

No. 633,183.

Patented Sept. 19, 1899.

S. L. DENNEY.  
DIVIDED CAR AXLE.

(Application filed Jan. 28, 1899.)

(No Model.)

FIG. 1.

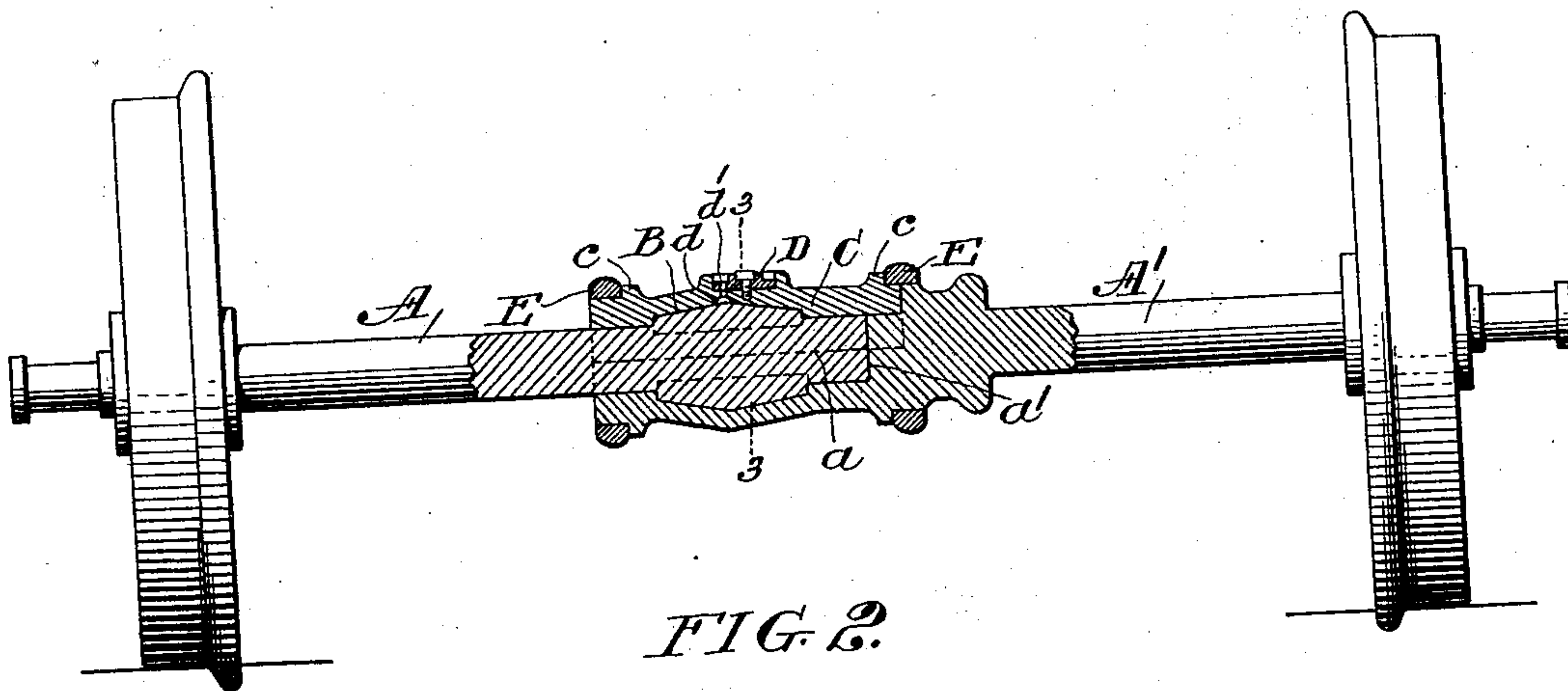


FIG. 2.

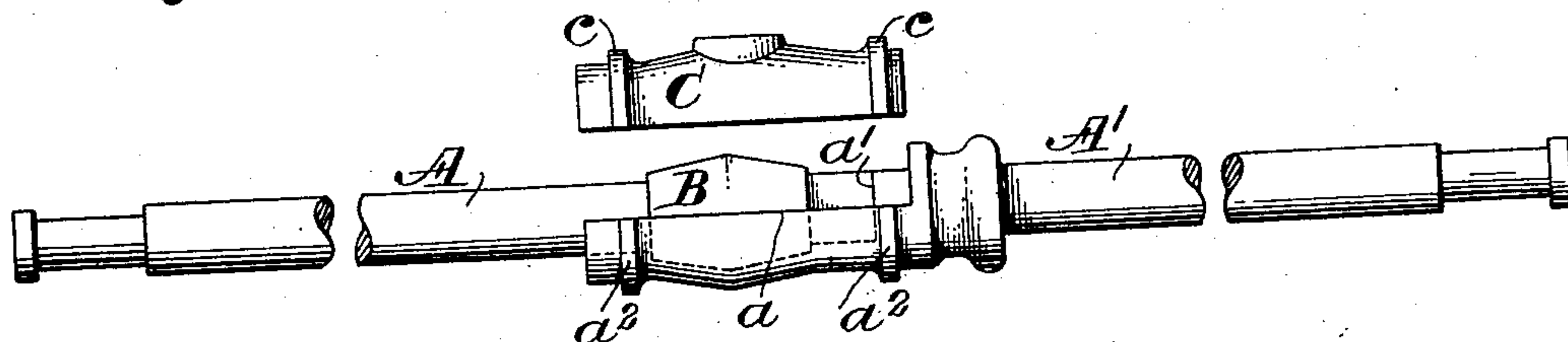
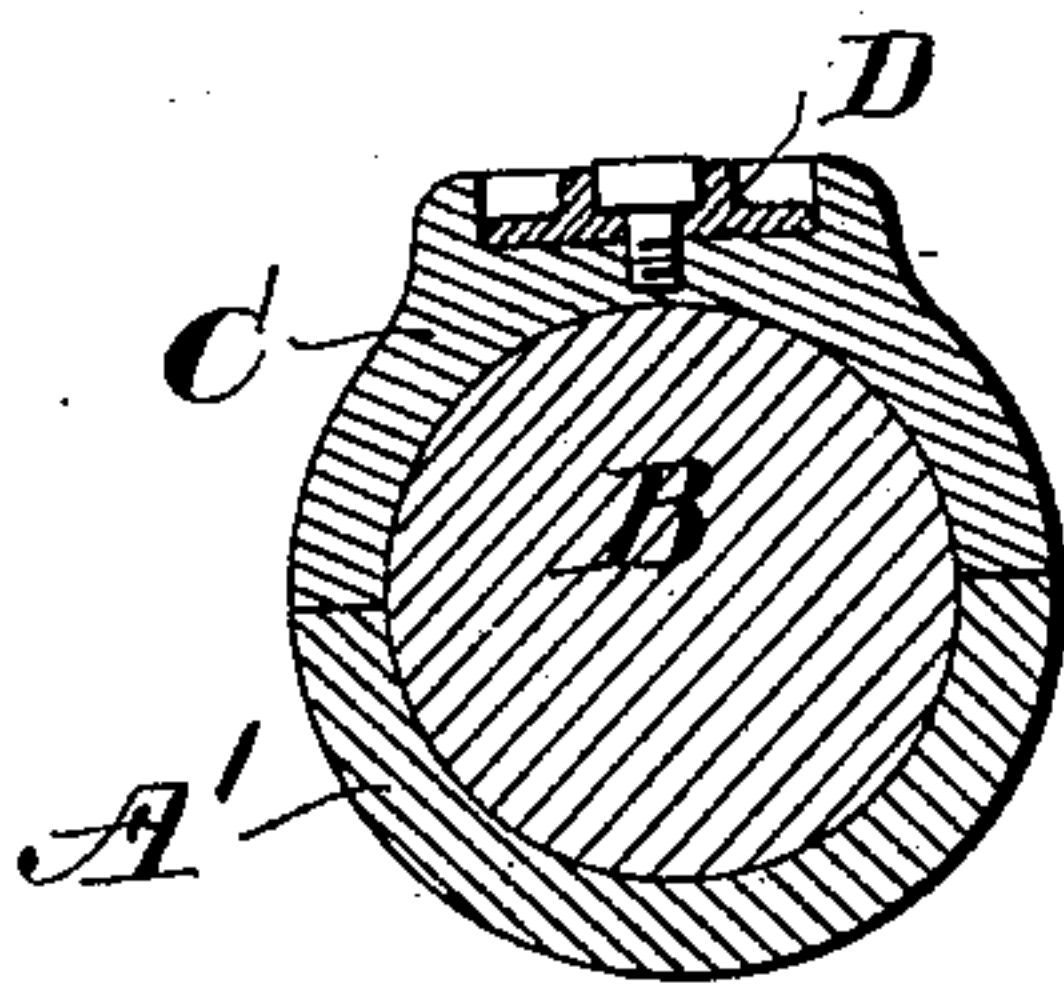


FIG. 3.



Witnesses:

Henry Denny  
J. Dewar.

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# UNITED STATES PATENT OFFICE.

SAMUEL L. DENNEY, OF ATLANTIC CITY, NEW JERSEY.

## DIVIDED CAR-AXLE.

SPECIFICATION forming part of Letters Patent No. 633,183, dated September 19, 1899.

Application filed January 28, 1899. Serial No. 703,659. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL L. DENNEY, a citizen of the United States, residing in Atlantic City, county of Atlantic, in the State of New Jersey, have invented certain new and useful Improvements in Divided Car-Axles and Methods of Making the Same, of which the following is a specification, reference being had to the component drawings thereof.

My invention relates to improvements in car-axles of that class known as "divided" car-axles, which are designed to allow the oppositely-disposed wheels on the axle to accommodate themselves automatically to the variable speed of rotation arising during the progress of the wheels around curves.

The object of my invention is to improve and simplify my previous invention dated December 17, 1895, and numbered 551,746, and my other invention dated January 24, 1899, and numbered 618,200, and also more particularly to facilitate and economize the manufacture of these axles.

My previous inventions served the purpose reasonably well where the form and arrangement of the cone portion employed was as therein shown; but experience has demonstrated that a greater degree of rigidity and inflexibility longitudinally in the axle is secured by one of the features of my present invention—namely, that of allowing the end of the axle to extend a suitable distance beyond the end of the cone, thereby increasing the length and rigidity of the bearing within the coupling-sleeve, another feature being the formation on the axle of double cones united at their base, which possesses many advantages in wearing, one particular advantage being that no lateral play will exist in the coupling to change the gage of the wheels between the rails.

Another particular feature of my present invention is the casting of the loose and fixed parts of the coupling directly upon the cones, by which means I secure the very important result of a chilled bearing-surface in the interior of the coupling.

Speaking further of the double-cone formation, I find it particularly well adapted for the casting of the coupling directly upon the axle, for the reason that it frees itself from the coupling after the operation of casting more

readily than will other forms which might be employed.

In the accompanying drawings, Figure 1 is a front elevation, partly in section, of a pair of wheels carrying a divided axle embodying my present invention. Fig. 2 is an elevation of the coupling with the cap detached, and Fig. 3 is an enlarged cross-sectional view on the line 3 3 of Fig. 1.

A and A' are the two parts of the axle. The part A has cast upon it the double-cone enlargement B a short distance from its inner end. The part A' has cast upon it the fixed part of the coupling-sleeve, which is adapted to the external contour of the cone B and forms the parting-recess *a*, into which fits the cap C, forming the detachable part of the coupling, which is also adapted to the external contour of the cone B, the line of separation or abutment of the axles being at *a'*, shoulders *c c* and *a<sup>2</sup> a<sup>2</sup>* being formed on the exterior of the cap C and fixed extension of the coupling, respectively, to receive locking-bands E E, which are shrunk in their places and serve to securely bind the coupling together.

*d* is an oil-hole communicating with the central part of the cone B, which is opened and closed by turning the disk D, which is held to the cap by a stud-bolt and in which is a corresponding hole *d'*.

The manufacture of my improved coupling consists in first placing one of the inner ends of the axle in a suitable two-part metal mold and casting the cone thereon. Then this casting is placed end to end in another suitable mold with its corresponding other part of the axle and the fixed part of the coupling-sleeve is cast on this end of the axle, and then these two or the whole formation thus far is placed in another suitable mold and the loose cap or sleeve is cast. By this means when the fixed or integral part of the coupling-sleeve is cast I obtain a chilled inner surface and a perfect fit around the cone, and also when the cap or loose part of the coupling is cast I obtain a correspondingly chilled inner surface of the cap and a perfect fit around the cone. By this process of forming the coupling I avoid expensive fitting and the cost of manufacture is reduced to a minimum, while I obtain the highest durability and perfection.



in the work. The parts after being thus cast and completed are permanently bound together by shrinking on the two wrought-iron bands.

5 I claim as my invention—

1. A divided car-axle of the two-part type having a fixed coupling-sleeve portion on one of its inner ends adapted to a suitable enlargement on the other of its inner ends and  
10 a cap for securely holding the two parts of the axle together.

2. A divided car-axle of the two-part type having a fixed coupling-sleeve portion on one of its inner ends adapted to a suitable double-  
15 cone enlargement on the other of its inner ends and a cap for securely holding the two parts of the axle together.

3. A divided axle of the two-part type having a fixed coupling-sleeve portion cast on one  
20 of its inner ends adapted to a suitable double-cone enlargement on the other of its inner ends and a cap for securely holding the two parts of the axle together.

4. A divided axle of the two-part type having a fixed coupling-sleeve portion cast on one  
25 of its inner ends adapted to a suitable double-cone enlargement on the other of its inner

ends and a cap for securely holding the two parts of the axle together said coupling being firmly bound together by bands shrunk on 30 the exterior of the same.

5. A divided axle of the two-part type having a fixed coupling-sleeve portion cast on one of its inner ends adapted to a suitable double-  
35 cone enlargement on the other of its inner ends and a cap for securely holding the two parts of the axle together said coupling being firmly bound together by bands shrunk on the exterior of the same, and an oil-hole in the cap adapted to be closed or opened by a  
40 rotating disk.

6. As a means of making a divided car-axle coupling of the two-part type, first casting a suitable enlargement on one of its inner ends, then placing the two inner ends of the axles  
45 together and casting a fixed portion of a coupler to one of its ends and then casting loosely a suitable cap portion over the enlargement and fixed portion of the coupler particularly for the purposes specified.

SAMUEL L. DENNEY.

Witnesses:

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