(No Model.)

C. L. HORACK.

CAR COUPLING LINK.

No. 251,049. Patented Dec. 20, 1881.

Fig. 1.

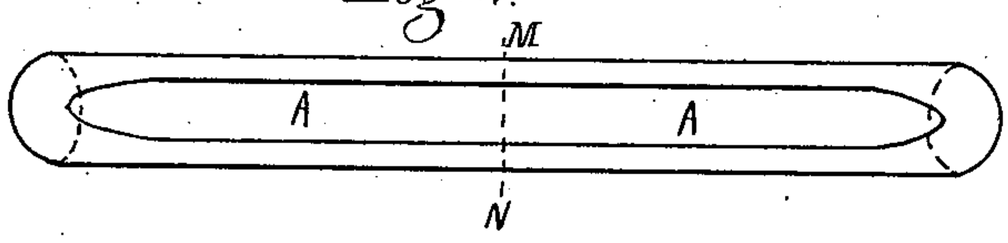


Fig. 2.

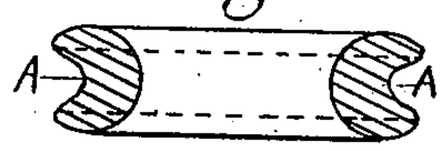


Fig. 3

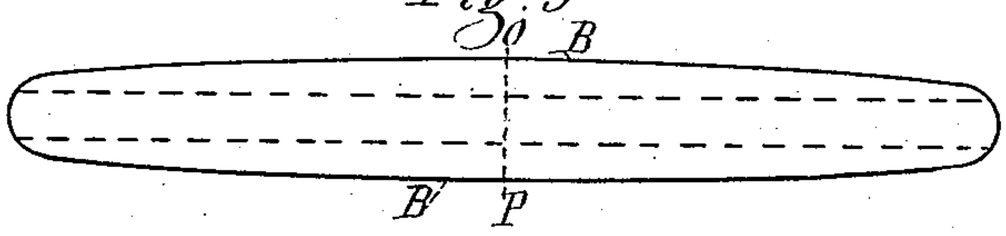


Fig. 4.

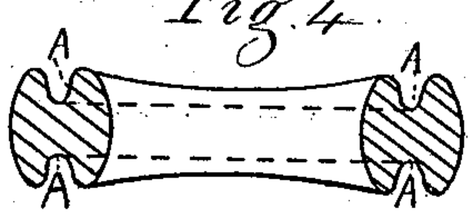


Fig. 5.

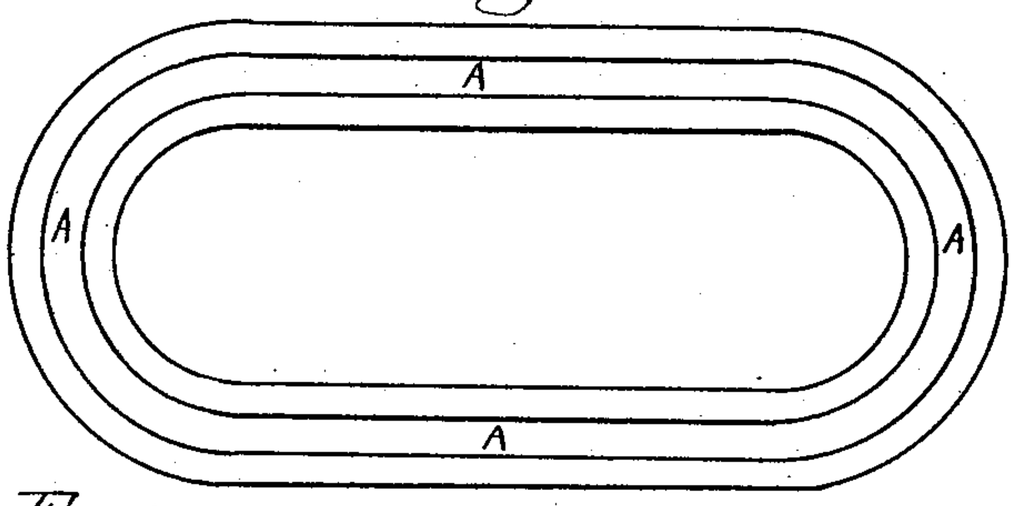


Fig. 6.

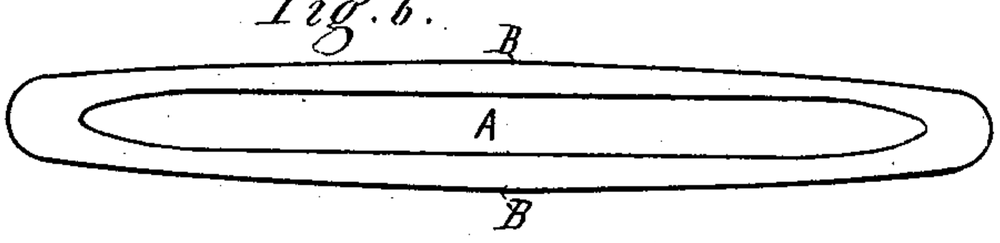


Fig. 7.

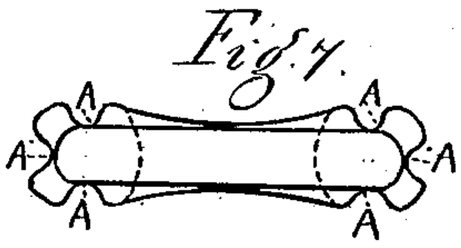
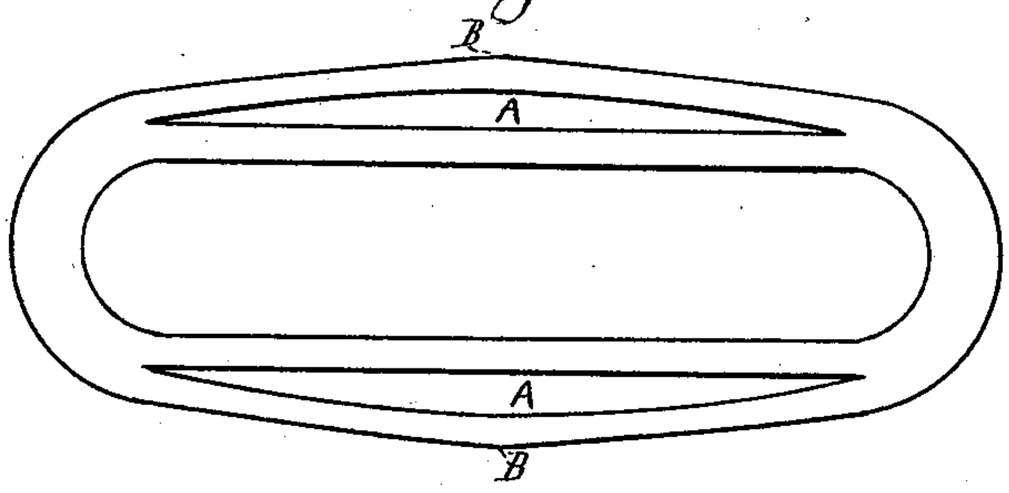


Fig. 8.



Attest:

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CAR-COUPLING LINK.

SPECIFICATION forming part of Letters Patent No. 251,049, dated December 20, 1881.

Application filed October 14, 1881. (No model.)

To all whom it may concern:

Be it known that I, CHAS. L. HORACK, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Coupling-Links for Cars, of which the following is a specification.

The objects of my invention are to use in the construction of coupling-links for cars such material as will allow a considerable reduction in their weight without reducing their strength, and to so distribute said material as to give to the sections of the bars forming metallic coupling-links more suitable forms and proportions than has been done heretofore, thereby making the strength and power of resistance of each part of a link proportionate to the strains which are likely to be brought to bear upon the same.

Links for coupling railroad-cars are generally made in the most economical manner possible, ordinary round wrought-iron or square bar-iron of uniform thickness and section being bent to the proper shape, and the ends being then welded together; or else they are manufactured by a process of rolling the same out of a bar of flat iron, in which case the welding operation is not required. To go to any more expense than is required to make such links safe and strong for a comparatively short period does not seem advisable, as but very few of the car-links now in use are secured to the draw-bars or cars in such a manner that they could not be detached easily and carried off and used on other cars or converted to entirely different uses from those for which they were intended. However, as there is a tendency on the part of railroad companies to guard against the frequent loss of links by making the same stationary, it will soon become a matter of importance to improve links by using more suitable material and proportions in their construction than has been done heretofore.

The principal strains which are apt to destroy car-coupling links are the shearing strain at their extreme ends, where they rest against the coupling-pins when trains are in motion, particularly at the points where the bars of which the links are made have been welded, and also the tensile strain caused by the motive power and applied to all parts of the link, and finally the transverse or bending strain at points about half-way between the extreme ends of the link, which frequently is exerted upon the same owing to the great differences which commonly exist in the elevations above the track of draw-bars coupled together, and also owing to sharp curves in the track. The power of resistance to any of these strains can be increased by using material of greater strength than the ordinary wrought-iron now commonly used in the construction of coupling-links. Such a material is steel.

The source of danger from the welding together of the ends of the bar forming the link can be done away with by either rolling it out of a solid bar of metal, as mentioned above, or else by casting it of such a size and shape, either with or without grooves, that it can be made to assume such dimensions and form as will appear to be most suitable; by afterward rolling it, subjecting it to the action of a trip-hammer, or by treating it in any proper manner which will bring about said result.

To better overcome transverse or bending strains, a considerable advantage can be gained by removing the material as much as practicable from the neutral axis of such section or from the center line of the bar forming the link. One way to accomplish this would be to make said bar tubular or hollow; but there are practical difficulties in the way. It is more feasible to construct solid links with longitudinal grooves or notches running along the same, as indicated in the accompanying drawings, in which—

Figure 1 is a side view of a link with longitudinal grooves or notches running along the sides of the same, and Fig. 2 is a cross-section of the link near the line M N. In this case the vertical thickness of the link is shown to be uniform. Fig. 3 is a side elevation, Fig. 4 a cross-section near the line O P, and Fig. 5 a top view, of a link with grooves on top and bottom. In this case the longitudinal grooves are shown to have been continued along and around the ends of the link, and the bar forming the link is shown to be increased in thickness vertically about half-way between the ends of the link, at the points B B, where the greatest transverse strain is to be expected. Fig. 6 is a side view, Fig. 7 an end view, and Fig. 8 a top view, of a link with longitudinal grooves on top, bottom, and the sides, said link being also

thickened horizontally as well as vertically about half-way between its extreme ends. The sections of those parts of the links not provided with grooves might either be made round, as is generally done at present, or square, oval, or of any other suitable shape.

As indicated in Figs. 3, 4, and 5, the longitudinal grooves described need not be confined to the longitudinal parts of the bar forming the link, but may be carried along the whole or parts of the rounding ends of the same. Said grooves may be of any suitable number, and may be arranged under any suitable angle to a horizontal section of said link, and may be made of uniform or of varying size and shape, as the circumstances of the case may require, and the longitudinal parts of the link lying between the rounding ends of the same may be thickened in any direction from the center line or neutral axis of the bar forming the same.

While I consider that links cast of steel and afterward treated by hammering or rolling, in the same manner as is generally done with cast-steel articles intended to resist great strains, would best answer the purpose, considerations of economy may necessitate the use of less expensive metallic substances, such as wrought-iron.

I claim as my invention and wish to secure by Letters Patent—

1. An oblong metallic coupling-link constructed with longitudinal grooves along the bar forming the same, said bar being constructed in such a manner as to increase in thickness toward the parts of it lying between the two extreme ends of said link.

2. An oblong metallic coupling-link constructed with longitudinal grooves along the bar forming the same.

3. An oblong metallic coupling-link constructed in such a manner as to increase in thickness toward the parts of it lying between the two extreme ends of said link.

CHAS. L. HORACK.

Witnesses:
WALDORF H. PHILLIPS,
T. W. OSBORN.