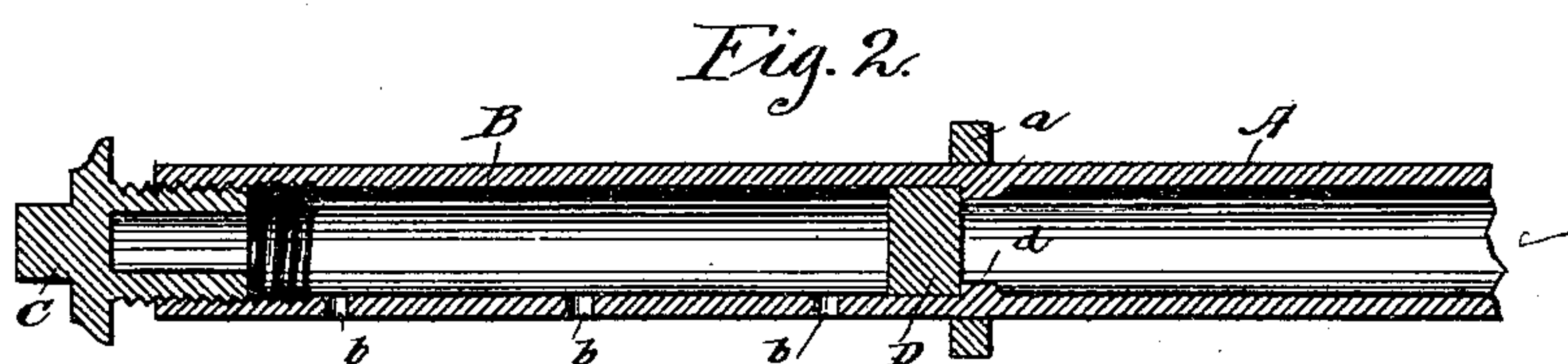
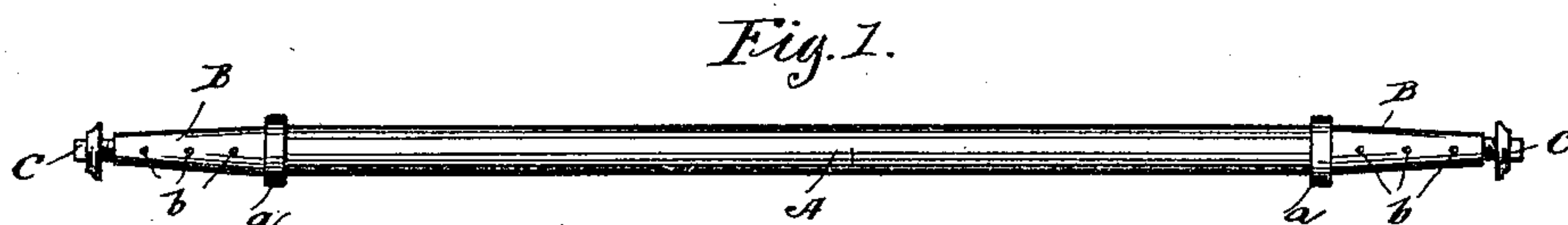


(No Model.)

C. F. MILBURN.
SELF LUBRICATING VEHICLE AXLE.

No. 438,778.

Patented Oct. 21, 1890.



Witnesses,

J. H. Mann,

Frederick Goodwin

Inventor,

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By,

Offield & Towle Attys.

UNITED STATES PATENT OFFICE.

CHARLES F. MILBURN, OF TOLEDO, OHIO.

SELF-LUBRICATING VEHICLE-AXLE.

SPECIFICATION forming part of Letters Patent No. 438,778, dated October 21, 1890.

Application filed October 20, 1888. Serial No. 288,696. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. MILBURN, a citizen of the United States, residing at Toledo, Lucas county, Ohio, have invented certain new and useful Improvements in Self-Lubricating Vehicle-Axles, of which the following is a specification.

My invention relates to tubular axles for wagons, carriages, and other vehicles; and the object of my invention is to improve that particular class of tubular axles which are made self-lubricating.

A feature of my invention relates to the provision of such tubular self-lubricating axles with a dam of such construction that the lubricant is prevented from passing from the interior of the spindles to the body portion of the axle and danger of breaking the axle at the dam is obviated.

In the accompanying drawings, Figure 1 is a bottom plan view of a tubular axle intended particularly to show the perforations through which the lubricant passes to the axle-box. Fig. 2 is a longitudinal section of a tubular axle with a straight spindle and provided with my improved form of dam to prevent the escape of the lubricant to the interior of the main axle-body.

In the drawings, A designates the body of the axle or that portion between the collars a, which axle is tubular in form and has the integral hollow spindles B. The outer ends of these spindles are preferably internally threaded to receive externally-threaded nuts C, which latter serve to retain the wheel upon the spindles in the usual manner. The spindles of the axles shown in the drawings may be formed by swaging in the usual way, and will be provided with suitable ports b b for the emission of the lubricant to the axle-boxes. The hollow interior of the spindle constitutes oil-chambers and, if desired, the entire interior of the axle-body may be utilized as a reservoir for oil. I employ a flexible dam D, whereby to prevent the lubricating-oil from passing from the interior of the spindle to the interior of the body portion of the axle. This dam will be inserted near the point at which the collar a is formed. Its form may be considerably varied; but I pre-

fer to construct it in the shape of a plug or short cylinder of flexible material, fitting accurately the cylindrical cavity of the spindle. In the usual construction of tubular self-lubricating axles rigid unyielding dams of metal of various forms have been employed. In some cases a metallic tube closed at one end and of an exterior diameter equal to the interior diameter of the spindle has been inserted into the spindle, its closed end terminating at a point near to the collar. The result of this construction is that the axle is liable to break at the end of the dam, the latter forming an unyielding fulcrum over which the strain is exerted. This defect in the construction has been aggravated by the processes heretofore employed to secure the dam in place, in one of which a metal plug or dam is inserted into the tubular axle while the latter is heated, and the cooling and consequent shrinkage of the tube secures the plug or dam in place. Another method is to secure the plug within the axle by welding. Both of these methods weaken the axle to some extent at the point where the plug or dam is inserted. I have contemplated several ways to secure the dam at the proper place within the axle. In Fig. 2 is shown a convenient method by the provision of lugs formed upon the interior of the axle. In this instance the dam or plug is intended to be composed of rubber; but any equivalent flexible material may be employed and the elasticity of the material relied upon to hold the dam to place, the lug being dispensed with.

I claim—

A self-lubricating tubular axle having a hollow spindle to provide a lubricant-chamber and suitable ports or perforations in the wall of the spindle for the escape of the lubricant, and a dam constructed of a flexible material secured within the hollow of the spindle to prevent the escape of the lubricant into the interior of the axle-body, substantially as described.

CHARLES F. MILBURN.

Witnesses:

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