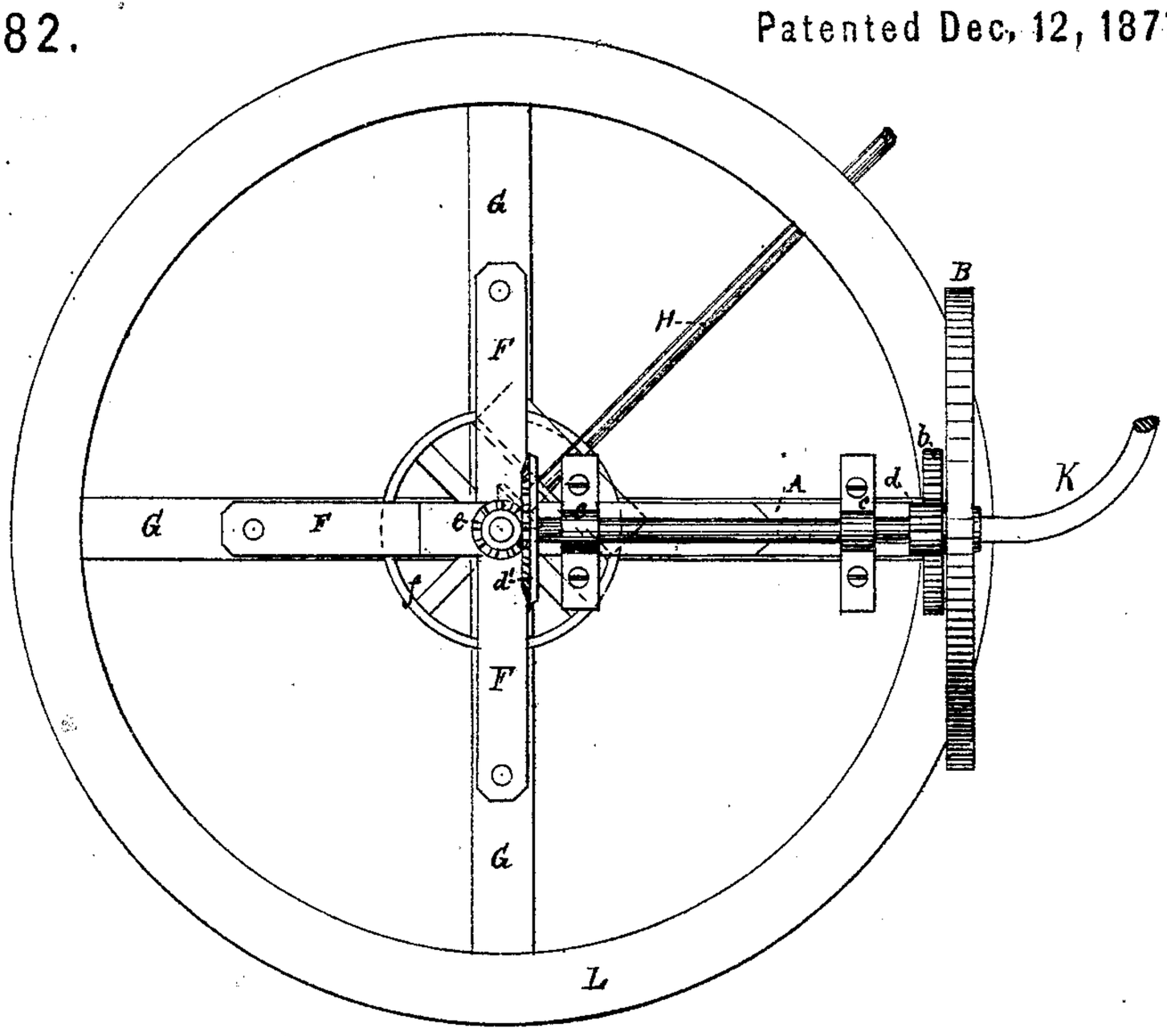
M. H. MARMADUKE & BEN. F. STEWART.

Improvement in Horse Power.

No. 121,882. Patented Dec. 12, 1871.



Witnesses:
G. Mathys.
b. A. Pettit

Inventor:
M. H. Marmaduke.
Ben. F. Stewart.
Per Munn & Co
Attorneys.

UNITED STATES PATENT OFFICE.

MARION H. MARMADUKE AND BENJAMIN F. STEWART, OF SANTA FÉ, MISSOURI.

IMPROVEMENT IN HORSE-POWERS.

Specification forming part of Letters Patent No. 121,882, dated December 12, 1871.

To all whom it may concern:

Be it known that we, MARION H. MARMADUKE and BENJAMIN F. STEWART, of Santa Fé, in the county of Monroe and State of Missouri, have invented a new and Improved Horse-Power; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming a part of this specification.

Our invention consists in the improvement of horse-powers, as hereinafter fully described and subsequently pointed out in the claim.

Figure 1 is a plan view of our improved horse-power, and Fig. 2 is a vertical section through the middle thereof.

A is a shaft having a horizontal journal, *a'*, at one end, and a vertical hub, *a*, at the other. B is a large wheel placed on said journal, and having a spur-wheel, *b*, on the boss of the hub. C C are frames placed, one near each end, upon the axle, on which are arranged the bearings *c c*. D is a horizontal shaft resting in said bearings, and having the pinion *d* at one end and the miter-wheel *d'* at the other, both made fast to the shaft. E is a vertical shaft journaled in an upright central frame, F, and in the bottom cross-pieces G G. This shaft E has a miter-pinion, *e*, which gears with the miter-wheel *d'*, a bevel-pinion, *e'*, which gears with a corresponding pinion, *h*, on a shaft, H, and, preferably, one fly-wheel, *f*, near the lower end, and a weighted disk or wheel, *f'*, near the top. This shaft E is also provided with an axle-box or tubular sleeve, which rests upon the upright frame F and receives the hub *a* of the shaft A. The cross-pieces G G are fastened in mortises formed in the bottom of an annular ring, I. Upon this ring is formed a hard circular track, L, for the wheel B. K is a bar, crooked in the usual way, and attached to the end of the protruding journal *a'* of shaft A. This bar is provided at one end with a nut or internally-threaded tube, which screws upon the threaded end of the journal.

The mode of operation is as follows: The horse, being attached to the free end of bar K, travels around the outside of the ring I, while the traveling wheel rotates the shaft D, which rotates the vertical shaft E. This turns the pulley-shaft H, which drives the mechanism to be operated by the horse-power.

The advantage gained over ordinary horse-powers by the above construction and arrangement of mechanism is so great that, in practice, it seems to do the same work with one-half the muscular exertion. Indeed, one horse seems to do what is esteemed to be the work of two with much less expenditure of effort.

The wheel B, moving on a rigid track, keeps the shaft or lever-arm A always in the same horizontal position, thereby practically nullifying the usual friction upon the vertical shaft, caused by the sagging of the arm. It is obvious that, by simply keying the shaft to the sleeve or axle-box, and that to the hub *a*, or by simply keying the shaft to the hub, the gears *b d d' e*, shaft D, and frames C C may be dispensed with entirely; but, where it is desirable to give considerable velocity to the machinery operated, this arrangement of multiplying mechanism is peculiarly adapted to the purpose.

Having thus described all that is necessary to a full understanding of our invention, what we esteem to be new, and desire to secure by Letters Patent, is—

The arrangement of the spur-wheel *b* on boss of large wheel B, the beveled pinion *d*, shaft D, and miter-wheel *d'* on the end of shaft D, frames C C above the shaft or lever-arm A, and the pinion *e* on the vertical shaft E, to form a convenient multiplying mechanism, as specified.

MARION H. MARMADUKE.
BENJAMIN F. STEWART.

Witnesses:
CHARLES W. TANNER,
THOMAS I. ARMSTRONG.