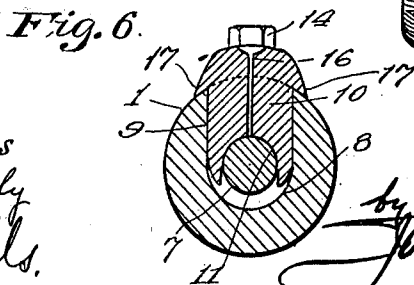
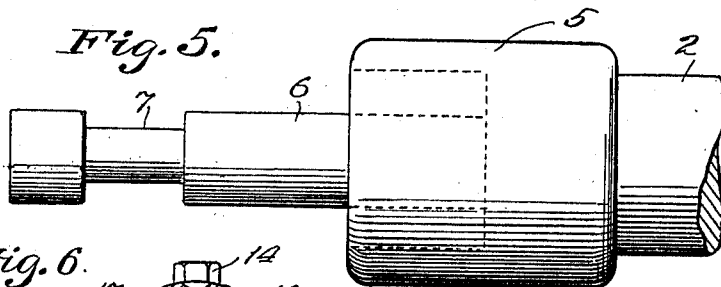
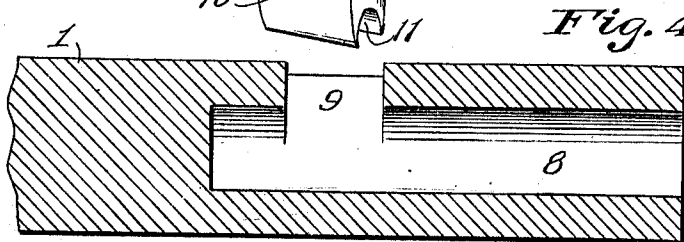
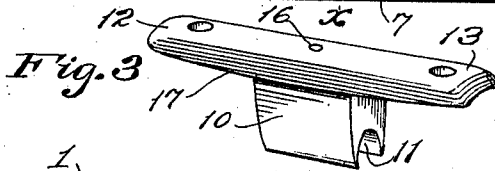
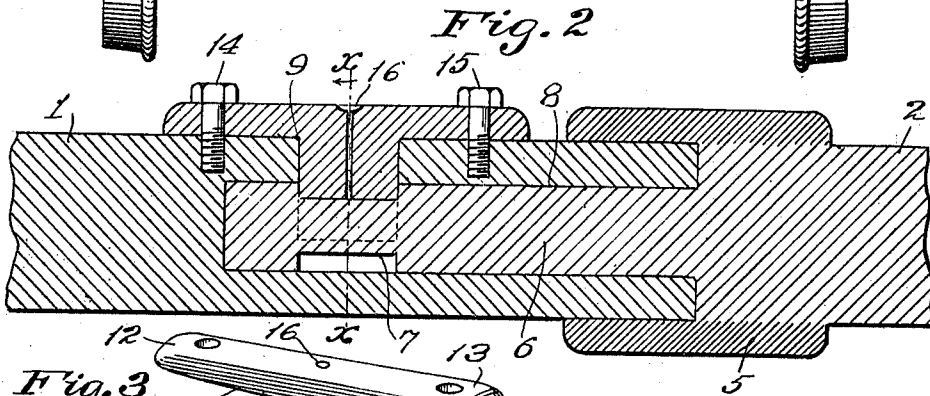
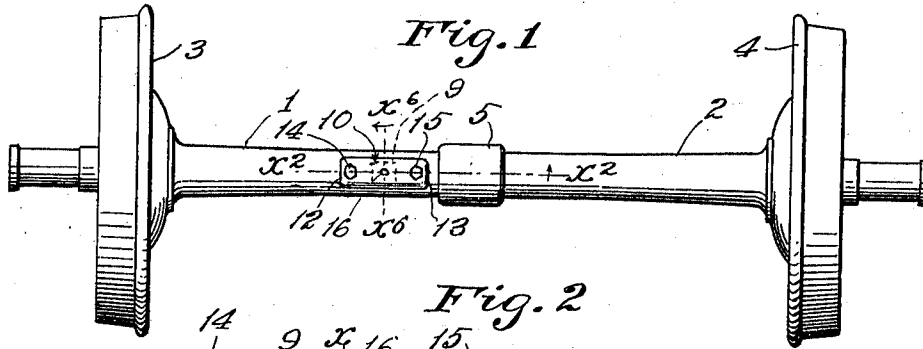


E. DEUTSCH.
DIFFERENTIAL CAR AXLE.
APPLICATION FILED NOV. 30, 1908.

989,131.

Patented Apr. 11, 1911.



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UNITED STATES PATENT OFFICE.

EMILE DEUTSCH, OF SIERRA MADRE, CALIFORNIA.

DIFFERENTIAL CAR-AXLE.

989,131.

Specification of Letters Patent.

Patented Apr. 11, 1911.

Application filed November 30, 1908. Serial No. 465,435.

To all whom it may concern:

Be it known that I, EMILE DEUTSCH, a citizen of the United States, residing at Sierra Madre, in the county of Los Angeles and State of California, have invented a new and useful Differential Car-Axle, of which the following is a specification.

The object of the invention is to improve the details of construction of differential axles for railway cars, street-cars, locomotives, and the like, and the invention comprises the novel features herein shown, described and claimed.

The accompanying drawings illustrate the invention.

Figure 1 is a view in elevation of a car axle embodying the principles of my invention. Fig. 2 is an enlarged longitudinal sectional detail through the differential coupling connecting the two sections of the axle, and taken on line x^2 , Fig. 1. Fig. 3 is a perspective of the removable coupling-member or key. Fig. 4 is a longitudinal sectional detail analogous to Fig. 2 and showing one section of the axle with the other parts removed. Fig. 5 is a view in elevation showing the end of the other section of the axle. Fig. 6 is a cross-section on the lines x^6 , Figs. 1 and 2.

Referring to the drawing in detail, the axle proper consists of the two sections 1 and 2, each section carrying a wheel 3 and 4, said sections butting together approximately at the center of the axle; and it is the object of my invention to couple these sections together so that either wheel may turn independently of the other, said wheels being fixed upon the respective sections of the axle so that when one wheel turns the corresponding axle-section must turn.

A sleeve 5 is welded or forged or otherwise fixed upon the inner end of the axle-section 2, and a pintle 6 extends from the end of the axle-section 2 at the axial center of the sleeve 5 and a considerable distance beyond the open end of the sleeve, and a clutch-bearing 7 is formed by turning a groove near the outer end of the pintle 6.

A pintle-bearing 8 is bored in the section 1 from its end to receive the pintle 6 and a clutch-bearing opening 9 is formed through one wall of the pintle-bearing 8 in position to register with the clutch-bearing 7 in the pintle. The clutch-bearing-block 10 has a semicircular bearing-face 11, and said clutch-bearing-block is adapted to fit closely in the

opening 9 and in the bearing 7 to hold the pintle 6 in the bearing 8, thereby coupling the axle-sections 1 and 2 together.

Wings 12 and 13 extend in longitudinal alignment from the clutch-bearing-block 10, and cap-screws 14 and 15 inserted through these wings and screw-seated in the axle-section 1 hold the clutch-bearing-block removably in place so that the axle-sections may be separated by removing the cap-screws and clutch-bearing-block. An oil-opening 16 is formed through the clutch-bearing-block to supply oil to the pintle 6.

The end of the axle-section 1 fits closely in the open end of the sleeve 5, and the pintle 6 fits closely in the bearing 8, and the clutch-bearing-block 10 holds the pintle in place so that either wheel 3 or 4 may rotate absolutely independently of the other. The sleeve 5 and the pintle 6 form a double lap extending across the joint between the ends of the axle-sections to prevent breaking.

The sleeve 5 covers the joint at the end of the bored section to exclude dust therefrom and the wings 12, 13 are extended to form lips 17 to cover the lateral opening 9 thus to exclude dust therefrom.

It is to be understood that the block may be fastened in place by other means than those shown without departing from the spirit of the invention in other respects.

I claim:

1. Two axle-sections adapted to butt together end to end, a short sleeve permanently fixed upon the end of one axle-section forming an annular socket around the pintle to receive the end of the other axle-section, a lateral opening in the other section for a clutch-block, a pintle extending centrally from the end of the first axle-section into a bearing in the other axle-section, and means beyond the sleeve for clutching the pintle to allow rotation and prevent withdrawal.

2. A differential axle comprising two sections adapted to butt together end to end, a permanently fixed sleeve upon the end of one section to receive the end of the other section, a pintle of smaller diameter than the sleeve extending from the end of the sleeve section into a bearing in the end of the other section, provided with an open seat for a clutch-block, a clutch-bearing in the pintle, a clutch-block inserted through the end of the axle-section to engage in the clutch-bearing in the pintle, and means for holding the clutch-block removably in place.

3. A differential axle comprising a section bored axially and provided with a lateral opening communicating with the bore, another section provided with an annularly grooved pintle, in said bore, a sleeve socket around and apart from said pintle and a block having a grooved face to engage the groove in the pintle in said opening and groove.
4. A differential axle comprising a section bored axially and provided with a lateral opening communicating with the bore, another section provided with an annularly grooved pintle, in said bore, a sleeve fixed around said pintle and a block in said opening and groove the same being provided with a perforation for oiling the pintle.
5. A differential axle for rail-way cars comprising two sections, one section being provided with an annularly grooved pintle and the other section being provided with a bore and a lateral opening, said bore fitting the pintle; a block in the opening and groove, and provided with wings, means to fasten the wing to the bored section.
6. A differential axle for rail-way cars comprising two sections, one section being provided with an annularly grooved pintle and the other section being provided with a bore and a lateral opening, said bore fitting the pintle; a block fastened in the opening and groove, and a fixed sleeve on the end of the pintle section, forming an annular space around the pintle to cover the joint at the end of the bored section.
7. A differential railway car axle comprising two sections one of which is bored and the other of which has a pintle rotatable in the bore, grooved block means to prevent the pintle from being withdrawn from the bore and a sleeve on the end of the pintle section, forming an annular space around the pintle fastened to one of the sections and covering the joint at the end of the bored section.
8. A differential railway car axle comprising a section which is axially bored and is provided with a lateral opening communicating with the bore, a section of which has a pintle that is annularly grooved and is rotatable in the bored axle and a block in the lateral opening and groove and provided with a lip to cover the opening.
- In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 21st day of November, 1908.
- EMILE DEUTSCH.
- In presence of—
JAMES R. TOWNSEND,
L. BELLE RICE.