

R. W. BENEDICT

HORSE-POWERS.

No. 180,828.

Patented Aug. 8, 1876.

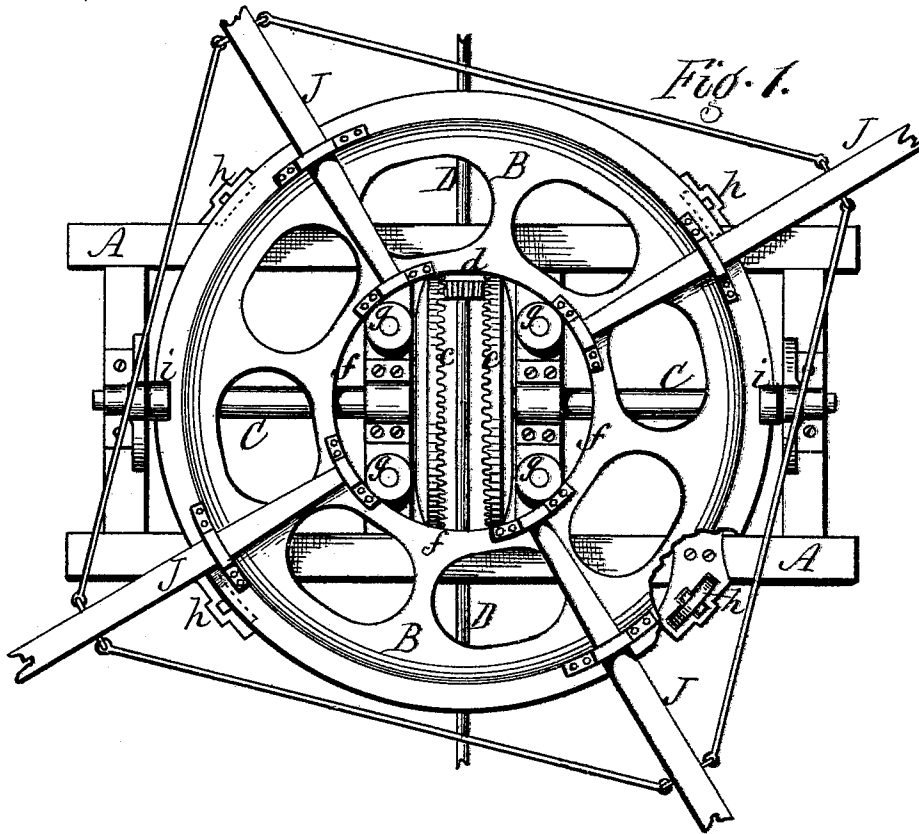
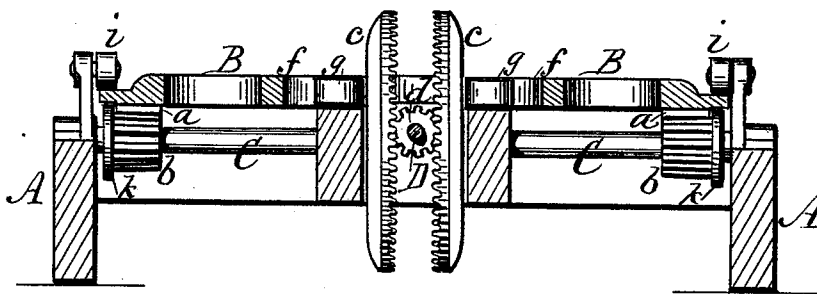


Fig. 2.



Witnesses.
E. P. Scott.
Abner Bumbank

Inventor.
Richard W. Benedict,
by R. F. Osgood
Atty.

UNITED STATES PATENT OFFICE.

RICHARD W. BENEDICT, OF PERRY, NEW YORK.

IMPROVEMENT IN HORSE-POWERS.

Specification forming part of Letters Patent No. **180,828**, dated August 8, 1876; application filed December 10, 1875.

To all whom it may concern:

Be it known that I, RICHARD W. BENEDICT, of Perry, in the county of Wyoming and State of New York, have invented a certain new and useful Improvement in Horse-Powers; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a plan. Fig. 2 is a central vertical section.

My improvement relates to horse-powers in which a horizontal toothed driving-wheel is used to give motion to the tumbling-rod by means of center-gears attached to short shafts gearing at the outer end with the driving-wheel. The invention consists, essentially, in constructing the driving-wheel with a central eye or opening to receive the center-gears, and combining with the same a system of friction-rollers, as hereinafter described.

A represents the frame, which may be either stationary or mounted. B is the driving-wheel, having a cog or tooth rim, *a*, on its under side and near its periphery. CC are short shafts located under the driving-wheel, having pinions *b b* at the outer ends, which engage on opposite sides with the cog-rim *a*, and having bevel-gears *c c* at the inner end, between which is located the pinion *d* of the tumbling-rod D. The gears *c c*, engaging with the tumbling-rod pinion *d* on opposite sides, balance the same, thereby making the power more effective, and producing the minimum amount of friction. The driving-wheel is operated by the usual sweeps or levers J J. Thus far the machine is of ordinary construction. The center-gears *c c* are necessarily of considerable size, in order to give sufficient motion to the tumbling-rod. Heretofore, in order to give space for said gears, the driving-wheel B has been made arching or concave on its under side, thereby forming a chamber for the center-gears, and a short spindle or shaft attached centrally on its under side has been made to rest in a step or bearing of the frame elevated above the gears *c c*. The driving-wheel in that case is made entire or with no opening in the center. This has been necessary, because no means have been known by which a flat

wheel could be used. Undue weight of the driving-wheel is thus produced, and the hanging of the same in an elevated step is both expensive and difficult to attach and is deficient in strength; and furthermore a wheel so hung, with its bearing elevated above the line of draft, produces great friction and strain, and is unequal in action.

To obviate these difficulties, I construct the driving-wheel B flat, or nearly so, and form in the center an eye or opening, *f*, of sufficient size to allow the gears *c c* to pass through, as shown in Fig. 1. In this opening are friction-rollers *g g g g* resting on cross-pieces of the frame A, and bearing against the inner periphery of the driving-wheel, to keep the same properly centered. On the quarters are four friction-rollers, *h h h h*, which rest under the rim of the wheel for supporting the same, and on top and in line with the shafts CC are two upper rollers, *i i*, resting on the flange, which keeps the wheel down to its work. The inner periphery of the wheel thus forms the rolling-surface resting against the friction-rollers *g*, and no other bearing is required for keeping the wheel centered. The friction is also greatly reduced over a spindle and step. These rollers take the great strain in action—the top and bottom rollers only preventing vertical movement in either direction.

By this means the center-gears have ample room and full play, while the driving-wheel is firmly seated, and, being flat, it is light and occupies less space, there is less cost in construction, and, its center bearings being in line with the draft-levers, there are less strain and binding than in other machines of the class.

I am aware that driving-wheels have before been used, consisting of simple rings, toothed to give motion to the gearing, but used in different kinds of powers from that above described. I design to have only sufficient space at the eye to allow passage of the center-gears, and by this means I bring the friction-rollers *g g* as near as possible to the center of the driving-wheel, which is desirable to reduce friction and lessen the strain.

I construct the outer pinions *b b* on the shaft CC with flanges or rims *k k*, which rest under the flange of the wheel, and thus form rollers additional to the rollers *h h* resting un-

der the wheel. These flanges are not so much to form friction-rollers as to prevent undue friction and binding between the teeth of the cog-rim *a* and pinions *b*. At these points, where the wheel passes under the upper rollers *i i*, the unequal action is likely to force the cog-rim down forcibly upon the pinions at intervals, especially if the power is greater on one side than on the other, or if the drawing-strain is upward. These flanges obviate all difficulty of the kind.

Having thus described my invention, I do not claim, broadly, a cog-rim resting on guides, and giving motion to the gearing in a horse-power.

I claim—

In a horse-power, the combination, with the master-wheel *B*, provided with the eye *f*, of the center-rollers *g g g g* bearing against the inner periphery, the quarter-rollers *h h h h* bearing under the rim, and the intermediate rollers *i k* embracing the rim in line with the pinions *b b*, as and for the purpose specified.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

R. W. BENEDICT.

Witnesses:

PHEBE ANN CALKINS,
CYRENA HIGGINS.