arranged on it, as herein described, and secure said band to the tire by solution or otherwise. In such cases the width of the band is preferably limited to the 15 space occupied by the projections. I form the projections on the covers or bands in the process of molding the same.

My improved non-slipping cover does not decrease the resiliency of the tire, as ordinary 20 non-slipping covers do, and is a sure preventive against slipping or skidding of the wheel to which it is fitted.

What I claim is—

1. A molded pneumatic-tire cover or band of india-rubber having on its wearing-surface 25 continuous parallel ridges of varying height so as to form undulating crests with the projections or highest points of adjacent ridges alternating in position, as set forth.

2. A molded pneumatic-tire cover or band 30 of india-rubber having continuous parallel ridges on its wearing-surface, with intermediate smooth or plain surfaces between said ridges, the ridges being of varying height so as to form undulating crests with the highest 35 points or projections of adjacent ridges alternating in position, as set forth.

In testimony whereof I have hereunto set my hand this 14th day of November, 1894.

CHARLES KINGSTON WELCH.

Witnesses:

M. WILKS,

FRED SHARPE.