(No Model.)

G. H. SIMMONS.

VEHICLE HUB AND AXLE.

No. 273,618. Patented Mar. 6, 1883.

Fig. 1.

Fig. 2.

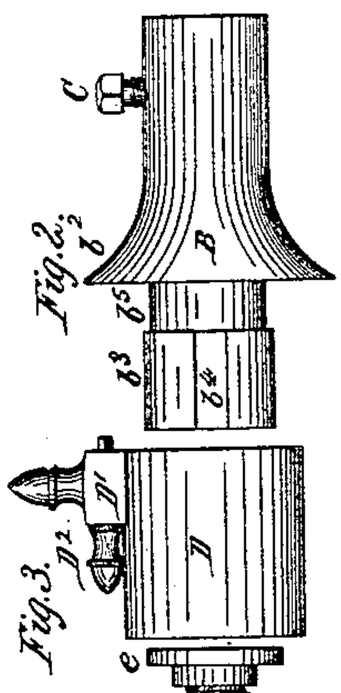


Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

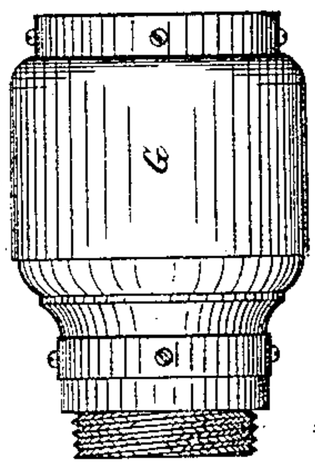


Fig. 7.

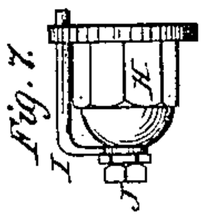


Fig. 8.

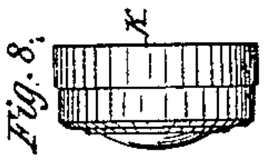


Fig. 9.

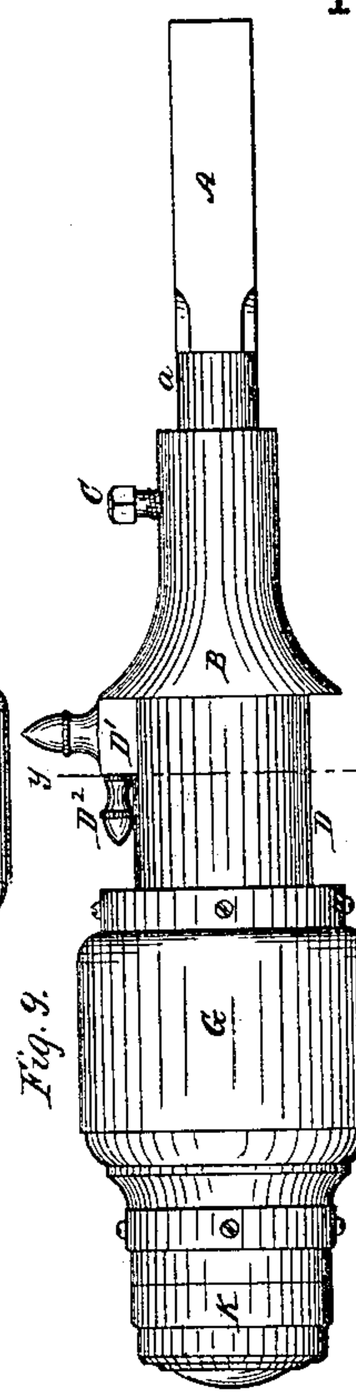


Fig. 11.

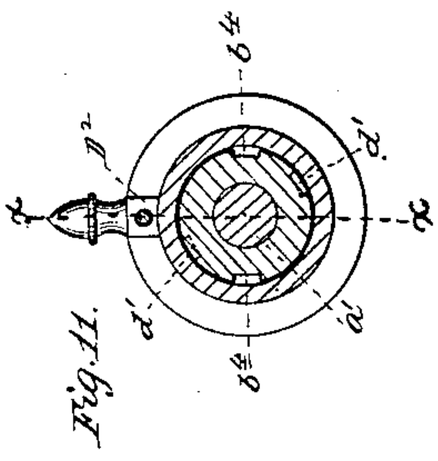
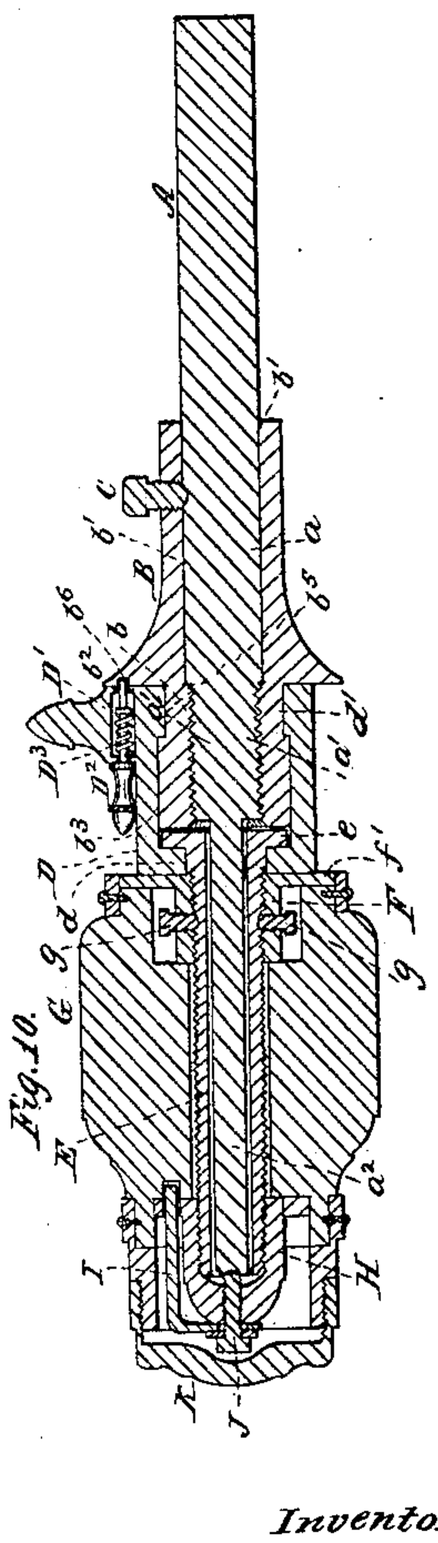


Fig. 10.



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UNITED STATES PATENT OFFICE.

GEORGE H. SIMMONS, OF TAUNTON, MASSACHUSETTS.

VEHICLE HUB AND AXLE.

SPECIFICATION forming part of Letters Patent No. 273,618, dated March 6, 1883.

Application filed November 1, 1882. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. SIMMONS, of Taunton, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Vehicle Hubs and Axles; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figures 1 to 8 represent views of the different parts of the device detached. Fig. 9 represents the complete device; Fig. 10, a sectional view taken on the line *x x*, Fig. 11. Fig. 11 is a cross-section view taken on the line *y y*, Fig. 9.

Similar letters of reference in the several figures denote the same parts.

My invention has for its object to so improve the manner of connecting vehicle-wheels to their axles as to enable the wheel to be removed from the axle in a very simple and expeditious manner, and without the necessity of employing a wrench for the purpose.

To this end my invention consists in certain improved details of construction and combinations of parts, which I will first describe, and then point out specifically in the claims at the end of this specification.

Referring to the accompanying drawings, A represents a carriage-axle, having the smooth cylindrical portion *a*, a smaller screw-threaded portion, *a'*, and a still smaller plain cylindrical portion, a^2. Upon this axle is placed a collar, B, having its interior screw-threaded at *b* for engagement with the screw-threaded portion *a'* of the axle, and its inner smooth portion, *b'*, projecting into the smooth portion *a* of the axle, and adapted to be secured in this position by means of a set-screw, C, passing through the collar and into a seat in the axle. The exterior of this collar is provided with a shoulder, b^2, a cylindrical portion, b^3, cut away at b^4 on opposite sides, and a cylindrical recess, b^5, between the cylindrical portion b^3 and shoulder b^2, as shown.

D represents a cylinder, having at its outer end an inwardly-projecting flange, *d*, and on its inner surface, near its inner end, a pair of short ribs, *d' d'*, of a width adapting them to fit the cut-away portions b^4 of the cylindrical part b^3 of the collar B, and of a length enabling them to be accommodated in the recess b^5 between the inner edge of the cylindrical part b^3 and the shoulder b^2. On the exterior of the cylinder a boss or projection, D', is formed, containing a longitudinally-moving bolt, D^2, pressed forward by a spring, D^3, and adapted to engage with a recess, b^6, in flange b^2, as will be hereinafter explained.

Fitted into the cylinder D is a pipe-box, E, which is screw-threaded exteriorly, and has an outwardly-projecting flange, *e*, at its inner end, which bears against inwardly-projecting flange *d* of cylinder D. Screwed upon pipe-box E is another collar, F, having projections or lugs *f*, which fit in corresponding recesses in the body of the hub G, so as to make a firm and rigid connection between the two, and having a flange, *f'*, covering the inner face of the hub and confining the flange *d* of the cylinder D between it and the flange *e*. The pipe-box is screw-threaded, except where flange *d* bears upon it, and at this point it is left smooth to enable the pipe-box to freely rotate with the hub. Set-screws *g g* pass through the collar F, seated in the pipe-box, operate to hold the collar and pipe-box firmly together. The pipe-box passes through the hub, and upon its outer end is screwed a nut, H. Through the flange of this nut and into the hub extends a pin, I, whose outer end is perforated and bent over the screw-nut, so that its perforation shall come opposite a screw-hole in the end of the nut H and permit the passage of a screw-bolt, J. Pin I and bolt J thus operate to lock the nut H from rotation after it has been adjusted to position. By screwing up the nut H the wheel can be kept tight and wear compensated. A cap, K, covers the outer end of the hub, as shown, to exclude dust, dirt, &c.

It will be observed by inspection of the drawings that the collar B only is connected permanently to the axle, while all the other parts of the device are connected to the wheel-hub. To connect the wheel, therefore, to the axle it is only necessary to slip the pipe-box upon the part *a* of the axle and turn the cylinder D until its lugs *d* correspond or stand opposite to the cut-away portions or grooves b^4 in the cylinder B, and then further press forward the hub until the end of cylinder D strikes the shoulder b^2. When this is accomplished the

lugs *d* will have passed into the cylindrical recess b^5, and the cylinder D can then be rotated until the spring-bolt D^2 is projected into the recess b^6 in the shoulder b^2 and locks the parts D and B securely together. The wheel is now free to rotate, and cannot be taken off unless the spring-pin is retracted and the cylinder D rotated and withdrawn in a manner the reverse of that above described. The convenience with which the wheel can be put on and taken off will be at once apparent to those who have been desirous of removing the wheel from an ordinary axle and have been unable to find a wrench with which to take off the nut.

The collar B can be made solid with the axle, if desired.

I claim as my invention—

1. The combination, with the wheel-hub and its pipe-box, of the cylinder D, collar B, and axle A, and the means for locking the parts B and D together, substantially as described.

2. The combination, with the hub, of the pipe-box E, having the flange *e*, the collar F, secured to the pipe-box, as described, and the cylinder D, having the flange *d* and carrying the spring locking-bolt, substantially as described.

3. The combination, with the axle having the smooth cylindrical portions *a* a^2 and the screw-threaded portion *a'*, of the screw-threaded collar B, locked to the axle, and having the cut-away portions or grooves b^4, the recess b^5, and the shoulder b^2, substantially as described.

4. The combination, with the hub, of the pipe-box, screw-threaded exteriorly, and the collar F, having the ribs *f* and flange *f'*, and the locking-screws *g*, substantially as described.

5. The combination, with the pipe-box E, of the nut H on its outer end, the pin I, and screw-bolt J, substantially as described.

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