

P. B. LASKEY & W. ARNOLD.  
Vehicle-Axle.

No. 217,012.

Patented July 1, 1879.

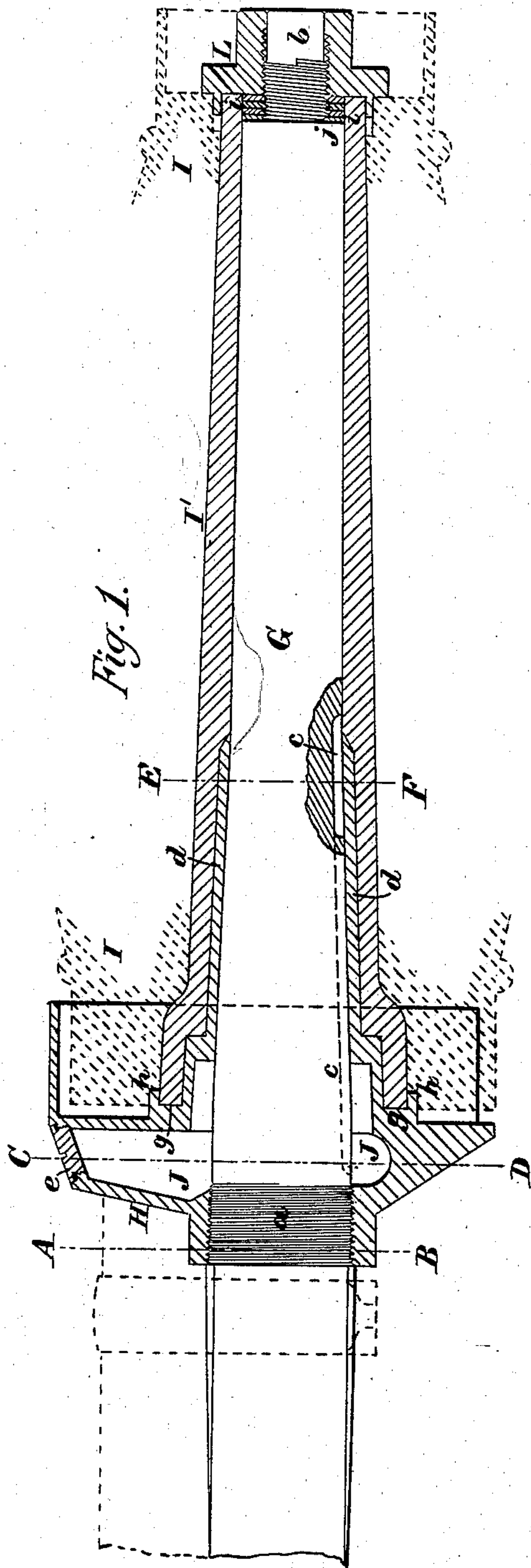


Fig. 1.

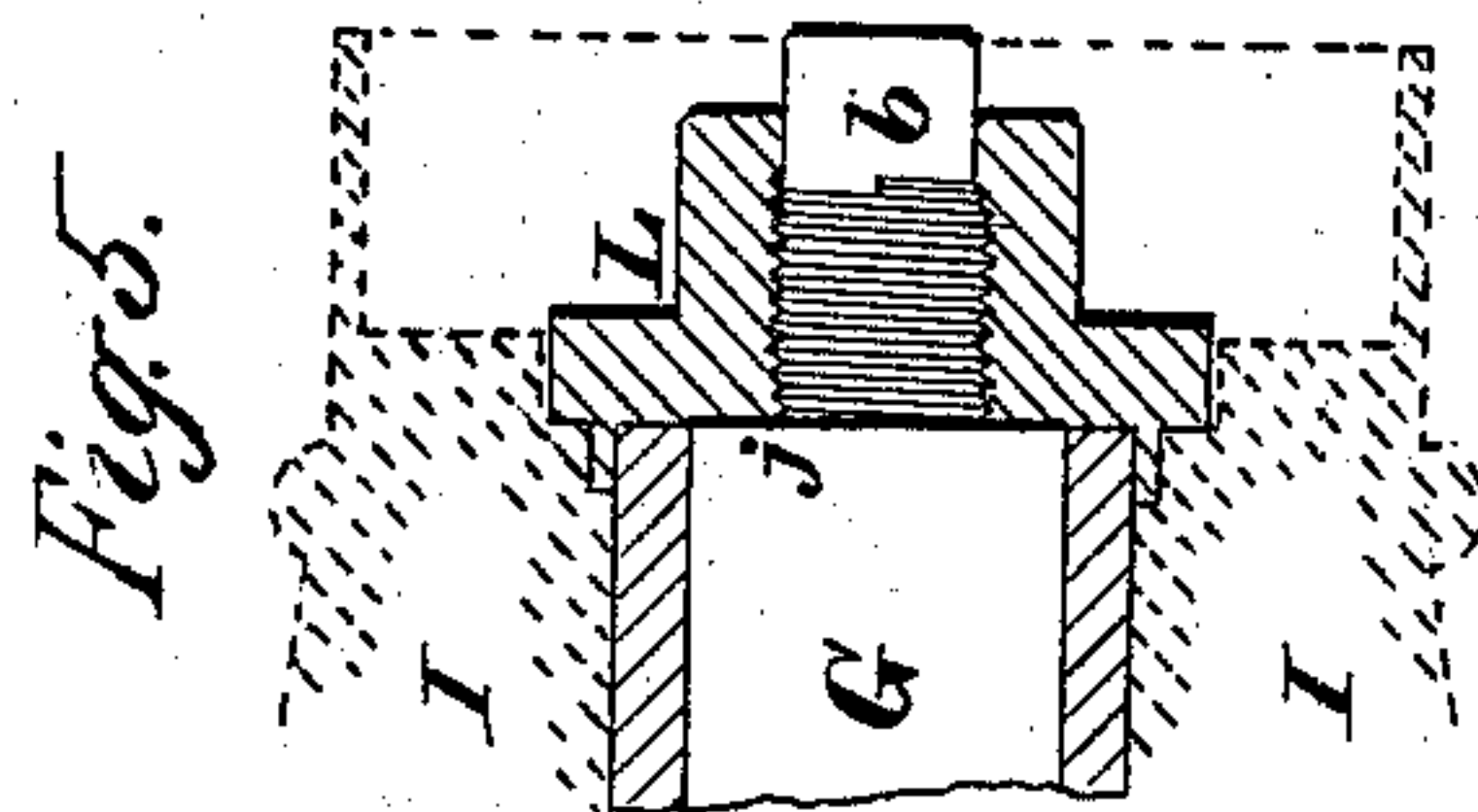


Fig. 5.

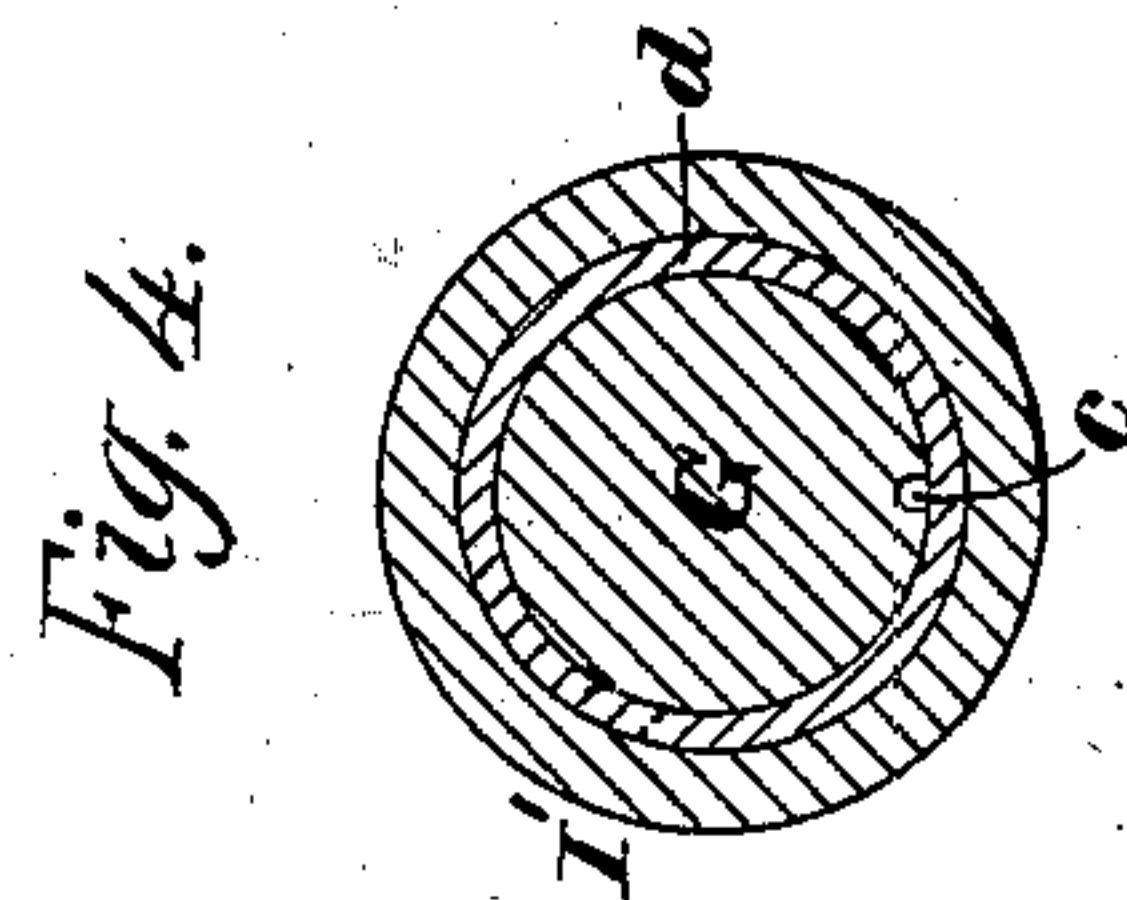


Fig. 4.

Fig. 3.

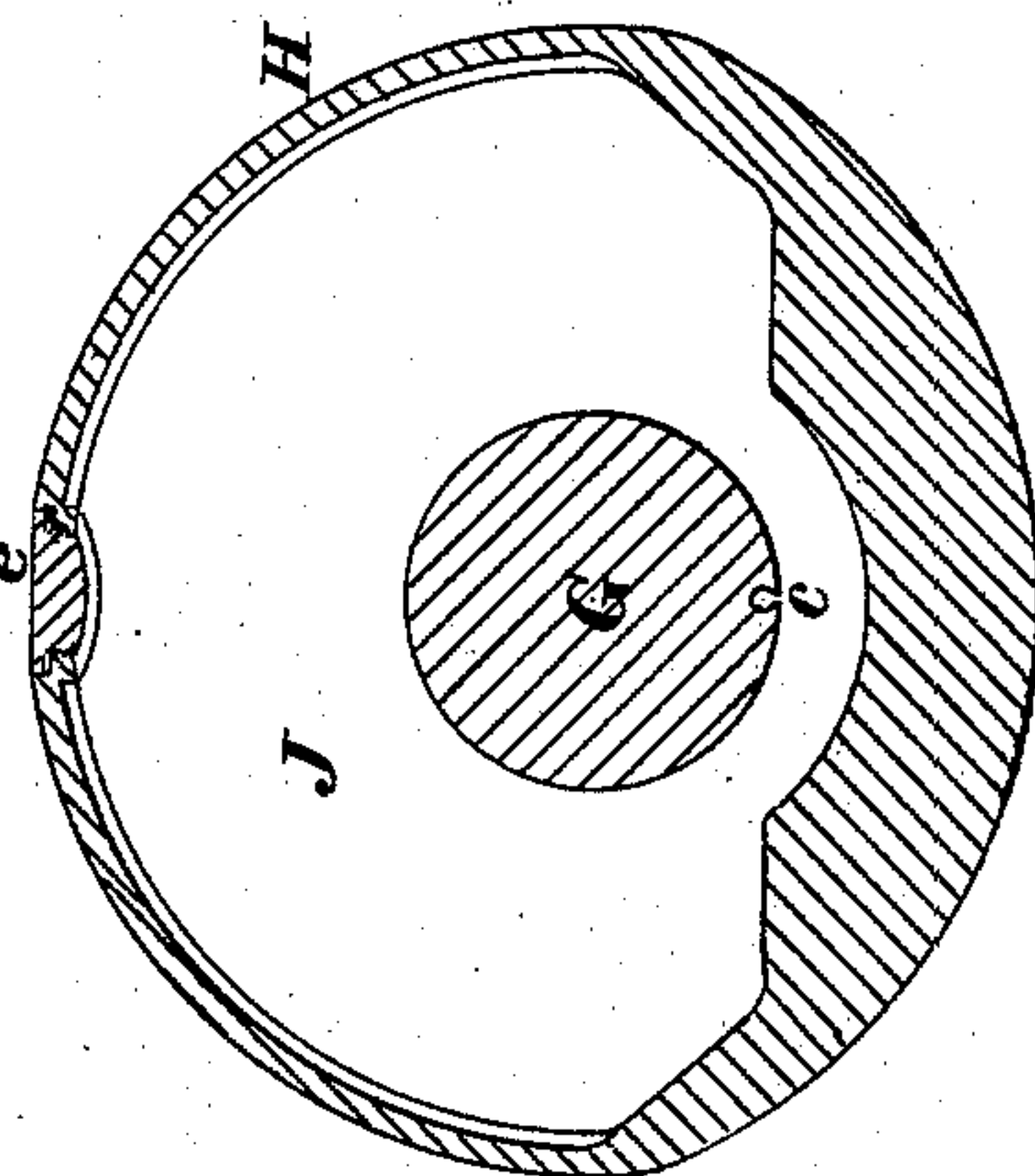
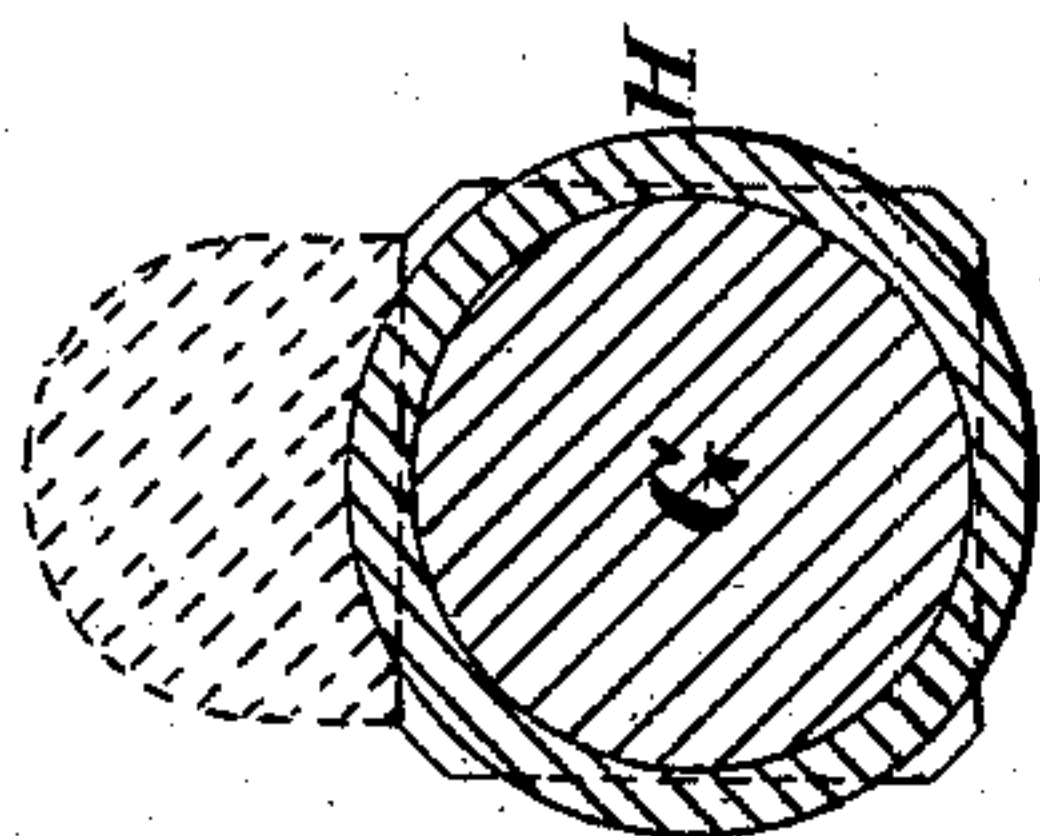


Fig. 2.



Witnesses;

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# UNITED STATES PATENT OFFICE.

PHILIP B. LASKEY AND WILLIAM ARNOLD, OF MARBLEHEAD, MASS.

## IMPROVEMENT IN VEHICLE-AXLES.

Specification forming part of Letters Patent No. **217,012**, dated July 1, 1879; application filed May 8, 1879.

*To all whom it may concern:*

Be it known that we, PHILIP B. LASKEY and WILLIAM ARNOLD, both of Marblehead, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Carriage-Axles and Sand-Boxes therefor, of which the following, taken in connection with the accompanying drawings, is a specification.

Our invention relates to the construction of carriage-axles and sand-boxes connected therewith; and has for its object the complete lubrication of the axle, greater durability of the same, a convenient and comparatively inexpensive means of compensating, in a great measure, for the wear of the parts, and a more perfect exclusion of dirt or grit from the bearing-surfaces; and it consists, first, in the combination, with a carriage-axle, of a sand box or shield adapted to overhang and partially surround the inner end of the wheel-hub, secured thereon in a fixed position by means of screw-threads formed therein and upon said axle, and provided with an annular chamber surrounding said axle at or near the end of the hub-bearing having the largest diameter and means of introducing a supply of oil to said chamber.

It further consists in the combination of a carriage-axle provided upon its under side with a groove or channel extending longitudinally thereof from near the larger end of the hub-bearing toward the smaller end of the axle and a sand box or shield adapted to overhang and partially surround the inner end of the wheel-hub, and provided with an annular chamber to hold oil, and secured to said axle in a fixed position by means of a screw-thread formed upon said axle, as will be further described.

It further consists in the combination of a sand box or shield adapted to overhang and partially surround the wheel-hub, secured in a fixed position upon a carriage-axle, and provided with an oil reservoir or chamber, and a sleeve or tube projecting therefrom toward the smaller end of the axle-bearing and fitting closely to said axle, to form a portion of the hub-bearing at that point where the greatest wear usually takes place—viz., that portion of said hub-bearing having the greatest diameter.

It further consists in the combination, with a sand box or shield provided with an oil reservoir or chamber and a sleeve to encompass a portion of the axle and form a part of the bearing for the hub, of a groove or channel formed in the under side of the axle and extending longitudinally thereof from a point within the oil-chamber to a point beyond the sleeve, that portion of said groove which is within the oil-chamber, and where the oil is taken up, being contracted at the outer surface of the axle to a much narrower width than the inner portion of said groove is made, so that dirt or foreign matter will not readily be drawn into said groove, but if any small particles should enter they will be carried through said groove, and not lodge therein and choke it and prevent the supply of the requisite quantity of oil to keep the axle-bearing in good running order.

It further consists in the combination, with a carriage-axle, of a sand box or shield provided with an oil-chamber, a sleeve inclosing said axle and forming a portion of the bearing for the wheel-hub, and an annular lip or short inwardly-projecting cylinder adapted to encompass the contiguous end of the hub-box and form a second guard against the introduction of sand or grit to the bearing of the wheel upon the axle and help to retain the oil, all formed in one piece and secured in a fixed position on the axle by means of a screw-thread formed thereon.

It further consists in the combination of a carriage-axle having a shoulder formed near its outer end by turning down the outer portion thereof to a smaller diameter, and having a male screw-thread formed upon the inner portion of said reduced part, while the extreme outer part thereof is cylindrical in form and of a diameter just equal to the diameter of the threaded portion at the bottoms of the threads, a nut having a thread cut through only a portion of its thickness, and two or more washers placed between said nut and the shoulder on the axle, as will be more fully described.

Figure 1 of the drawings is a central longitudinal section of our improved sand-box, showing the axle in elevation. Fig. 2 is a transverse section on line A B. Fig. 3 is a transverse section on line C D. Fig. 4 is a similar



section on line E F; and Fig. 5 is a partial central longitudinal section, showing the position of the nut after the box has worn, so as to require the removal of all of the washers.

G is the axle, constructed in the usual manner, except that it is provided with a male screw-thread, *a*, to receive the sand-box H, has the extreme outer end of its nut-receiving stud *b* turned smooth, as shown, and has formed in its under side a groove or channel, *c*, which will be more fully described.

The sand box or shield H is provided with a screw-thread to fit the thread *a* on the axle, by which it is firmly secured thereto, and with the taper sleeve *d*, which fits closely the axle G, and projects into and forms a portion of the bearing for the box I' of the hub I. Shown in dotted lines. (A chamber, J, is formed in the sand box or shield H to be filled with oil for lubricating the axle, said oil being introduced through an aperture in the top of said box, which is closed by the screw-plug *e*, as shown.

The under side of the axle has formed therein the channel or groove *c*, extending longitudinally thereof from the oil-chamber J to a point outside of the outer end of the sleeve *d*, to serve as a conduit for the passage of oil from said chamber to the central portion of the hub-bearing, that portion of said groove or conduit which is within the chamber J being made narrower at the surface of the axle than it is nearer the center of the axle, for the purpose of preventing any foreign substances which may happen to be in the oil passing into the bearing.

The face of the sand-box and oil-chamber contiguous to the inner end of the wheel-hub is provided with the shoulder *g* to take the endwise thrust, and with the annular projecting lip *h*, which fits into a corresponding groove formed in the end of the hub I, just outside of the box I', as shown in Fig. 1, as an additional security against the introduction of grit to the hub-bearing.

L is the nut for securing the wheel upon the axle, having a thread in a portion of its length, and the remaining portion of the hole through it left smooth, and adapted to fit closely the cylindrical outer portion of the stud *b*, while its thread fits a corresponding male thread cut on the inner portion of the stud *b*, said nut and stud being constructed in such a manner that the nut may be set with its outer face flush with the end of the stud *b*, with the washers *i i* placed between it and the shoulder *j* of the axle G, as shown in Fig. 1; or, when the shoulder *g* on the sand-box and the end of the hub-box I' become worn, said nut can be screwed up to bear against the shoulder *j* by first removing the washers *i i*, as shown in Fig. 5.

By the use of our improvements the axle may be kept well lubricated with very little trouble, it being completely self-oiling as long as the supply of oil contained in the chamber J lasts, and when the supply is exhausted it can be renewed without removing the wheel from the axle. The bearing is much more se-

cure against the introduction of sand or grit than heretofore; and when the box or axle becomes badly worn, so as to affect the running of the wheel, the wear can be taken up by removing one or more of the washers *i i*, and removing the sand-box with its sleeve and replacing it by another, which can be done at a comparatively small cost.

The greater part of the wear of carriage-axles comes upon the larger or inner end of the bearing, and when the axle becomes badly worn at that point it becomes necessary to take the axle to the blacksmith's and have the axle-spindles cut off and new ones welded on, which is a very expensive job, and one which is entirely obviated by the use of our improvement, as the bulk of the wear comes upon the sleeve of the sand-box, and when it becomes badly worn its removal leaves the axle as large and strong as it was originally, and a new sleeve can be substituted for the old for a small cost, they being made in steel castings, and finished to be interchangeable.

What we claim as new, and desire to secure by Letters Patent of the United States, is—

1. In combination with the axle of a carriage, a sand box or shield adapted to overhang and partially surround the inner end of the wheel-hub, secured in a fixed position thereon by means of screw-threads formed therein and upon the axle, and provided with an annular chamber adapted to contain oil for lubricating the axle-bearing, substantially as described.

2. In combination with a carriage-axle, a sand box or shield adapted to overhang and partially surround the inner end of the wheel-hub, secured in a fixed position thereon by means of screw-threads formed therein and upon the axle, and provided with an annular chamber or reservoir to contain oil, and a groove or channel formed in the under side of the axle and extending longitudinally thereof, substantially as described.

3. In combination with the axle of a carriage, a sand box or shield adapted to overhang and partially surround the inner end of the wheel-hub, provided with a sleeve inclosing the axle and projecting into and forming a portion of the bearing for the hub of the carriage-wheel, substantially as described.

4. The combination of the axle G, sand box or shield H, oil-chamber J, the sleeve *d*, and the groove or channel *c*, extending from the chamber J to beyond the outer end of the sleeve *d*, substantially as described.

5. In combination with the axle of a carriage, the sand box or shield H, oil-chamber J, sleeve *d*, and annular lip or rib *h*, all formed in one piece and secured in a fixed position on the axle by means of a screw-thread formed on said axle, substantially as and for the purposes described.

6. In combination with an annular oil tank or chamber surrounding a carriage-axle, and adapted to supply oil for lubrication, the groove or channel *c*, formed in the under side



of the axle, and having that portion thereof which is within the oil-chamber contracted, substantially as and for the purposes described.

7. The carriage-axle G, provided with the shoulder *j* and the threaded stud *b*, the outer portion of which is made in the form of a smooth cylinder, in combination with the nut L, provided with a smooth hole through a portion of its thickness and a screw-thread through the remaining portion of its thickness, substantially as and for the purposes described.

8. The carriage-axle G, provided with the shoulder *j* and the threaded stud *b*, the outer portion of which is made in the form of a

smooth cylinder, in combination with the nut L, provided with a smooth hole through a portion of its thickness and a screw-thread through the remaining portion of its thickness, and the washers *i i*, all arranged substantially as and for the purposes described.

Executed at Boston, Massachusetts, this 5th day of May, A. D. 1879.

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Witnesses:

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