A. SCHIRCK.

Lubricating-Axles for Vehicles.

No. 166,898. Patented Aug. 17, 1875.

Fig. 1.

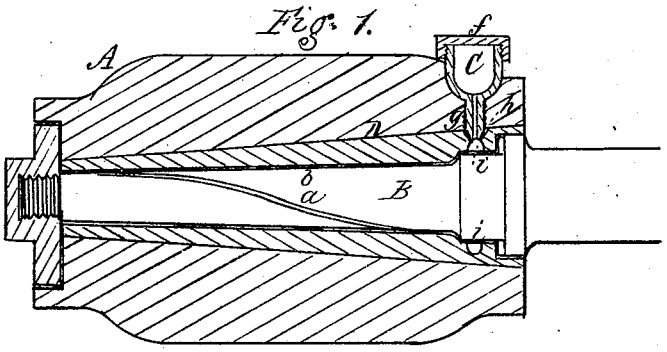


Fig. 2.

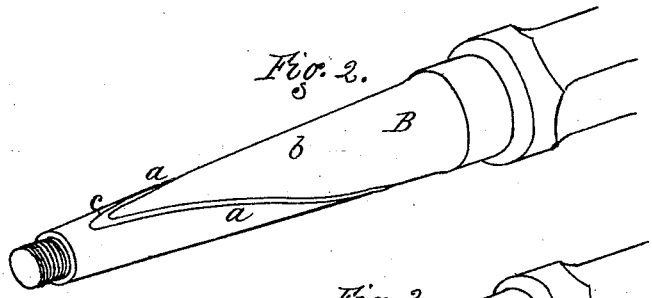


Fig. 3.

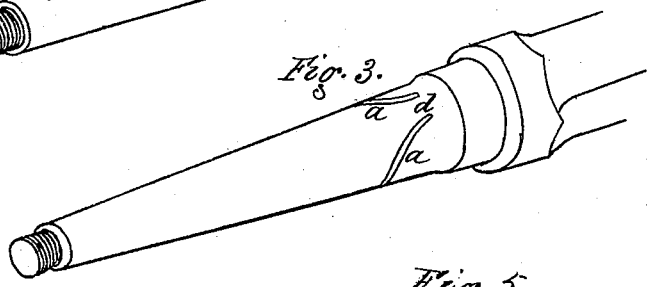


Fig. 4.

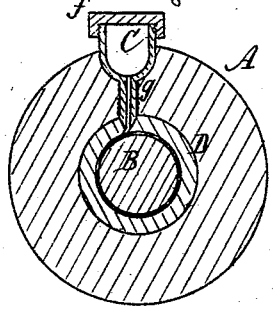
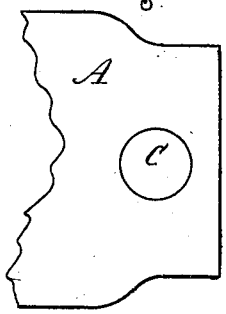


Fig. 5.



Witnesses.

Alfred Padley
Henry M. Thomas,

Inventor:
Alex Schirck,
per R. F. Osgood,
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UNITED STATES PATENT OFFICE.

ALEXANDER SCHIRCK, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN LUBRICATING-AXLES FOR VEHICLES.

Specification forming part of Letters Patent No. **166,898**, dated August 17, 1875; application filed July 15, 1875.

To all whom it may concern:

Be it known that I, ALEXANDER SCHIRCK, of the city of Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Improvement in Carriage-Wheels; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same.

My invention consists of a carriage-axle, the spindle of which has on its surface grooves extending spirally in opposite directions from a cavity at one end of the spindle, said grooves being separated by a closed space, whereby the diffusion of the oil over the spindle is equalized, as will more fully hereinafter appear.

In the drawings, Figure 1 is a section of a hub, showing my improvement. Fig. 2 is a perspective view of the journal, looking on top; Fig. 3, a similar view, looking on the bottom; Fig. 4, a section of the hub, showing the oil-cup inserted therein; Fig. 5, a plan of the same.

A represents the hub, and B the journal, of an ordinary carriage-wheel. The journal is cut with two oil-grooves, *a a*, which meet at an apex at the outer end, on top, and at the base of the incline *b*, down which the oil spreads, as shown in Fig. 2. From this point the grooves diverge, passing downward and backward on opposite sides till they nearly meet at the base and on the under side, as shown in Fig. 3.

It will be noticed that at the apex, on top, is a connecting cavity, *c*, while at the base is a closed space, *d*, between the ends of the grooves, the object of which will be presently explained. The grooves, also, from the apex to the base, have a gentle decline, so that the oil collected at the apex will naturally flow to the base.

At the inner end of the hub is an oil-cup, C, which may either be sunk flush in the wood, or rest outside. It has a screw-cap, *f*, and also a screw-stem, *g*, when necessary to pass through a great depth of the wood. The lower end of the stem is made conical, and is tapped into a countersunk hole in the box D, as shown at *h*. A discharge-hole is made through the stem, which opens in the oil-groove *i*, surrounding the base of the journal, and at such a position as to carry the oil around and deposit it upon the surface before it reaches the grooves *a a*.

If desired, the oil-passage at the bottom of stem *g* may be turned at a tangent to the axle, as shown in Fig. 4, in which case the revolution of the journal produces a suction or draft upon the oil in the cup.

If desired, also, wicking may be employed in the cup to properly hold and feed the oil.

The operation is as follows: The oil resting in the cup is spread upon the base of the axle by simply passing into groove *i*. Such portion as falls to the bottom is carried to the top again by the revolutions of the wheel. The oil carried to the top flows down over the smooth incline *b*, as indicated by the arrow, Fig. 1, till it reaches the grooves *a a*; here it concentrates at the apex, and is gathered into the collecting-cavity *c*. From this point it flows downward and backward through grooves *a a* till it reaches the base, when it runs out at the closed space *d*, which diffuses or spreads it, so that it is taken up by the revolution of the box and carried to the top again, when it performs the same operation.

By this means a constant circuit of the oil is produced from end to end, passing across the length of the journal, and thereby equally lubricating its whole surface. The tendency of the oil, in its outward flow, is to concentrate at the cavity *c*, which collects and holds it, while in its backward flow it is diffused or spread out by the space *d*, and these parts are essential in the operation.

I am aware that various methods of grooving the journals of axles have before been known—circular, straight, and otherwise.

I do not claim such broadly, but only the particular form above described, by which a longitudinal circuit of the oil is made, which will equally lubricate all parts, and prevent the escape of the oil at the ends of the journals.

I do not claim a spiral groove extending around the axle-spindle from end to end, for such is old and well known; but,

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

The spindle B, having the grooves *a a*, ex-

tending in spiral lines in opposite directions from the cavity *c* at one end of the spindle, and separated by the closed space *d* at the other, and adapted to operate in connection with the axle-box D and oil-cup C, substantially as described, for the purpose specified.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

ALEXANDER SCHIRCK.

Witnesses:
R. F. OSGOOD,
D. L. JOHNSTON.