(No Model.)

E. J. SUGDEN.

VEHICLE IRON.

No. 426,878. Patented Apr. 29, 1890.

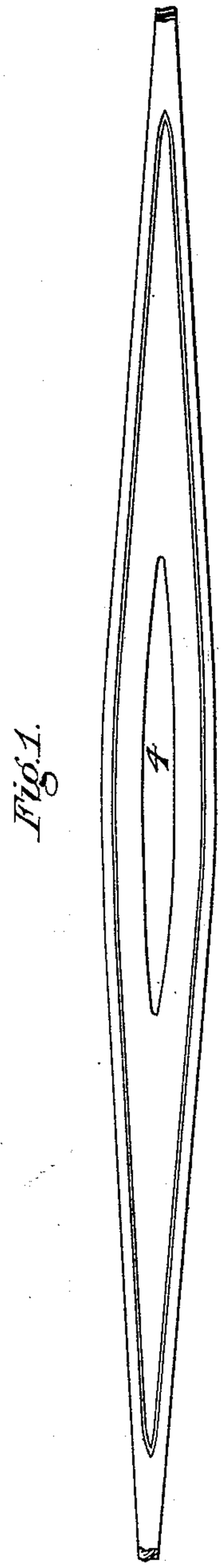

Fig. 1.

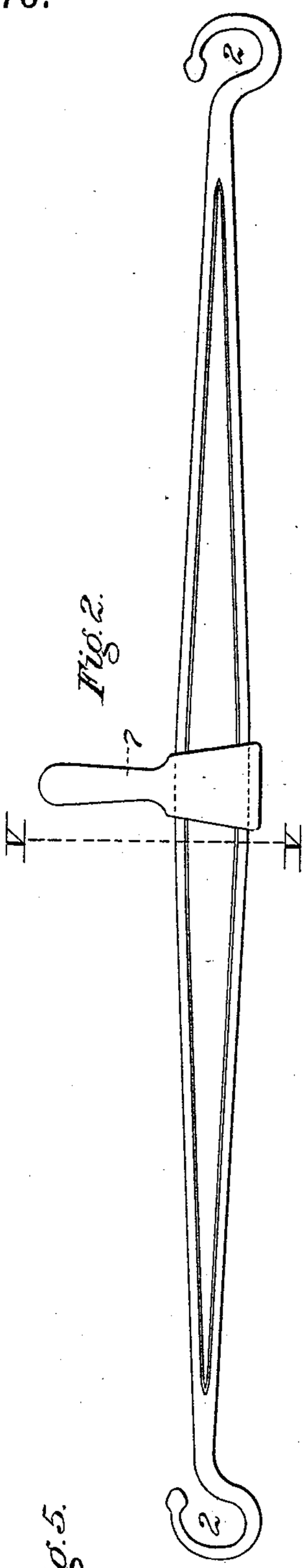

Fig. 2.

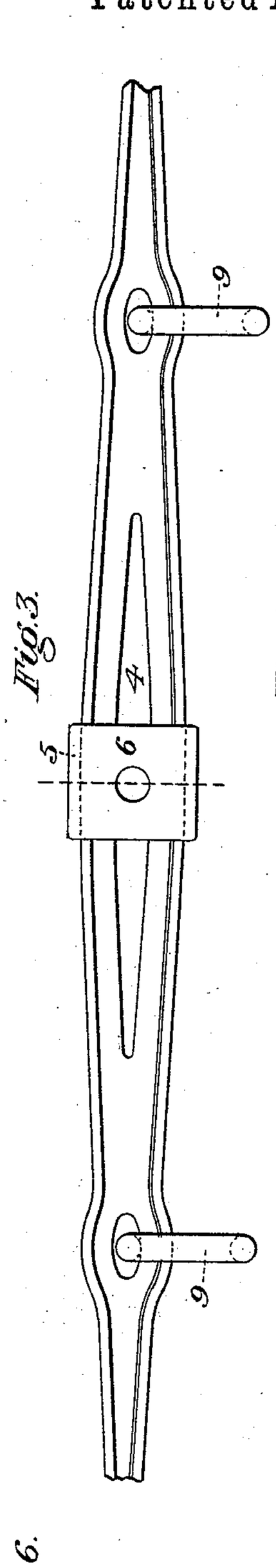

Fig. 3.

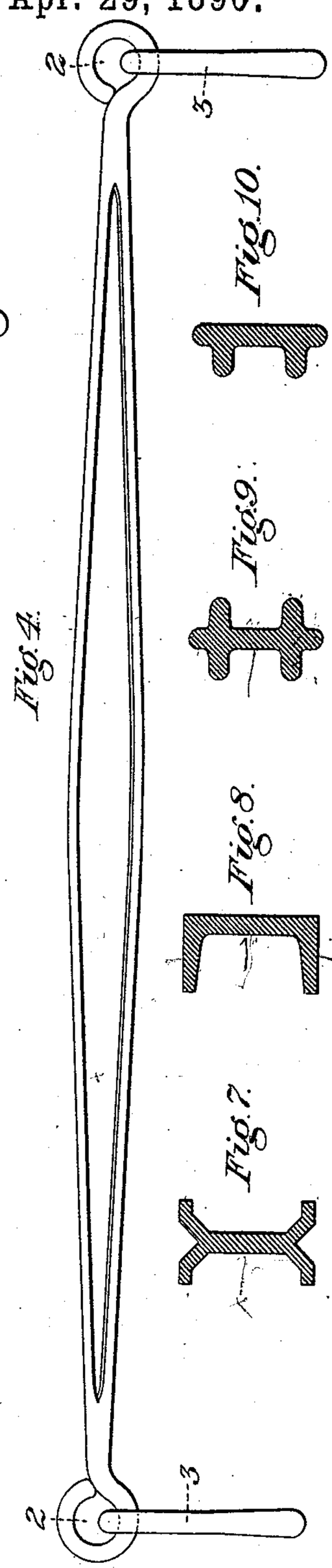

Fig. 4.

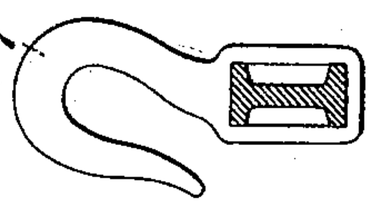

Fig. 5.

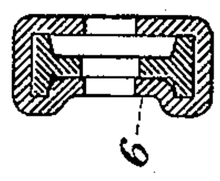

Fig. 6.

Fig. 10.

Fig. 9.

Fig. 8.

Fig. 7.

WITNESSES.

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EDMONDS J. SUGDEN, OF PITTSBURG, PENNSYLVANIA.

VEHICLE-IRON.

SPECIFICATION forming part of Letters Patent No. 426,878, dated April 29, 1890.

Application filed August 22, 1889. Serial No. 321,625. (No model.)

To all whom it may concern:

Be it known that I, EDMONDS J. SUGDEN, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Whiffletree or Neck-Yoke Irons, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, in which—

Figure 1 shows in plan view a tapered metal bar adapted to be fitted with irons for use as a singletree or neck-yoke. Fig. 2 is a plan view of the finished article; Fig. 3, a plan view of a doubletree, and Fig. 4 a similar view of a singletree. Fig. 5 is a vertical cross-section on the line V V of Fig. 2. Figs. 6, 7, 8, 9, and 10 are sections of different forms of metal bar which may be used in the manufacture of my improved articles.

My invention relates to an improvement in singletrees, doubletrees, and neck-yokes; and it consists in such articles formed as hereinafter described and claimed, the construction being such as to afford the greatest possible strength combined with elasticity and lightness of weight.

The article is made from an iron or steel bar provided with flanges and an intervening web. Of this class of bars there are many forms, several of which I have illustrated in the drawings, Figs. 6, 7, 8, 9, and 10, the best known of these forms being the common **I**-beam and the channel-bar. I take a bar of this sort and by suitable means, such as hereinafter described, I taper it longitudinally from at or near the middle toward the ends, and then apply to it the irons or means of attachment to the vehicle and draft-chains in such manner that when in use the strain of traction shall be exerted on the bar substantially in the plane of the web. To increase the elasticity of the article, it may be hardened or tempered in the usual manner.

Another method of manufacture of my improved article is to produce it directly in its finished form by casting from iron or steel in a suitable mold, without employing any subsequent rolling or reduction. Such articles should be subsequently annealed in the usual manner. The kind of material to be used and the precise manner of manufacture of the articles will be determined by the qualities of elasticity, lightness, and rigidity required in the finished product, all or any of which can be attained by the use of suitable material properly proportioned and skillfully and intelligently manipulated.

To describe more particularly the manufacture of these articles according to the mode first above indicated, I take a bar of steel of the general form above defined, and having cut it into suitable lengths I roll or forge it into the shape shown in Fig. 1, so that it shall taper from at or near the middle toward its ends. This taper may be a gradual reduction in all its cross-sectional dimensions or in any of them. For example, the web may be tapered and not the flanges, or the flanges may be tapered and not the web; but I prefer to taper all these parts. Such tapering is preferably performed according to a method of manufacture described and claimed by me in an application for Letters Patent, Serial No. 321,626, filed August, 1889. At the ends of the bar I preferably reduce the metal for a short distance—say about four inches—to round or elliptical form, and afterward bend these parts into the form of hooks or eyes 2 for the attachment of the draft-chains, as shown in Figs. 2 and 4; or, if desired, the hooks may be formed separately and welded to the ends of the bar. In Fig. 2 the bar is shown provided at the end with hooks. In Fig. 4 it is shown provided with eyes 2 and links 3 applied thereto. In Fig. 3 the doubletree is provided with links 9, which are fitted in holes formed for their reception in the web of the metal bar, and at its ends it may also be formed with hooks or eyes, as above described.

In order to add strength to the bar, I may divide the web at the middle by a split 4, extending a suitable distance in both directions and spread laterally, thus forming a truss, which imparts very great strength to the bar. This truss is braced by means of a clip 5, set at a suitable place or places on the bar and having a portion 6 interposed between the divided parts or straps of the web. This clip may be shaped to form a band encircling the article, having an integral hooked portion 7, as shown in Fig. 2, or it may have a hole ex-

tending through it for the accommodation of a king-pin to attach the article to the pole or shaft of a vehicle, as shown in Fig. 3. The article shown in Figs. 2 and 4 is not split or divided. The clip may be shrunk on the bar or may be otherwise applied; but it is applied in such manner that in use of the article the plane of the web shall be substantially in the line of draft.

The mode of making the article directly in its tapered form by casting in a proper mold will be readily understood.

The advantages of my invention will be appreciated by those skilled in the art.

I have found that articles made as I have described are much lighter than wooden articles of the same strength, are much neater, more durable, and by reason of their elasticity they relieve the horses from the great strain of starting with heavy loads without the use of separate tug-springs or other appliances.

I do not limit my invention to its application to any particular style or shape of singletrees, doubletrees, or neck-yokes, except as stated in the claims. Any desired pattern or style may be made according to my invention, and any suitable fittings may be applied to them.

The formation of the article in a truss form is of great advantage in the strength it affords, and I desire to claim it broadly, independently of the form or style of metal bar employed. For example, the same construction could be applied with advantage to unflanged bars. It will be understood, also, that the article can be made without division or trussing, and that the claims of this patent are not limited thereto, nor to any other limitations of the description, unless expressly so stated therein. Thus it is possible to secure some of the advantages of my invention within the scope of this patent by forming the article of a metal bar with longitudinal flanges and an intermediate web without tapering, it being necessary only that in such case the web should be in the plane of the draft when the article is in use.

The method of making my improved article may also be modified in its details by those skilled in the art of metal working, since I claim, broadly—

1. A vehicle-iron of the nature described, consisting of a metal bar having longitudinal flanges and an intermediate web, and having draft-irons in such position that the web shall be substantially in the plane of the draft, substantially as set forth.

2. A vehicle-iron of the nature described, consisting of a tapered metal bar having longitudinal flanges and an intermediate web, substantially as set forth.

3. A vehicle-iron of the nature described, consisting of a metal bar having longitudinal flanges and an intermediate web, and having the web divided to form a truss, substantially as set forth.

4. A vehicle-iron of the nature described, consisting of a tapered metal bar, whose cross-section is that of an **I**-beam, substantially as and for the purposes described.

5. A vehicle-iron of the nature described, consisting of a metal bar split and separated in truss form, substantially as set forth.

6. A vehicle-iron of the nature described, consisting of a metal bar split and separated in truss form, and having a clip connecting the sides of the truss, substantially as set forth.

In testimony whereof I have hereunto set my hand this 14th day of August, A. D. 1889.

EDMONDS J. SUGDEN.

Witnesses:
W. B. CORWIN,
THOMAS W. BAKEWELL.