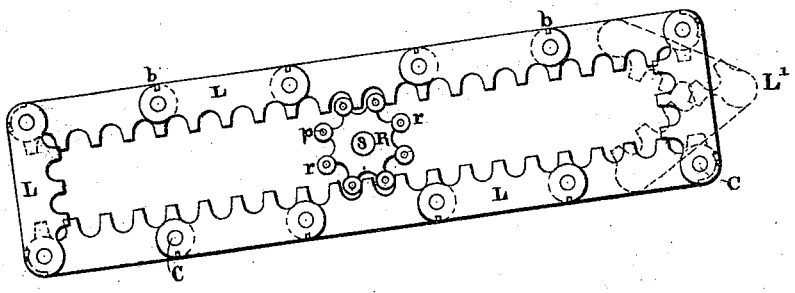
G. E. BURT.

Horse-Power.

No. 161,663. Patented April 6, 1875.



WITNESSES:

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UNITED STATES PATENT OFFICE.

GEORGE E. BURT, OF HARVARD, MASSACHUSETTS.

IMPROVEMENT IN HORSE-POWERS.

Specification forming part of Letters Patent No. **161,663**, dated April 6, 1875; application filed May 5, 1873.

To all whom it may concern:

Be it known that I, GEORGE E. BURT, of Harvard, in the county of Worcester and State of Massachusetts, have invented certain Improvements in Horse-Powers, of which the following is a specification:

The first part of my invention relates to the construction of endless-chain horse-powers, so that the pivoted sections of the chain will pass from one track to the other without the aid of truck-wheels on the moving chain, or spiders to support the sections of the chain at the ends.

The second part of my invention relates to the cogs of the gear-wheels, to avoid as much as possible the great loss heretofore caused by the friction of the cogs against each other when in operation.

The nature of this invention consists in constructing the sections in endless-chain horse-powers, so that they will be self-supporting while passing between the upper and lower tracks.

It is well known that in all horse-powers, or in any machinery where gearing is used, a considerable part of the propelling force is consumed in the friction of the gears, especially where a high rate of speed is required, as for thrashing grain or for sawing wood. One especial object of this invention is to lessen the friction of the cogs on each other as much as possible, for which purpose I make the cogs, of one or two gears, of rolls which are placed on pivots or bearings, on which they may turn, instead of slipping on the surface of the cogs with which they come in contact.

In the accompanying drawings, Figure 1 is a side elevation, showing the pivoted rolling cog-gear in connection with the endless cog-chain or rack as used in an endless-chain or tread horse-power.

In Fig. 1 the parts are represented as used in an endless chain power.

R is a gear, having rolling cogs *r r* turning on the pivots *p p*. The pivots *p* are attached firmly to the frame-work of the gear R while the rolls *r* turn freely on these pivots. The gear R is placed on and revolves with the shaft S, as shown in Fig. 1. The links L represent the links of an endless platform-chain. To these links lags or treads are bolted or secured, on which the horse walks. These links are all pivoted together and run on trucks or rolls placed either on these links or beneath them, as desired. The rolls *r* mesh into the cogs of the links L, both on the upper and lower portions of the chain, so that as the top part of the chain is carried in one direction the bottom sections are carried in the opposite direction by the rolling gear R.

Both the upper and under portions of the chain are kept in straight lines by the trucks and tracks, but it has been usual to have either a spider at the end to carry the sections from one track to the other, or circles upon which trucks on the links could roll between the upper and lower tracks. But as here arranged the length of my link is just sufficient to raise the end of the next link into the line of the upper sections when passing from one track to the other, while the rear end of each section, as it passes from the lower to the upper track, is forced forward by the following links, which are driven forward by the gear R. The links are shown by the full lines in one position, when passing from the lower to the upper track, and by the dotted lines, (see L′,) in their intermediate position.

By having the links of the required length to carry each link from one track to the other, and by forcing the lower line of links forward by cogging the gear R into both the top and bottom sections, the end spiders or circles commonly used can be dispensed with at both ends of the chain-track.

As the cogs on the links L pass in and out of the cogs on the gear R, the rolls *r* turn on their bearings *p*, reducing the friction considerably from what would be unavoidable if the cogs on the gear R were common or fixed spur-cogs. As the links L turn on their pivots *c* in passing around the ends, they are always kept from bending out beyond a straight line, either on the upper or lower track, by the bunters or stops *b* placed on the outer or upper sides of the link.

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

The combination, in a horse-power, of an endless chain or gear, and a pinion which communicates the power to the machine operated, having the cylindrical teeth of one of the interengaging sets constructed to revolve upon their respective axes, substantially as set forth.

GEORGE E. BURT.

Witnesses:

EDWIN A. HILDRETH,

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