R. S. LEGETT.

Horse-Power.

No. 212,854. Patented Mar. 4, 1879.

Fig. 1.

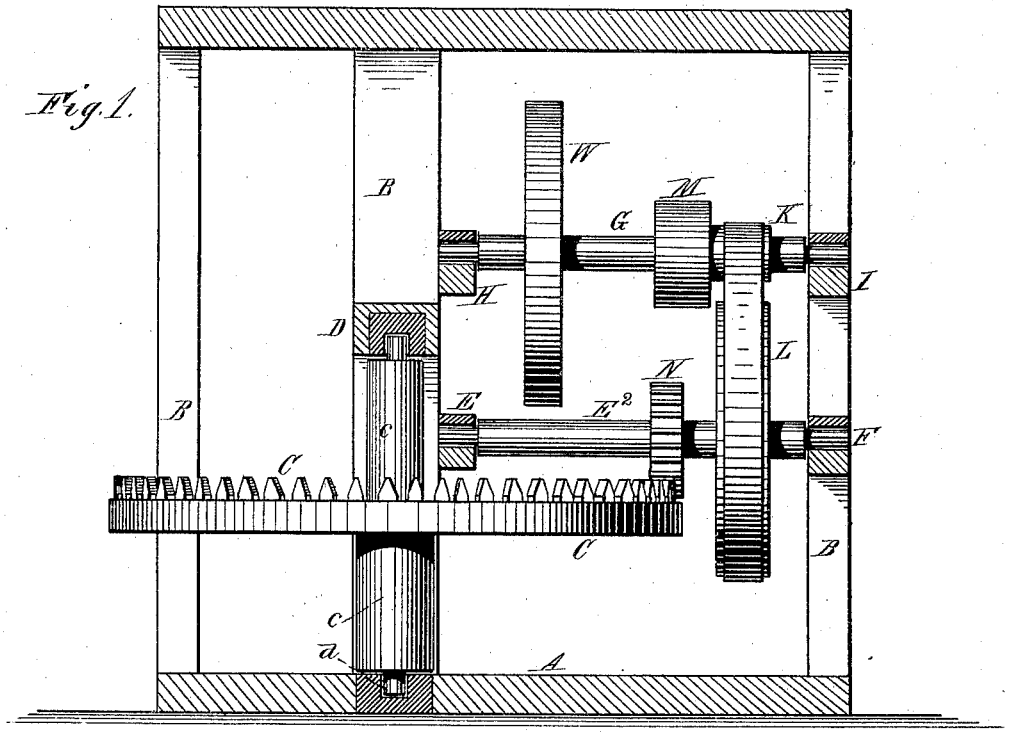
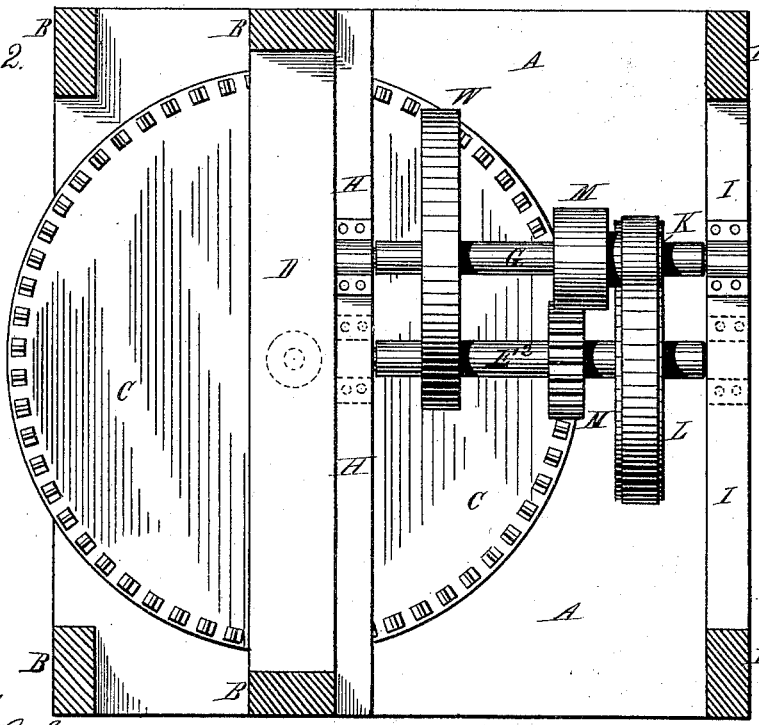


Fig. 2.



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UNITED STATES PATENT OFFICE.

ROBERTSON S. LEGETT, OF RED BLUFF TOWNSHIP, MARLBOROUGH COUNTY, SOUTH CAROLINA, ASSIGNOR OF ONE-THIRD HIS RIGHT TO WILLIAM L. LEGETT, OF SAME PLACE.

IMPROVEMENT IN HORSE-POWERS.

Specification forming part of Letters Patent No. **212,854**, dated March 4, 1879; application filed December 20, 1878.

To all whom it may concern:

Be it known that I, ROBERTSON S. LEGETT, of Red Bluff township, county of Marlborough, and State of South Carolina, have invented certain new and useful Improvements in Horse-Powers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Figure 1 is a partial section and elevation of my improved machine upon a plane passing through the axis of the drive-wheel and through the axis of the main belt-wheel. Fig. 2 is a plan view, showing the relative location and arrangement of the several operating parts.

Like letters in both figures indicate corresponding parts.

My invention has relation to that class of machines which are propelled by animal-power, the several improvements being specially adapted for use in such machines of this general class as are ordinarily intended to remain stationary; but they may easily be applied to the portable machines by providing any convenient and desirable attachments to facilitate transportation.

Heretofore in the class of machines to which my invention pertains great loss of power has resulted from the inertia of the parts; and where this has been partially obviated by the application of a balance or fly wheel, this balance has of necessity been exceedingly small, owing to the compact arrangement of the essential elements of the machine and their relative location. Much dependence has also been placed upon the fact that the machinery to be driven through the medium of the animal-power is itself ordinarily provided with a balance of some character. This balance, of course, is intended and proportioned specially for the machine to which it is applied, and has no reference to the power-supplying apparatus. This latter might be, for instance, an eight-horse power, and it might be desired to drive with it an ordinary fanning-mill not requiring more than one-horse power. In this instance the balance would manifestly be greatly disproportioned to the combined system, and could not beneficially act for the desired end. Therefore it is the object of my invention to so arrange the several parts of the power as to accommodate a balance of sufficient size and weight which shall be always one element of the machine, and at the same time the number of gears, &c., be reduced to a minimum, and the parts made to run easily and smoothly, while suitable means are provided for an easy and convenient coupling of the power with the machinery to be driven.

To accomplish all of this the invention consists in certain relative arrangements or combinations of parts, all of which will be hereinafter first fully described, and then pointed out in the claims.

In the drawings, A represents the base or bed of the machine, which, in the portable variety, may be made of planking, or of base timbers so united as to afford the requisite foundation for the frame, or in the stationary machines may be a portion of the cellar-bottom or other flooring. Upon this base I erect the standards B B, &c., which are firmly braced at top, and which serve as supports for the cross-pieces necessary to maintain the several journals in proper position.

The drive-wheel C is in the shape of a crown-wheel, the cogs uppermost, and its shaft *c* is securely stepped at bottom, as at *d*, and held firmly in place at top by a suitable gudgeon located in the horizontal brace D, which extends between the two central uprights B B.

Two horizontal braces, E and F, support the journals for the pinion-shaft E^2, which shaft is so located as to lie in a radial direction with respect to the crown or drive wheel, and made sufficiently long to accommodate a band-wheel between the drive-wheel and the outside frame-timbers. Parallel with the shaft E^2 is a second shaft, G, suitably journaled in the horizontal braces H I. This second shaft supports the band-pulley K immediately over or at least in the same vertical plane with band-wheel L, the driving-pulley M, from which the power is to be transmitted, about in the same vertical plane with the pinion N, and between brace H and pulley M the balance-wheel W, which is only limited in size by the distance between shafts E^2 and G. Manifestly

this distance may be varied in accordance with the size of the machine; and the arrangement affords an opportunity for applying the proper size of balance-wheel without interfering in any way with the other working parts.

The animals are yoked or hitched to the drive-wheel at some convenient point beneath it or upon its circumference, said wheel being elevated sufficiently upon its shaft to accommodate them.

The location of the band-wheel L between the drive-wheel and the frame-timbers enables me to make this wheel of ample size, so that any desired change of speed may be effected by simply varying the size of wheel K, and the larger the band-wheel L the more room will be afforded for wheel W.

To make the machine portable it will only be necessary to provide the base with axles, upon which traveling wheels may be conveniently mounted.

In ordinary gin-houses where horse-power is used, it is customary to locate the shaft corresponding with G and its pulleys K M, together with a balance-wheel, upon the second floor, while the drive-wheel is located on a lower floor or on the ground; and the arrangement is thereby cumbersome and not readily accessible.

The dimensions of the several parts are, of course, no material feature of the invention; but the arrangement shown enables me to make them about as follows: Drive-wheel, ten feet in diameter; pulley K, fifteen inches; pulley M, twenty-six inches; band-wheel L, eight feet, and the balance six feet, or even more, if desired. These proportions have been found practically to give the best results.

The location of the horizontal brace D about midway between the top and bottom of the machine enables me to make the shaft *c* about half its ordinary length, and in consequence the drive-wheel C is little liable to spring out of true position; and to insure a positive and unyielding as well as steady motion of the several parts the drive-wheel is toothed or cogged, as shown, and these cogs mesh with the corresponding cogs upon the driving-pinion N.

If the pinion-shaft be mounted in adjustable bearings, as is necessary in machines of this character which have heretofore been constructed so as to run by frictional contact of the drive-wheel with the pinion, the shaft cannot be held firmly enough in proper position to insure at all times a steady motion, and the frame is not well braced or compact in such styles of machines, nor is the motion positive, as is desirable. The slipping of the pinion upon the drive-wheel is a serious objection.

The two central uprights, B B, form convenient stays not only for the general frame-work, but for the cross-braces D and H, which braces also add to the rigidity of the general structure.

The general arrangement above explained is found to be compact, simple, cheap, not liable to disarrangement of parts, and to fully answer the several purposes and objects of the invention, as previously stated.

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

1. In a machine of the character herein specified, the combination, with the drive-wheel, having teeth or cogs upon its upper surface, of a cog-pinion mounted upon the band-wheel shaft, which shaft is supported upon rigid cross-pieces, said drive-wheel being pivoted or stepped at top in a rigid cross-bar located below the upper frame-work, and the balance-wheel shaft being journaled in cross-braces of the frame, the several parts being arranged to communicate a steady and positive motion, substantially as shown and described.

2. In combination with the two central uprights, B B, the horizontal brace D, extending between them and supporting the extremity of the driving-shaft at a point below the top of the frame-work, the band-wheel and fly-wheel shafts being each mounted in rigid braces, and the whole adapted to secure rigidity of the frame-pieces and positive and uniform motion of the operating parts, substantially as shown and described.

3. The herein-described animal-power, composed of the frame-work having the central and end uprights, B B, &c., toothed drive-wheel C, toothed pinion N, band-wheel L, pulley K, pulley M, balance-wheel W, and the corresponding shafts E^2 and G, mounted upon immovable horizontal cross-braces, the several parts being combined and arranged so as to insure rigidity of frame and positive uniform motion of the operating parts, as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand and seal in the presence of two witnesses.

ROBERTSON S. LEGETT. [L. S.]

Witnesses:
ANGUS BLUE,
J. S. CROUCH.