

W. NEHRING.
WAGON AXLE.

No. 465,625.

Patented Dec. 22, 1891.

FIG. I.

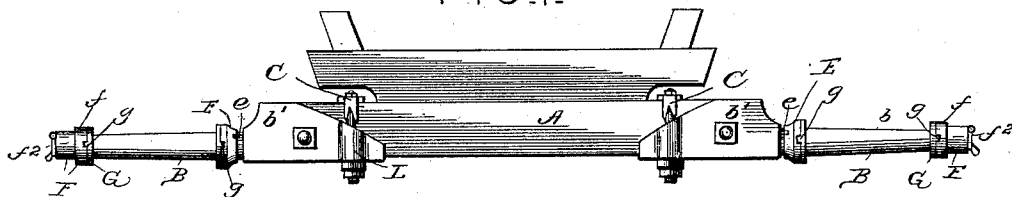


FIG. II.

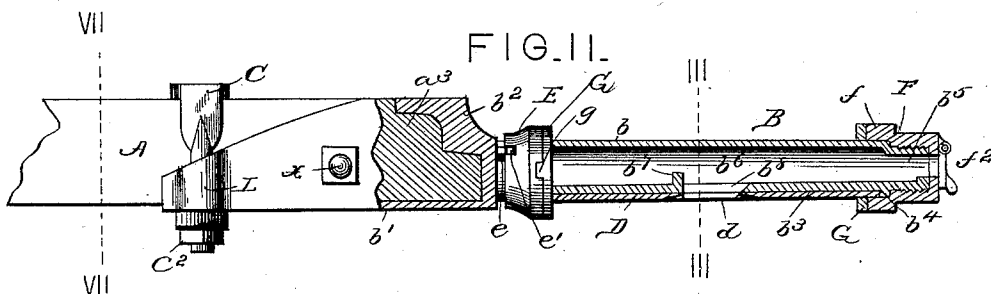


FIG. III.

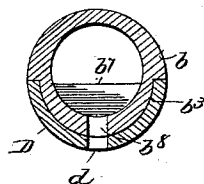


FIG. IV.

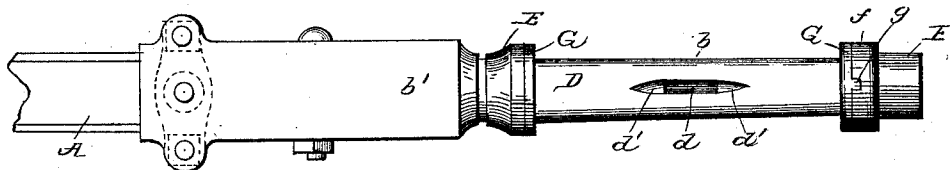


FIG. V.

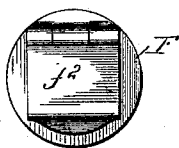
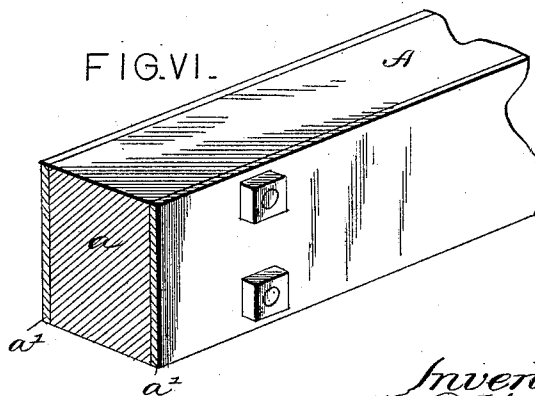


FIG. VI.



(No Model.)

2 Sheets—Sheet 2.

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FIG.VII.

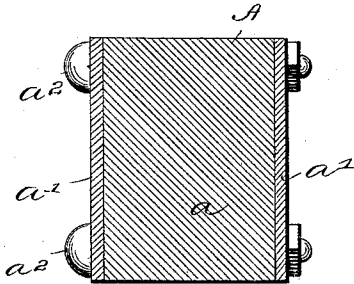
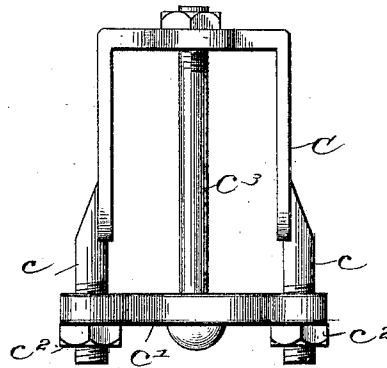


FIG.VIII.



c FIG. IX.

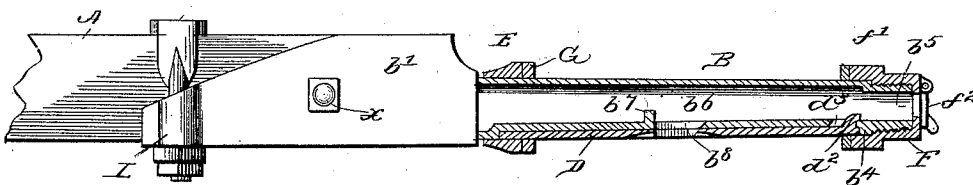
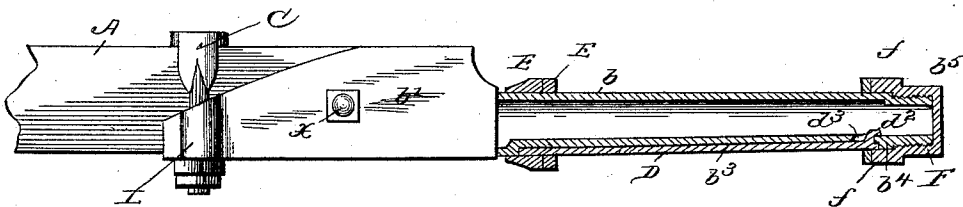


FIG. X.



Witnesses:

Harry S. Rohrer
William E. Knight.

Inventor:
Wm. Nehring.

By Knight Bros.
Attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM NEHRING, OF EVANSVILLE, INDIANA.

WAGON-AXLE.

SPECIFICATION forming part of Letters Patent No. 465,625, dated December 22, 1891.

Application filed March 23, 1891. Serial No. 386,097. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM NEHRING, a citizen of the United States, residing at Evansville, in the county of Vanderburg and State of Indiana, have invented certain new and useful Improvements in Wagon-Axles, of which the following specification, taken in connection with the accompanying drawings, is a full, clear, and exact description, such as will enable those skilled in the art to which they appertain to make and use the same.

My invention relates to improvements in that class of wagon-axes in which detachable hollow axle-spindles are employed; and the object of my invention is to provide an axle which will be simple in construction and at the same time strong, durable, and effective.

My invention consists, principally, of three features of novelty: first, an improved axle composed of a wooden core and strengthening-strips of metal; second, a detachable hollow spindle provided with a detachable wear-strip of peculiar construction, and, third, an improved arrangement for utilizing the hollow spindle for a lubricating-chamber; and my invention consists of other features of novelty, all of which will be first described with reference to the accompanying drawings, and then more particularly pointed out in the claims.

In the accompanying drawings, Figure I is a side elevation of a wagon-axle embodying my improvements. Fig. II is an enlarged view of a portion of the same, the hollow spindle being shown in section. Fig. III is a sectional view of the hollow spindle, taken on the line III III of Fig. II. Fig. IV is an enlarged bottom view of the spindle and a portion of the axle. Fig. V is an end view of the retaining-nut. Fig. VI is a perspective view of a portion of the axle without the spindles attached. Fig. VII is a sectional view taken on line VII VII of Fig. II. Fig. VIII is a side elevation of my improved clip. Fig. IX is a sectional view of my improved spindle having a slightly-modified form of wear-strip. Fig. X is a similar sectional view showing the same form of wear-strip without the perforation for the passage of oil.

Like letters of reference indicate the same parts throughout the several views.

A represents the axle, B the hollow spindles, and C the securing-clips. The axle A is constructed to receive my improved form of spindle, as will presently appear.

The spindle B is formed with the bearing portion *b* for the reception of the wheel and the socket portion *b'* for fitting over the end of the axle. The socket *b'* has a shoulder *b²*, against which a similar shoulder on the axle abuts. *b³* is a convex groove formed on the under side of the spindle B and adapted to receive a convex wear-strip D. The strip D is confined from longitudinal movement between the socket portion *b'* and a shoulder *b⁴* at the outer end of the groove *b³*.

E is a collar adapted to fit on the spindle and hold the inner end of the wear-strip snugly against the spindle. *e* is a lug formed on the upper surface of the spindle B and adapted to engage in a notch *e'*, formed in the inner edge of the collar E, to prevent its turning. The spindle has the customary screw-threaded nib *b⁵* at its outer end for the reception of the wheel-retaining nut F, which nut is formed with an annular collar *f*, which engages the outer end of the wear-strip D for holding it against the spindle.

G are washers fitting on the spindle against the collars E and *f* and provided with lugs *g*, which engage in notches in said collars, whereby they are prevented from turning, so that they can take up all the wear on their bearing-faces.

The hollow or cavity *b⁶* of the spindle B is utilized for an oil-reservoir, the oil being confined in the outer half of the cavity by shoulders or dams *b⁷*.

b⁸ is an oblong perforation or slit in the bottom wall of the reservoir *b⁶*, which registers with a similar slit *d* in the center of the wear-strip D. The outer or bearing surface of this wear-strip D is provided with oil-distributing grooves *d'*, leading from the ends of the slit *d*, whereby oil passing from the reservoir *b⁶* is fed to the wheel-bearing. The nib *b⁵* is also perforated longitudinally, and the nut F is also perforated and provided with a suitable cover or door *f²*, whereby the oil may be readily inserted into the reservoir; or, if preferred, the nut F may be formed whole without the per-

foration, when it will be necessary to remove it from the axle when it is desired to insert the oil into the hollow spindle.

The axle A is formed of a central strip or core a of wood and two outer inclosing strips or thin bars a' of tempered iron or steel, the parts being securely riveted or bolted together by means of rivets or bolts a^2 , passing through suitable perforations. The ends of the axle are formed with shoulders a^3 , which, when the spindles B are put in place, abut against the shoulders b^2 and the edge of the upper surface of the spindle-sockets, whereby when the clip C and the bolts or rivets x are put in place a secure joint is formed between the axle and detachable spindles and a stout and economical axle formed. It is obvious that the axle and spindles are perforated at the proper places for the reception of the bolts x and the central bolt of the clip C.

The clip C is provided with the customary screw-threaded bolts or arms c , the keeper c' , perforated to fit over these bolts, and nuts c^2 to retain the keeper in place. In addition to this, in my improved clip I provide a central perforation in the keeper and one in the arch of the clip, through which a central bolt c^3 passes and holds the clip securely in position. This form of clip is of particular advantage in combination with my improved wagon-axle, as it makes it impossible for the clip to slip longitudinally out of place.

In Figs. IX and X I have shown a modified form of wear-strip applied to my improved axle-spindle. In this form the small or outer end of the concave wear-strip D is provided with a retaining-hook d^2 , adapted to engage in a perforation d^3 in the under side of the spindle B, which assists in holding the wear-strip to the spindle. The collar E and retaining-nut F are also employed in combination with this form, the principal function of the hook d^2 being to retain that end of the wear-strip in position when the nut and wheel are removed. L L are perforated ears or lugs formed on the enlarged end of the detachable spindle, through which the arms of the clip C may pass.

Figs. IX and X differ only in the omission of the central lubricating-chamber from Fig. X, in place of which the lubricant may be supplied as is now commonly done.

The hollow spindle may be formed of a metal casting or of a solid forged piece of metal, with the oil-chamber bored in. The wear-strip is formed of any suitable metal which is softer than the journal-box of the wheel, so that the wear is taken up entirely by said strip and the spindle and wheel are protected.

Having thus fully described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. An axle-spindle having a concave groove in its surface, in combination with a concave wear-strip adapted to fit in said groove, and suitable collars fitting on the spindle and engaging the ends of the wear-strip, substantially as set forth.

2. An axle-spindle having a concave groove in its surface, in combination with a concave wear-strip, a collar E, fitting on the spindle and engaging one end of the wear-strip for holding it in place, and a nut F, provided with a collar f for engaging the other end of said wear-strip, substantially as set forth.

3. An axle-spindle, in combination with a wear-strip, a collar for holding the wear-strip in position, a notch in the collar, and a lug on the spindle, whereby the collar is prevented from turning, substantially as set forth.

4. The combination of an axle-spindle with a wear-strip set in its surface, said wear-strip being formed of softer metal than the spindle, whereby it takes up the wear and protects the spindle and journal-box of the wheel, as herein set forth.

5. The combination of a hollow axle-spindle, a wear-strip, means for connecting the wear-strip to the spindle, and a perforation through the spindle and strip, substantially as set forth.

6. The combination of a hollow axle-spindle, an oil-inlet, shoulders or dams formed in said hollow spindle for confining the oil, and an oil-outlet, as herein set forth.

7. The combination of a hollow axle-spindle, dams formed in said spindle for confining the oil, an oil-outlet, an internally-screw-threaded retaining-nut adapted to engage the end of said spindle, and an oil-inlet door in said nut, whereby the oil can be placed in said spindle behind the outer dam, as herein set forth.

8. An axle-spindle formed with a groove on its surface, a wear-strip fitting in said groove, a hook formed on one end of the wear-strip and adapted to engage in a perforation in the spindle, and a collar adapted to engage the other end of the wear-strip, substantially as set forth.

9. The combination of an axle-spindle, a socket-piece formed thereon, perforated lugs or ears L, the axle A, and a clip, substantially as set forth.

WILLIAM NEHRING.

Witnesses:

MATH STEFFEN,
HERMAN NEHRING.