E. J. SPRONG.

METALLIC SIDE-BAR FOR VEHICLES.

No. 172,939. Patented Feb. 1, 1876.

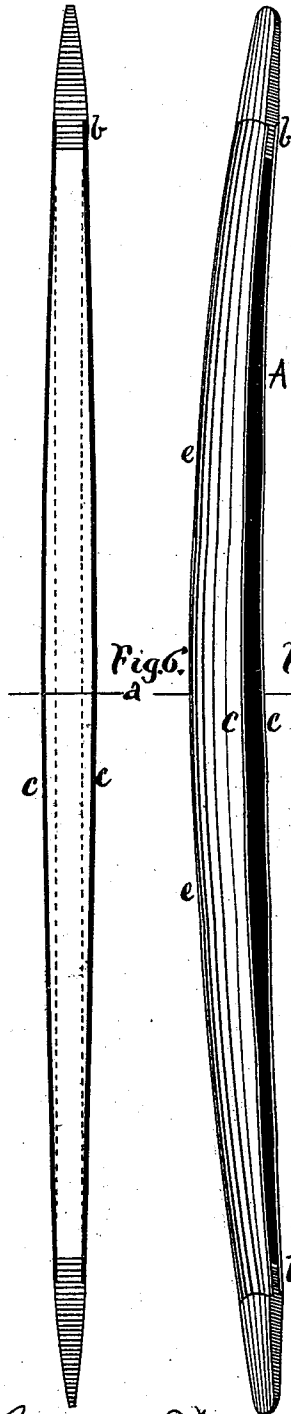



Fig. 6.




Fig. 1.

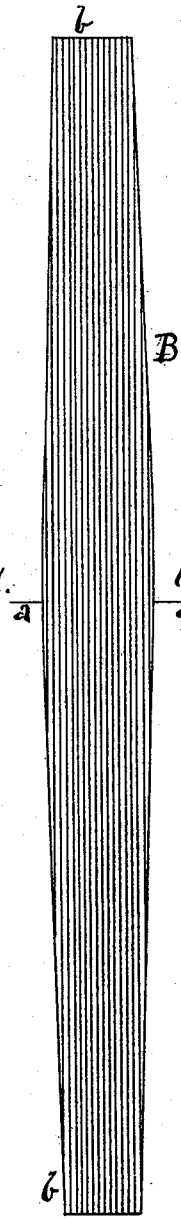



Fig. 2.

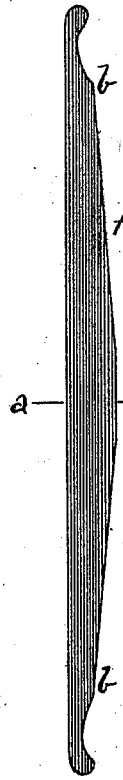



Fig. 5.




Fig. 3.




Fig. 4.

Witnesses:
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# UNITED STATES PATENT OFFICE.

EDMOND J. SPRONG, OF TROY, NEW YORK.

## IMPROVEMENT IN METALLIC SIDE BARS FOR VEHICLES.

Specification forming part of Letters Patent No. **172,939**, dated February 1, 1876; application filed May 20, 1875.

*To all whom it may concern:*

Be it known that I, EDMOND J. SPRONG, of the city of Troy, county of Rensselaer, State of New York, have invented an Improved Side Bar for Wheel-Vehicles; and I do hereby declare that the following is a description thereof, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a perspective view of the bar when completed. Fig. 2 represents the steel-trip from which the bar is formed. Fig. 3 is a cross-sectional view at the cutter. Fig. 4 is a cross-sectional view at the ends. Fig. 5 is a side view of a bar of modified form. Fig. 6 is a view of the bar from beneath, illustrating its gradual tapering toward the ends from the center of its length, and the contraction of the central swell when loaded.

My invention relates to side bars or bearing-bars for the support of the bodies of light carriages from their usual end springs; and consists of a steel bar made from a sheet-steel strip swaged into a V or U shaped form, and gradually tapering in all its sides from the center of its length toward its ends, with the said ends set with solid metal finishing-blocks.

The object of this invention is to produce a steel-bar that will at once be elastic, light in weight, strong and of graceful external appearance, and capable of enduring varying weights with an elastic resistance without settling or springing from its original form.

To enable others skilled in the art to make and use my invention, I will proceed to describe it in reference to the drawings and the letters of reference marked thereon, the same letters indicating like parts.

In the drawings, A represents the side bar when completed for use. B represents substantially the form of a strip of steel from which the said bar is formed. A′ is a modification of the said bar in its form, and for use at the ends of vehicles as a spring-bar. In practice I employ a strip, B, of sheet-steel, cut in such a form as to be of greater width at its center of length, as at *a*, than at its ends *b b*. This gradual tapering of the halves of the length of the bar may be made greater in a short bar, as A′, Fig. 5, than in a longer bar, A, Fig. 1. The said sheet or strip is heated to a dull cherry-red in a proper furnace or forge, and submitted to the action of swages, operating with both sides of the said strip, to form the same into a V or U shape in its cross-structure, substantially as represented in Figs. 3 and 4, although the said strip may be shaped in form by dies or rolls, yet preference is given to swages operated by a hand-sledge or trip-hammer, on account of the metal, which is previously expanded by the heat, being thus compressed by hammering. Another advantage arising from the process of swaging for forming the bar into shape is that the said bar will receive a degree of temper from the hammering. The form I give to the bar when finished is to be such as will produce a taper of each half, from the center of its length toward its ends, on all sides, so that the spread of the sides *c c* of the bar at the center of its length, as in Fig. 3, and at *a* in Fig. 1, will have a greater extension than the spread of the sides *c c* at the ends, as in Fig. 4, and at *b b* in Fig. 1, in which the spread of the said sides will gradually contract as they recede from the center of length toward the said ends, as shown in Fig. 6. This gradual contraction of the lateral sides as they approach the ends operates to support the weight carried in a more elastic manner, and enables the bar to be formed of lighter material than when the said lateral sides are uniform in cross-section the entire length of the said bar, as the gradual lateral and central swell of the sides tends to straighten in their lines, as in Fig. 6, illustrated by dotted lines, when a weight is imposed, and permits a lengthening of the lower side of the bar, while the upper ridge-line *e* of the bar will be the same in length, and thereby secure an elastic depression of the central portion of the bar so much desired when riding rapidly or over rough roads. The depth of the said bar is also gradually contracted from the center of its length to the ends, so that the vertical extension of the bar will be greater at *a* from the ridge *e* to the lower edge than at *b* at the ends.

It is to be understood that bars or equivalent bearing-pieces made U-shaped, with their lateral sides having a uniform extension of spread, so that the edges of the said sides are

about parallel, form no part of my invention, as such formed bars have been used for axles, either singly or in combination with wood cores or iron tubing, and would not give that elasticity to the bar as will the gradual contraction of the lateral sides from their center of length toward and to the ends.

When the bar has been properly shaped I secure, by rivets, brazing, or otherwise, the metal finishing-blocks with the end of said bar; the said bar is then ground and polished, when it is ready for use. To secure the ends of the bar to the springs, and also the loops supporting the body with this improved bar, I employ clips, the same as when the bar is made of wood. The improved bar is lighter than a wooden bar of the same dimensions, and will carry more than twice the weight a wooden one will bear, and is rendered more elastic, and will better preserve its normal form than wood, while its elasticity is greatly increased.

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

The steel side bar B, constructed from sheet-steel, with a gradual taper from its center of length toward the extreme ends, and with a gradual contraction of the spread of its lateral sides from the center of its length toward the said ends, substantially as described.

EDMOND J. SPRONG.

Witnesses:
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