

J. H. ELWARD.  
Horse-Power.

No. 196,887.

Patented Nov 6, 1877.

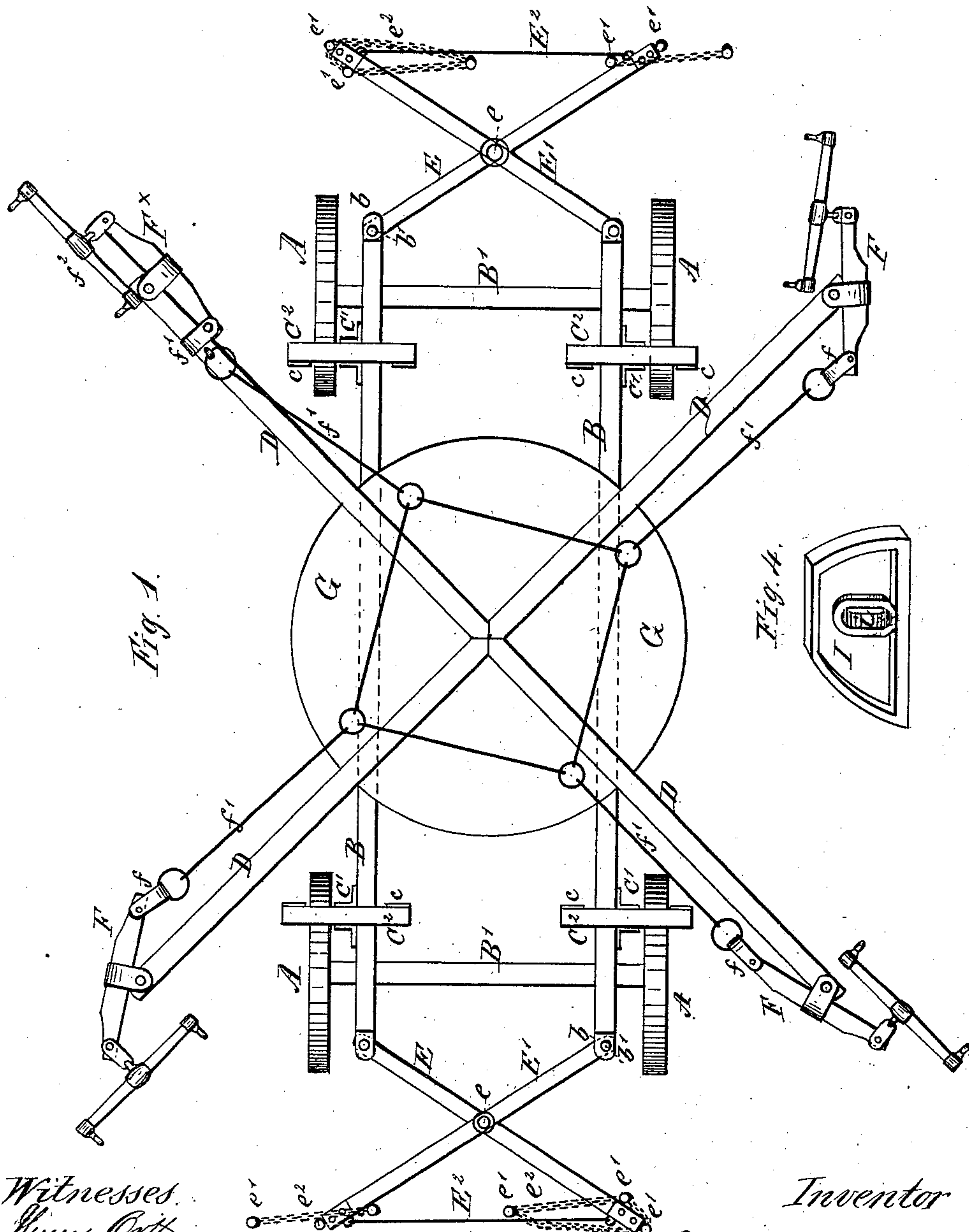


Fig. 1.

Fig. 4.

Witnesses.  
*Henry Orth*  
H. H. Bliss.

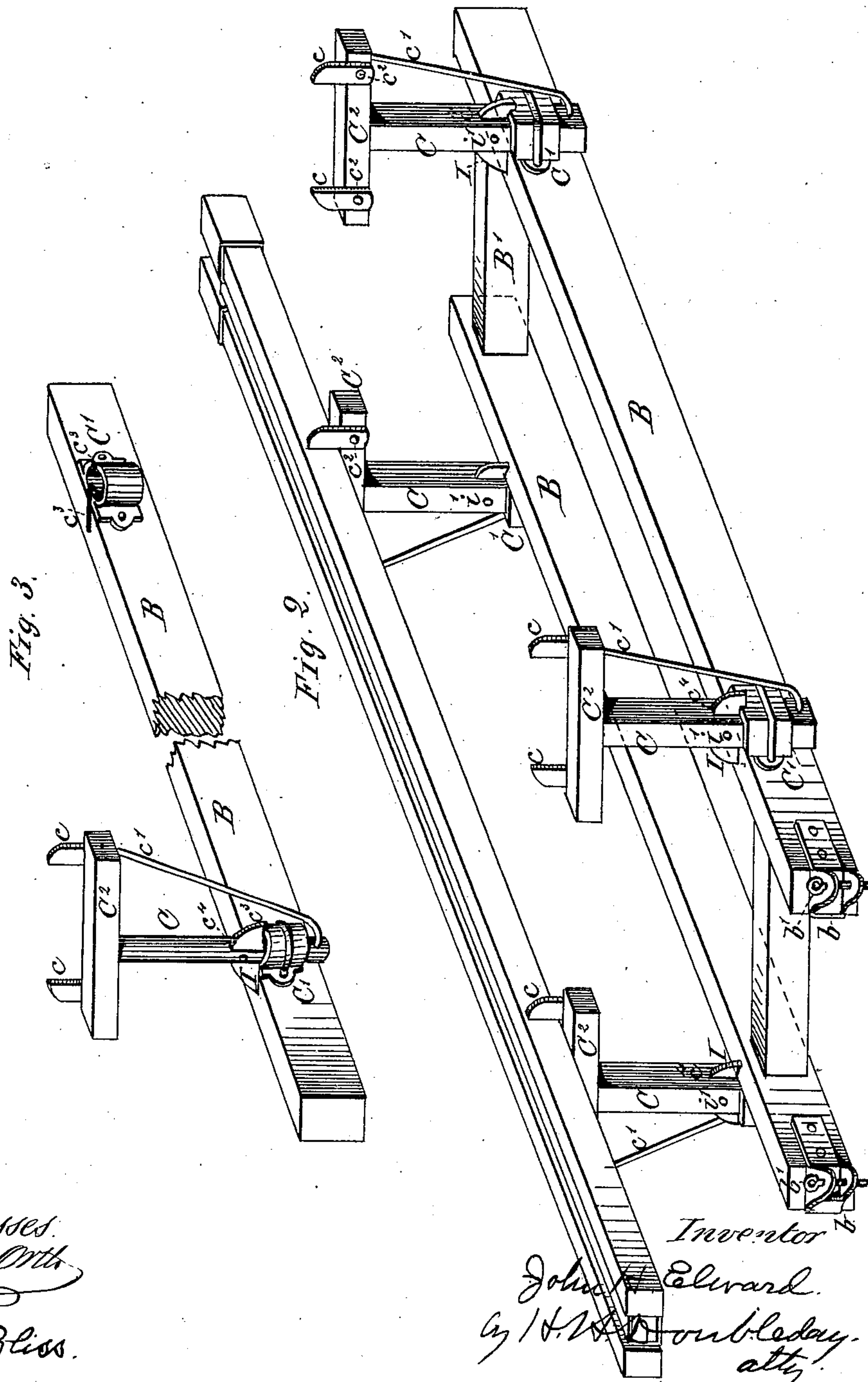
Inventor  
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by *W. A. Doubleday*  
att'y.

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2 Sheets—Sheet 2.

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# UNITED STATES PATENT OFFICE.

JOHN H. ELWARD, OF ST. PAUL, MINNESOTA.

## IMPROVEMENT IN HORSE-POWERS.

Specification forming part of Letters Patent No. **196,887**, dated November 6, 1877; application filed May 22, 1877.

*To all whom it may concern:*

Be it known that I, JOHN H. ELWARD, of the city of St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Horse-Powers; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Figure 1 is a plan view of a horse-power having my improvement applied thereto. Fig. 2 is a detached view, in perspective, showing more plainly that part of the invention which relates to the devices used for supporting the sweeps and other parts upon the frame-work. Fig. 3 is a detached view of a slight modification of one of the devices, and Fig. 4 represents a locking-plate.

A A are the wheels, B B the side pieces, and B' B' the cross-girts, of the main supporting-frame, which may be of any usual or approved construction.

The master-wheel is represented at G, and the sweeps or levers at D D, these parts being also of the ordinary kind.

At each end of each side piece B' there is an angular plate, provided with projecting ears *b* and a pin, *b'*. (See Fig. 2.)

E E<sup>1</sup> are the braces, one end of each brace being attached to one end of a side piece by means of a pin, *b'*. Each pair of braces is pivoted together centrally, as at *e*. The outer or lower ends of the braces are shod with a metal socket, and are drawn tightly toward each other by a link, E<sup>2</sup>, provided with screw-thread, or otherwise made adjustable, in such manner that such tension as is desired may be applied; and from an examination of the drawings it will be readily seen that such tension serves to press the ends of the side pieces B B more firmly upon the girts B' B'. This constitutes what I prefer to call a "truss-brace," and its outer end may be staked to the ground in any usual manner (as indicated) by means of stakes *e*<sup>1</sup> and chains *e*<sup>2</sup>. When thus staked there is always a liability of brace E<sup>1</sup> becoming loosened at its lower end, owing to the

fact that there is a pull in an upward direction upon it, and sometimes the ground will be softer upon that side of the machine than it is upon the opposite side. In either case, with the ordinary arrangement of braces, this loosening will permit an increase of the strain upon the girt B', at that end of the machine in the direction in which the horses are moving, and will tend to pull the frame-work apart at that point; but by my improved truss-brace this result cannot happen, as the strain is practically uniform upon all parts, and the durability of the frame thereby greatly increased.

F F F F<sup>x</sup> are levers pivoted to the end of the sweep, and connected by clevises *f* with either a series of links, F', or with the sweeps, as indicated at F<sup>x</sup>. Under the former arrangement they constitute a draft-equalizer, while under the latter arrangement the levers serve as rigid extensions of the sweeps, the horses being attached to the whiffletrees or eveners *f*<sup>2</sup>.

By this construction and arrangement I am enabled to secure the desired uniformity in the speed of the power, whether the levers F are used as parts of the draft-equalizer or not, as it will be readily seen that, under both arrangements shown, the power is applied at the distance on radial lines from the center of the master-wheel, and hence the horses traverse a circle of the same diameter.

C is a standard mounted in a strap-box, C<sup>1</sup>, attached to the side piece of the frame, so as to slide up and down freely therein. C<sup>2</sup> is a T-piece secured to the upper end of the standard, and braced thereto by bar *c*<sup>1</sup>. *c c* are stakes pivoted to the T-piece C<sup>2</sup> by means of staples *c*<sup>2</sup>, one leg of each staple serving as a pivot, the other leg serving as a stop to restrict the outward movement of the upper end of each stake when it is swung up into a proper position for holding in place the sweeps, braces, stakes, &c., which may be loaded upon the standards, as indicated in Fig. 2. Each standard is slotted, as at *c*<sup>4</sup>, in which slot is a locking-plate, I, provided centrally with a slot, *i*, to receive a pivot, *i*<sup>1</sup>.

The length of the locking-plate is such that when it is turned crosswise of the standard it projects upon one or both sides of the standard, and, resting upon the side piece or strap-box, or both, supports the standard in its ele-



vated position; but the locking-plate is so narrow that when it is turned up endwise, within the slot  $c^1$ , (which is long enough to receive it,) said plate will pass down with the standard through the strap-box.

There is play enough in slot  $i$  upon the pivot so that the upper end of the slot in the standard can rest upon the upper side of the locking-plate, thus relieving the pivot of the weight of the load, as shown in the drawings.

When preferred, the standard may be made round, (see Fig. 3,) in which case I prefer to cut notches  $c^3$  in the side piece or strap-box, or both, to lock the parts in place, and the strap-box may be located below the upper edge of the side piece a distance equal to the thickness of the T-piece  $C^2$ , so that this piece can be turned around parallel with the side piece B, and let down until their upper faces are on a level, should this be found desirable.

What I claim is—

1. The combination, with the frame-work of a horse-power, of the truss-brace E  $E^1$   $E^2$   $e$ , substantially as set forth.

2. The combination, with the frame-work of a horse-power, of the rising and falling supporting-standard C, substantially as set forth.

3. The combination, with the sliding standard C, of the locking-plates I, substantially as set forth.

4. The combination, with the T-piece  $C^2$  and stakes  $c$ , of the pivoting and locking staples  $c^2$ , substantially as set forth.

5. The combination, with the frame-work of a horse-power, of the sliding and rotating standard, Fig. 4, substantially as set forth.

6. In a horse-power, the combination, with the sweep-levers and the links of the draft-equalizer, of levers pivoted to the sweep-levers, and provided at their inner ends with detachable fastenings, adapted to connect the pivoted levers with the equalizer, or with the sweeps, at the will of the operator, substantially as set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JOHN H. ELWARD.

Witnesses:

WAYLAND S. GOODHUE,  
H. J. CHAMBERS.