H. K. PORTER.
Spring Shackle-Link.

No. 196,478. Patented Oct. 23, 1877.

FIG. 1.

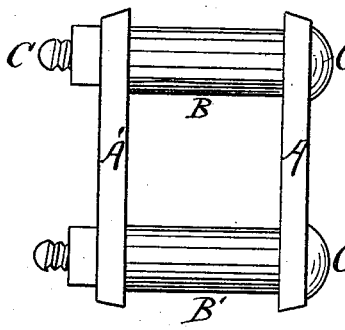



FIG. 2.

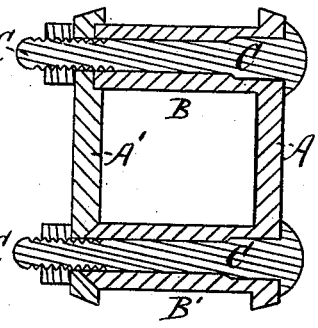



FIG. 3.

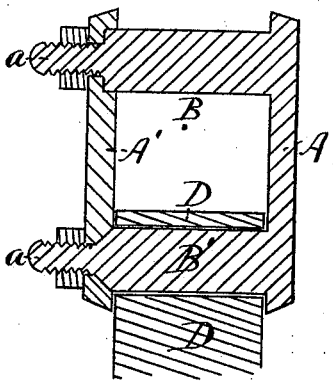



FIG. 4.

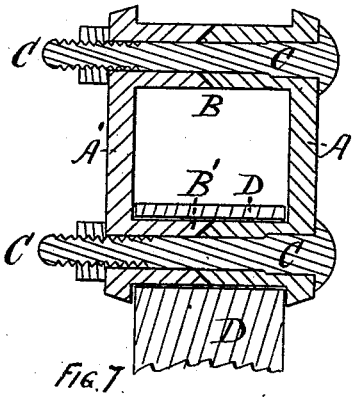



FIG. 5.

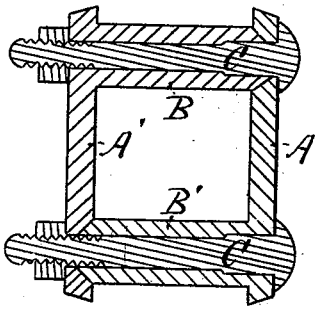



FIG. 6.

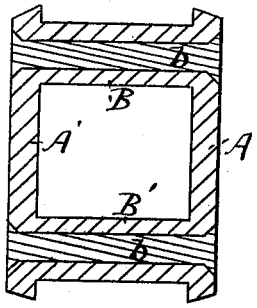



FIG. 7.

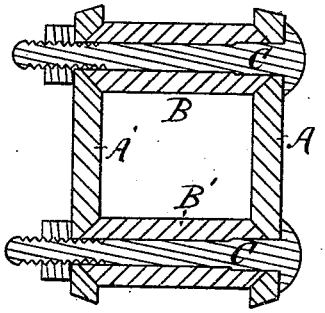



FIG. 8.

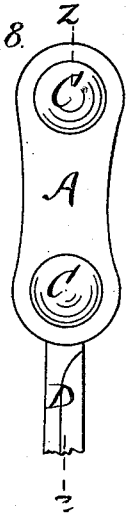
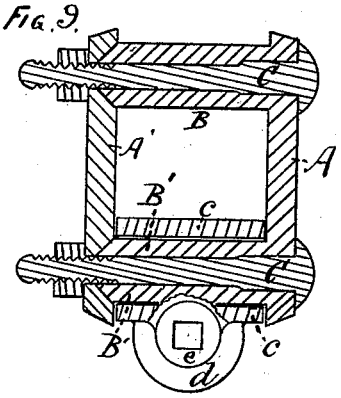



FIG. 9.

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# UNITED STATES PATENT OFFICE.

HENRY K. PORTER, OF BOSTON, MASSACHUSETTS.

## IMPROVEMENT IN SPRING SHACKLE-LINKS.

Specification forming part of Letters Patent No. **196,478**, dated October 23, 1877; application filed February 6, 1877.

*To all whom it may concern:*

Be it known that I, HENRY K. PORTER, of Boston, State of Massachusetts, have invented an Improved Spring Shackle-Link, of which the following is a specification:

The object of my invention is to effect certain improvements in the shackle-links by which the ends of the springs of vehicles are attached to the axles or other supporting parts thereof; and the invention consists in forming hollow the transverse bars of such links, which bars pass through the eyes of the springs and the shackle.

It also consists in a shackle-link formed with such tubular bars and divided into two or more parts, which are secured together with screw-bolts or their equivalents.

It further consists in a shackle-link formed with one side bar and both transverse bars in one piece, with one removable side piece, which is secured in position by screw-nuts threaded upon the transverse bars.

It also consists in a shackle-link cast entire in one piece, but with hollow bars, wherein wrought-iron rivets are secured.

It also consists in countersinking or counterboring one part, to receive the conical end of the corresponding part of the shackle.

In the drawings, Figure 1 is a top or plan view of one of my improved links formed with hollow transverse bars, in which screw-bolts are inserted. Fig. 2 is a horizontal longitudinal section of Fig. 1 taken on such line as shown at *z z*, Fig. 8. Fig. 3 is a similar section taken through a link with solid bars, a removable side, secured by screw-nuts threaded on the bars, and showing a part of the shackle-plate in section. Fig. 4 is a section similar to Fig. 3, but showing the transverse bars taken and divided transversely in the middle, and formed countersunk and conical, respectively, at the line of meeting, and with screw-bolts through the same. Fig. 5 is a similar section, but showing one transverse bar formed entire upon each of the side bars. Fig. 6 is a similar section, but showing the side and transverse bars formed as an entire casting, and with wrought-iron bars inserted in the holes through the transverse and side bars. Fig. 7 is a similar section, but showing the side bars and tubes formed separately, and secured by the screw-bolts C C. Fig. 8 is a side elevation of Fig. 1, as viewed from the right hand, showing a shackle-plate, also in elevation. Fig. 9 is a section similar to the several others, but showing the link applied to a platform spring-shackle.

Similar letters of reference indicate the same parts in the several figures.

In Figs. 1 and 2 the transverse round bars B B′ are formed hollow and as an integral part of the side bar A. The side bar A′ is shown counterbored, to receive the end of bars B B′. The screw-bolts C C pass through the several parts, and, with the screw-nuts thereon, unite the whole together. The bars B B′ may be recessed into bar A′ by either of the methods shown; but I prefer that of countersinking, as it is self-centering, and when in position affords the same relief to the bolt C as would counterboring.

In Fig. 3 the side bar A and transverse bars B B′ are shown formed solid of an entire piece, while bar A′ is secured upon bars B B′ by screw-nuts upon the threaded terminals *a a* of the bars B B′, as shown. The bars A and B B′ may be forged or cast in one piece, as preferred; and bar A′ may also be cast or forged.

In Fig. 4 the bars B are shown divided in the middle, and the respective parts formed upon the side bars A A′, the bars B B′ being countersunk into each other, and the bolts C C being employed.

In Fig. 5 each one of the bars B is formed upon a side bar, A, which bars A are respectively countersunk to receive the conical ends of bars B.

In Fig. 6 the bars A A′ and B B′ are formed as an entirety, or one casting, and the rods *b b* are secured in the holes cast through the several bars by riveting, as shown.

In Fig. 7 the bars A A′ and B B′ are formed separately, and are countersunk and secured together by the bolts C C, as shown.

Fig. 8 is a side elevation, as already described.

In Fig. 9 the link shown in Figs. 1 and 2 is combined with the cross-tubes used for platform-springs, the link being shown in tube C C in longitudinal section, while the transverse tube shown at *d* is shown in end elevation, *e*

being an auxiliary tube inserted in tube *d*, to receive the shackle-bolt.

It will be observed that the bolts C C are shown formed square under the head, and that the hole in the link is correspondingly formed, so that the bolt cannot be rotated when in position in the link.

It will also be apparent that, instead of screw-bolts, rivets may be employed for the purpose of securing the several parts of the divided links together.

I claim as my invention—

1. In a spring shackle-link, the tubular bars B B′, substantially as described and shown.

2. In a divided or two-part spring shackle-link, the tubular bars B B′, formed upon one or both the side bars A A′, substantially as described and shown.

3. In a divided or two-part spring shackle-link, the tubular bars B B′ and the screw-bolts C C, substantially as described and shown.

4. In a divided spring shackle-link, the countersunk or counterbored seats for the reception of the correspondingly-formed ends of bars B B′, substantially as and for the purposes specified.

HENRY K. PORTER.

Witnesses:

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T. W. PORTER.