No. 689,178. Patented Dec. 17, 1901.

C. O. GEHRCKENS.

DRIVING BELT.

(Application filed Mar. 18, 1901.)

(No Model.)

Fig. 1.

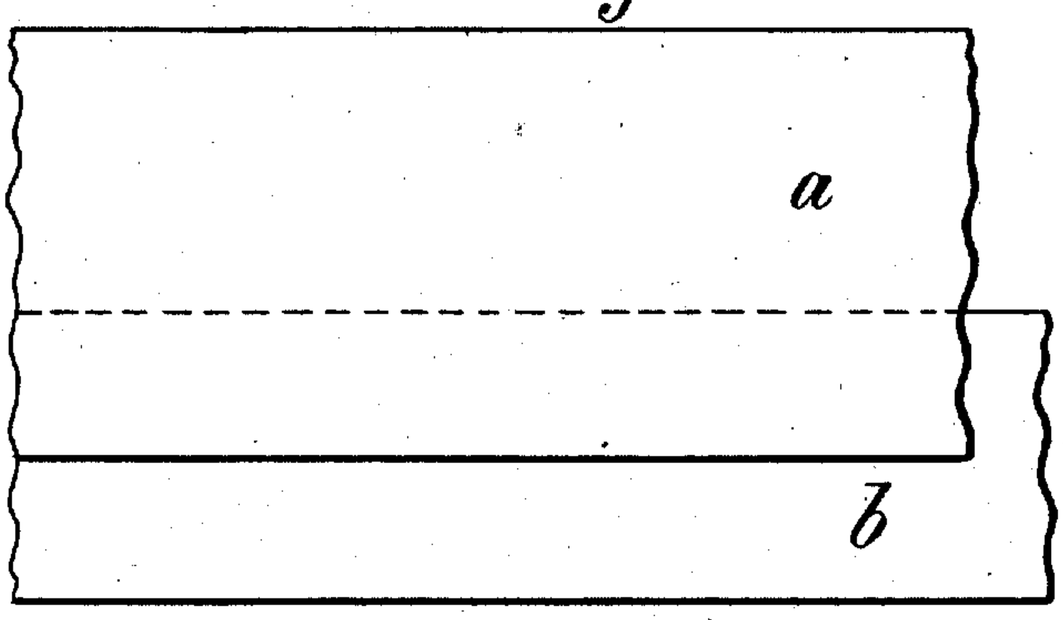


Fig. 2.

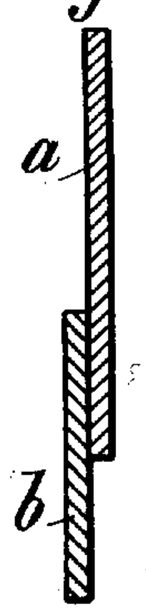


Fig. 3.

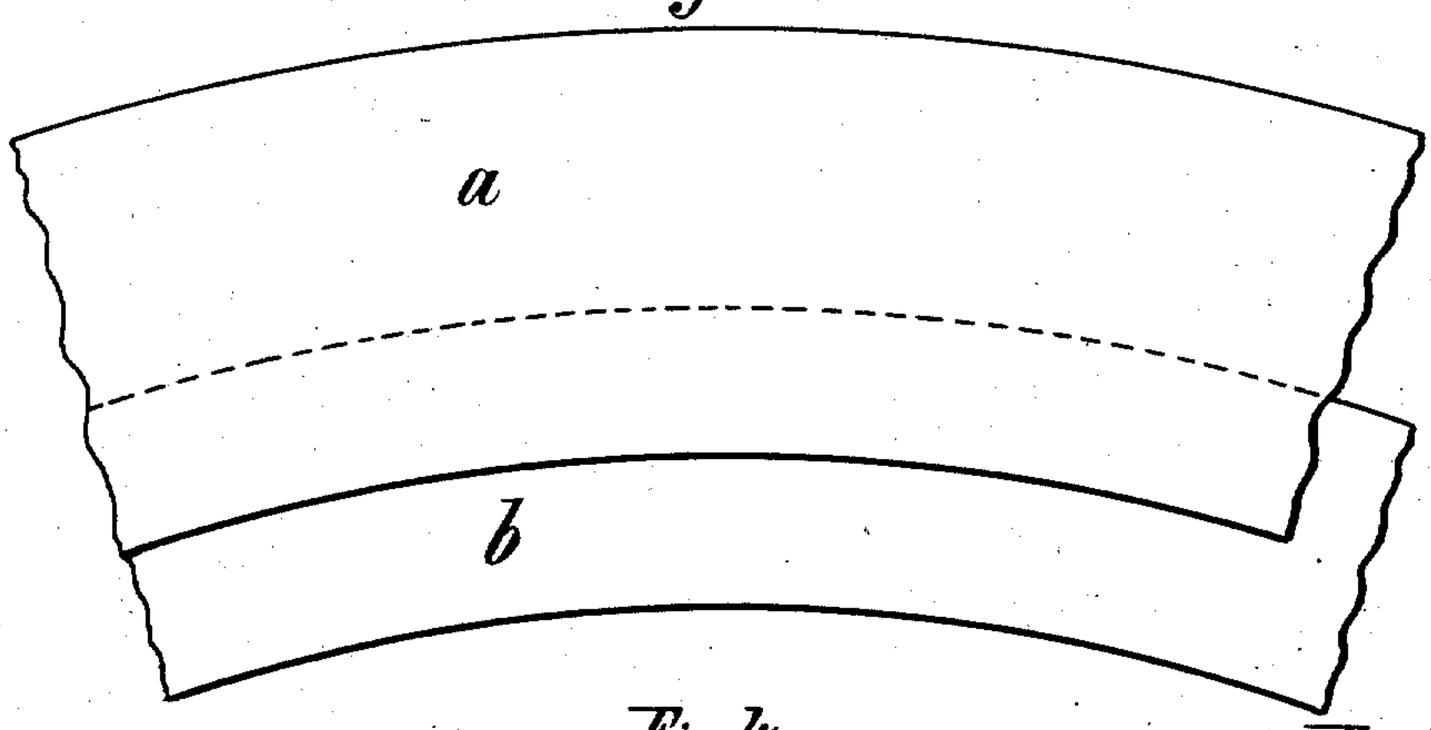


Fig. 4.

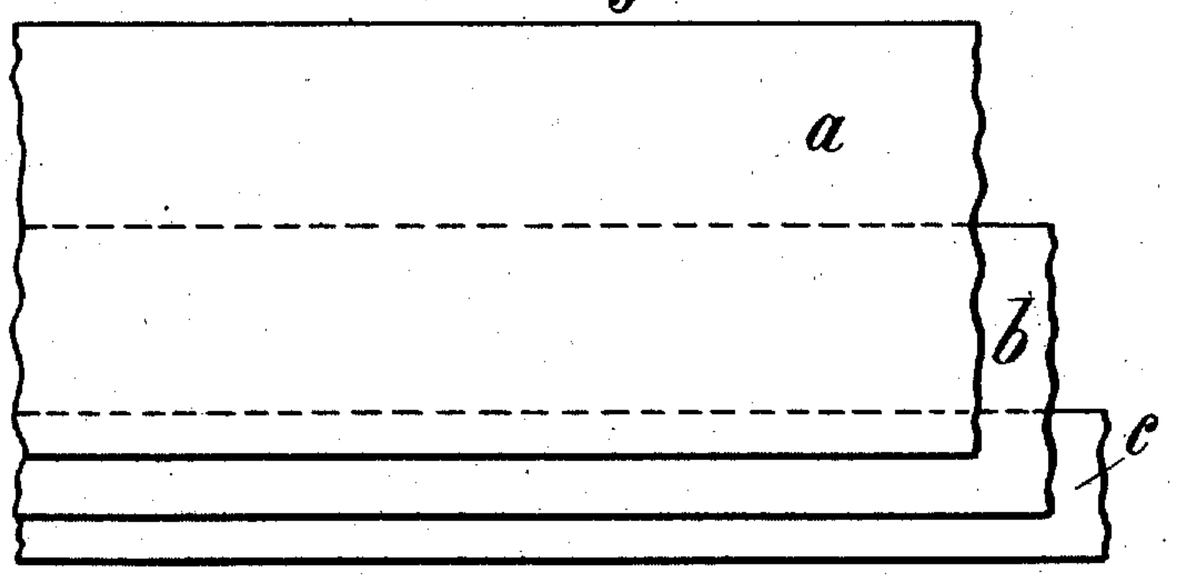
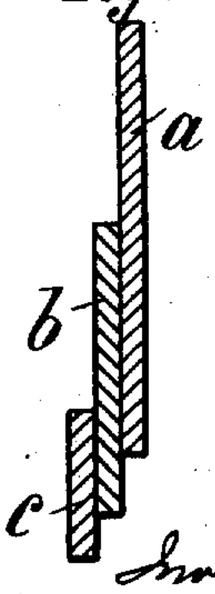


Fig. 5.



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UNITED STATES PATENT OFFICE.

CARL OTTO GEHRCKENS, OF HAMBURG, GERMANY.

DRIVING-BELT.

SPECIFICATION forming part of Letters Patent No. 689,178, dated December 17, 1901.

Application filed March 18, 1901. Serial No. 51,692. (No model.)

To all whom it may concern:

Be it known that I, CARL OTTO GEHRCKENS, a subject of the German Emperor, and a resident of Hamburg, in the German Empire, have invented certain new and useful Improvements in Driving-Belts, of which the following is a specification.

The present invention relates to improvements in driving-belts, especially of that class which have become known by the specification of my prior United States Patent, No. 324,993, of August 25, 1885, and which consists of two or more longitudinal strips having equal or nearly-equal breadth and being superposed or placed in the form of steps or stairs one upon the other, so that the overlapping or the projecting parts (the steps or lags) of the several strips are of practically equal width, the layers being connected by cementing, sewing, or any other suitable means. Driving-belts of this kind have proved very true and advantageous, especially when used as quartered belts. In quartered belts, as is well known, the belt on leaving the driving-pulley turns or cants on its stretched or longer edge, so that its other or shorter edge is canted or turned away from the driving-pulley. This outward turning or canting of the belt continues until the belt reaches the driven pulley, where the belt is in a plane at about right angles to the plane or position in which it leaves the driving-pulley. The canted or turned-off or longer edge of the belt has therefore to travel a greater distance than the edge on which the belt is turning or canting. For this reason and for the reason that the latter edge of the belt is nearer to the imaginary crossing-point of the shafts of the pulleys this edge is commonly called "inner" edge, whereas the other edge is generally known as "outer" edge of the belt. Quartered belts of the above-described construction first assist the outer edge of the belt on leaving the pulley to lift or move off therefrom, and to thereby cause the belt to assume an oblique position to the pulley, so as to form at this place a sort of bell-mouthed or funnel-shaped bag, (which peculiar formation of the belt is absolutely necessary for compensating for the surplus or excess of travel of the outer edge over that of the inner edge of the belt,) and, secondly, they reliably prevent the edges of the belt from overstretching, and consequently from lateral breakage or tearing, because in such step or stair shaped belts the line of greatest tension is removed from the edge to a line nearer to the middle of the belt. In spite of the above-mentioned advantages the said stepped belts yet possess the disadvantage that they do not allow the belt in its own plane to form an arch or annular segment, or at least render this difficult. Quartered belting is known to stretch more on the outer edge than on the inner edge. In consequence of this fact there is the tendency in quartered belts to shape themselves by this very surplus stretching of the outer edge into an arch-shaped or segmental band form, the inner edge of such a belt being more curved than the outer one. The belt must therefore be capable of taking the said curved form without breaking or tearing at the outer edge—that is, that one having the longer radius.

The object of the present improvements is to construct, arrange, and connect the longitudinal strips in such a manner that the step or stair shaped belt without altering its above-mentioned advantages (formation of a funnel or bell shaped bag and prevention of lateral breakage) is adapted to accept the necessary arch shape or segmental form at the turn in an easier and more natural manner. The object aimed at is attained by making the longitudinal strips to be superposed not of equal, but of unequal, breadth, increasing each by at least one-third in breadth, so that the outer edge of the stair-shaped or stepped belt receives a proportionately greater lag than the inner edge.

In the accompanying drawings, Figure 1 is a plan view, and Fig. 2 a cross-section, of a portion of an improved driving-belt embodying my invention. Fig. 3 is a plan view of the same driving-belt after use, having taken an arch-shaped or segmental band form. Fig. 4 is a plan view, and Fig. 5 a cross-section, showing a modification of my improved driving-belt.

Similar letters refer to similar parts throughout the several figures.

Referring to Figs. 1 and 2, my improved

driving-belt consists of a strip *a* and a strip *b*, superposed upon and connected with each other in any suitable manner. The strip *a* is by one-third or about so much broader than the strip *b*, thus insuring a greater lag at the outer edge. This greater lag at the outer edge allows a greater stretching and extension of the belt along this outer edge than along the inner edge, having the smaller lag, so that the belt is necessarily caused to accept by and during its use as a quartered belt the above-described curvature into the form of a segmental band. (Shown by Fig. 3.) The same rounding or curving also appears in step or stair shaped belts being composed of three or more longitudinal strips of unequal breadth—that is to say, when the strips are arranged and connected in such a manner that the overlappings and lags increase from the inner edge toward the outer edge of the belt.

In Figs. 4 and 5 I have shown a driving-belt composed of three longitudinal strips *a*, *b*, and *c*.

The improved belts may also advantageously be employed as crossed belts in connection with conical pulleys, as the conditions above explained with reference to quartered belts also apply in quite a similar manner to crossed belts.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. A driving-belt comprising two or more strips of unequal breadth and stair-shaped in cross-section, substantially as and for the purpose set forth.

2. A driving-belt composed of two or more strips of unequal breadth and stair-shaped in cross-section, the overlappings and lags of which differ in width, substantially as and for the purpose set forth.

3. In a driving-belt, the combination of two or more longitudinal strips of an unequal breadth, connected together to form a belt stair-shaped in cross-section, the overlappings and lags of which increase from the inner edge toward the outer edge of the belt, substantially as and for the purpose set forth.

4. In a driving-belt, the combination of two or more longitudinal strips of unequal breadth, connected together to form a belt stair-shaped in cross-section, the overlappings and lags of which are of unequal breadth, substantially as and for the purpose set forth.

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