

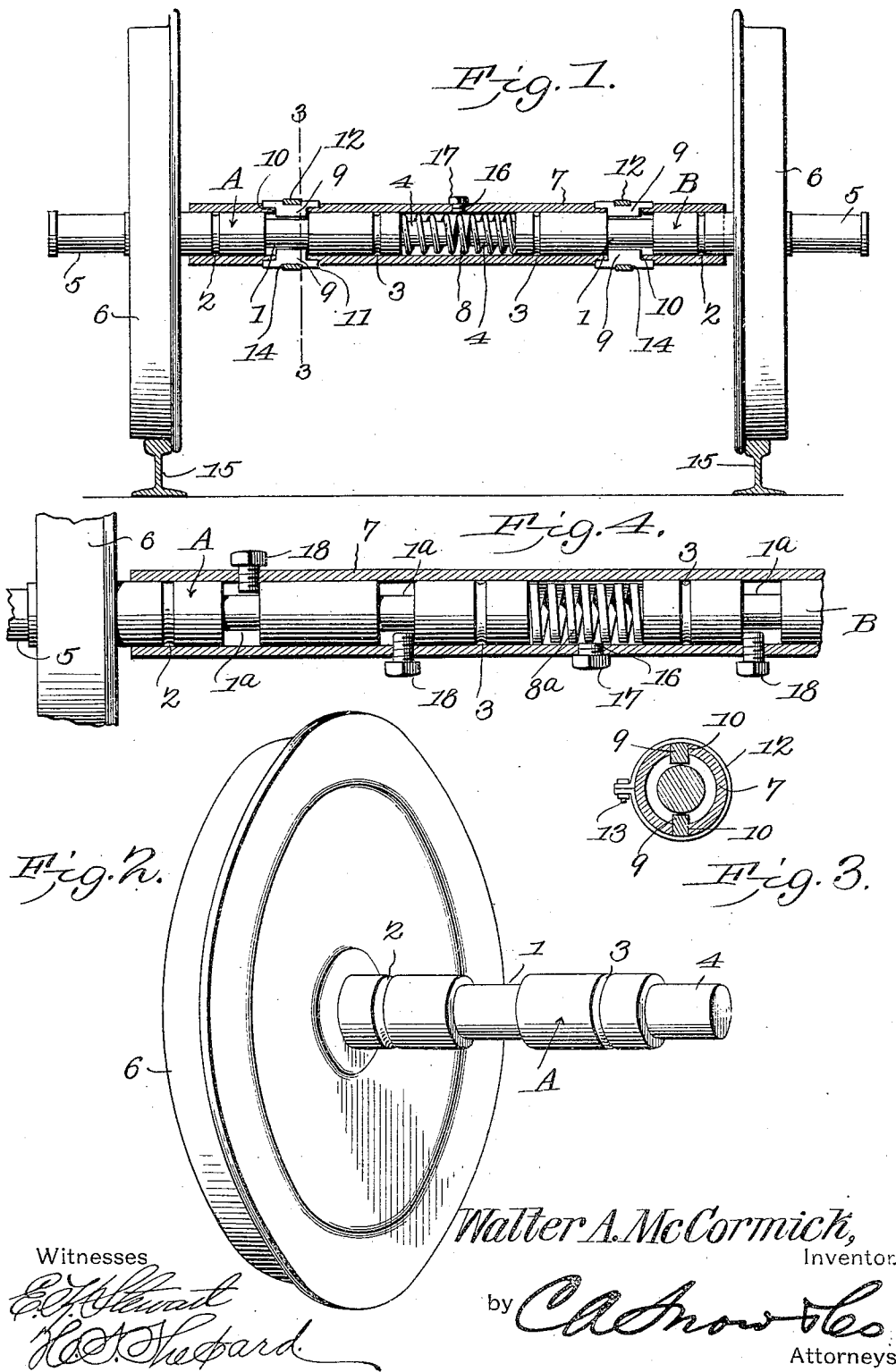
No. 808,301.

PATENTED DEC. 26, 1905.

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CAR AXLE.

APPLICATION FILED AUG. 15, 1905.



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WALTER A. McCORMICK, OF PULASKI, VIRGINIA.

CAR-AXLE.

No. 808,301.

Specification of Letters Patent.

Patented Dec. 26, 1905

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To all whom it may concern:

Be it known that I, WALTER A. McCORMICK, a citizen of the United States, residing at Pulaski, in the county of Pulaski and State of Virginia, have invented a new and useful Car-Axle, of which the following is a specification.

This invention relates to axles, and is primarily designed to provide an improved endwise-expansible axle for use in connection with railway-cars for the purpose of maintaining the wheels upon the track throughout any inequalities or differences in the gage thereof.

A further object of the invention is to have one end portion of the axle independent of the other end portion in order that either wheel may run faster than the other when passing around a curve, thereby to prevent binding of the wheels upon curved portions of the track.

It is also proposed to enable the mounting of the present axle in the ordinary forms of journal-boxes now commonly employed upon change or car-trucks without requiring any alteration therein.

In carrying out the invention it is proposed to have the axle made up of two sections, and in this connection it is also proposed to assemble the same in such a manner as to render the present form of axle as strong and durable as the ordinary single-piece axle.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a side elevation of a car-axle of the present invention, the connecting box or sleeve being in section. Fig. 2 is a perspective view of one of the axle-sections and the car-wheel carried thereby. Fig. 3 is a cross-sectional view on the line 3 3 of Fig. 1. Fig. 4 is an enlarged fragmentary view similar to Fig. 1, showing a modification.

Like characters of reference designate cor-

responding parts in each and every figure of the drawings.

As hereinbefore indicated, the present axle is formed in half-sections, which are duplicates, and have been designated in general in Fig. 1 of the drawings by the reference characters A and B, respectively. Each axle-section of the form shown in Figs. 1 and 2 is provided about midway of its ends with an annular groove or channel 1, and at opposite sides of this channel are other narrower and shallower grooves 2 and 3, designed as oil-channels for collecting and retaining surplus oil, and they may also be used as races for antifriction-balls. The inner extremity of the axle is reduced, as at 4, while its outer end is shaped to produce a journal-terminal 5 of any approved or well-known form, so as to be received within any of the journal-boxes now commonly employed upon car-trucks. Fixed upon the axle at the inner end of the spindle is an ordinary car-wheel 6, which is cast integral with the axle or assembled thereon by a drop-forging process.

Upon particular reference to Fig. 1 of the drawings it will be seen that two of the foregoing-described axle-sections are assembled in longitudinal alinement and inclosed within a tubular open-ended metallic box or sleeve 7, the inner ends of the axle-sections being spaced and yieldably maintained in spaced relation by means of a helical spring 8, which embraces the reduced terminals 4 of the axle-sections and bears in opposite directions against the annular shoulders produced by said reduced portions.

For the purpose of preventing endwise separation of each axle-section from the sleeve or boxing 7 I employ one or more keys 9 for cooperation with the annular channel 1, each key being received within an opening 10 in the sleeve and provided with a head 11, engaging the exterior of the sleeve or box and preferably countersunk therein. A band 12 embraces the keys and the sleeve or box and has its ends connected in any suitable manner—as, for instance, by having its ends turned outwardly and pierced by a suitable fastening 13, as best shown in Fig. 3 of the drawings. By preference the outer end of each key is provided with a notch 14 for the reception of the retaining-band, so as to prevent edgewise slipping of the latter from the keys. It will be noted that each key en-

gages the inner edge of the adjacent channel, so as to prevent separation of the axle-sections, and each channel is wider than the key in order that the axle-section may be moved inwardly against the tension of the spring 8, whereby the axle may automatically accommodate itself to any reductions in the gage of the track.

In rounding a curve one or both of the axle-sections will yield endwise, so as to cushion and absorb the shocks commonly incident in rounding curves. Moreover, as the axle-sections are independent of one another the outer section and its wheel are free to rotate faster than the inner wheel, and thereby prevent binding of the wheels when rounding a curve.

Although the axle-sections are capable of rotating within the sleeve or box 7, the axle-sections and sleeve ordinarily rotate together when traveling over a straight portion of track; but there is sufficient looseness to enable independent rotation of the axle-sections when rounding curves and under other conditions where such independent rotation is essential or desirable.

In view of the independent rotation of the axle-sections within the box or sleeve 7 it is proposed to provide for lubricating these elements by having the space between the inner ends of the axle-sections constitute a lubricant-containing chamber or receptacle which may be filled through an opening 16 in the box or sleeve, which is normally closed by a threaded plug 17 or other suitable means.

A slightly-modified form of the invention has been shown in Fig. 4, wherein instead of the form of keys 9 in Fig. 1 I employ set-screws 18 and provide two annular channels 1^a instead of a single channel 1, as in Figs. 1 and 2. Moreover, the inner ends of the axle-sections are not reduced and the spring 8^a abuts directly against the inner extremities of the axle-sections. Other than the slight changes just mentioned the two forms of axle are precisely the same.

One of the main advantages of the present invention which results from the sectional feature of the axle is that each axle-section and its wheel is an exact duplicate of the other, and when either of the wheels becomes worn it may be replaced without discarding the entire axle and the two wheels, as with the ordinary form of car-axle. Moreover, the yielding of the axle-sections and the independent rotation thereof entirely obviates torsional strain thereon, and hence materially prolongs the life of the axle, while at the same time it permits the wheels to automatically accommodate themselves to variances in the track-gage and also absorbs jars incident to rounding curves.

Having thus described the invention, what is claimed is—

65 1. A car-axle comprising independent axle-

sections, a sleeve embracing the sections, and means connecting the sleeve and the individual axle-sections to permit rotation of the axle-sections within the sleeve and also to permit a limited separating movement of said axle-sections.

2. A car-axle comprising independent axle-sections, each section being provided with an annular channel, a sleeve embracing the axle-sections and covering the channels thereof, and keys carried by the sleeve and entering the respective channels to permit rotation of the axle-sections the channels being wider than the keys to permit of limited endwise play of the axle-sections.

3. A car-axle comprising independent axle-sections, a sleeve embracing the sections, means to permit limited separation of the sections within the sleeve, and a spring interposed between and bearing against the inner ends of the axle-sections.

4. A car-axle comprising spaced independent axle-sections provided with annular channels, a sleeve embracing the axle-sections and covering the channels thereof, keys carried by the sleeve and engaging the channel to permit rotation thereof within the sleeve, the channels being wider than the keys to permit limited endwise movement of the axle-sections and a spring housed within the sleeve between and bearing against the inner ends of the axle-sections.

5. A car-axle comprising duplicate half-sections, each section being equipped with a car-wheel and having its outer end projected beyond the wheel and formed into a journal, a sleeve loosely embracing the axle-sections, means carried by the sleeve to permit of a limited endwise play of the axle-sections, and a spring interposed between and bearing against the inner ends of the axle-sections.

6. In a car-axle, the combination of duplicate axle-sections, each section being provided with a car-wheel with its outer end projected beyond the wheel and formed into a journal, the inner end portion of the axle-section being provided with an annular channel and annular grooves at opposite sides of the channel, a sleeve loosely embracing the inner end portions of the axle-sections and covering the channels and the grooves, keys carried by the sleeve and disposed in the respective channels, each channel exceeding in width the width of the respective keys to permit of a limited endwise play of the axle-sections, a helical spring housed within the sleeve between and bearing against the inner ends of the axle-sections, the space within the sleeve and between the axle-sections constituting a lubricating-chamber, the sleeve being provided with a filling-opening located between the axle-sections, and a removable closure for the filling-opening.

7. In a car-axle, the combination with spaced axle-sections having annular chan-

nels, of a sleeve embracing the axle-sections
and covering the channels, said sleeve being
provided with an opening in communication
with each channel, removable keys fitted in
5 the openings of the sleeve and entering the
channels, and retaining-bands embracing the
respective keys and the sleeve.

In testimony that I claim the foregoing as
my own I have hereto affixed my signature in
the presence of two witnesses.

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Witnesses:

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