J. KLINE.

Carriage-Axle.

No. 161,618. Patented April 6, 1875.

Fig. 1.

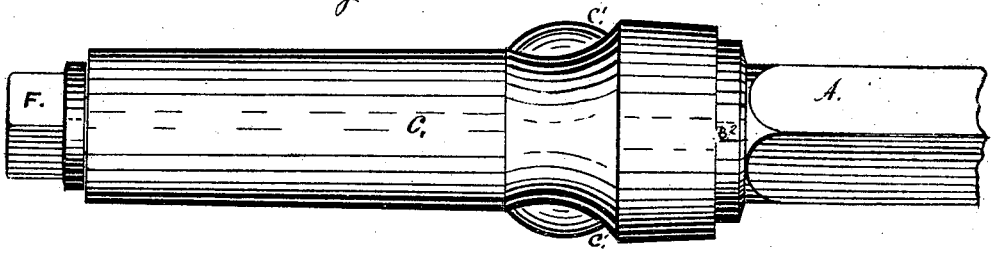

Fig. 2.

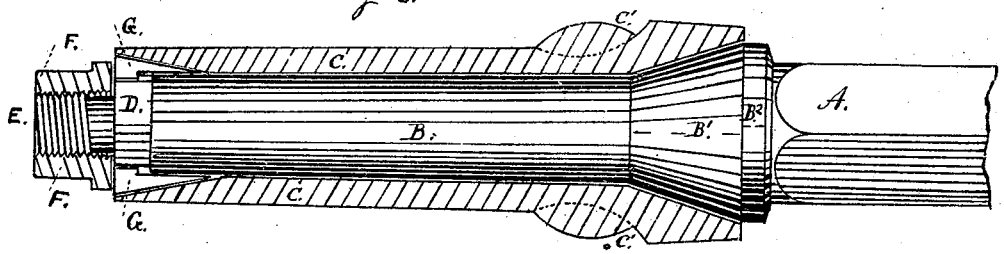

Fig. 3.

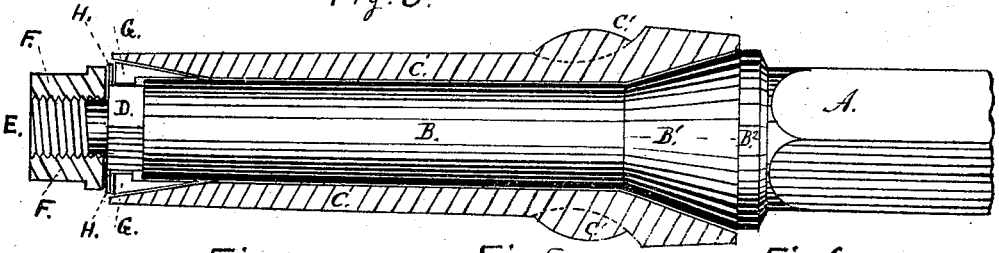

Fig. 4.

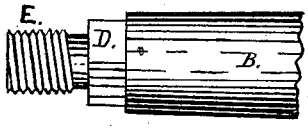

Fig. 5.

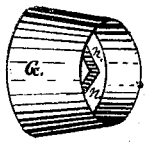

Fig. 6.

Witnesses:
J. A. Moore.
Wilson Bear

Inventor:
Jacob Kline.

UNITED STATES PATENT OFFICE.

JACOB KLINE, OF CAMP HILL, ASSIGNOR OF THREE-FOURTHS HIS RIGHT TO J. ADDISON MOORE AND WILSON BEAR, OF SAME PLACE, AND MICHAEL M. GROVE, OF HARRISBURG, PENNSYLVANIA.

IMPROVEMENT IN CARRIAGE-AXLES.

Specification forming part of Letters Patent No. **161,618**, dated April 6, 1875; application filed March 5, 1875.

To all whom it may concern:

Be it known that I, JACOB KLINE, of Camp Hill, in the county of Cumberland and State of Pennsylvania, have invented a new and valuable Improvement in Compensation-Axles; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a side view of my invention. Fig. 2 is a vertical longitudinal section of the same as an unworn axle. Fig. 3 is a like view of the same as a worn axle, compensatingly adjusted. Fig. 4 is a perspective view of the front end of the arm of my axle. Fig. 5 is a perspective view of the conical follower or skein-retainer. Fig. 6 is a front view of the same.

My invention relates to axles and skeins or boxes for wagons; and it consists, first, in a novel construction of the front end of the arm of the axle, specially adapted to secure the jam-nut reliably thereon, and to guide and support the skein-retainer compensatingly; second, in a peculiarly-formed conical follower or skein-retainer, by which the wear of the journal is compensated for by setting it farther into the flaring front end of the skein, effected by interposing thin washers between the head of the follower and the face of the jam-nut, and without contact with the front end of the skein or axle-box.

The letter A of the drawings represents the bed or butt of my axle, constructed in form as shown, with the re-enforcing conical enlargement B^1 B^2 solidly massed thereon, the part B^2 being cylindrical as a lubricant-retainer, it being made to extend rearwardly from the end of skein or box C. Box C has the usual splines C′, for retaining the box in the hub, and is made tapering at its rear end for the same reason—that when entered in the hub the rear wedges may retain it more securely therein. The arm B is made in form as shown in Figs. 2, 3, and 4, having its major part nearly cylindrical, terminated at its front end by a square or angular part, D, and a screw, E, all massed into one solid body. The part D is the guide for the eye *m* of the conical follower G, which is thereon set adjustably, and prevented from rotating. The part D is also, at its front end, the base on which the face of nut F jams or sets. The part D is relatively longer than the thickness of the floor *n* of follower G, that the latter may have surplus space thereon, to be set in when worn, as shown in Fig. 3, by interposing one or more thin washers, H, between its head and the face of nut F, said washer being bored sufficiently large to enter it on part D.

The screw E and nut F are made in the usual manner, except that the flange of the nut is not made large enough to bear against the front end of the skein C, as has hitherto been the manner of holding the skein on the arm of the axle, but is made to act only as a detent for the follower G, by bearing either directly against its base end, as shown in Fig. 2, which is the case when the device is unworn, or indirectly by means of the washer H, interposed as described. It may be observed, therefore, that the direction of motion of the wheel does not affect the stability of the nut F, as it is virtually locked by this plan of construction; also, that the said nut has but one place to sit, whether the follower is set out full limit or adjusted farther in.

The follower G is the frustum of a cone, bored out the major part of its length, to apply like a sleeve on the round part of arm B, as shown, and it is perforated its remaining length angularly, to admit the square part D through it, as shown. The follower serves to retain the skein C in proper place by sustaining its front end without binding, and it is upheld on the parts secure against canting, and the wheel is therefore sustained truly in its plane of motion.

The main stress or bearing of the wheel is on the cone B^1, as the major journal, the dish of wheels naturally transferring the momentum of resistance toward the middle of the wagon. For this reason the follower G is mainly a keeper or retainer for the wheel to its true journal, but is unlike nut-locked washers.

This plan of construction is in favor of the

lubrication, of great strength, and more especially in favor of regularity of motion, and is applicable to axles generally, and to stationed wheel-journals.

I do not claim conical retainers, broadly, as they are old devices.

Having thus fully and clearly described my invention, what I consider as new and useful, and what I desire to secure by Letters Patent of the United States, is—

1. The axle A B, provided with the square part D and the screw E, as a solid extension of arm B, as and for the purposes set forth.

2. The combination of the axle A B D E, the follower G, nut F, and skein C, all constructed and combined to operate compensatingly, as set forth.

3. The combination of the axle A B D E, follower G, nut F, skein C, and washer H, as and for the purpose shown and described.

In testimony that I claim the foregoing as my invention, I have hereunto set my hand in the presence of two witnesses this 4th day of March, 1875.

JACOB KLINE. [L. S.]

Witnesses:

J. A. MOORE,

WILSON BEAR.