(No Model.)

E. M. ALLEN.

AXLE.

No. 400,817. Patented Apr. 2, 1889.

Fig. 1.

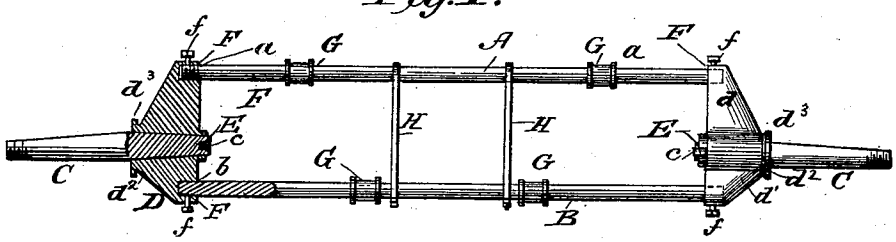


Fig. 2.

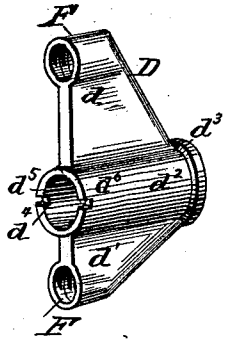


Fig. 4.

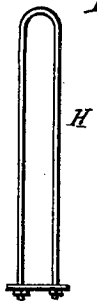
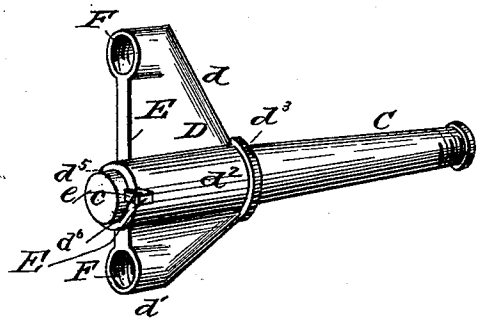


Fig. 3.



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UNITED STATES PATENT OFFICE.

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AXLE.

SPECIFICATION forming part of Letters Patent No. 400,817, dated April 2, 1889.

Application filed June 14, 1888. Serial No. 277,135. (No model.)

To all whom it may concern:

Be it known that I, EDWARD M. ALLEN, of Stafford, in the county of Harford and State of Maryland, have invented a new and useful Improvement in Axles, of which the following is a specification.

My invention is an improved axle of the class illustrated in my former patents, Nos. 322,340 and 346,698, and the improved axle is intended especially for use in connection with automatic brake devices—such, for instance, as shown in my said patents above described.

The invention consists in certain novel constructions and combinations of parts, as will be hereinafter described and claimed.

In the drawings, Figure 1 is a front view of my improved axle, one end being shown in section. Fig. 2 is a detail view of the connection-block. Fig. 3 is a detached perspective view of one end of the axle, showing the inner side or end of the connection-block and the means for holding the spindle therein and from turning; and Fig. 4 is a detail view of one of the braces.

The improved axle comprises the upper shaft, A, lower shaft, B, and spindles C C. In order to provide for the convenient renewal of one or more of such parts when worn, without necessitating the substitution of a complete axle, I form the said parts separate, and provide in connection therewith connection-blocks D D, which are fitted to receive such shafts and spindles and to support them rigidly while in use, and yet permit their convenient removal when desired.

In the construction shown the shafts A B have their opposite ends threaded at *a b* and in reverse directions—that is to say, they have right-hand threads at one end and left-hand threads at the other end. The spindles C also have shanks or stems *c* at their inner ends.

The connection-blocks D may be cast or forged, as is found desirable, and are usually made of the form shown, with upper arm, *d*, lower arm, *d'*, and outer end or neck-like portion, d^2, provided with end collar or flange, d^3, which latter serves instead of the collar ordinarily formed on the inner end of the spindle. Through the connection-block concentrically with flange d^3, I form the bore or socket d^4 for the stem *c* of the spindle, and at the inner end of said bore is formed an extension, d^5, having a slot, d^6. The bore d^4 is so formed, as shown, as to give the spindle the proper pitch and gather to insure the proper running of the wheel. In practice the stem of the spindle is inserted in bore d^4, and extends at its inner end slightly past the inner end of the connection-block. In such extended portion I form an opening, *e*, to receive the key E, which forms the fastening for securing the spindle in the connection-block, and such key, by fitting in slot d^6 of extension d^5, also operates to prevent the spindle from turning in the connection-block. While I prefer to employ the key shown as the fastening, it is obvious that it would involve no departure from some of the broad principles of my invention to make the fastening in the form of a nut threaded on the inner end of the spindle and turning up against the inner end of the joint or connection-block.

In its inner side above and below the bore for the spindle I provide the connection-block with threaded sockets F, fitted to receive the ends of the shafts, so the latter may be conveniently turned into and out of the connection-blocks.

It will be noticed that the bore in the connection-block is made tapering toward its inner end, so the drawing of the spindle-stem in by the fastening key or nut will operate to tighten said stem in the connection-block.

On the upper and lower shafts or sections I fit at proper points wear sleeves or tubes G, of suitable metal, and arranged at the points where it is desired to connect the clips and the like employed in securing the axle to the necessary connecting-bars and the like in the application of the axle to a vehicle.

In order to prevent any untuirning of the shafts A B, I provide screws *f*, turned through the connection-blocks to intersect the sockets F and bear against the shafts.

In order to strengthen the axle I provide braces H, extended between the shafts or sections A B, and secured at their opposite ends to the upper and lower shafts a short distance from their ends.

Where a nut is used on the inner ends of the spindle-stems, a fastening key or pin may be driven through the nut, when the latter is tightened up, to hold the stem from turning in the connection-block.

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

1. An axle comprising the connection-blocks, the upper and lower shafts secured rigidly to such connection-blocks and detachable therefrom, and the spindles, substantially as set forth.

2. An improved axle, substantially as described, comprising the connection-blocks, the spindles, the upper and lower shafts connected with the said blocks, and the braces extended between said shafts, substantially as set forth.

3. The combination of the connection-blocks having bores fitted to receive the stems of the spindles, the upper and lower shafts connected with said blocks, the spindles having stems fitted to the bores of the connection-blocks, and the fastening-keys, substantially as set forth.

4. The combination of the connection-block having a bore for the spindle-stem and an extension at the inner end of said bore fitted to receive the fastening-key, the spindle, and the fastening-key, substantially as set forth.

5. The combination, in an axle, of a spindle having a stem and a connection-block having a socket fitted to receive said stem, and provided at the outer end of said socket with a collar or flange, substantially as set forth.

6. An axle comprising the connection-blocks having threaded sockets in their inner faces near their upper and lower ends, and the upper and lower shafts or sections having their ends threaded to enter said sockets, substantially as set forth.

7. An axle having upper and lower shafts or sections and provided thereon with removable wear-sleeves, substantially as set forth.

8. The combination of the connection-blocks having threaded sockets in their inner faces and screws intersecting said sockets, and the shafts or sections having their ends threaded to enter the sockets of the connecting-blocks, substantially as set forth.

9. An axle consisting of the connection-blocks having bores or sockets for the spindle-stems, and provided in their inner faces with sockets for the upper and lower shafts, the spindles having their stems fitted to the bores of the connection-blocks, fastenings whereby to secure the stems in said blocks, the shafts having their ends fitted to the sockets of the blocks, and fastenings for securing said shafts in their sockets, substantially as set forth.

EDWARD M. ALLEN.

Witnesses:
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