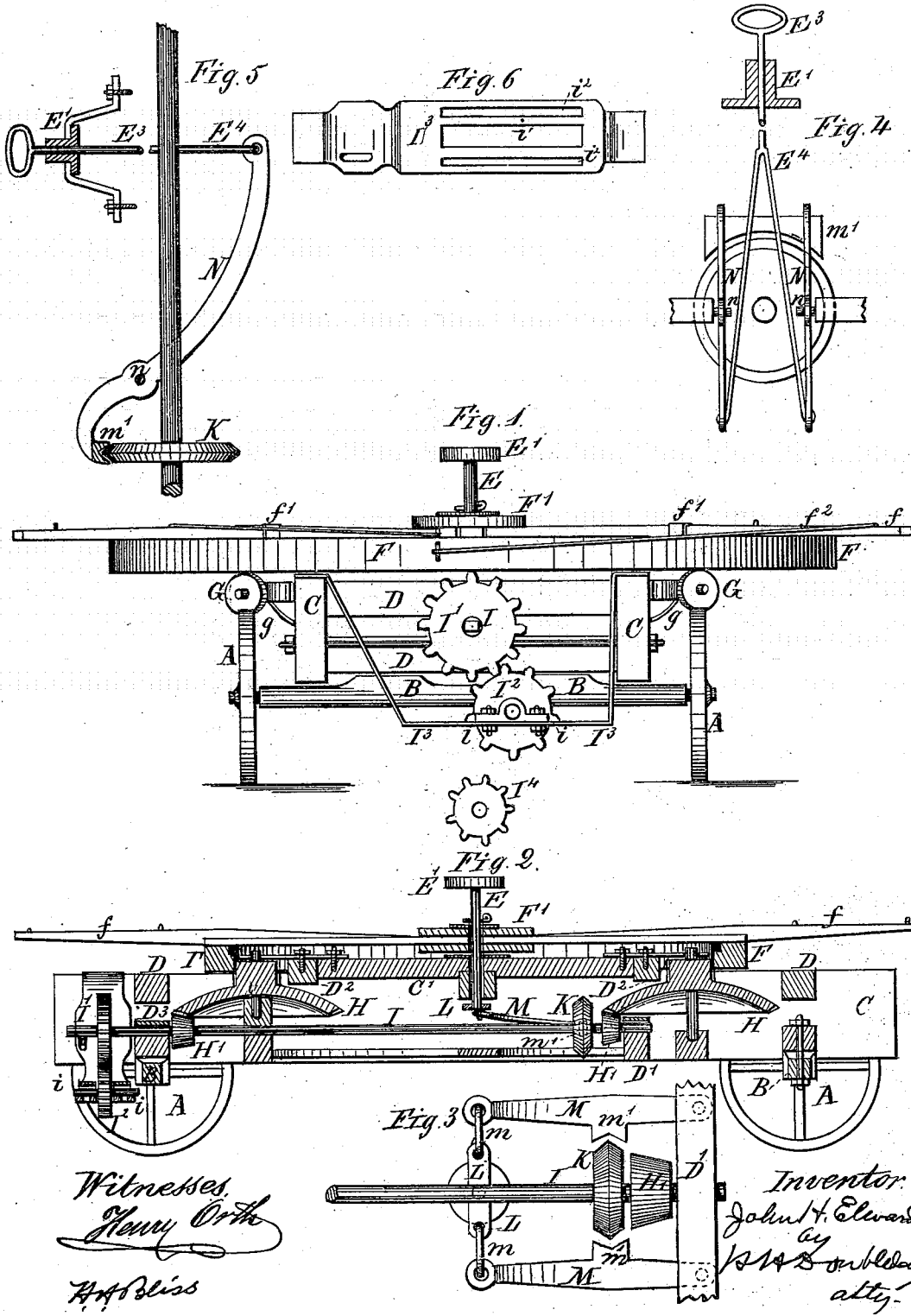


J. H. ELWARD.

HORSE-POWER.

No. 187,366.

Patented Feb. 13, 1877.



Witnesses,
Henry Orth
H. Bliss

Inventor,
John H. Elward
By *J. A. S. Sibley*
att'y.

UNITED STATES PATENT OFFICE.

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

IMPROVEMENT IN HORSE-POWERS.

Specification forming part of Letters Patent No. **187,366**, dated February 13, 1877; application filed January 19, 1877.

To all whom it may concern:

Be it known that I, JOHN H. ELWARD, of St. Paul, county of Ramsey, State of Minnesota, have invented certain new and useful Improvements in Horse-Powers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

Figure 1 is an elevation of my improved horse-power, taken from the end at which it is coupled with the shafting. Fig. 2 is a vertical longitudinal section of the same. Fig. 3 is a bottom-plan view of the brake device detached. Fig. 4 is an end view of a modification of the brake device. Fig. 5 is a side view of said modification, one of the brake-arms being removed. Fig. 6 is a top-plan view of the bracket which supports the pinion that rotates the tumbling-rod.

My invention consists, first, in the peculiar construction and operation of a brake for horse-powers; and, second, in providing a peculiar means for varying the speed of the connecting-shaft.

In the drawings, A A represent the ground-wheels of a mounted horse-power, upon the axles B B. The frame of the horse-power consists of the beams or joists C C and the cross-girts D D¹ D². C' is a joist, supported by girts D² D², and provides a bearing for the center-pin E. F is the master-wheel, having a hub, F'. *ff* are the sweeps, passing through brackets *f*¹ on the rim of the master-wheel, and braced by means of arms or links *f*². G G are rollers, upon which the rim of the master-wheel rests, and are supported by brackets *g g*. The master-wheel revolves upon the center-pin E, and rotates the wheels H H, which, in turn, actuate the main or line shaft I by means of pinions H' H'. The inner end of shaft I has a bearing in the girt D¹. K is a brake-wheel, keyed to the shaft I near its inner end, and rotating therewith.

L is a cross-head or crank-wheel, rigidly connected to the lower end of center-pin E. M M are brake-arms, pivoted at their forward ends to the girt D¹, one upon each side of the line-shaft I. At their other ends they are hinged to the cross-head L by links *m m*. *m'* *m'* are friction-shoes upon the inner edge of

brake-arms M, (shown in full line in Fig. 3 and dotted line in Fig. 2,) so situated that they can be forced against the brake-wheel K. E¹ is a hand-wheel attached to the top of center-pin E, for rotating said pin. It will be seen that when the pin E is rotated, the cross-head L will draw the outer ends of arms M together, thus forcing the brake-rubbers *m' m'* against the wheel K. Instead of a rotating hand-wheel and center-pin to actuate the brake-arms, construction of the nature of that shown in Figs. 4 and 5 may be employed. In those figures the master-wheel revolves around a sleeve or thimble, E², through which the rod E³ passes vertically. The brake-arms N are pivoted to suitable supports, as at *n*, and carry at their forward ends the brake-shoe *m'*. At the other end they are connected with rod E³ by a yoke, E⁴; or, if desired, chains may be employed in place of rod E² and yoke E⁴. In this construction the brake is applied by pulling up the rod or chains attached to the brake-levers M. Again, the brake-levers may be pivoted in such manner as to force the shoe against the brake-wheel by the application of downward pressure upon them.

The outer end of the main or line shaft I projects beyond, and has a bearing upon, girt E². Outside of the frame it carries a spur-wheel, I¹, meshing with a pinion, I². Pinion I² has a bearing in adjustable boxes *i i*, supported upon a bracket, I³, which is suspended from the main frame. The bottom part of bracket I³ is provided with a slot, *i*¹, in which pinion I² revolves, and two smaller slots, *i*² *i*², which allow the boxes *i i* to be adjusted at different distances from the spur-wheel I¹. If it is desired to increase the speed of the tumbling-shaft, pinion I² can be removed, and a smaller one, such as pinion I⁴, inserted nearer to wheel I¹, and vice versa if the speed is to be diminished. The end of the shaft upon which the pinion I² is mounted is, by preference, squared to receive the usual tumbling-rod connection.

Although the brakes are shown as being applied to the main shaft, yet it is apparent that they might be applied to the bevel-gears H, or other part of the driving mechanism, without departing from the spirit of my in-

vention, which consists, essentially, in such a construction and arrangement of the parts that the brakes may be applied through the master-wheel.

What I claim is—

1. In a horse-power, the combination, with the line-shaft I, of the brake-wheel K, shoes *m' m'*, brake-arms M M, cross-head L, center-pin E, and connecting devices, substantially as set forth.

2. In a horse-power, the combination, with

the line-shaft, of a mounting for the tumbling-rod pinion, arranged to receive pinions of different diameters, as and for the purpose set forth.

In testimony whereof I have hereunto set my hand this 28th day of December, A. D. 1876.

JOHN H. ELWARD.

Witnesses:

H. J. CHAMBERS,
G. ROOSEN.