

No. 640,863.

Patented Jan. 9, 1900.

E. M. BIRDSALL.  
ELASTIC TIRE.

(Application filed Nov. 2, 1899.)

(No Model.)

Fig. 1.

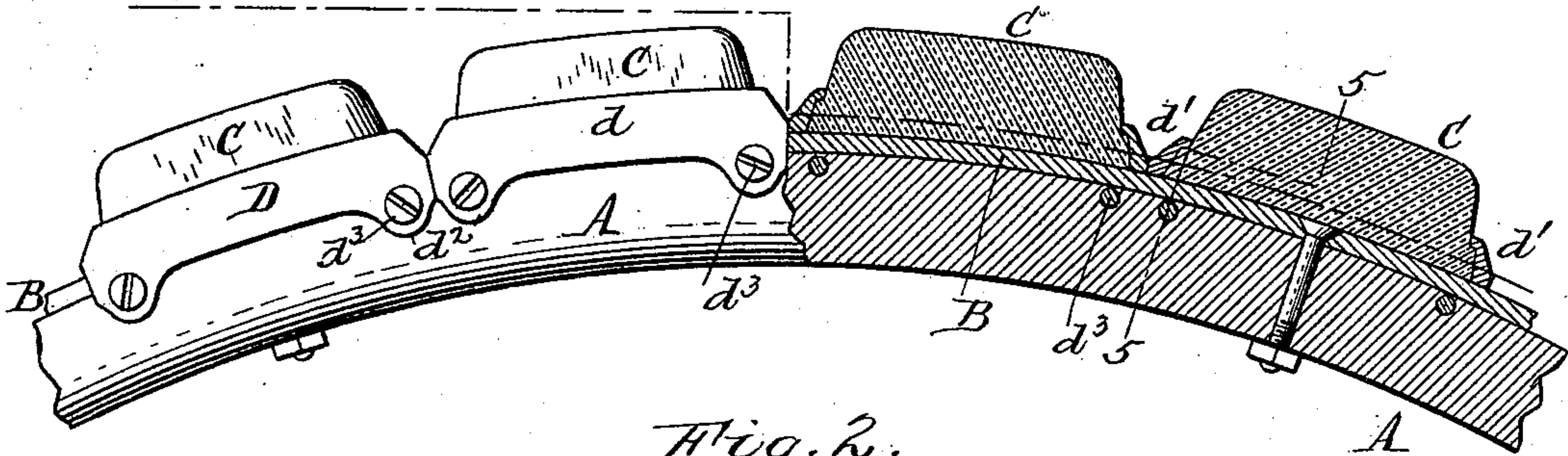


Fig. 2.

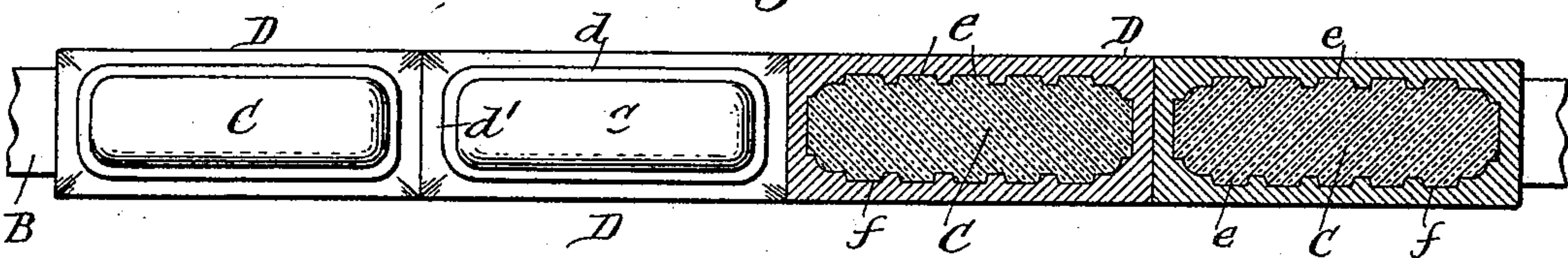


Fig. 3.

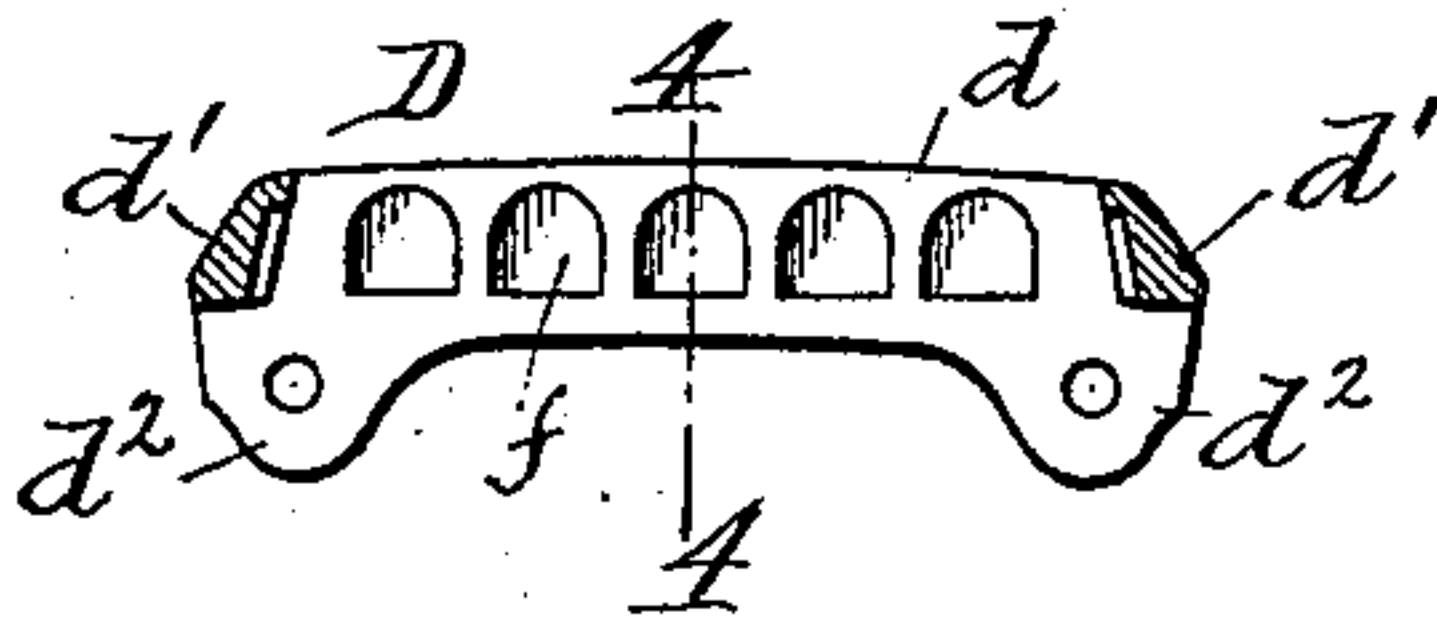


Fig. 4.

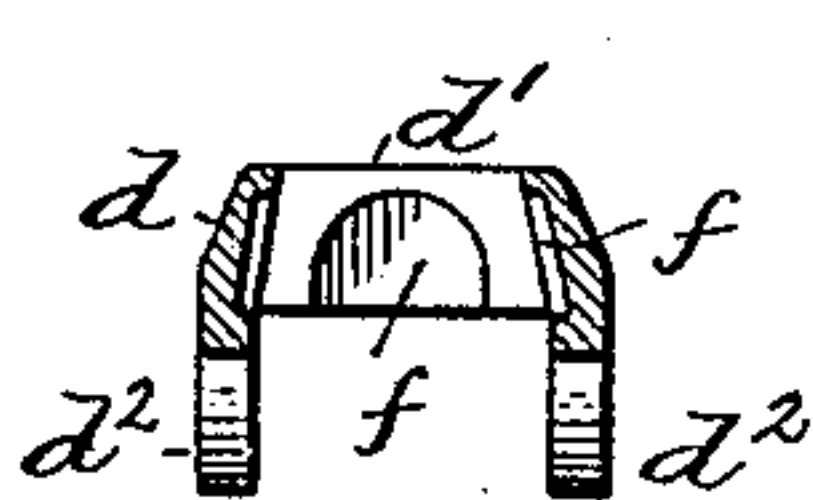


Fig. 5.

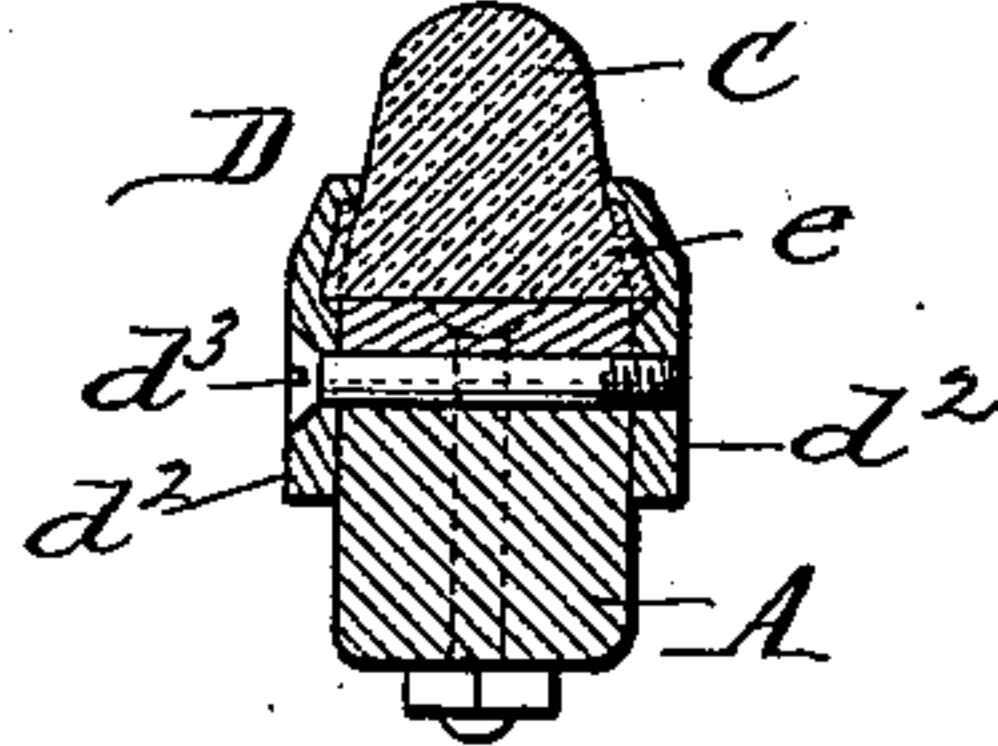


Fig. 6.

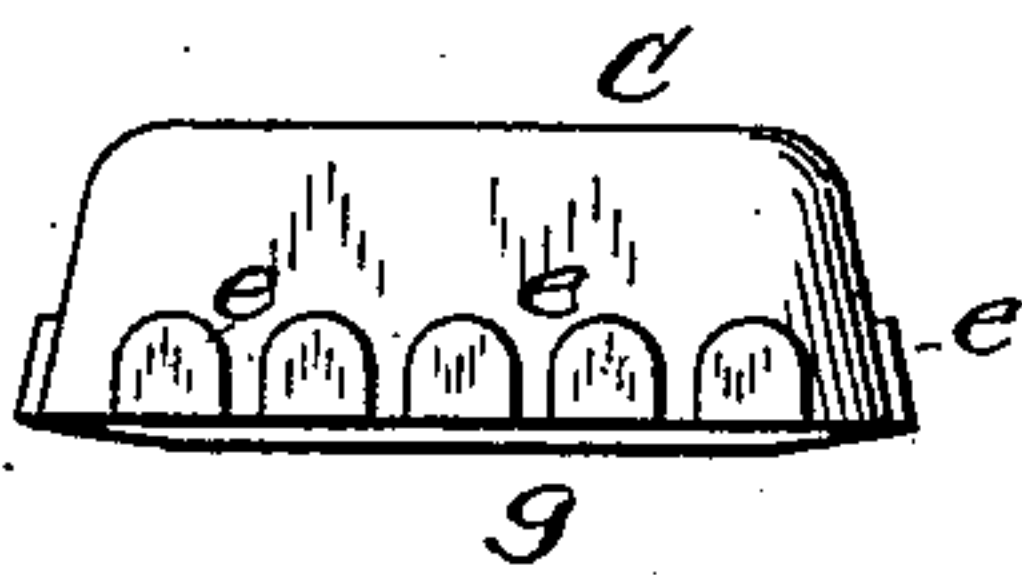


Fig. 7.

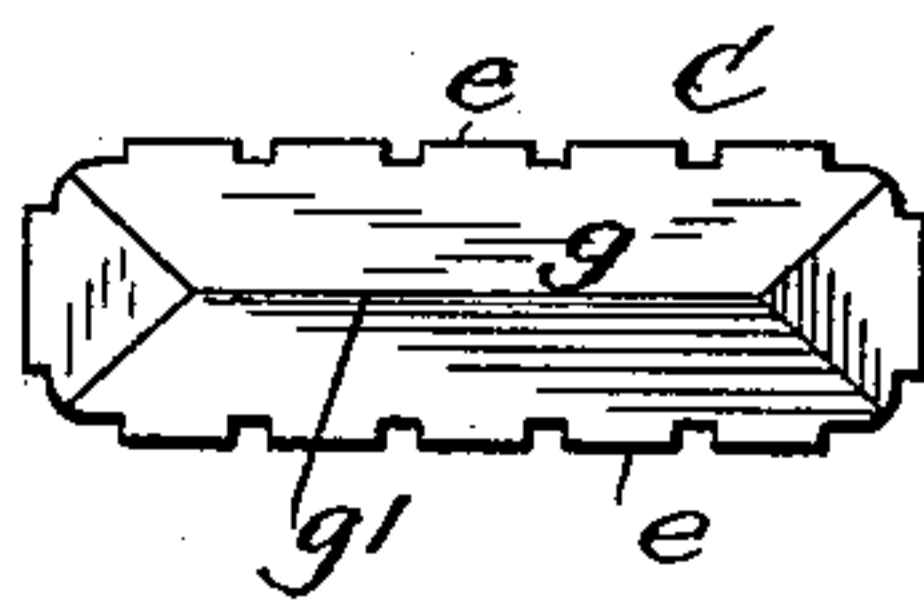


Fig. 8.

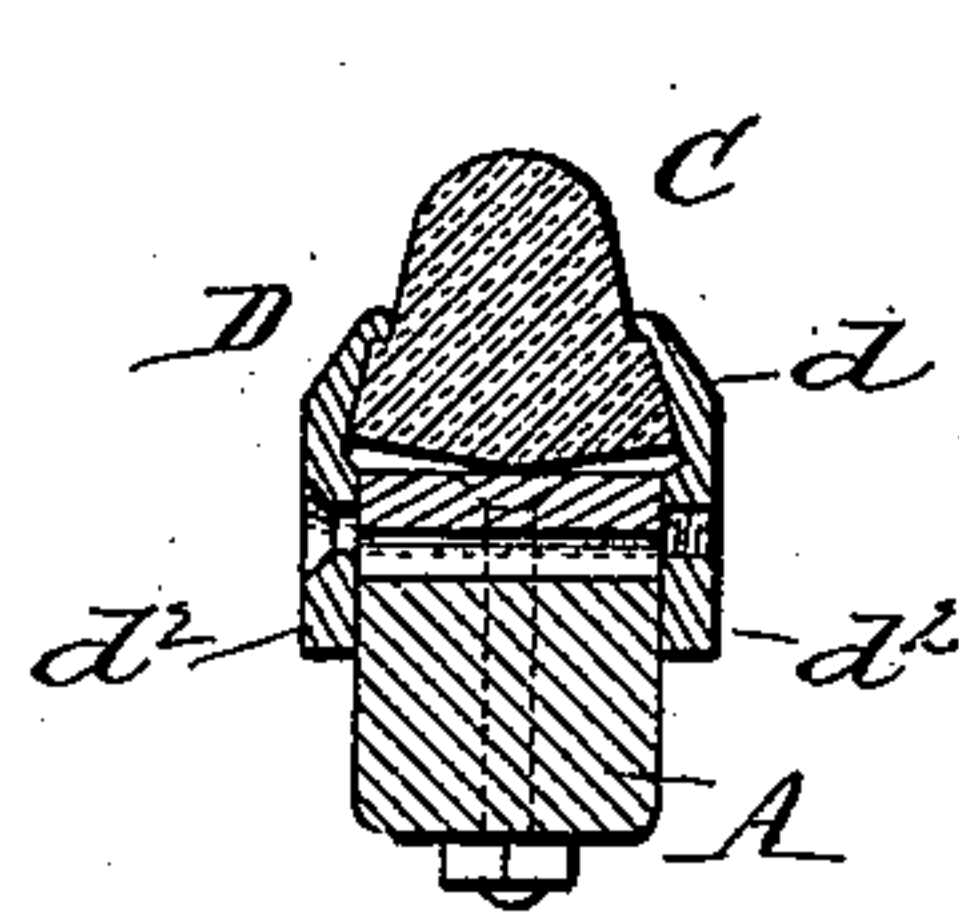


Fig. 10.

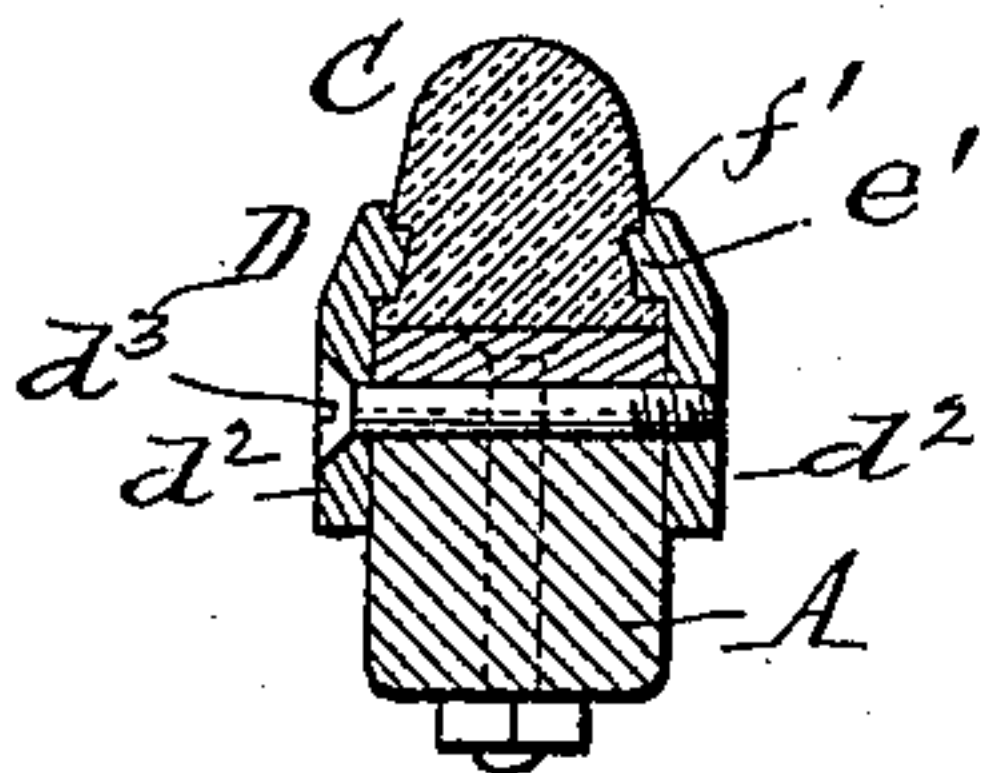
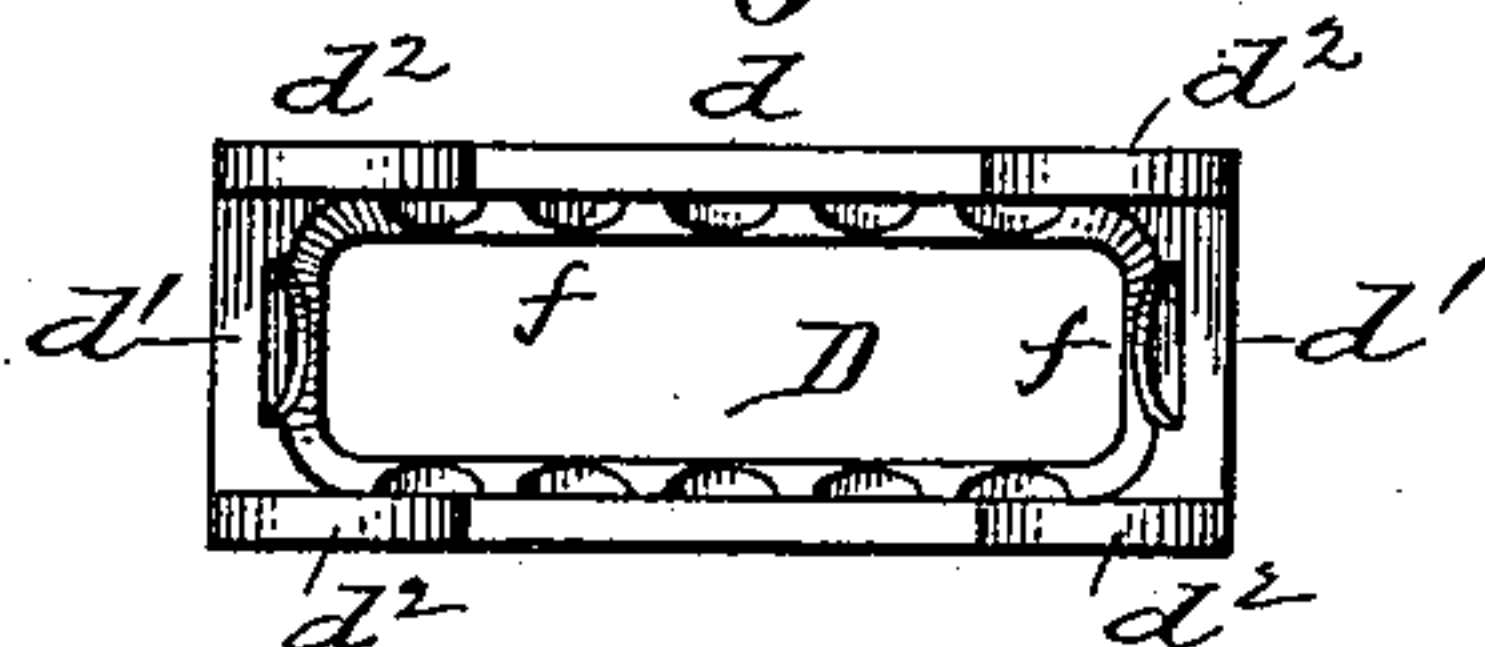


Fig. 9.



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# UNITED STATES PATENT OFFICE.

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## ELASTIC TIRE.

SPECIFICATION forming part of Letters Patent No. 640,863, dated January 9, 1900.

Application filed November 2, 1899. Serial No. 735,564. (No model.)

*To all whom it may concern:*

Be it known that I, EDGAR M. BIRDSALL, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Elastic Tires, of which the following is a specification.

This invention relates to elastic tires for the wheels of carriages and other vehicles, and more particularly to tires of this class which comprise a number of segmental sections or blocks of practically solid india-rubber and metallic sockets or holders in which the blocks are confined and which are secured to the periphery of the wheel rim or felly.

One of the objects of my invention is to interlock the blocks with their sockets in such a manner that the blocks are prevented from being compressed or displaced lengthwise in their sockets by dragging over the ground or striking obstructions, thereby avoiding pulling out of the blocks.

Another object of my invention is to so construct the elastic blocks that they are compressed within their sockets or holders, so as to reliably retain the same in place.

In the accompanying drawings, Figure 1 is a fragmentary side elevation, partly in section, of a wheel rim or felly provided with my improved tire. Fig. 2 is a top plan view thereof, partly in section. Fig. 3 is a detached longitudinal section of one of the block-sockets. Fig. 4 is a cross-section thereof in line 4 4, Fig. 3. Fig. 5 is a cross-section in line 5 5, Fig. 1. Fig. 6 is a detached side elevation of one of the rubber blocks. Fig. 7 is a bottom plan view thereof. Fig. 8 is a cross-section similar to Fig. 5, showing the form of the bottom of the block before the same is flattened against the wheel-rim. Fig. 9 is a bottom plan view of one of the block-sockets. Fig. 10 is a transverse section similar to Fig. 5, showing a modified arrangement of the interlocking lugs and recesses of the rubber blocks and their sockets.

Like letters of reference refer to like parts in the several figures.

A is the usual wooden felly of the wheel, and B the metallic band or tire, which is shrunk

upon the felly and secured thereto in the customary manner.

C are the elastic blocks or sections which form the tire and which consist of rubber or other suitable material.

D are the metallic holders or sockets which receive and confine the blocks C and which rest against the outer surface of the metallic band or tire, the blocks projecting beyond the sockets in the usual manner to form the sectional tire. These sockets D are oblong or rectangular in form and consist of side walls  $d$  and end walls  $d'$ . The side walls of each socket are provided at their inner edges with ears  $d^2$ , which overlap the sides of the felly A and the metallic band B, and the socket is secured to the felly by transverse screws or bolts  $d^3$ , which pass through the felly and the ears  $d^2$ , as shown in Figs. 1 and 5. The rubber blocks are preferably widened or enlarged toward their bases and their bottom or bases rest against the periphery of the metallic tire B. The end and side walls of the sockets D are beveled or converged outwardly to correspond to the beveled sides and ends of the blocks, as shown in Figs. 3, 4, and 5. Each block is interlocked with its socket by a row or number of independent lugs or projections  $e$ , arranged on the base portion of the block at its sides and ends and fitting into corresponding recesses or depressions  $f$ , formed in the inner sides of the sockets, as shown in Figs. 2 and 5. These interlocking lugs and recesses not only prevent withdrawal of the blocks from their sockets, but also resist compression and displacement of the blocks in the direction of their length. When the blocks are confined in their sockets by continuous base-flanges and a block is dragged along the ground from any cause or strikes an obstruction which tends to compress the same lengthwise, such base-flanges offer no resistance to compression, rendering the block liable to be pulled or twisted out of its socket. By interlocking the blocks with their sockets by a number of independent lugs and corresponding recesses, as shown, the lugs resist compression of the blocks under the above-mentioned conditions, thereby preventing



longitudinal displacement of the blocks and the pulling out of the blocks, which is liable to result from their displacement. As shown in Fig. 10, the arrangement of these interlocking lugs and recesses may be reversed, the lugs  $e'$  being formed on the inner side of the sockets and the recesses  $f'$  in the rubber blocks.

The blocks C are preferably provided with a convex bottom or inner face  $g$ , as shown in Figs. 6 and 8, and are constructed to snugly fit against the walls of the sockets before the blocks arranged therein, are applied to the wheel-rim. By this construction when the sockets are placed against the periphery of the metallic tire B the blocks bear against the latter only at their salient central portions or ridges  $g'$ , as shown in Fig. 8, in which position of the blocks the bolt-holes of the socket-ears  $d^2$  are out of register with the bolt-holes of the felly. Upon now pressing the socket inwardly sufficiently to bring these holes in line for receiving the screws or bolts  $d^3$  the convex bottom of the block is compressed and flattened against the periphery of the metallic tire B. This flattening of the convex bottom causes the base portion of the block to spread or expand and impinge firmly against the surrounding walls of the socket, thereby tightly securing the block in its socket. The convex bottom of each block preferably has the form of a prism with beveled ends, as shown in Figs. 6 and 7, by which construction the base portion of the block is expanded lengthwise against the end walls of the sockets and crosswise against the side walls thereof.

As the various blocks constituting the elastic tire are separate and independent of one another, a block can be readily detached from the wheel-rim for repairing or renewing the same, and as readily replaced, without disturbing the adjacent blocks. This is easily done by removing the two screws or bolts  $d^3$  of the block-socket.

In applying the blocks to the wheel-rim they are first inserted in their sockets D from the inner sides of the sockets and the latter are then secured to the rim.

I claim as my invention—

1. In a sectional elastic tire, the combination with a socket or holder adapted to be secured to a wheel rim or felly, of an elastic block arranged in said socket, one of said parts being provided in its sides with a number of independent lugs or projections which interlock with corresponding recesses formed in the other part, substantially as set forth.

2. In a sectional elastic tire, the combination with a socket or holder adapted to be secured to a wheel rim or felly and provided in the inner side of its side walls with a row of independent recesses or depressions, of a block arranged in said socket and having its base portion provided in opposite sides with lugs or projections which interlock with the recesses of said socket, substantially as set forth.

3. In a sectional elastic tire, the combination with a socket or holder adapted to be secured to a wheel rim or felly of an elastic block having its base portion confined in said block and provided with a convex bottom adapted to be flattened against the periphery of the wheel-rim for expanding the base portion of the block against the surrounding walls of said socket, substantially as set forth.

4. In a sectional elastic tire, the combination with a socket or holder adapted to be secured to a wheel rim or felly, of an elastic block having its base portion confined in said block and provided with a prismatic bottom adapted to be flattened against the wheel-rim, substantially as set forth.

Witness my hand this 25th day of October, 1899.

EDGAR M. BIRDSALL.

Witnesses:

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