No. 753,816. PATENTED MAR. 1, 1904.

W. P. WILCOX.

AXLE.

APPLICATION FILED DEC. 16, 1903.

NO MODEL.

Fig. 1.

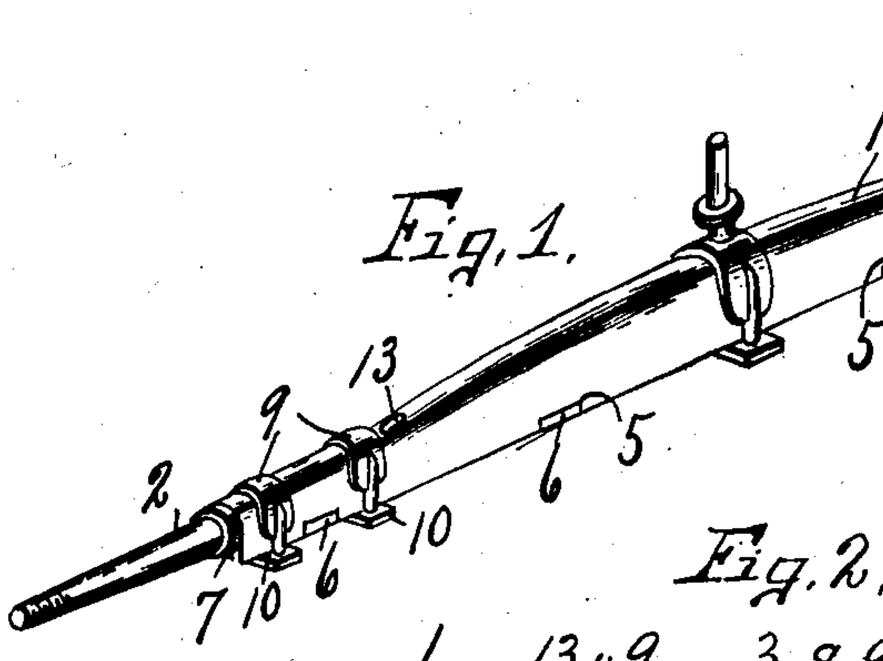


Fig. 3.

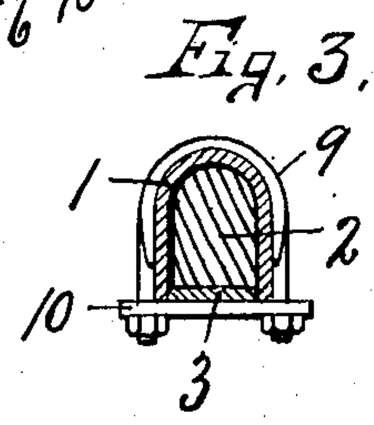


Fig. 2.

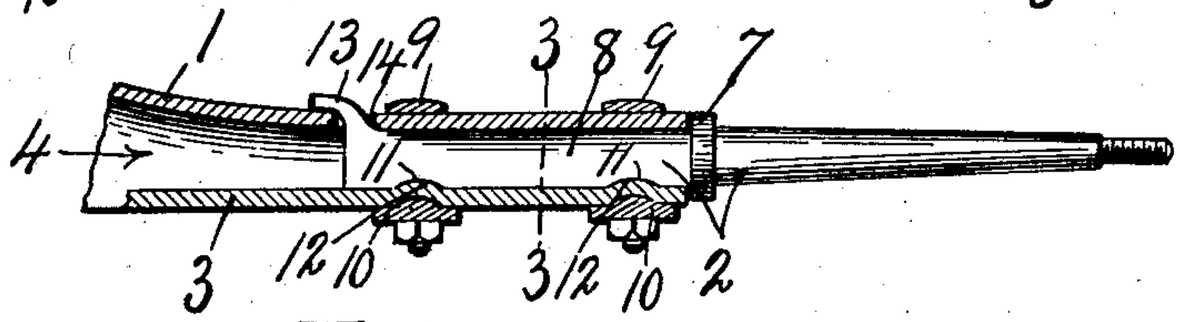
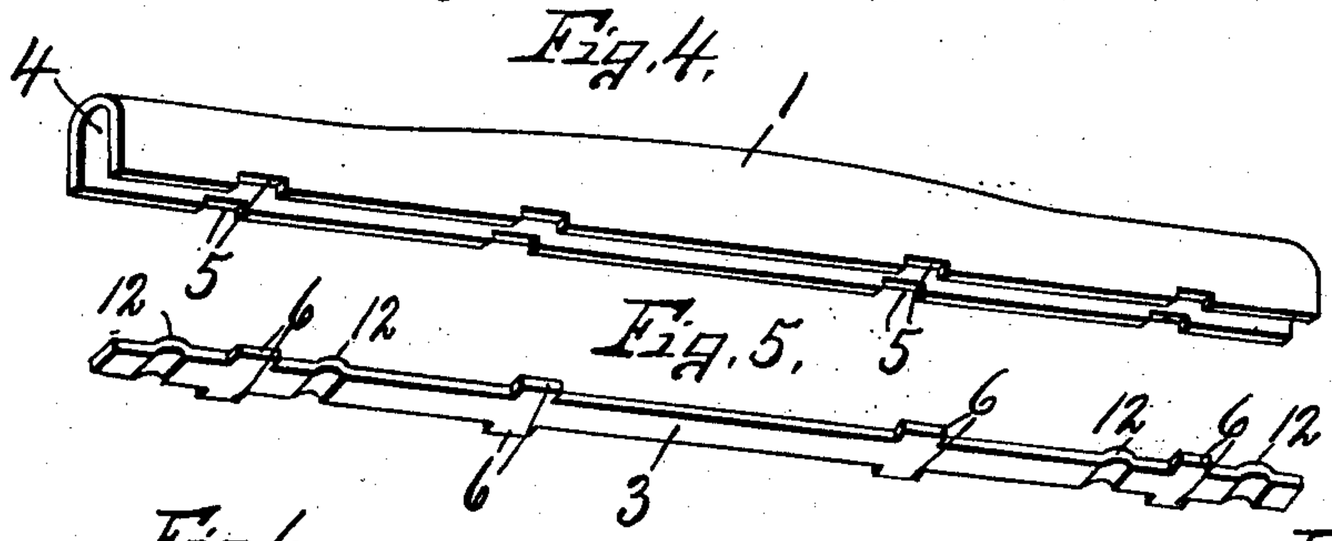


Fig. 4.



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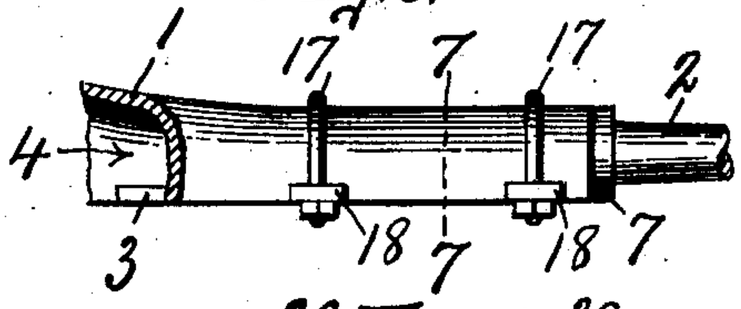


Fig. 8.

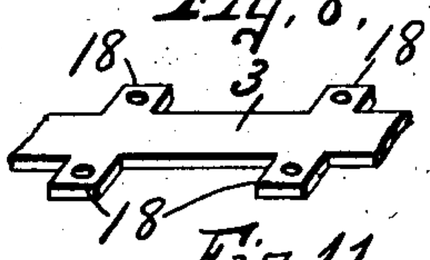


Fig. 7.

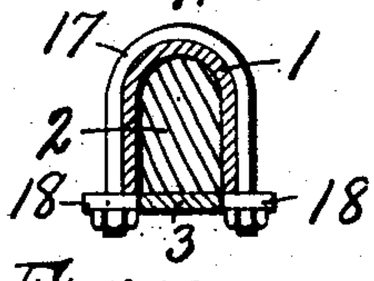


Fig. 9.

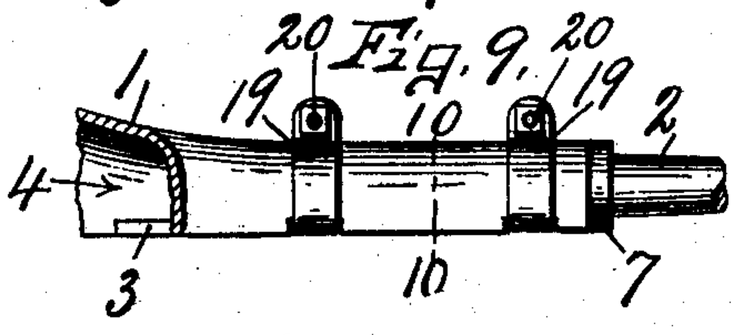


Fig. 11.

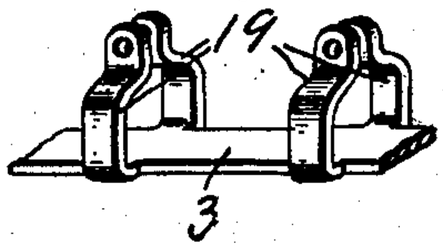


Fig. 10.

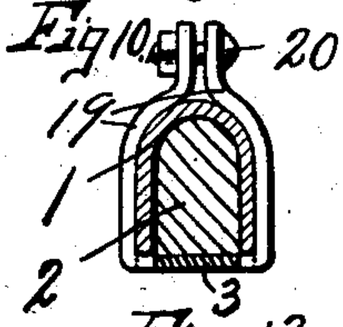


Fig. 12.

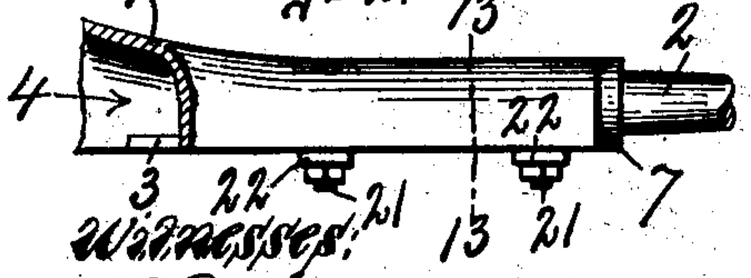


Fig. 14

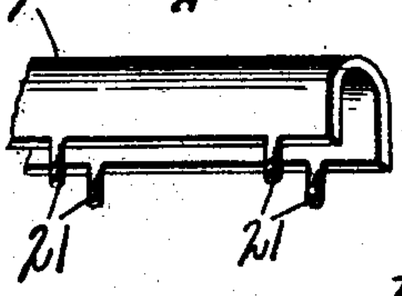
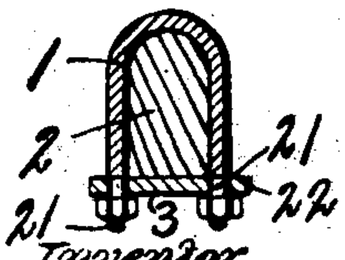


Fig. 13



Witnesses:
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H. C. Chase.

Inventor:
William P. Wilcox
By Holland P. Dennison
Attorney.

No. 753,816. Patented March 1, 1904.

UNITED STATES PATENT OFFICE.

WILLIAM P. WILCOX, OF SYRACUSE, NEW YORK, ASSIGNOR OF ONE-HALF TO JAMES E. HUBBELL, OF SYRACUSE, NEW YORK.

AXLE.

SPECIFICATION forming part of Letters Patent No. 753,816, dated March 1, 1904.

Application filed December 16, 1903. Serial No. 185,380. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM P. WILCOX, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Axles, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to improvements in wagon-axles in which the axle-stubs are separable from the axletree and are held in place by one and the same retaining-plate.

The object is to produce an all-metal axle which is light and strong and may be manufactured at a minimum cost and in which the axle-stubs may be removed and others reinserted without much labor or expense.

I am aware that it is not broadly new to provide removable axle-stubs; but I believe that I am the first to removably secure the axle-stubs in the ends of a metal channel-bar by means of a single retaining-plate which is inserted in the open side of the bar and which at the same time serves to reinforce the bar against buckling or torsional strains.

The specific object therefore is to secure both axle-stubs in the ends of a channel-bar by a single removable plate which also serves to reinforce the axletree.

In the drawings, Figure 1 is a perspective view of a wagon-axle embodying the features of my invention. Fig. 2 is an enlarged longitudinal sectional view through one end of the axletree, showing one end of the axle-stub secured in place. Fig. 3 is a cross-section taken on line 3 3, Fig. 2. Figs. 4 and 5 are perspective views, respectively, of the detached axletree or channel-bar and the reinforcing stub-retaining plate. Figs. 6, 9, and 12 are elevations of portions of modified forms of axles. Figs. 7, 10, and 13 are sectional views taken, respectively, on lines 7 7, Fig. 6, 10 10, Fig. 9, and 13 13, Fig. 12. Figs. 8, 11, and 14 are perspective views of portions of the reinforcing-plates seen in Figs. 6, 9, and 12, respectively.

Similar reference characters indicate corresponding parts in all the views.

This axle comprises, essentially, a metal axletree 1, axle-stubs 2, and a reinforcing or retaining plate 3, which is removably secured to the axletree to lock and hold the axle-stubs in operative position.

The axletree 1 is preferably formed from a single plate of sheet-steel, which is rolled, pressed, or otherwise bent concavo-convex transversely to form a channel-bar having a lengthwise channel 4, the center of the axle being somewhat deeper at the center than at the ends to give it a truss effect. In use this channel-bar is arranged with its open side at the bottom, and the lower edges of its longitudinal sides are formed at intervals with transverse recesses 5, which receive lateral projections 6 on the plate 3.

The axle-stubs 2 are formed with annular shoulders 7 and with extensions or shanks 8, and these shanks are laid or inserted in the ends of the channel 4, with their top faces abutting against the upper wall of the channel and the shoulders 7 abutting against the end faces of the bar 1, it being understood that the cross-sectional form and size of the shank are substantially the same as that of the channel 4, into which it is snugly fitted.

After the axle-stubs are placed in position, as just described, the plate 3 (which is of substantially the same width as the open side of the channel) is inserted in the channel with its projections 6 seated in the recesses 5 to hold it from endwise movement relative to the channel-bar and engages the lower faces of the extensions 8 to clamp the axle-stubs in operative position against the upper wall of the channel. This plate is adapted to be removed or replaced at will and is held in place by suitable clamping devices, as clips 9 and clip-plates 10, and I usually provide one pair of these clamping devices for each end of the plate 3 and locate them between the inner end of the extension 8 and the adjacent outer end of the channel-bar 1, so as to stiffen the plate where the strain is greatest.

I have now described how the plate 3 is clamped and locked to the axletree 1 and held from endwise movement by the projections 6; but it is also necessary to hold the axle-stubs from endwise movement in the channel of the

bar 1. To accomplish this, the lower faces of the extensions 8 are formed with transverse grooves 11, which receive transverse ribs 12 in the plate 3, these ribs being formed by pressing up portions of the plate 3, alined with the clip-plates 10. This forms transverse depressions in the lower face of the plate 3, into which the clip-plates 10 are fitted to prevent displacement of the clips. As a further protection against endwise and downward movement of the axle-stubs the inner ends are formed with shoulders 13, which project through apertures 14 in the top of the bar 1 and lap slightly on the top face of said bar to relieve the strain upon the plate 3 when the axle is in use; but these lugs or shoulders 13 and recesses 14 may be omitted without affecting the general utility of the invention.

In some instances the clip-plates 10 may be dispensed with and the clips, as 17, secured directly to projecting lugs 18 on the reinforcing-plate, as seen in Figs. 6 to 8, inclusive, or these projections may be extended upwardly over the sides of the bar 1, as seen at 19, Figs. 9, 10, and 11, and clamped together above the top by a bolt 20, while in other cases the sides of the channeled axletree may be formed with depending threaded studs, as 21, Figs. 12, 13, and 14, to receive apertured clip-plates 22 and suitable nuts to hold the clip-plates in position.

In assembling the axle-stubs are placed with their extensions in the channels and the annular shoulders against the end faces of the channel-bar, after which the plate 3 is inserted in the open bottom of the bar 1 and against the lower faces of the extensions and is then secured in place by the clips and clip-plates, as described

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

1. An axle comprising a metal channel-bar axle-stubs inserted in the ends of the channel, and a clamping-plate removably secured in the open side of the channel-bar and holding both axle-stubs in position.

2. An axle comprising a metal bar having a lengthwise channel extending from end to end and open at the bottom, axle-stubs extending into the channel and having shoulders engaging the end faces of the bar, and a reinforcing-plate removably secured in the channel and engaged with the axle-stubs to hold the latter in operative position.

3. In an axle, a channel-bar and a reinforcing-plate extending across the open side of bar, axle-stubs extending into the channel, and means to clamp the channel-bar and plate together.

4. In an axle, a metal bar concavo-convex in cross-section and having its open side at the bottom, axle-stubs having extensions movable into and out of the open bottom and operatively seated against the inner face of the top, and means extending under and across the open bottom and engaged with the axle-stubs to hold them in place.

5. An axle comprising a channel-bar and a reinforcing-plate extending across its open side, each having shoulders engaging the other to prevent independent endwise movement of the parts; axles extending into the channels and resting on the plates and means to clamp the plates in operative position to hold the axle-stubs in place.

6. An axle comprising a channel-bar, a reinforcing-plate and axle-stubs secured in the channel and having interlocking shoulders to prevent endwise movement relative to each other, and means to clamp the plate to the bar.

7. An axle comprising a channel-bar and a reinforcing-plate secured in its open side, said bar and plate having interlocking shoulders to prevent endwise movement relative to each other, axle-stubs secured in the channel by the plate and means to clamp the plate to the bar.

8. An axle comprising a channel-bar and a reinforcing-plate secured in its open side, said bar and plate having interlocking shoulders to prevent endwise movement relative to each other, axle-stubs secured in the channel, means to lock the axles from endwise movement and additional means to clamp the plate to the bar.

In witness whereof I have hereunto set my hand this 7th day of December, 1903.

WILLIAM P. WILCOX.

Witnesses:
H. E. CHASE,
MILDRED M. NOTT.