(No Model.)

A. A. MARCH.

AXLE SKEIN.

No. 589,605. Patented Sept. 7, 1897.

Fig. 1.

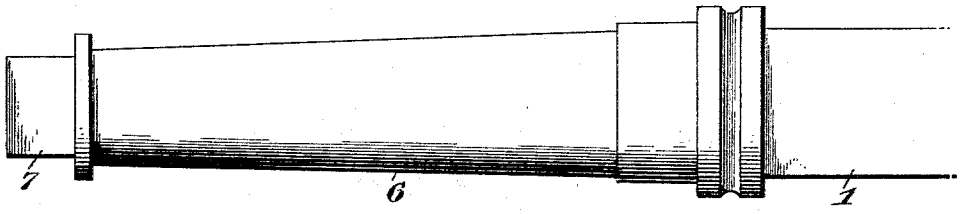
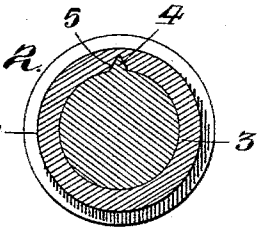


Fig. 2.



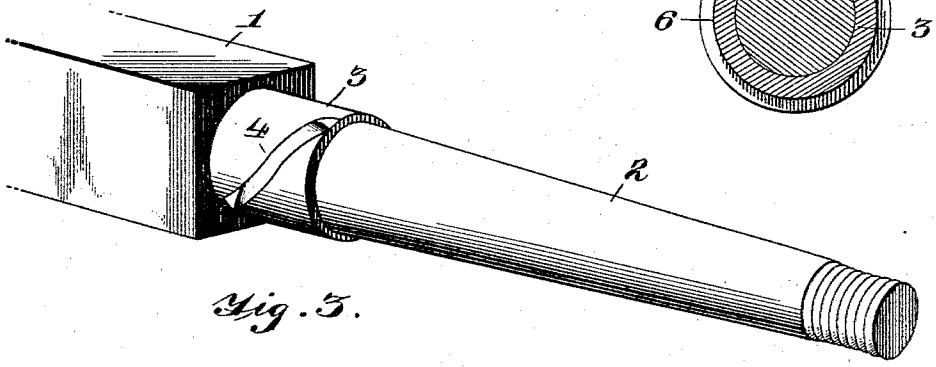
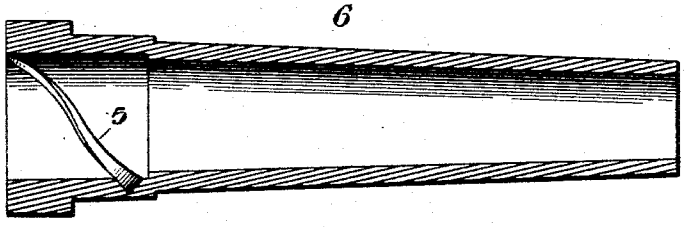


Fig. 3.

Fig. 4.



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UNITED STATES PATENT OFFICE.

ALONZO A. MARCH, OF FLORENCE, KANSAS.

AXLE-SKEIN.

SPECIFICATION forming part of Letters Patent No. 589,605, dated September 7, 1897.

Application filed January 16, 1896. Serial No. 575,760. (No model.)

To all whom it may concern:

Be it known that I, ALONZO A. MARCH, a citizen of the United States, residing at Florence, in the county of Marion and State of Kansas, have invented a new and useful Axle-Skein, of which the following is a specification.

My invention relates to improvements in the construction of axles by which the skeins may be fastened thereto or removed therefrom more readily than is possible with axles of the ordinary construction.

Prior to my invention it has been proposed to fasten a skein or sleeve to the collar of the axle by means of a series of interlocking screw-threads formed in the usual manner on the faces of the axle-collar and the inner end of the sleeve or skein; but in practical service of such a construction it is found that the threads are liable to become rusted, owing to exposure of the axle to the weather, and thereby form a rust-joint between the axle and the skein, which joint renders it extremely difficult and laborious to remove the skein. With axles of this construction it is necessary to cut threads on the collar and the skein after they have been properly shaped and fashioned to adapt them for service in connection with each other. In my present invention I aim to overcome these objections by the provision of interlocking devices on the axle-collar and the skein, which may be cast or made complete at the time of fabrication of the parts and which will insure ready attachment of the skein to or its removal from the axle-collar, as may be desired.

To the accomplishment of these ends my invention consists in the combination, with an axle having the usual collar and a skein having its inner end enlarged to fit said collar, of a single cam-rib disposed diagonally on the collar and extending around the same for a part of its circumference and from end to end of the same, and a like cam-groove on the inner surface of the enlarged part of the skein and adapted to receive said cam-rib and to lock the skein to the collar by a partial rotation of the skein on the axle, said interlocking rib and groove being of angular form in cross-section and of slight sigmoidal curvature in the direction of the length, so as to tightly wedge together when the skein is fitted in place by a partial rotation thereof.

To enable others to understand my invention, I have illustrated the same in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is an elevation of an axle with a skein thereon. Fig. 2 is a vertical transverse sectional view through the axle-collar and the enlarged inner end of the skein, illustrating the interlocking cam-rib and groove by which the skein is held rigidly in place. Fig. 3 is a detail perspective view of the axle with the skein removed, illustrating the cam-rib on the axle-collar. Fig. 4 is a longitudinal sectional elevation through the skein, showing the cam-groove therein.

Like numerals of reference denote corresponding parts in all the figures of the drawings, referring to which—

1 designates a part of an axle, 2 is the spindle thereof, and 3 is the axle-collar between the body of the axle and the spindle. These parts may be of the usual or any preferred construction; but in accordance with my invention I provide the axle-collar with a cam-rib 4, which protrudes from the cylindrical surface to the axle-collar. This cam-rib is disposed diagonally on the axle-collar to extend partially around the cylindrical surface of said collar about one-fourth the circumference thereof, and also to extend from the front edge of the collar, where it joins to the spindle, to the rear edge of the collar, where it joins with the body of the axle, all as shown by Fig. 3.

The skein is indicated at 6 in the drawings, and, as usual, it is enlarged at its inner end to fit snugly to the collar 3. The skein is designed to be held, primarily, by a nut 7, which is screwed on the threaded extremity of the axle-spindle; but to hold the sleeve in place on the spindle I construct it with a cam-groove 5, arranged to receive the cam-rib 4 and to interlock therewith by a wedging action by a partial rotation of said sleeve or skein on the axle-spindle. The cam-groove is formed on the inner surface of the enlarged end of the skein, and it extends in a diagonal direction partly around the inner circumference of the skein, one extremity of said cam-groove open-

ing through an edge of the skein to enable the cam-rib 4 to be easily fitted to the cam-groove in the skein when the parts are assembled.

To secure a wedging action between the skein and the axle, so as to hold the skein tightly in place and to enable the skein to be quickly and easily applied, as well as to be removed in like manner, I make the cam-rib and cam-groove of angular form in cross-section, as shown by Fig. 2, and impart thereto a slight sigmoidal curvature in the direction of their length. The curvature and angular form of the cam-rib corresponds to the cam-groove, and the parts are thus mutually adapted to each other to secure proper connection and operation when adjusting the skein.

In applying the skein it is slipped lengthwise on the axle-spindle until its inner enlarged end comes opposite to the axle-collar. The skein is now adjusted axially to bring the extremity of its cam-groove opposite to the outer extremity of the cam-rib, and the skein is now given an endwise thrust and partial rotation, whereby the cam-rib coacts with the cam-groove to draw the skein tightly in place on the axle-spindle and the collar. The nut 7 is now screwed on the end of the spindle to bear against the skein, and the latter is thus held rigidly and securely in place.

My invention reduces to a minimum the wear on the axle-spindle, thus saving the time and expense involved in cutting off a worn spindle and welding a new spindle in place. The skein may be easily detached from the axle by removing the nut and by giving a partial turn to the skein. As the coacting rib and groove are protected by being inclosed within the skein and as there is but a single rib and groove the liability of the parts getting rusty is reduced to a minimum, so that the skein can be quickly disconnected. My axle may be made to fit wheel-hubs of any ordinary size by using properly constructed and proportioned skeins, thus enabling the device to be used almost universally in connection with ordinary wheel-hubs. It is evident that in case the skein becomes worn it can be removed and a new skein substituted, and skeins of different thicknesses may also be used to make the axle fit to the boxing in the wheel-hub.

My improvements may be cast in finished condition at the time of manufacture of the axle and the skein, thus necessitating a minimum amount of labor in finishing and fitting the parts and enabling them to be easily, quickly, and cheaply produced and assembled.

I am aware that prior to my invention an axle-box has been provided on its exterior surface with a series of spiral ribs to be embedded in the wooden hub of a vehicle-wheel to make the boxing fast with the wheel-hub; but my invention is distinguished from such prior device in that I provide a cam-shaped sigmoidal rib of angular cross-sectional contour on the collar of the axle, so as to extend diagonally from end to end of the collar, and I also construct the axle-skein on its inner surface with a cam-groove of a form corresponding to the cam-rib, whereby the skein may be assembled with relation to the spindle to secure a tight wedging action between the axle-collar and the skein itself to hold the latter securely in place.

What I claim as new, and desire to secure by Letters Patent, is—

The combination with an axle having the usual collar and spindle, and a skein, of the single, cam-rib protruding from the cylindrical surface of the axle-collar and extending diagonally across the same, from end to end thereof, and the cam-groove provided in the inner surface of the skein, to extend diagonally part way around its inner circumference; said rib and groove being of corresponding angular form in cross-section and having slight sigmoidal curvature to tightly wedge together, and interlock intimately one with the other, when the skein is fitted in place by a partial rotation thereof, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ALONZO A. MARCH.

Witnesses:
D. C. BATTEY,
GEO. W. KATES.