J. LANE.
Wheel-Colter.

No. 222,711. Patented Dec. 16, 1879.

Fig. 1.

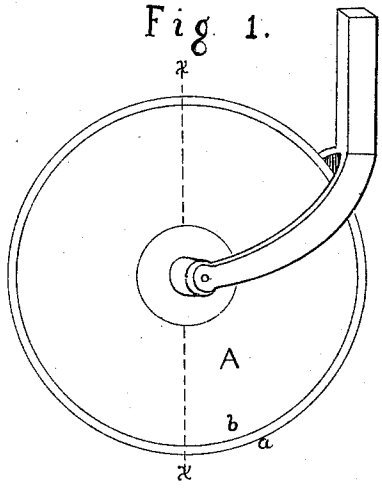
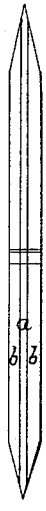


Fig. 2.



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UNITED STATES PATENT OFFICE.

JOHN LANE, OF HYDE PARK, ILLINOIS.

IMPROVEMENT IN WHEEL-COLTERS.

Specification forming part of Letters Patent No. **222,711**, dated December 16, 1879; application filed May 1, 1879.

To all whom it may concern:

Be it known that I, JOHN LANE, of Hyde Park, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Wheel-Colters, which improvement is fully set forth in the following specification and accompanying drawings.

My invention relates to colter-blades made of cast-steel.

The object of my invention is to produce a colter-blade which shall have a cutting-edge sufficiently hard-tempered without the necessity of further hardening or tempering, while the supporting exteriors of such blade shall be cast-steel, and supporting the middle section from liability to break.

The nature of my invention consists in interposing a thin middle-section layer of hard-tempered cast-steel between exterior-section layers of less hard-tempered cast-steel, as hereinafter more fully set forth.

The usual colter-blade as made of cast-steel is too soft, without hardening and tempering, for a good cutting-edge, is liable to bend and batter along the edge when meeting stones and other hard substances in the soil, and also wears away rapidly.

In hardening and tempering such cast-steel blades a difficulty is encountered in that the process of hardening warps the blade, and the edge, being sharpened thin, will crack and break in the process of hardening, and will crack and break in use; and when the blade has been made of hard-tempered cast-steel, so hard as not to require further hardening or tempering, such blades are also brittle by reason of their hardness, and will break in use, and are liable to crack and break about their edge in meeting stones and hard substances in the soil.

Iron-faced cast-steel, as steel center with iron exteriors, and iron one side with steel the other side, have proved inferior, in that the iron sides will not scour and polish in use where steel plows are required; hence the necessity of making the colter-blade of cast-steel.

By my invention I make the exteriors of the colter-blade all cast-steel, to insure polish and scour in use, between which exteriors I interpose a middle section of hard-tempered or high-carboned cast-steel, which middle section, being thin and hard-tempered, will wear away slowly, keeping sharp, while the cast-steel exteriors, being softer and tough, will support the middle section from liability to break, and, wearing away the faster, will keep the middle section sharp in use.

It is well known that cast-steel may be made of any desired degree of hardness by the introduction of more or less carbon in the making of the steel—the more carbon in the steel the harder it will be. I take advantage of this fact in the making of my improved colter-blade by adding an extra quantity of carbon to the middle section of the blade, producing a hard-tempered cast-steel without necessity of further hardening, and which will not need hardening further to equal ordinary cast-steel hardened and tempered.

In the accompanying drawings, Figure 1 represents a perspective view of a wheel-colter, and Fig. 2 a cross-section of the blade A, taken through line *x x* of Fig. 1.

The blade A is formed of three layers of cast-steel, making what I call "three-ply steel," the middle-section part *b* being hard-tempered cast-steel, by the combining therewith of an extra quantity of carbon, and the two exterior parts *a a* at each side of same are of ordinary cast-steel, without the extra quantity of carbon combined therewith.

I prefer a process of making my improved colter-blade as follows: I first prepare a block of hard-tempered cast-steel, which has been made by introducing and combining therewith an extra quantity of carbon, which block, properly prepared, I place in the center of an ingot-mold, and molten cast-steel is then turned in on each side of the said block, and unites therewith in the process of casting, forming an ingot of cast-steel having a hard-tempered middle-section part. The ingot is afterward rolled to desired thickness, and colter-blades are cut therefrom and formed in the usual process of making colter-blades.

I do not claim the combination of iron and steel in a colter-blade, and I am aware it is not new to combine two grades of tempered steel in one bar or plate, as a soft center with hard exteriors is well known. Such I do not claim.

Having thus fully set forth and described my invention, I claim—

The colter-blade having a middle-section part of hard-tempered cast-steel, combined with exterior parts of less hard-tempered cast-steel, made and combined substantially as and for the purpose set forth.

JOHN LANE.

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