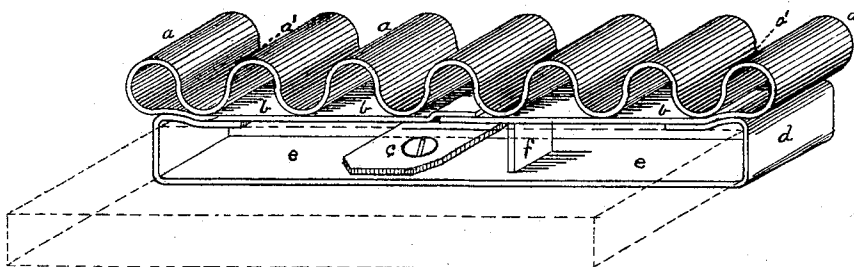


A. W. GRAY.

Links of Endless Chains for Horse-Powers.

No. 141,268.

Patented July 29, 1873.



WITNESSES:

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ALBERT W. GRAY, OF MIDDLETOWN, VERMONT, ASSIGNOR TO LEONIDAS GRAY, ALBERT Y. GRAY, AND ALBERT W. GRAY, OF SAME PLACE.

IMPROVEMENT IN LINKS OF ENDLESS CHAINS FOR HORSE-POWERS.

Specification forming part of Letters Patent No. **141,268**, dated July 29, 1873; application filed February 26, 1873.

To all whom it may concern:

Be it known that I, ALBERT W. GRAY, of Middletown, in Rutland county, in the State of Vermont, have invented certain new and useful Improvements in Links of Endless Chains for Horse-Power and other like Machines; and that others skilled in the art may make and use my invention I make this full, true, and exact description thereof, and of the mode of its construction, reference being had to the annexed drawing and the letters of reference thereon.

The drawing is a view, partly in perspective, of my improved link with the bottom thereof up, and showing, by dotted lines, the tread or way to which it is fastened for use.

Links in the endless chain of horse-power and other like machines have heretofore been constructed in the general form represented in the drawing; but experience derived from use has developed material defects in their construction as not being adequately strong in the direction of their longitudinal strain when in use, but also in the provision of convenient means by which to fasten them to the respective ends of the several pieces of plank constituting the tread or way of the machine; and my invention, therefore, is of improvements by which to remedy these defects.

In describing its construction, I remark that the letters *a a* represent the series of cogs on the links of the chain which in use work the pinion that exerts the power of the machine; and the letter *b* represents portions of the bar of metal of which the cogs are formed turned back against the reverse side of the cogs, where they meet and lap one over the other for the distance of about half an inch, where they are perforated for a rivet; and the letter *c* represents another piece of metal of about the width and thickness of that from which the cogs are made, one end whereof is placed flush with the outer side of the link; and it extends across and against the bar *b*, where the ends thereof meet and lap, and being perforated for a rivet it is firmly riveted through said ends to them; and the other end thereof extends inwardly an inch or more beyond the inner side of the link, and is perforated for a large screw by which to fasten it to the tread

of the machine. The letter *d* indicates another bar of metal of about the width and thickness of that from which the cogs are formed; and from this I construct what I call the cap of the link, and after having bent it at nearly right angles near each end I further bend the bent ends down so as to make them fit against the form of the bar *b* on the reverse side of the cogs near either end thereof, and leave a space between the ends so bent down and the longitudinal part of the cap or bar *d* of about one and a half inch, and the ends so bent down extend along on the bar *b* about one inch, where they are firmly riveted through a depression between the cogs at *a'* and the bar *b*, and thereby a mortise, *e*, is formed for the reception of the ends of the planks which are to form the tread or way of the machine; and it will be obvious that the ends of the bar *d* so bent down will occupy spaces in said mortise similar in thickness and on the same side thereof that is occupied by the cross-piece *c*; and as a means of further strengthening the links of horse-power and other like machines against longitudinal strains at their weakest point, and where experience has shown they require it, and at the same time of strengthening the link in other respects and making it more durable in service, I insert a stud, *f*, in cross-section of the link, made of a short piece of thin flat bar-iron formed with a rivet on each end into a rivet-hole made about midway of the link through a depression between two of the cogs and the bar *b*, and in a rivet-hole in the cap *d* exactly opposite to the rivet-hole in the bar *b*, and I firmly rivet it at both ends, and thereby protect the link in its middle part, where it is always weakest from the longitudinal strains always exerted on the links of horse-power chains when the machine is in use, and also strengthen the link for general service.

When the links in the chain of horse-power and other like machines are constructed with the improvements indicated in this case the pieces of plank used for the tread or way of such machines may be re-supplied to those partly worn, and be securely fastened in position by persons who are unfamiliar with the construction of the machines by simply saw-

ing the pieces of suitable lengths and inserting their ends in the mortises, and fastening them by a strong screw driven into them through the screw-hole in the cross-piece *c*, whereby the necessity for and the expense and delay of sending the machine back to the factory for that purpose will be avoided.

As the question of the manner of using the links of the endless chain of horse-power machines does not arise on consideration of their improved construction, I omit any statement thereof; but

What I claim as new, and for which I seek Letters Patent, is—

1. The cross-piece *c* in a link in the endless chain of horse-power and other like machines, in combination with the cog-work and cap of such links, for the uses and purposes set forth.

2. The combination of the cogs *a a* with the cap *d*, the cross-piece *c*, and the stud *f*, for the uses and purposes set forth.

Witnesses: ALBERT W. GRAY.

A. A. GREENE,

A. Y. GRAY.