

W. J. F. LIDDELL.

Improvement in Horse Powers.

No. 124,212.

Patented March 5, 1872.

Fig. 1

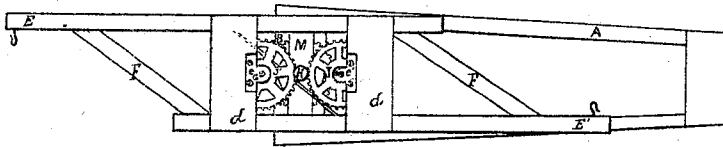
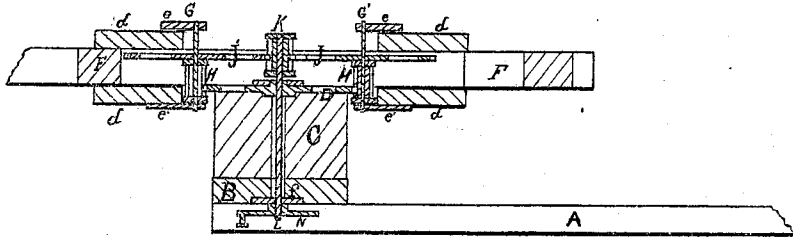


Fig. 2



WITNESSES

F. H. Brown
F. F. Warner.

INVENTOR

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By Gidley & Warner
his attys
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UNITED STATES PATENT OFFICE.

WALTER J. F. LIDDELL, OF MADISON, WISCONSIN.

IMPROVEMENT IN HORSE-POWERS.

Specification forming part of Letters Patent No. 124,212, dated March 5, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that I, WALTER J. F. LIDDELL, of Madison, in the county of Dane and State of Wisconsin, have invented certain new and useful Improvements in Horse-Powers; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable others skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 is a general plan or top view of my improved horse-power, and Fig. 2 is an enlarged vertical longitudinal central section of the same.

Similar letters of reference indicate like parts in both figures of the drawing.

The object of my invention is to so arrange the operating parts as to lessen the friction, and thereby produce a greater power with a given amount of draft; and to that end consists in a revolving frame, forming the draft-levers, and to which frame is secured a system of gear-wheels, having an independent rotary motion jointly with a rotating movement of the frame, and which engage opposite sides of a pinion mounted upon a vertical shaft carrying the fly-wheel, thereby overcoming the side pressure of the shaft against its boxes. Also, in the combination of the several parts, which will be more fully understood from the following description.

In the drawing, A represents the main or fixed frame, which may be as shown, or may be of any suitable form that will receive the operating parts of the machine. B is a transverse cross-head or girt, which is firmly secured to the upper side of the frame, at or near its end, and attached to the center of this girt is a vertical upright, C, upon the upper end of which is permanently attached a fixed gear-wheel, D. E and E' are the draft-levers, which form the sides of the revolving frame, and are united one to the other laterally by a system of cross-girts, *d*, which are firmly secured to the upper and lower sides thereof. Firmly secured in the heel or short ends of said levers are girts F and F', which extend diagonally across and firmly secured to the opposite lever, at or near its center, between the cross-girts *d* and the end of the lever, thereby forming a brace for the same. G and

G' are vertical shafts, which are secured in suitable boxes *e e'* affixed to the center and upper and lower sides of the cross-girts *d*, and firmly secured. To the lower end of said shafts are pinions H and H', which engage the fixed gear-wheel D, mounted upon said shafts. Above the pinions are gear-wheels J and J', which engage opposite sides of a gear-pinion, K, affixed to the upper end of a vertical shaft, L, extending downward through upright C and girt B, and is secured at its lower end by a suitable box, *f*, affixed to the lower side of the said girts, and at its upper end by passing through the center or hub of the wheel D. Firmly secured to the lower side of the said levers is a cross-head, M, which rests at its center upon shaft L, and is so arranged as to freely revolve thereon. It also rests upon the center or hub of wheel D, so that, as said frame is rotated, a rotary motion is imparted to shafts G and G' by the engaging of pinions H and H' with wheel D, thereby communicating a rotary motion to shaft L by the engaging of wheels J J' with pinion K of said shaft. Affixed to the lower end of the shaft K is a fly-wheel, N, from which motion is communicated to any desired machinery by means of a belt or pitman, not shown in the drawing.

I do not wish to confine myself, strictly, to either of the above-described means of communicating motion, as a bevel-gear may be affixed to the said shaft to engage a suitable pinion upon a horizontal shaft, and to which may be connected a tumbling-rod in the usual manner.

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

1. The combination of levers E and E', diagonal girts F F', and cross-girts *d*, forming the revolving frame carrying the gear-wheels J and J', substantially as and for the purpose described.

2. In combination with the said revolving frame, as described, shafts G G', wheels J J', pinions H H', fixed wheel D', pinion K, shaft L, and cross-head M, substantially as and for the purpose described.

The foregoing specification signed by me this 27th day of September, A. D. 1871.

WALTER J. F. LIDDELL.

Witnesses:

E. F. PARKER,
E. W. ARNDT.