

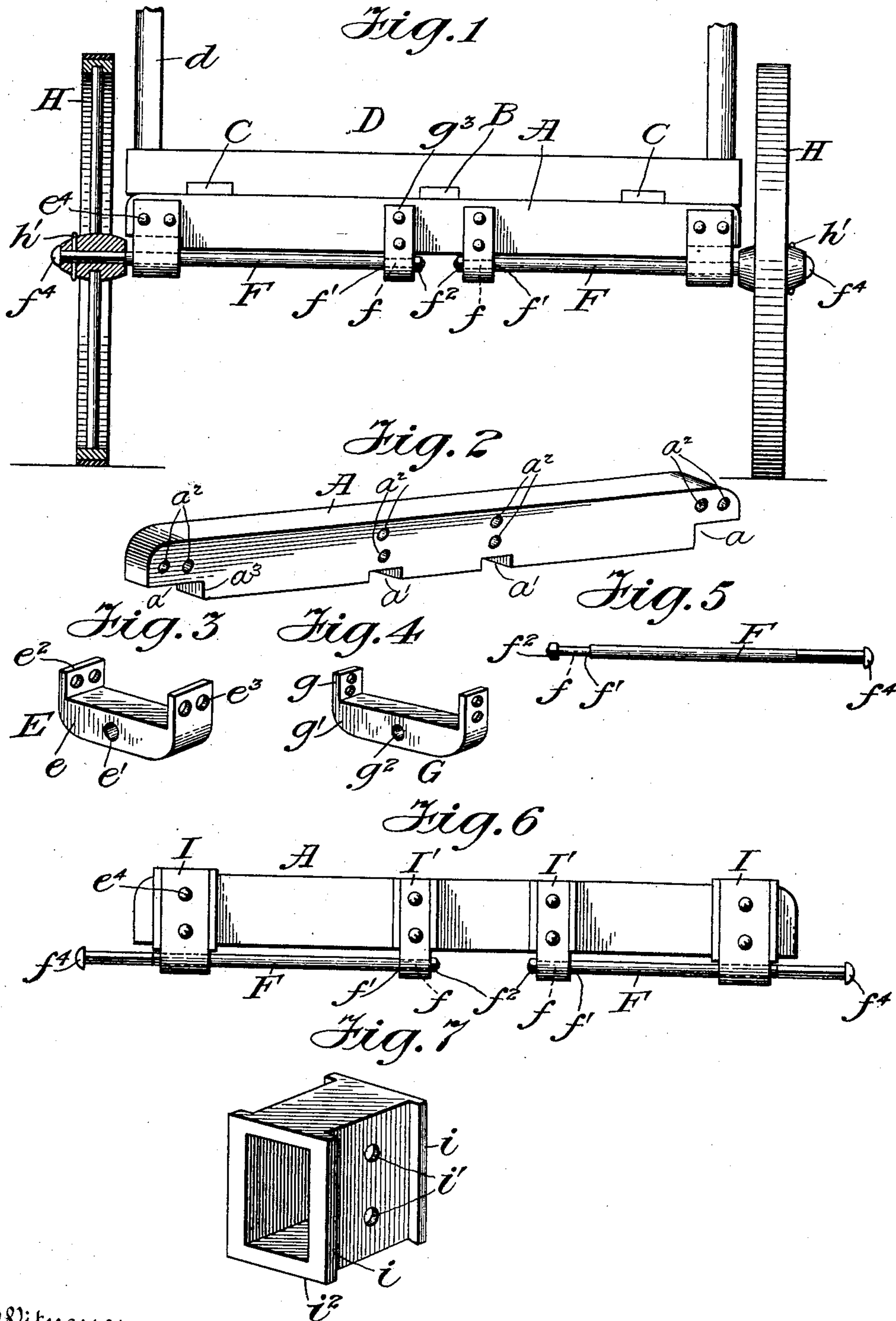
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VEHICLE AXLE.

APPLICATION FILED NOV. 13, 1903.

NO MODEL.



Witnesses  
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# UNITED STATES PATENT OFFICE.

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## VEHICLE-AXLE.

SPECIFICATION forming part of Letters Patent No. 771,053, dated September 27, 1904.

Application filed November 13, 1903. Serial No. 181,024. (No model.)

*To all whom it may concern:*

Be it known that I, FINLEY M. FOSTER, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Vehicle-Axles, of which the following is a specification.

This invention relates to certain improvements in wheeled vehicles, and more particularly to the arrangement of the axles and the relation of the same with respect to the bolsters, the more prominent objects of the invention being the advantageous employment of mutually-independent revoluble axle-sections in connection with peculiarly-conditioned bearing-boxes, the novel construction serving to properly support said independent revoluble axles in a manner whereby the actual bearing-surface involved and the function resulting therefrom are both very considerably reduced and the durability of the vehicle augmented as compared with prior constructions designed for somewhat similar purposes.

With the above and other objects in view the invention comprises an axletree having lower recesses adapted for the reception and retention of intermediate and outer bearing-boxes with vertical straps for intimately bearing at the front and rear of the tree, securing bolts being employed for rigidly fastening the several bearing-boxes in position and the bolster above each axletree being of such character that the weight of the body-load will be imposed upon the end portions of the tree and intermediately upon the axle-sections, and more especially in the vicinity of the wheels. By reason of the arrangement just set forth the intermediately-located bearing-boxes provided for supporting the inner end portions of the revoluble axle-sections are narrower and lighter than the outer boxes, and yet properly perform their functions without presenting an element of weakness centrally between the wheels, which might be the case were the strain of the load centrally sustained.

A further development of the invention consists in slipping endwise on the axletree and before the attachment of the bolster metal loops, which intimately clamp the tree and

are recessed and perforated for the proper location and securement of the bearing-boxes.

There are other important features connected with the improvements, which, besides those alluded to, are specifically set forth in the subsequent detailed description.

In the accompanying drawings, forming part of this specification, Figure 1 is a rear elevation, partly in section, of a wagon embodying my invention. Fig. 2 is a detail perspective view of the axletree appearing in Fig. 1. Fig. 3 is a view of one of the outer bearing-boxes. Fig. 4 is a view of one of the inner bearing-boxes. Fig. 5 is a view of one of the axle-sections. Fig. 6 is a view of an axletree, illustrating a slightly different arrangement of the invention. Fig. 7 is a perspective view of one of the loops represented in Fig. 6 as clamping the axletree.

Similar reference characters are employed to designate corresponding parts in the several figures of the drawings wherein they occur.

Referring now more particularly to the construction disclosed in Figs. 1 to 5, inclusive, A designates the rear axletree of a wagon, said axletree being provided with a centrally-located slot and also slots at each side of the same and somewhat near the ends for the accommodation of the end portion of the reach B and corresponding portions of the rear hounds C C. Upon the tree A is mounted a bolster D, provided at its ends with standards  $d$ . It will be noted in Fig. 1 that the central portion of the bolster at its lower edge is removed, so that the contact of the bolster is at the end portions of the axletree, whereby the weight of the load is principally transmitted at such points.

It may be stated at this point that the essential features of the invention in so far as they are applicable are duplicated at the front axletree, and therefore the description of the arrangement of parts with respect to the rear axletree will suffice for an understanding of both.

The end portions of the axletree are recessed or cut away at their under side, as indicated at  $a$ , Fig. 2, lower recesses  $a'$  being intermediately located in said tree. At each end of the axletree is located a bearing-



box E, comprising a relatively thick block  $e$ , having a horizontal perforation  $e'$  for the reception and bearing of the outer portion of one of the axle-sections F F. This block  $e$  is provided at its respective ends with upper vertical ears or straps  $e^2$ , which are relatively so spaced as to adapt them for snugly receiving the contiguous end portion of the axletree A, whereby said straps will be in intimate relation with the front and rear faces of said tree. The straps  $e^2$  are provided with alined perforations  $e^3$ , adapted to register with perforations  $a^2$  in the axletree near each end of the latter for the passage of securing-bolts  $e^4$  for rigidly connecting each box E to the axletree. It will be comprehended that when each box E is adjusted in position it will be held with the upper portion of its block  $e$  bearing against the shoulder  $a^3$  presented by the lower notch  $a$ , the position of the block, however, being such that its opening  $e'$  will occupy a horizontal plane immediately below the lower edge of the tree.

Bearing-boxes G, considerably narrower in width than the boxes E, have their straps  $g$  embracing and bolted to the front and rear faces of the tree A, the block  $g'$  of each of these bearing-boxes G having a horizontal opening  $g^2$  in alinement with the opening  $e'$  of the contiguous outer bearing-box E, the opening  $g^2$  being smaller in diameter. When each box G is applied, its block  $g'$  will engage within one of the recesses  $a'$ , and thus aiding to maintain said box in position, bolts  $g^3$ , passing through perforations in the ears  $g$  and through the axletree, serving to positively fasten the box to the tree. Relatively independent axle-sections F F are introduced through the outer bearing-boxes, so that intermediate portions of said sections will revolvably bear in said boxes, while reduced inner portions  $f$   $f'$  will correspondingly bear in the smaller openings of the boxes G G, the extremities of the reduced portions  $f$  projecting beyond the boxes and threaded for the application of nuts  $f^2$  to retain the sections against withdrawal, the reduced portions  $f$  resulting in shoulders  $f'$  at the opposite sides of the boxes, contributing to maintain the sections in their bearing relation. Each section F has an outer head  $f^4$ , so that previous to introducing the section within its bearing-boxes it is necessary to pass the section through the opening in the hub  $h$  of the wheel H it is designed to carry. Such wheel H can be positively retained on the spindle presented by the outer portion of its section F by means of a pin  $h'$ , passed through the hub and the axle-section F within the same.

From the description thus far it will readily be comprehended that the independently-revoluble sections F F will be efficiently supported and in a manner calculated to involve but little friction. Moreover, the lighter and narrower boxes G effectively support the inner ends of these sections, while weight strain is not

objectionably experienced in the locality of said boxes G G by reason of the peculiarly-conditioned bolster. The improved arrangement is such that the metal parts constituting the bearings proper are of exceedingly simple and durable character and can be readily and securely applied and when adjusted in position will properly support the axle-sections without attendant wrenching strain or undue friction. Moreover, the said metal parts can be readily removed when necessary for alteration or repair.

In lieu of recessing the axletree I may introduce thereon a series of four metal loops I I', adapted to intimately clamp said axletree, the outer loops I I at the ends of said tree being somewhat more ample in width than the more centrally-located loops I'. Each of these loops is provided with a pair of laterally-projecting flanges  $i$   $i'$ , adapted to receive between them the tongue of the bearing-boxes, the perforations of which are designed to register with perforations  $i''$  in the transverse vertical walls of the loops, whereby securing-bolts can pass through said straps, walls, and axletree, and thus firmly secure the several parts together. It will be well to have the flanges also present at the under side of each loop, as indicated at  $i^2$  in Fig. 7, and thus afford a bearing-recess at the under side for the reception of the bearing portion proper of each box. This arrangement is particularly desirable in the matter of the more centrally-located bearing-boxes, for, as will be obvious, it will provide for the location of the section G' of said bearing-boxes.

As before intimated, a vehicle-axle embodying my improvement is not only extremely simple and durable, but will conduce to highly satisfactory service.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with an axletree at the under side of which are a pair of intermediately-located and also outer recesses and contiguous horizontal bolt-holes, of wide bearing-boxes engaged within the outer recesses and narrower boxes within the intermediate recesses, each of said bearing-boxes integrally provided at the front and rear with upper vertical straps containing alined horizontal perforations such straps terminating in free top extremities and at the front and rear of the axletree, longitudinally-disposed bolts bearing in said ears and the axletree, independent axle-sections revolvably bearing in said boxes, the inner portions of said sections being reduced to bear in corresponding openings in the intermediate boxes and provide a shoulder at one side of each of the latter, and nuts engaging the axle extremities between the intermediate boxes.

2. The combination with an axletree at the under side of which are a pair of intermedi-



ately-located and also outer recesses and contiguous horizontal bolt-holes, of wide bearing-boxes engaged within the outer recesses and narrower boxes within the intermediate recesses, each of said bearing-boxes integrally provided at the front and rear with upper vertical straps containing alined horizontal perforations such straps terminating in free top extremities and at the front and rear of the axletree, longitudinally-disposed bolts bearing in said ears and axletree, independent axle-sections revolubly bearing in said boxes and having outer heads, the inner end portions of

said sections being reduced to bear in corresponding openings in the intermediate boxes and provide a shoulder at one side of the latter, nuts engaging the axle extremities between the intermediate boxes, and a bolster bearing on the ends only of the axletree. 15

Signed at New York, in the county of New York and State of New York, this 6th day of November, A. D. 1903. 20

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