

T. G. PALMER.  
Horse-Powers.

No. 158,806.

Patented Jan. 19, 1875.

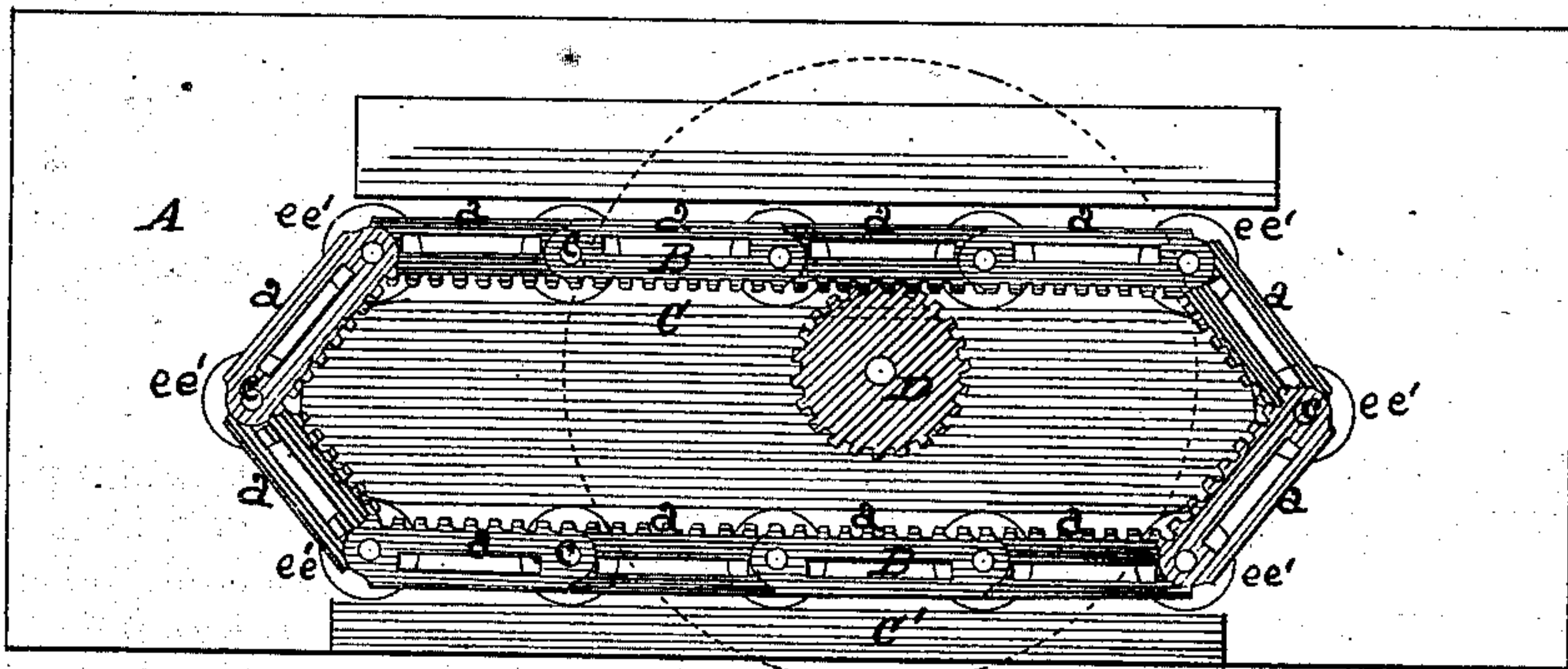


Fig. 1.

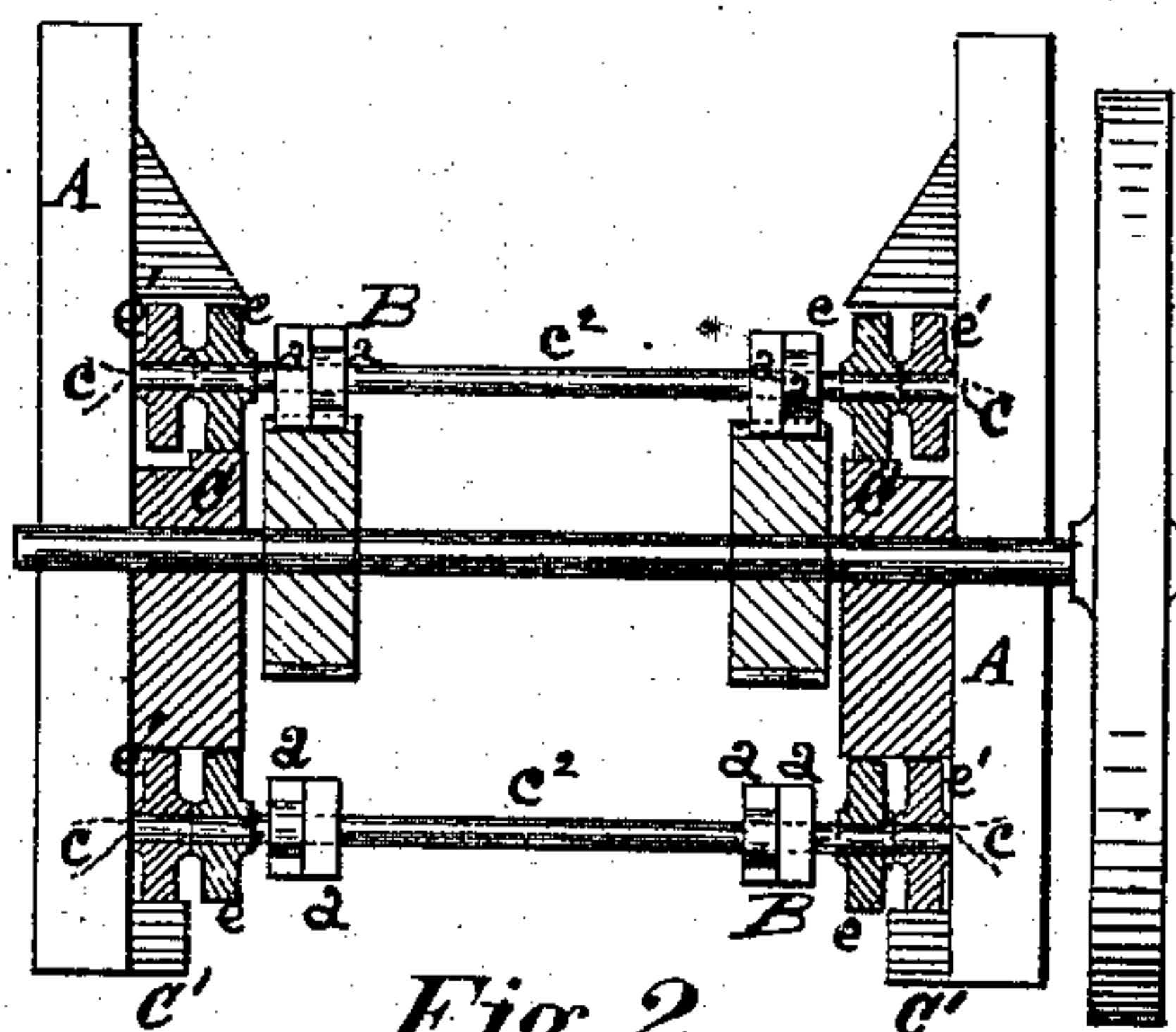


Fig. 2.

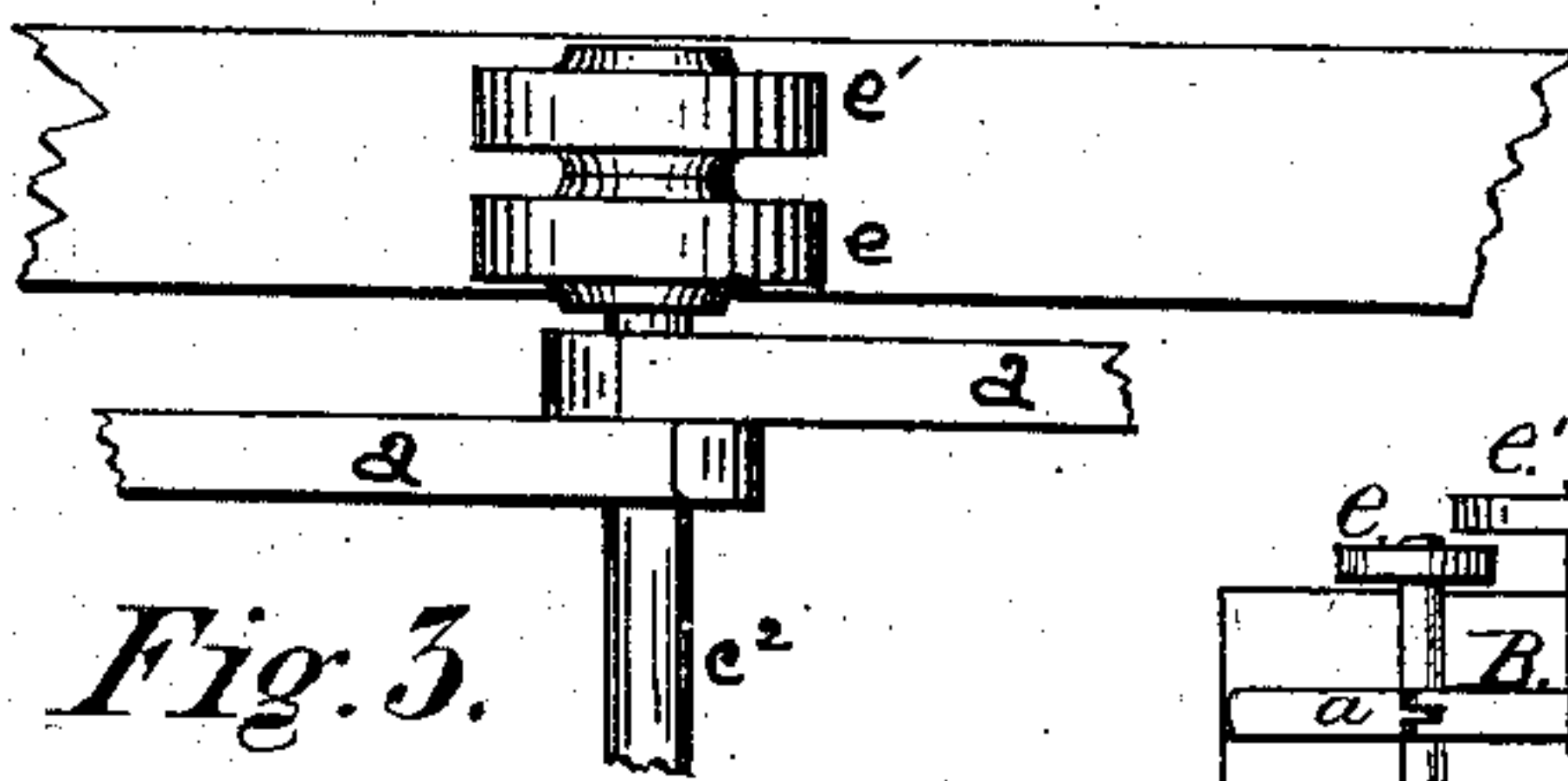


Fig. 3.

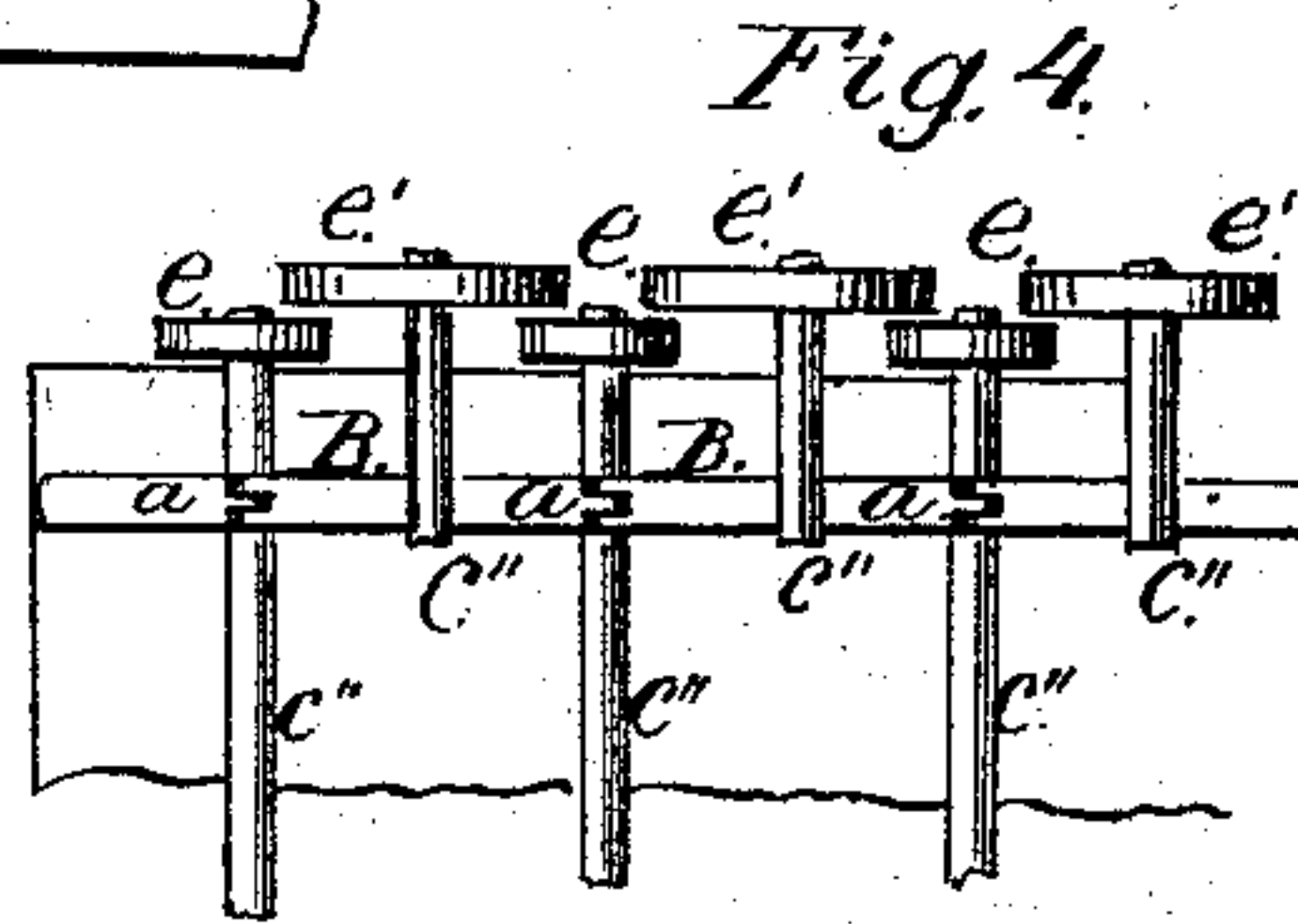


Fig. 4.

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# UNITED STATES PATENT OFFICE.

TIMOTHY G. PALMER, OF SCHULTZVILLE, NEW YORK.

## IMPROVEMENT IN HORSE-POWERS.

Specification forming part of Letters Patent No. **158,806**, dated January 19, 1875; application filed January 11, 1875.

*To all whom it may concern:*

Be it known that I, TIMOTHY G. PALMER, of Schultzville, in the county of Dutchess, State of New York, have invented certain new and useful Improvements in Horse-Powers; and I do hereby declare that the following is a description thereof, reference being had to the accompanying drawings forming a part of this specification, in which—

Figure 1 is a sectional elevation of a section of a horse-power embodying the improvements in this invention. Fig. 2 is a transverse sectional view of the same. Fig. 3 is a plan view of a section of the chain and the duplex wheels or rollers employed in this invention. Fig. 4 is a modification of the above.

My invention relates to that class of horse-powers known as endless-chain powers; and consists in supporting the chain by two sets of wheels or rollers, revolving on the usual spindles, and operating on or with the usual tracks or ways of the power-machine, the object of this invention being to prevent or obviate the excessive friction attending the reversal of the direction of the revolution of the supporting-rollers, and remove the drag attending the reversal of the rollers after they have ceased to bear on the track or way and are about to engage with another track or way to be revolved in an opposite direction.

To enable others skilled in the art to make and use my invention, I will proceed to describe it in reference to the drawings and the letters of reference marked thereon, the same letters indicating the same parts.

In the drawings, A A represent the sides of the power-machine. B is the endless chain, made in the usual forms of construction as practiced by the trade. *a a* are the links comprising the chain. *c c* are the spindles, connecting with the said chain and carrying the two sets of wheels, *e e'*, which wheels are to support the chain from the ways C and C<sup>1</sup>.

In some classes of powers I would form the spindles with the rods C<sup>2</sup>, which will also operate as pivots for the links of the chain, as is practiced by some manufacturers. Again, I would have the said spindles carried by the lugs employed by some manufacturers, in cases where the spindles were not connected with the rods C<sup>2</sup>.

Where the motion of the chain is to revolve

a gear-wheel, D, as employed in some power-machines, I would form the links with cogs, while in those machines employing end drums or reels I would dispense with such cogs.

As endless-chain powers have heretofore been constructed the endless chains employed have been supported by a single wheel or roller on each spindle, attached to and carried by the said chain. In this mode of construction the same wheels had to operate with the several tracks or ways or guards, where guards are employed, and were reversed alternately in their direction of revolution as they passed from one way to another, or from one way to the guard, as the case might be. This reversal of the direction of the revolving of the wheels being continuous from the successive advancement of all the wheels carrying the chain is a constant source of resistance, which must be overcome before the wheels passing from one way or track to another can operate in the manner designed, in a reverse direction; and the aggregate resistance offered by the reversal of all the wheels or rollers is thus made to be very great, and is designed to be wholly obviated by the improvements in this invention.

In this invention I employ what I denominate duplex wheels or rollers *e e'* on each spindle *c* for supporting the several portions of the endless chain from their ways or tracks C and C<sup>1</sup>. The rollers *e*, designed to carry the weight of the animal, are set nigh to the links *a a* and run on the track C, while the rollers *e'* pass over the depressed portion of the said way without contact with the same. The rollers or wheels *e'*, designed to support the lower portion of the chain only, is set outside the wheels *e*, and run on the track C<sup>1</sup> below with the wheels *e* free from the said track. The duplex wheels being thus set, and each one working on its own track or way, will be permitted to revolve in its own direction without any reversal by a changing of relative positions with the said tracks, as carried forward in its endless direction of passage, and each roller or wheel *e* is permitted to continue to revolve unchecked after its passage from the upper track C until it comes to rest, or is again brought in contact with the said track, while the wheels or rollers *e'* are also permitted to freely revolve after leaving their track below until they come to



rest, or are again brought in contact with the said lower track.

In powers employing no end drums or reels for carrying the endless chain, but only end tracks, the reversals of the supporting-wheels are increased, and, consequently, the loss of power is also increased. In such machines or powers the said duplex wheels operate substantially the same as in case with drum-wheel powers having an upper and lower way or track only. The advantage gained is greater, by reason that the said reversals, which in the old-constructed machines were at least four times, are now wholly overcome or obviated by the employment of the duplex wheels before referred to, so that the more rapid changings of the said wheels from their contact with the several ways are not permitted to be in the least a source of loss of power consequent on their passage from one track to the other in the endless direction of the travel of the said wheels as heretofore.

The advantages attending the improvements in this invention for preventing the great loss of power heretofore had in endless-chain powers, by the constant reversal of the many supporting wheels or rollers in their changes from

one track to the other, is apparent, as by the employment of the two sets of wheels or rollers each wheel or roller of the set will have its own direction of revolution without any change whatever.

It is obvious that extra spindles may be attached to the ends of the lugs or center of the links, extending far enough to receive a set of wheels or rollers, *e*, outside of the other set, *e'*, and in this case but one wheel is required on each spindle to accomplish the same result.

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

1. In endless-chain horse-powers, two set of wheels or rollers, *e e'*, operating on each end of spindles or rods for carrying the endless chain, substantially as and for the purpose specified.

2. Spindles attached to the ends of the lugs or center of the links for the extra set of wheels, as specified.

TIMOTHY G. PALMER.

Witnesses:

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