(No Model.)

F. D. BLISS.

Carriage Axle.

No. 229,364. Patented June 29, 1880.

FIG. 1.

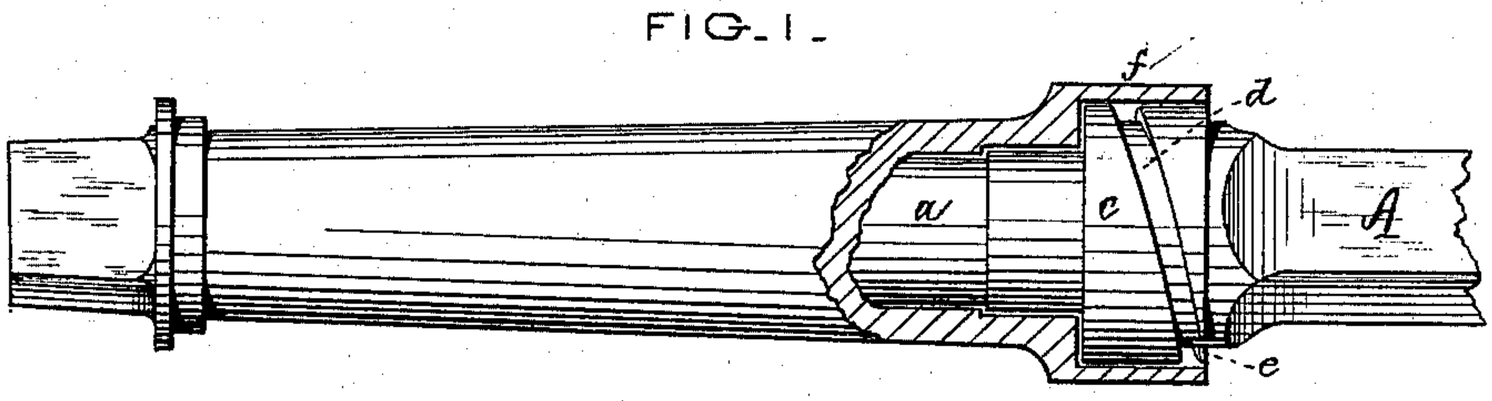
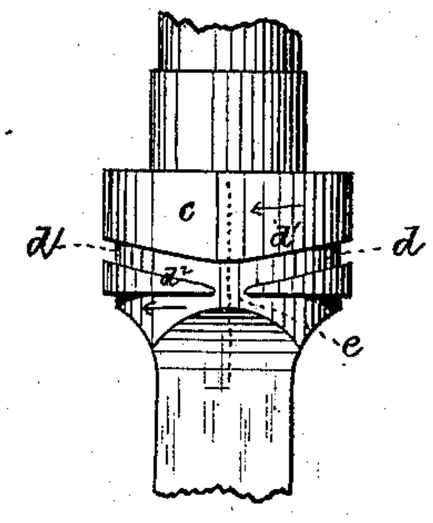


FIG. 2.



WITNESSES:

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" "

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UNITED STATES PATENT OFFICE.

FRANCIS D. BLISS, OF NEW HAVEN, CONNECTICUT.

CARRIAGE-AXLE.

SPECIFICATION forming part of Letters Patent No. 229,364, dated June 29, 1880.

Application filed March 5, 1880. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS D. BLISS, of the city and county of New Haven, in the State of Connecticut, have invented certain new and useful Improvements in Carriage-Axles; and I do hereby declare that the following specification, taken in connection with the drawings herewith, and forming a part of the same, is a full, clear, and exact description of my invention.

My invention relates to means for protecting axle-bearings from dust, dirt, and other foreign matter liable to introduction between the inner surface of the inner end of an axle-box or the inside band of a hub and the coincident surface of the axle-collar.

Axles have heretofore been constructed with reference to said protection of the axle-bearing in various ways, and they have also been provided with detachable structures in considerable variety under the name of "sand-bands," "sand-collars," "sand-boxes," &c. Some of these contrivances require the detachment of the wheel from its axle from time to time in order to remove the accumulated extraneous matter which has been arrested on its way to the axle-bearing, and others are provided with an opening, through which the extraneous solid matter may be dug out or removed from time to time without loosening the wheel; and, still further, a detachable spirally-grooved block, mounted upon and secured to the axle back of its collar, has been heretofore employed in connection with a hub-band, the whole constituting a self-cleaning sand-band.

My invention relates specially to that class of axles which are used with axle-boxes and have broad collars, which are wholly and closely encircled by the axle-box flanges; and it consists of a broad axle-collar concentric with the axis of the axle-bearing and containing a spiral groove which is open at the lower rear side of the collar adjacent to the outer end of the axle-box flange when the latter is in proper position upon the axle. The flange of the axle-box, therefore, in combination with the spirally-grooved collar, constitutes a sand-box which has an opening beneath the axle of only sufficient area for the discharge of extraneous matter, whereas in sand bands or boxes which are composed of a hub-band and a detachable spirally-grooved block, as before herein referred to, there is beneath the axle a wide opening between the axle and the inside of the hub-band, through which the joint between the wheel-hub and the collar of the axle is largely exposed to the free entrance of dust and dirt, without any clearing action on the part of the hub-band and the spirally-grooved block.

To more particularly describe my invention, I will refer to the accompanying drawings, in which—

Figure 1 represents, partly in elevation and partly in longitudinal vertical section, an axle-box and one end of an axle embodying my invention. Fig. 2 represents the periphery of the grooved collar of said axle in a plane projection.

A denotes the axle, having the usual bearing *a* and a collar, *c*. The sand-groove *d* in said collar is doubly spiraled, as is clearly shown in the drawings, and has the exit or discharge-aperture *e* at the under side of the axle, formed by a lateral cut extending from said groove to the rear surface of the collar. The flange *f* of the axle-box, as is usual, extends over and surrounds the collar *c*. The collar *c* is cylindrical and concentric with the axis of the axle-bearing, as heretofore; but such a collar, so far as my knowledge extends, never before contained a spiral groove open at the rear lower side, so as to cause said collar, in conjunction with the flange of the axle-box, to operate as a self-clearing sand-band.

In Fig. 2 the entire sand-groove is shown, with arrows indicating the direction in which the axle-box revolves. Assuming the axle to be in use, the portion of the groove shown on the right-hand side of the dotted line in said figure would be on the front side of the axle, and therefore the edge *d'* of that portion of the groove operates as a clearing-edge for scraping extraneous matter from the inner surface of the axle-box flange, and as the extraneous matter is accumulated thereby in the groove it is constantly moved downward toward the discharge-opening *e*, through which it is ejected automatically from time to time. The portion of the groove on the left-hand side of the dotted line in Fig. 2 would be on the rear side of the axle, and while operating, as heretofore, to arrest the passage of extraneous mat-

ter, the edge d^2 of that portion of the groove operates as a clearing-edge. The pitch of the spiral is greater than the width of the groove, so that the flange of the axle-box is internally scraped continuously, both toward and away from the axle-bearing, which is conducive to a continuous change in position of the earthy matter in the groove and to its prompt and automatic discharge from the opening *e*.

While I prefer, for attaining the best results, to have the sand-groove *d* doubly spiraled—*i. e.*, in two directions, as shown—I do not limit my invention to that precise form of groove, because I am well aware that the automatic discharge of solid extraneous matter can be attained, in connection with a partial scraping effect, if the groove be only spiraled half-way to afford the scraping-edge d', and that the remainder of the groove on the rear side of the axle may be straight and operate as a sand-groove with as good results as the straight non-spiraled grooves heretofore used. I prefer, also, to have this groove cut in a collar integral with the axle; but it is obvious that, so far as the operation of the spiral groove is concerned, it is immaterial whether it be cut in a collar solid with the axle or in a detachable sectional collar applicable to axles, after the manner of the well-known detachable sand-bands, provided always that the grooved collar be cylindrical and concentric with the axis of the axle-bearing, so that the flange of the axle-box will wholly surround the collar, be in slight scraping-contact with its entire periphery, and afford no opening between said flange and axle other than the open groove for the discharge of extraneous matter.

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

The combination of the flanged axle-box and the axle having a cylindrical collar concentric with the axis of the axle-bearing and containing the spiral sand-groove, open at the rear side of the collar, substantially as described.

FRANCIS D. BLISS.

Witnesses:
S. R. DAVIS,
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