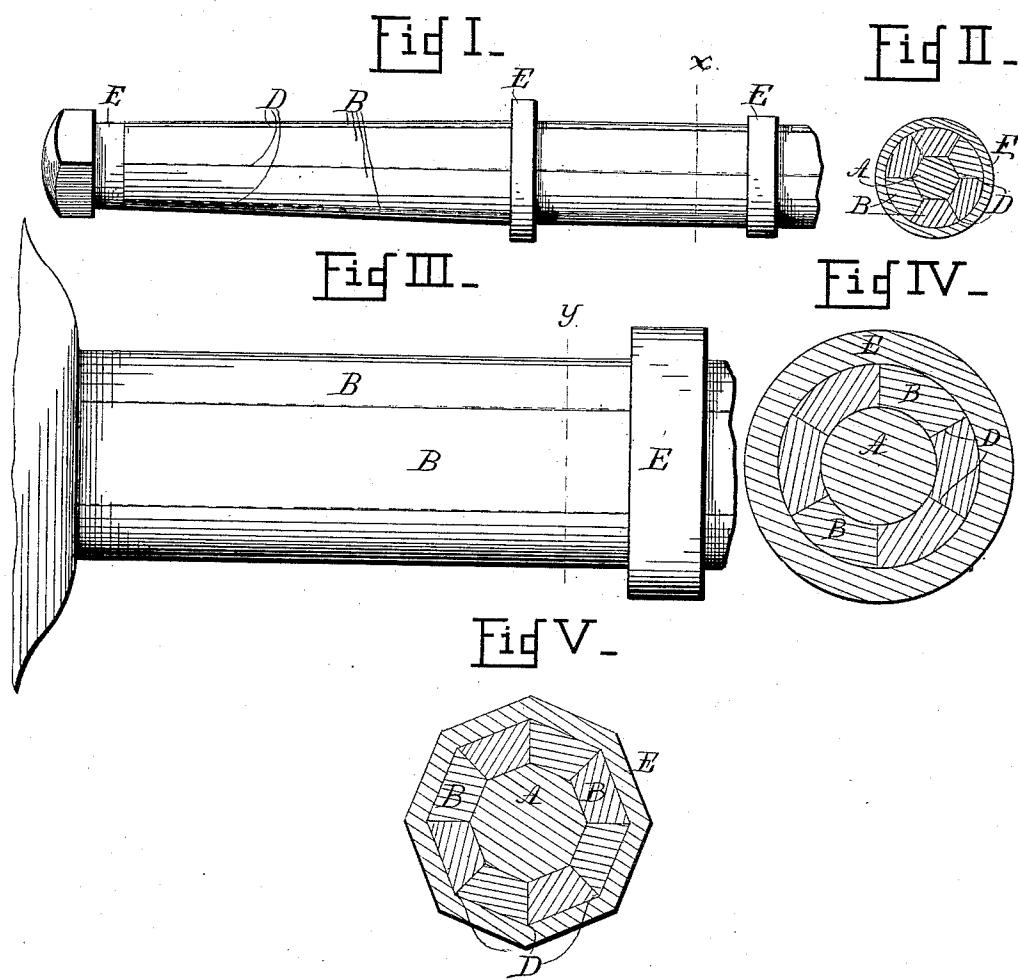


(No Model.)

W. H. ROGERS.
AXLE FOR VEHICLES.

No. 430,438.

Patented June 17, 1890.



Witnesses

S. E. Stevens

P. C. Stevens.

By his Attorney W. X. Stevens.

Inventor

William H. Rogers.

UNITED STATES PATENT OFFICE.

WILLIAM HAYES ROGERS, OF KINGSTON, ONTARIO, CANADA.

AXLE FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 430,438, dated June 17, 1890.

Application filed April 15, 1890. Serial No. 348,028. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HAYES ROGERS, a citizen of the Dominion of Canada, residing at Kingston, in the county of Frontenac and Province of Ontario, Canada, have invented certain new and useful Improvements in Axles for Vehicles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to axles for vehicles. It is a well-known fact that metal axles, whether they are used by engines, cars, carriages, or wagons, are all subjected in service to continual jarring under more or less strain, causing vibration among the particles of the metal, which tends to crystallize it, producing that kind of weakness which causes the axle to be broken short off by some unusual strain.

The object of my invention is to construct axles of any kind of metal and for every kind of vehicle that the vibrations cannot be so communicated from one particle to another throughout any cross-section of the axle as to endanger such crystallization and consequent breaking.

To this end my invention consists of a vehicle-axle constructed as hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure I is a side view of a portion of a wagon-axle; Fig. II, a cross-section at the line *x*; Fig. III, a side view of a portion of a car-axle at the journal; Fig. IV, a cross-section at the line *y*; and Fig. V, a cross-section of a modification, all showing my invention.

A represents the central portion of the axle, which I call the "core." It may be of any kind of metal, formed either cylindrical or tapering, round, or many-sided. Around this core I place a series of staves *B*, neatly fitted upon the core, and preferably touching each other on radial lines *D*, and at suitable intervals, or covering the whole length, as different cases require, I place bands *E* tightly

around the staves *B*. This may be most economically and securely done by heating the bands and shrinking them on. By this means 50 the core and staves are united to form an axle, which may be turned in a lathe and otherwise manipulated as though it were a single piece of metal; but I do not contemplate welding or otherwise actually uniting the different 55 pieces of metal, because if that were done it would produce a common piled-up faggot and result in making a single piece of metal. The outer surface of the staves may be round, as shown in Fig. II, or many-sided, as shown in 60 Fig. V. In the latter case the band *E* may be swaged into form on a properly-shaped mandrel.

It is evident that the particles of metal in the core and in the staves cannot be subjected 65 to exactly like conditions of vibration, and that any such vibration as tends to disintegrate the particles cannot pass in a direct line like a crack from one piece to another of this axle, and I think that the nature of the 70 vibrations being continually changed by the changing strains due to the different stays on the core in revolving car-axles will tend to prevent crystallization, and that the same result will be found to follow in a more limited 75 degree in those axles which do not revolve, owing to the inharmonious vibration of the core and variously shaped and located staves. The advantages of any construction which will render the axles of cars and other vehicles 80 less liable to be broken in service are obvious.

Having thus fully described my invention, what I believe to be new, and desire to secure by Letters Patent, is the following:

A vehicle-axle comprising a metallic core, 85 a series of metallic staves around the core, and rings driven or shrunk upon the staves, substantially as shown and described.

In testimony whereof I affix my signature in the presence of two witnesses

WILLIAM HAYES ROGERS.

Witnesses:

JOSEPH BAWDEN,
HENRY R. SPRIGGS.