A. B. FARQUHAR.

Improvement in Horse-Powers.

No. 126,386. Patented May 7, 1872.

Fig. 1.

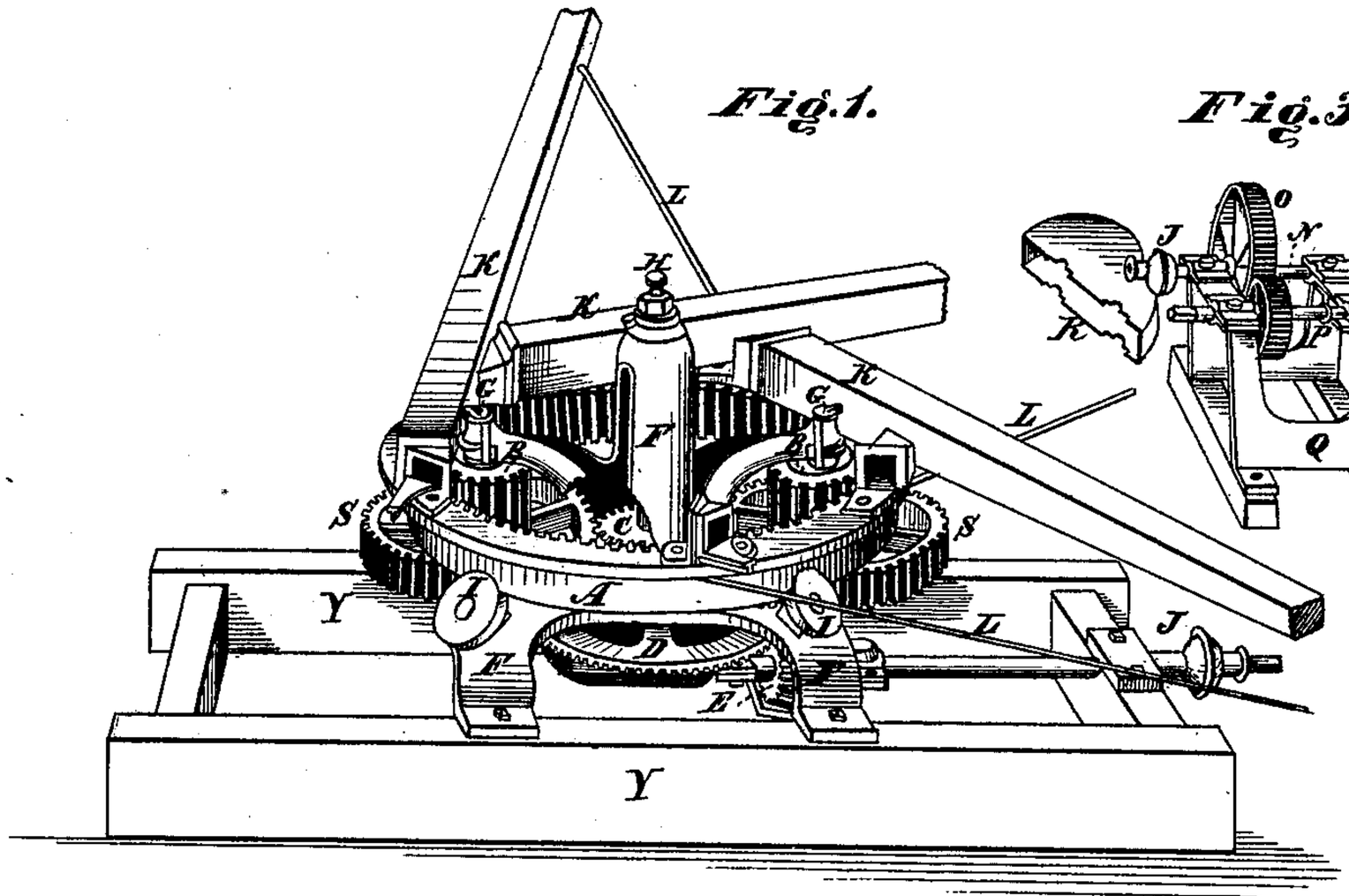
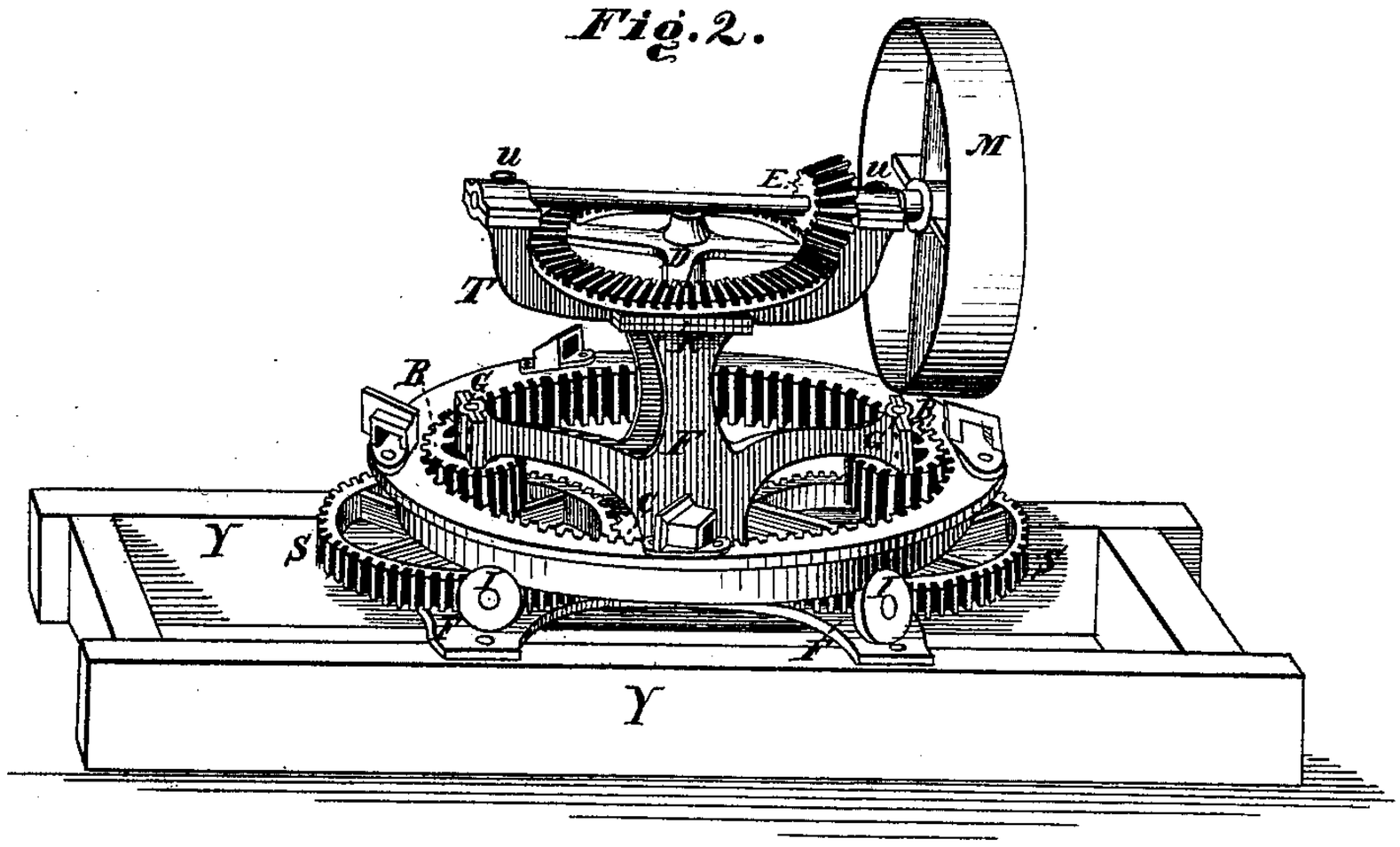


Fig. 3.

Fig. 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

ARTHUR B. FARQUHAR, OF YORK, PENNSYLVANIA.

IMPROVEMENT IN HORSE-POWERS.

Specification forming part of Letters Patent No. 126,386, dated May 7, 1872.

To all whom it may concern:

I, ARTHUR B. FARQUHAR, of York, county of York, State of Pennsylvania, have invented certain Improvements in Horse-Powers, of which the following are the specifications:

The object of my invention is to obtain a horse-power from which motion can be conveyed in the usual manner by a horizontal shaft, over which the horses pass, and in the same machine, by placing the bevel-wheel and its pinion above the frame, which in the first case were below, in such a manner that motion can be transmitted in a vertical or any oblique direction; to have the frame which carries the gearing made in one piece, thereby avoiding joints and the danger of their coming loose and deranging the working parts; supporting the master-wheel upon grooved rollers, placed at an angle to the horizontal, in such a manner that both the weight and lateral strain of the master-wheel are supported upon them; also, the arrangement of the jack with the power in such manner that by the shifting or changing of a coupling two or more different rates of speed may be given to the belt-wheel thereof.

In the accompanying drawing, Figure 1 represents the horse-power with horizontal shaft below. Fig. 2 represents the power with bevel-gear and belt-wheel above. Fig. 3 represents the geared jack.

The master-wheel A is a substantial iron rim having converge or internal gear, with suitable sockets for holding the levers K. B B are the pinions gearing into the master-wheel, and fastened upon the same shaft or axle with the wheels S S. These wheels, in turn, gear to the center pinion C, keyed to the vertical shaft, that also carries the bevel-wheel D. This shaft is supported at its lower end by a stop-box, and at its upper end by a bearing in the raised part of frame F. The bevel-wheel D is held into gear with its pinion E by a set-screw, H, at top of shaft, upon which the bevel-wheel is hung. By this arrangement the necessity for a slide or roller bearing upon the rim of wheel D is obviated, saving the power usually consumed in overcoming friction caused by such appliances. The journals of shaft carrying bevel-pinion E run in boxes bolted to the frame F, all other journals being supported directly by said frame. I I are the rollers, of which there should be four. The shafts or axles upon which they are hung are inclined to the horizontal at or about an angle of forty-five degrees, their position being such that the master-wheel A, resting in a suitable groove in the said rollers, will be supported, and, as it revolves, held concentrically with the center pinion C. The boxes G G, on the projecting arms of the frame F, carry the upper journals of pinion B B and wheels S S, the lower journals of the same running in step-boxes in under part of said frame F. The shaft J, connecting with and receiving motion from the bevel-pinion E, is coupled to the shaft of wheel O of the jack, Fig. 3, and by the gear-wheel O and pinion N motion is given to the belt-wheel M.

The arrangement of the gearing is such that the wheel M, when driven as above, will have a velocity suitable to drive a thrashing-machine, or other machine requiring a high speed. By coupling shaft J to the end of shaft N a slower rate of speed is given to wheel M, suitable for ginning cotton; and while the shaft is thus coupled the wheel M may be placed on the end of shaft O, thus obtaining a still slower motion. By removing the journal-box at H, and fastening in its place to the frame F the arms T supporting the boxes U U, the bevel-wheel D and its pinion E can be removed from below and placed as shown in Fig. 2. The belt-wheel M being hung on either end of shaft of pinion E, the belt therefrom may be carried vertically or obliquely, as desired, and the arms T fitted to frame F by a round socket and flange. The said arms T, carrying shaft and pinion E, can be turned to and held in any desired position with respect to the sills Y Y, by which arrangement motion can be transmitted in any direction.

Double or triple geared powers are not new, their use being common; but great as their superiority over other horse-powers has been, serious defects still existed. The object of this invention is to overcome these difficulties.

I claim—

1. The grooved rollers I I I I, when constructed and arranged substantially as and for the purpose set forth.

2. The arrangement of the bevel-wheel D and pinion E so that they can be used either below the frame in the usual manner or above the frame and gearing, substantially as and for the purpose set forth.

3. The arms T, connected to the frame F by a swivel-joint, allowing belt wheel or wheels to be set in any position, substantially as and for the purpose set forth.

A. B. FARQUHAR.

Witnesses present:

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