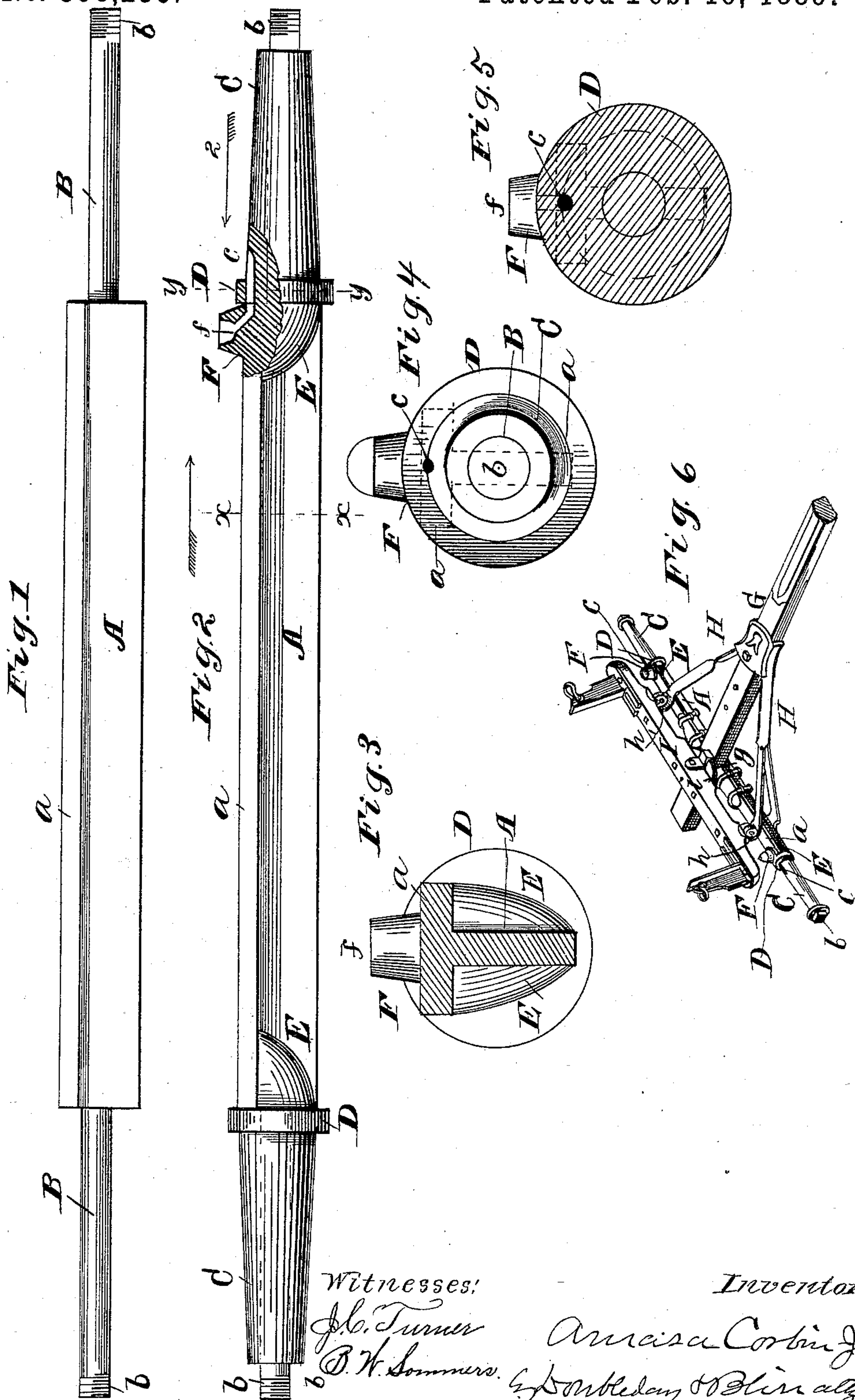


(No Model.)

A. CORBIN, Jr.  
VEHICLE AXLE.

No. 398,235.

Patented Feb. 19, 1889.



Witnesses:

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# UNITED STATES PATENT OFFICE.

AMASA CORBIN, JR., OF GOUVERNEUR, NEW YORK.

## VEHICLE-AXLE.

SPECIFICATION forming part of Letters Patent No. 398,235, dated February 19, 1889.

Application filed November 15, 1888. Serial No. 290,900. (No model.)

*To all whom it may concern:*

Be it known that I, AMASA CORBIN, Jr., a citizen of the United States, residing at Gouverneur, in the county of St. Lawrence and State of New York, have invented certain new and useful Improvements in Vehicle-Axles, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a side elevation of the steel T-bar properly shaped for having the skeins cast upon it. Fig. 2 is a side elevation of the completed axle, partly broken away to show the oil-duct. Fig. 3 is a transverse section on the line  $x x$ , Fig. 1, looking in the direction of the arrow 1. Fig. 4 is an end view of Fig. 2, looking in the direction of the arrow 2. Fig. 5 is a transverse section on the line  $y y$ , looking in the direction of the arrow 2. Fig. 6 is a perspective view, on a reduced scale, showing my improved axle in combination with other parts of a wagon.

Like letters of reference indicate like parts in all the figures.

The body of the axle between the skeins is made of steel in T-bar form, and having the flat horizontal web  $a$  uppermost and projecting about equally upon opposite sides of the vertical web A.

In carrying out my invention I take a T-bar, of steel or wrought-iron, of the proper length, and swage its ends into substantially the form shown in Fig. 1 to form a core for each of the skeins, care being taken by preference that the outer ends of these cores B B are in line with each other to facilitate threading them, as at  $b b$ , to receive nuts adapted to hold the wheels on.

After the parts A B are properly shaped they are placed in a mold and the remaining parts cast upon them.

C C are the skeins, each having at its inner end a shoulder, D, to receive the hub of the wheel.

It is well known that iron or steel axles are very liable to be broken at points just inside of the skeins, and to re-enforce and strengthen them at these points I propose to cast forked extensions E E upon the inner ends of the skein. These extensions and re-enforcements are preferably shaped as indicated in the drawings, and embrace and are welded to the

opposite sides of the vertical web A of the T-bar, and also lie against and are welded to the under side of the horizontal web  $a$  upon both sides of the vertical web, this operation of welding being insured by reason of there being a sufficiently large body of cast-iron to prevent the operation of chilling, which ordinarily occurs when a relatively small body of iron is cast upon and in contact with a cold metal surface; but I propose, when the circumstances are such as to make it desirable, to heat the T-bar at the points where the welding is to take place to insure a more perfect union between these re-enforcements and the adjacent parts of the axle, although under ordinary circumstances I have been able to attain satisfactory results by using T-bars at the ordinary temperature which they attain in a common foundry.

In order to facilitate oiling the axle without removing the wheels, I propose to cast oil-boxes F F just inside of the shoulders or rims D D and integral therewith, thus constituting, with the re-enforcements E E, forks which embrace the horizontal web  $a$ .

$f$  is an oil-duct extending through the shoulders D D and into the grooves  $c c$  in the upper sides of the skeins. By preference I cast these oil-cups with depressions or sockets extending to or near the shoulders D D and then drill the remaining portions of the ducts; but the upper faces of the cups may be cast flat and the entire duct drilled out, or the ducts may be formed by coring.

After the axle has been removed from the mold, with the skeins cast upon it, I propose to put it into a lathe and turn the skeins to the proper size and taper, unless they have the proper form and surface after they have been subjected to the usual treatment of pickling; or a suitable surface may be produced by chilling the wearing-surface or case-hardening them. So, also, I propose to turn up the extreme outer ends of the cores B B, unless they come out of the sand in proper shape.

In Fig. 6 I have shown a tongue, G, bolted to the upper flat web of the axle, and further connected therewith by forked braces H H, each of which at its rear end straddles the axle and is secured to it; also, there is a bolster, I, pivotally mounted upon the tongue,



with, preferably, interposed metal plates *g* *g'* and anti-friction rollers *h h*, which rest upon and traverse the upper legs or arms of the forked braces.

5 I am aware that skeins have been cast upon wrought-metal bars which are angular in cross-section, and hence do not claim such invention broadly; but I believe that an axle having a central section which is T-shaped  
10 in cross-section, with its horizontal flat part uppermost, and has at its ends skeins with integral inwardly-projecting extensions *E*, arranged below the upper flat part or web, has advantages over any prior form, in that, among  
15 other things, such extensions, even though not welded to the T-bar part of the axle, serve a useful purpose in strengthening the axle against breakage at the points where the skeins join the T-bar part, under many of  
20 the strains to which the axle at such points is subjected.

While I prefer to make my axle in a single piece extending from skein to skein, I do not wish to be limited to such construction, be-  
25 cause it may be made in two sections, each having at its outer end a skein, there being some advantages incident thereto. In fact, there are instances in which my invention may be advantageously used in that way in  
30 connection with very long axles, and in some cases where a single wheel is used at the end of a pivoted or sweep bar. Again, while I have described the best mode now known to me of working or carrying out my invention,  
35 I do not wish to be limited to the precise details above given, because many modifications will suggest themselves to any one skilled in the art without going outside of its spirit.

40 What I claim is—

1. A wagon-axle formed of a wrought-metal T-bar, *A a*, with the flat web *a* uppermost,

and provided with cast-metal skeins, each having forked re-enforcements *E E* on opposite sides of the vertical web and immedi- 45 ately below the flat web, substantially as set forth.

2. A wagon-axle formed of a wrought-metal bar, in combination with a cast-metal skein, and re-enforcements integral with the skein 50 projecting inward therefrom and welded to the steel bar, substantially as set forth.

3. A wagon-axle having a wrought-metal core projecting at both ends of the skein, in combination with a cast-metal skein pro- 55 vided with re-enforcements projecting from the inner end of the skein and welded to the wrought-metal bar, substantially as set forth.

4. A wagon-axle formed of a wrought-metal bar having a vertical web, in combination 60 with a cast-metal skein provided with forked re-enforcements welded to opposite sides of the vertical web, substantially as set forth.

5. A wagon-axle having a wrought-metal core and a shoulder, *D*, and provided with an 65 oil-cup of cast metal welded to the upper surface of the wrought-metal core inside of the shoulder, and having also an oil-duct extending from the oil-cup through the shoulder to the skein, substantially as set forth. 70

6. A wagon-axle provided with a metal skein cast thereon and having at its inner end a shoulder to receive the wheel-hub, a metal oil-cup on the upper surface of the bar inside 75 of the skein, and an oil-duct extending from the oil-cup to a point between the shoulder and the outer end of the skein, substantially as set forth.

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

AMASA CORBIN, JR.

Witnesses:

H. G. IRVEN,  
S. W. HARRIS.