C. E. MACARTHY.

Horse-Power.

No. 209,699. Patented Nov. 5, 1878.

Fig. 1.

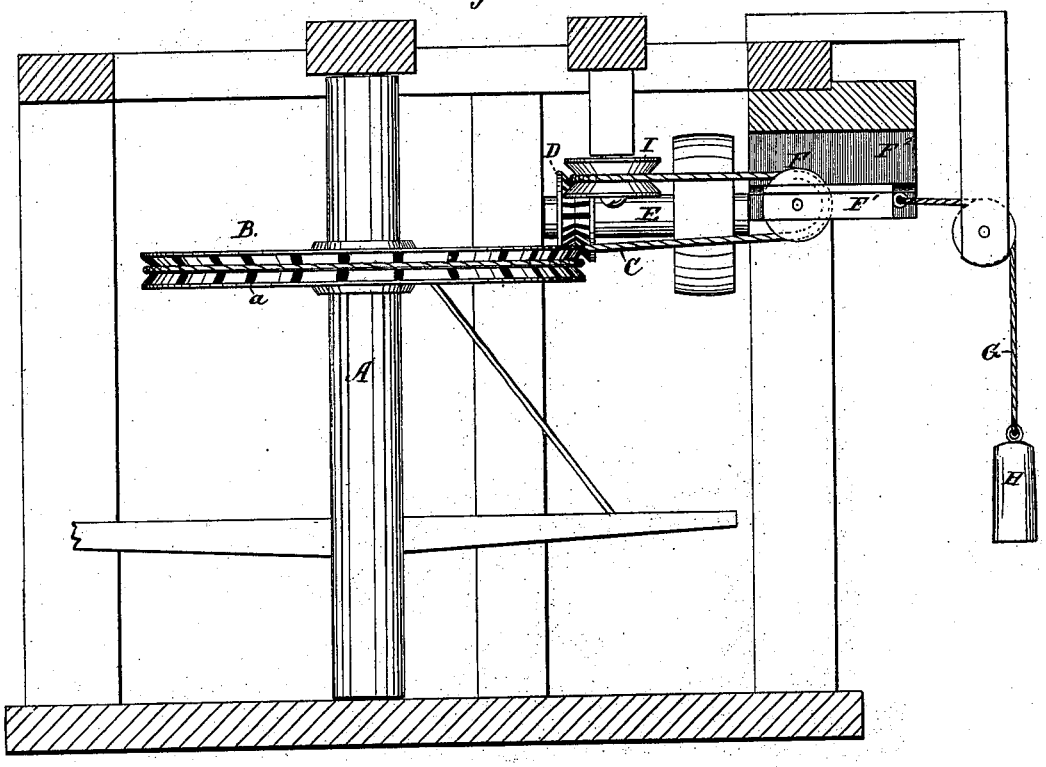


Fig. 2.

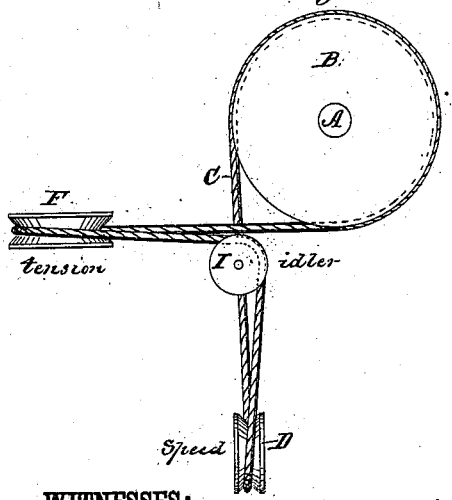


Fig. 3.

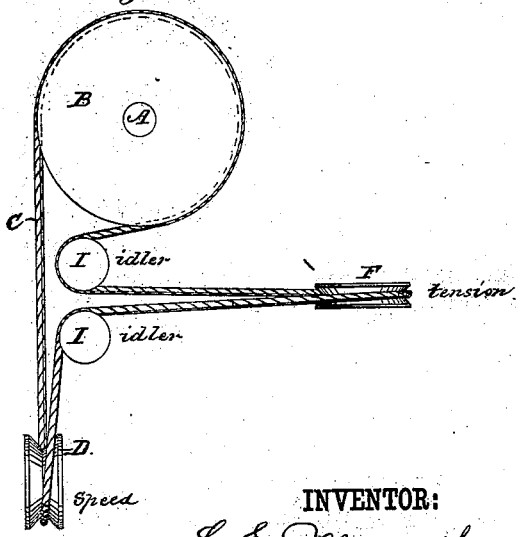
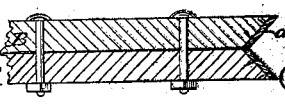


Fig. 4.



WITNESSES:

W. W. Hollingsworth

Edw. M. Byrn.

INVENTOR:

C. E. Macarthy

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

CHARLES E. MACARTHY, OF FORSYTH, GEORGIA.

IMPROVEMENT IN HORSE-POWERS.

Specification forming part of Letters Patent No. **209,699**, dated November 5, 1878; application filed October 30, 1878.

To all whom it may concern:

Be it known that I, CHARLES E. MACARTHY, of Forsyth, in the county of Monroe and State of Georgia, have invented a new and Improved Horse-Power; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation with the frame-work in vertical section. Fig. 2 is a top or plan view of the arrangement of the gearing. Fig. 3 is a similar view of a modification of the invention. Fig. 4 is a sectional detail, showing construction of master-wheel and speed-wheel.

My invention relates to an improvement in horse-powers designed more particularly to be located beneath a gin-house for ginning cotton, but applicable for all purposes for which a horse-power is ordinarily employed.

The invention is an improvement upon the type of horse-powers shown in my previous patents, granted March 26, 1878, and July 30, 1878, in which an endless rope belt passes around a master-wheel and transmits power to the speed-pulley.

The novelty of the present invention consists in the peculiar arrangement of pulleys in relation to the belt and master wheel, in which I combine a horizontal master-wheel, a speed-wheel, (arranged in a vertical plane at right angles to the master-wheel,) and a tension-pulley, arranged in a vertical plane and at right angles to both the master-wheel and the speed-wheel, and adapted, in connection with one or more idler-pulleys, to distend the belt in a direction laterally to the line of belt running from the master-wheel to the speed-wheel, as hereinafter more fully described.

In the drawings, A represents the king-post, arranged in bearings at the top and bottom, and provided below with laterally-projecting levers for the attachment of the team.

Near the top of the king-post, and beneath the gin-house, is rigidly attached a master-wheel, B, having around its periphery a V-shaped groove to receive a rope belt, C. This groove I prefer to make V-shaped, so that the rope may bind with a wedging action into the same to increase the frictional contact.

D is the speed-wheel, fixed rigidly upon a revolving shaft, E, carrying a band-pulley, for connection with the machinery to be driven. This speed-wheel is arranged at right angles to the master-wheel, and in a vertical plane, which is a tangent to the master-wheel.

F is the tension-pulley, which is arranged in a sliding carriage, F^1, moving in guides F^2. This pulley F is strained with a constant tension to tighten the belt by a cord, G, attached to its carriage, and passing over a friction-pulley, with a weight, H, attached to its lower end. Said tension-pulley is arranged in a vertical plane at right angles to the plane of both the speed-wheel and master-wheel, and is adapted to distend the belt in a direction lateral to the line of belt coming from the master-wheel to the speed-wheel.

In changing the plane of the portion of the belt passing between tension and speed pulleys an idler-pulley, I, is employed.

Now, in running the gearing, it will be seen (see Fig. 2) that the belt passes from the vertical plane of the speed-pulley to the master-wheel, around which it moves in a horizontal plane. Leaving the master-wheel, it passes at right angles to the line of belt extending from the speed-wheel to the master-wheel, and then passes in a vertical plane around the tension-pulley. It then turns in a horizontal plane at the idler-pulley at right angles, and comes again into the vertical plane of the speed-wheel.

As a modification of my invention, instead of arranging the tension-pulley to the left and using one idler, as in Fig. 2, I may arrange said tension-pulley to the right and employ two idlers, as in Fig. 3, the general arrangement of the several wheels and pulleys and their operation in connection with the belt being the same.

The chief advantage secured by my herein-described improvement is, that a much lighter weight supplies the necessary tension for the tension-pulley, and less slackway is found to exist in the rope belt.

In constructing the master-wheel and speed-wheel, I take two disks of wood, beveled upon their peripheries in opposite directions, and fasten them together with bolts, as in Fig. 4, so that their beveled edges give a V-shaped

groove. Now, to prevent the V shape from wearing round by the friction of the rope, which roundness would cause the belt to slip, I set into the V-shaped groove, at close intervals, steel wearing-surfaces *a*, which are arranged flush with the V-shaped groove, and are secured by screws. This always preserves the V shape for the groove in the master-wheel and speed-wheel, and hence always secures a firm and positive frictional contact between the rope and the wheel.

Having thus described my invention, what I claim as new is—

The combination, with the master-wheel and the speed-wheel, arranged in planes at right angles to each other, of the endless rope belt and the tension-pulley, arranged in a plane at right angles to both the master-wheel and speed-wheel, and adapted, in connection with one or more idlers, to distend the belt in a direction laterally to the line of belt running from the speed-wheel to said master-wheel, substantially as and for the purpose described.

C. E. MACARTHY.

Witnesses:
SOLON C. KEMON,
W. H. KIRSCH.