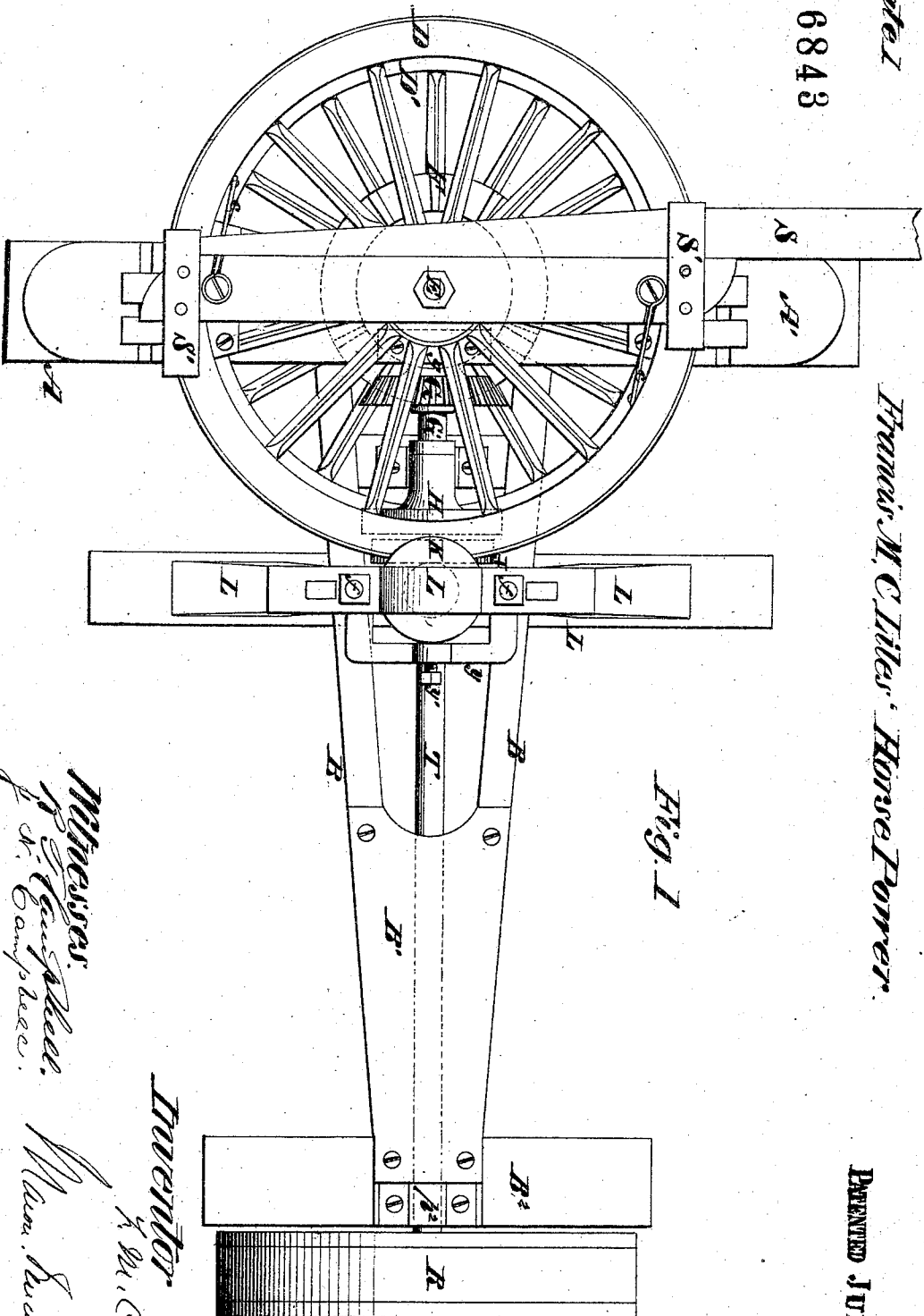


Plate 1

116843

Francis M. C. Liles' Horse Power.

PATENTED JUL. 11 1871



Witnesses:
J. S. Campbell.
J. S. Campbell.

Inventor
Francis M. C. Liles
by
Wm. H. Smith & Co.

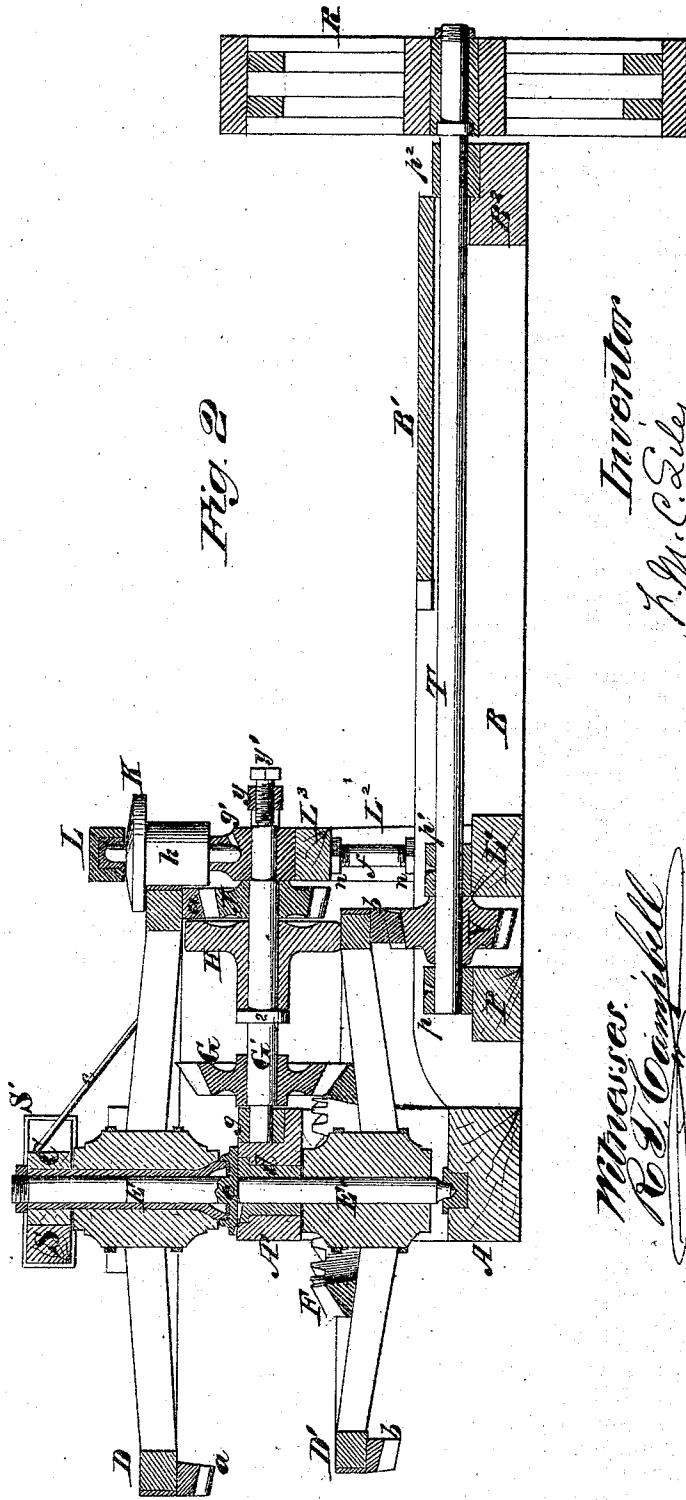


Fig. 2

Witnesses.
R. S. Campbell
J. M. Campbell

Inventor
F. M. C. Liles
by
Messrs. Knicker & Son

UNITED STATES PATENT OFFICE.

FRANCIS MARION CHESTER LILES, OF ROANOKE, ALABAMA.

IMPROVEMENT IN HORSE-POWERS.

Specification forming part of Letters Patent No. 116,843, dated July 11, 1871.

To all whom it may concern:

Be it known that I, FRANCIS MARION CHESTER LILES, of Roanoke, in the county of Randolph and State of Alabama, have invented a new and Improved Horse-Power; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1, plate 1, is a plan view of the machine complete. Fig. 2, plate 2, is a section taken longitudinally and vertically through the center of the machine.

Similar letters of reference indicate corresponding parts in the two figures.

This invention relates to improvements on that class of horse-powers wherein two master-wheels are employed in combination with pinion-wheels, which transmit rotary motion to a shaft on which a belt-wheel is applied. The object of my invention is to combine, with machines of the above-named description, certain devices, hereinafter set forth, which will diminish friction, and which will also allow an adjustment of the spur-wheels to compensate for the wear of the teeth thereof.

The following description of my invention will enable others skilled in the art to understand it.

In the accompanying drawing, A A' represent two horizontal beams, which are arranged one above the other and sustained by standards at their ends, so as to constitute a strong frame for sustaining the principal wheels of the power. B B are horizontal sill-beams, which are firmly secured to the sill-beam A, and extend out therefrom to a transverse beam, B², upon which latter is applied the outer bearing p², for the belt-drum shaft T. B¹ represents a platform or bridge, which is secured across the outer portions of the converging beams B B, over which the animals are hitched to the sweeps S. L, L¹, L², and L³ represent beams which are strongly secured together and confined to the sill-beams B B, forming a frame for supporting one end of a shaft, G¹, and also an anti-friction flanged roller, k. At the middle of the length of the beam A', and secured firmly thereupon, is a plate, e, from which rises perpendicularly a shaft, E, around which turns a horizontal master-wheel, D, having spur-teeth a applied to its lower sides, as shown in Fig. 2. On top of this wheel, and extending diametrically, is a beam, C, which is secured

down upon blocks and stayed by brace-rods c. To the ends of this beam C loops S' S' are applied for receiving and holding the sweeps S'. The shaft E passes through the beam C and receives a nut on its upper end. Directly below the shaft E is a turning-shaft, E', on which is secured a large wheel, D', having spur-teeth b secured to the lower side of its rim and a spur-wheel, F, of considerably less diameter, secured upon its spokes. This wheel D' is between the two horizontal beams A A', as shown by Fig. 1. The teeth a of wheel D engage with the teeth of a bevel-pinion, J, which is keyed on the shaft G', and the teeth of wheel F engage with another wheel, G, which is keyed on the shaft G'. The teeth b b of the wheel D' engage with a pinion, V, which is keyed on the shaft T of belt-pulley R. By this arrangement of large and small wheels a comparatively slow motion imparted to the wheel D will transmit a very rapid motion to the belt-wheel R. The shaft G' is supported by journal-boxes g g', the latter one of which has a socket formed in its cap, which receives the lower end of a flanged roller, k, the upper end of which is received into a socketed box inserted into the cross-beam L, shown in Fig. 2. The flange K of roller k extends over the rim of wheel D, and holds this wheel down in place so that its teeth a will not spring up from the pinion J. The teeth b on wheel D' are held down in gear with the teeth of pinion V by means of a roller, H, which is applied to turn freely on the shaft G', and which is held up in place by a collar, Q, on this shaft. A yoke, y, is secured down upon the cross-beam L³ by means of nuts, which are applied to upright screw-shafts f, and through the yoke a screw, y', is tapped, the end of which is set up against the outer end of shaft G'. By means of the screw y' the shaft G' can be adjusted endwise, and the spur-wheels J G set up to their respective wheels, and any wear thereof compensated for. The cross-beams L L¹ L³ are tied together by means of vertical screw-rods on, which nuts n n are applied, by means of which the intermediate beam L³ and the beam L can be adjusted vertically, to compensate for the wearing away of the pressure-rollers k H.

My object is to employ wheels D D' of very large diameter, in combination with pinion-wheels of small diameter. To do this and produce a practical machine it is necessary to employ anti-friction

pressure-rollers, so arranged that they will prevent the large wheels from springing up out of place with respect to the pinions with which they are engaged; and it is also necessary to provide means for adjusting said parts so as to compensate for wear; otherwise the machine will work hard and irregular. These requirements I have fulfilled by the devices which I have above set forth.

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

1. The combination of the wheels D D' and the rollers *h* H, substantially as herein set forth.

2. The wheels D D', J, G, and F, in combination with the wheel V on belt-wheel shaft T, the adjusting-screw *y'*, and the adjusting-nuts *n n*, all arranged substantially as set forth.

FRANCIS MARION CHESTER LILES.

Witnesses:

WM. A. HANDLEY,
WM. E. WHITE.