

J. A. WHITTON.
AXLE.
APPLICATION FILED JULY 26, 1910.

982,403.

Patented Jan. 24, 1911.

Fig. 1.

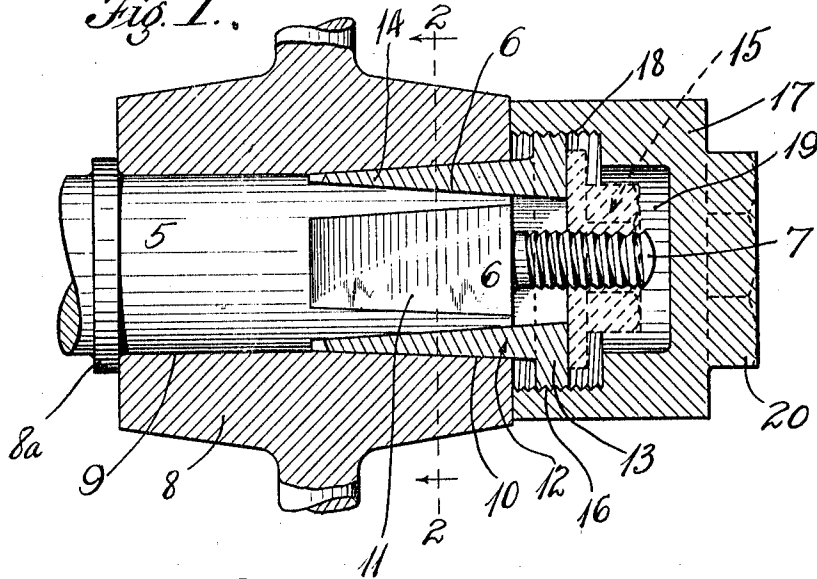


Fig. 2.

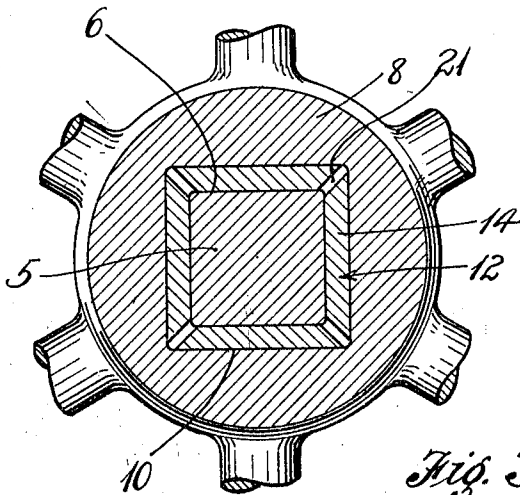


Fig. 4.

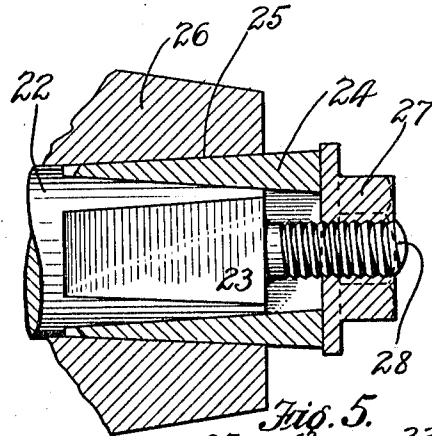


Fig. 5.

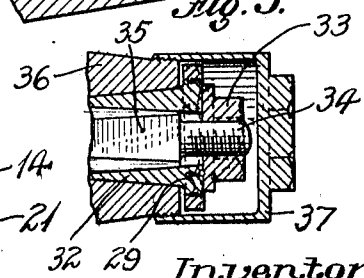
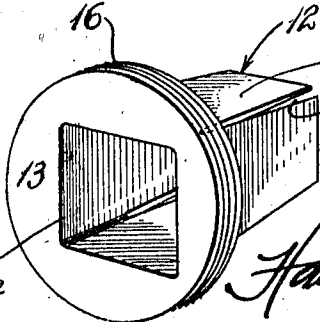


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

JAMES A. WHITTON, OF LOS ANGELES, CALIFORNIA, ASSIGNOR OF ONE-HALF TO Y. R. DEL VALLE, OF LOS ANGELES, CALIFORNIA.

AXLE.

982,403.

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To all whom it may concern:

Be it known that I, JAMES A. WHITTON, a citizen of the United States, residing at Los Angeles, county of Los Angeles, State of California, have invented new and useful Improvements in Axles, of which the following is a specification.

This invention relates to axles and particularly to the axles of vehicles such as motor cars or automobiles.

The object of the invention is to provide improved means for securing the wheels to the rear axle which will give a very rigid connection between the parts and which will insure a proper centering of the wheel on the hub.

A further object of the invention is to construct the part so as to enable the wheel to be readily removed and replaced.

In the drawing forming a part of the annexed specification, Figure 1 is a longitudinal vertical section taken through the wheel hub at the end of the axle and illustrating the manner of attaching the parts. Fig. 2 is a vertical section taken on the line 2-2 of Fig. 1. Fig. 3 is a perspective showing the wedge which forms a part of the invention. Fig. 4 is a view similar to Fig. 1 but showing a modified construction of the device. Fig. 5 is a view similar to Fig. 4 and showing the preferred form of the invention.

Referring more particularly to the parts, 5 represents the rear axle of a car to which my invention has been applied. In applying my invention I cut away the end of the axle so as to give it an angular form presenting four flat faces 6 and giving the axle a substantially square cross section at this point as illustrated in Fig. 2. These faces 6 converge toward each other in the direction of the end of the axle so that the end of the axle presents the form of a four sided wedged or tapered neck.

On the end of the axle a threaded stud 7 is formed of reduced diameter. The wheel hub 8 is formed on its inner side with a bore which substantially fits the diameter of the round portion of the axle 5 and the outer half portion of the opening through the hub is formed with a tapering square opening 10 arranged so that the side walls of this opening converge toward the middle plane of the wheel. In this way it will be seen that when the hub is in place a wedged shaped

space is formed between the hub and the square neck 11.

I provide a wedge 12, the construction of which is clearly illustrated in Fig. 3. This wedge has a round head 13, with a square opening 13^a, from the inner face of which four wedged shaped blades 14 extend inwardly. These blades taper in thickness so that they are of reduced thickness toward their forward edges and they are adapted to fit in the wedged shaped spaces between the neck 11 and the square opening 10 in the hub. When the wheel is placed on the axle this wedge is forced into position so as to jam the hub tightly on the axle and I then place a follower nut 15 on the tubular stud 7. This nut is screwed up tight so as to seat against the outer face of the wedge 13 and hold the wedge securely in position.

The outer edge of the wedge 13 is formed with screw threads 16 and these screw threads enable a cap nut or cap 17 to be attached as in Fig. 1, said nut having a threaded chamber 18 at its inner end which receives the thread 16 as shown, the inner face of the cap seating against the end of the hub as indicated. The interior of the cap 17 is formed into a chamber 19 which receives the nut 15 as shown, and the outer portion of the cap 17 is formed into a hexagonal head 20 to enable the cap to be applied or removed as will be readily understood. The inner end of the hub 8 seats against a collar 8^a formed on the axle.

With a construction such as that described if it should be necessary on the road to remove the wheel from the axle this can be readily accomplished simply by applying a wrench to the hexagonal head 20 and removing the cap 17. The nut is then removed by means of a wrench, and the cap 17 is then replaced and by screwing it up it will withdraw the wedge. This is a very advantageous arrangement as in some cases the wedge might be jammed so tightly as to prevent its being readily withdrawn. In order to indicate that the follower nut 15 should first be removed it is indicated in dotted outline in Fig. 1. From inspection of Figs. 2 and 3 it will be seen that the edges of the blades 14 are disposed close together so that the blades 14 present substantially the form of a box having slots 21 in its longitudinal edges.

In Fig. 4 I illustrate a modified form of

the invention in which I dispense with the cap 16. In this construction the axle 22 is substantially similar to the axle 5 described above and similarly formed into an angular or square neck 23 which receives the wedge 24 which is adapted to be jammed in the square tapered opening 25 in the hub 26, being held in position by the follower nut 27 screwing onto the threaded stud 28 on the end of the axle. This construction has substantially the same advantages as shown in Fig. 1 except that it does not provide for the easy removal of the wedge. It will be seen that by the construction described the hub can be very securely attached to the axle and that when the wedge is seated it will accurately center the hub on the axle.

In Fig. 5 I show the preferred form of the invention. In this form of the invention I provide the threaded collar 29 of the wedge 32 with a special nut 31 for withdrawing the wedge 32. The follower nut 33 is mounted on a stud 34 as described and jams the cotter 32 on the square neck 35 of the axle. The hub 36 is threaded to receive a cap nut 37 as shown.

What I claim is:—

1. An axle having an angular neck, a hub fitting on said axle having an angular opening at said neck and cooperating with said neck to form a tapering opening, a wedge fitting in said opening engaging the sides of said neck, and means for securing said wedge.

2. In combination, an axle having an angular neck, a hub having an angular opening opposite said neck, said angular opening and said neck having faces converging in the direction of the middle of said axle, a wedge having a plurality of tapered blades received in said opening around said neck, and means for securing said wedge.

3. In combination, an axle having a tapered neck, a hub having an opening receiving said neck, a tapered wedge adapted to fit between the walls of said opening and said neck so as to jam said hub upon said neck, removable means for securing said wedge and a removable nut engaging said wedge and adapted to withdraw the same.

4. In combination, an axle having an angular neck, a hub having an angular opening on said neck, a wedge received over said neck in said opening adapted to jam said hub on said neck, said wedge having a threaded collar thereupon, said axle having a stud, a follower nut on said stud adapted to retain said wedge and a nut engaging the threads of said collar adapted to seat against said hub.

In witness that I claim the foregoing I have hereunto subscribed my name this 19th day of July, 1910.

JAMES A. WHITTON.

Witnesses:

F. D. AMMEN,
EDMUND A. STRAUSE.