2 Sheets—Sheet 1.

T. C. BETTIS & J. W. HEATH.

Horse-Power.

No. 204,185. Patented May 28, 1878.

Fig. 1.

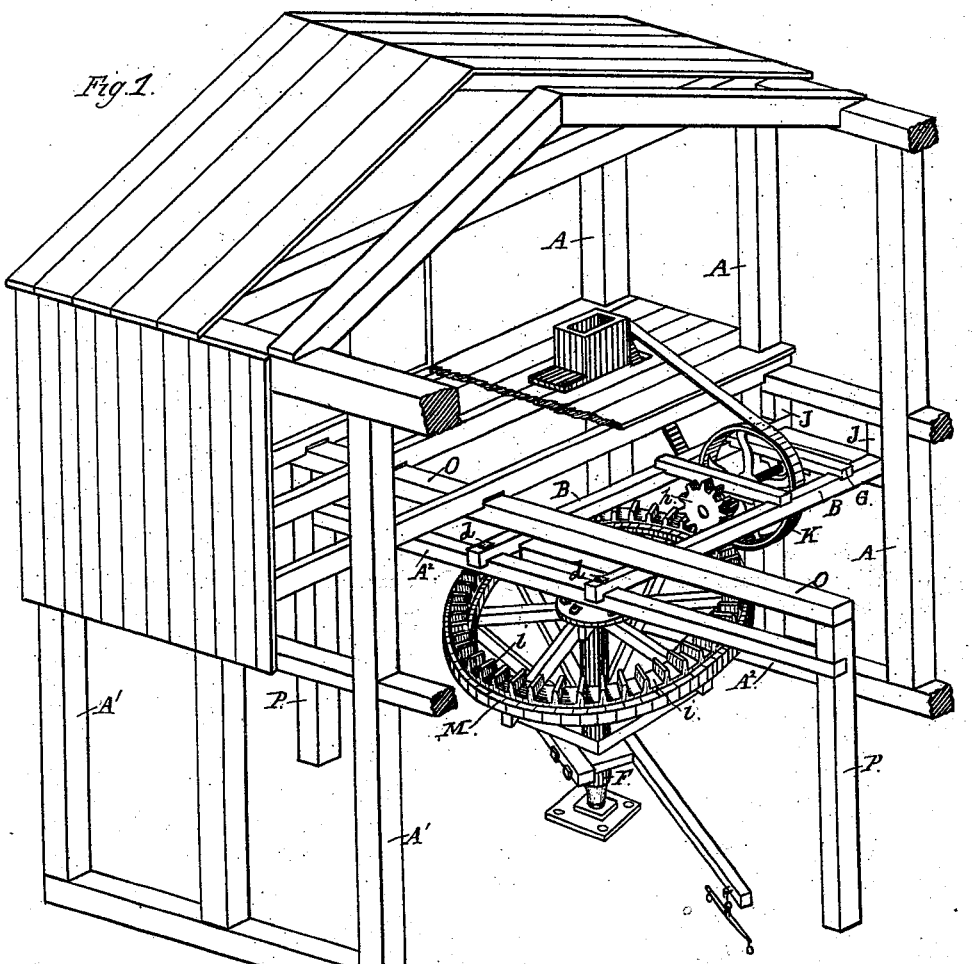
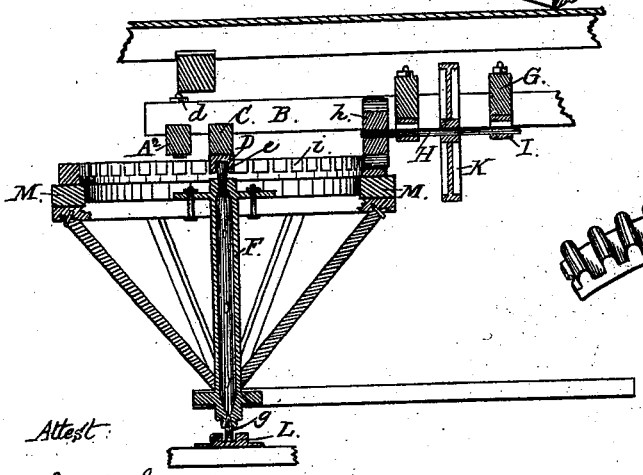


Fig. 2



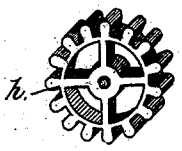
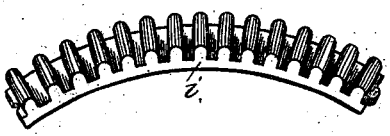


Fig. 3.



Attest:

Geo. T. Smallwood Jr.

Chas. J. Gooch

Inventors:

Tillman C. Bettis & James W. Heath.

By Knight Bros

Attys.

2 Sheets—Sheet 2.

T. C. BETTIS & J. W. HEATH.

Horse-Power.

No. 204,185. Patented May 28, 1878.

Fig 4

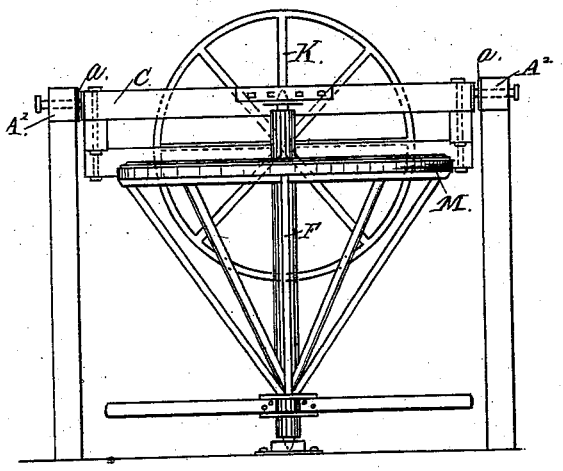
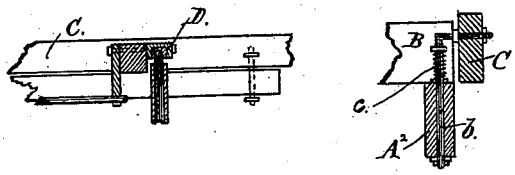


Fig. 5.



Attest:

Geo. T. Smallwood Jr.

Chas J. Cook

Inventors:

Tillman C. Bettis & James W. Heath.

By Knight Bros

Attys:

UNITED STATES PATENT OFFICE.

TILLMAN C. BETTIS AND JAMES W. HEATH, OF MEMPHIS, TENNESSEE, ASSIGNORS TO RANDLE, HEATH & LIVERMORE, OF SAME PLACE.

IMPROVEMENT IN HORSE-POWERS.

Specification forming part of Letters Patent No. **204,185**, dated May 28, 1878; application filed April 10, 1878.

To all whom it may concern:

Be it known that we, TILLMAN C. BETTIS and JAMES W. HEATH, both of Memphis, in the county of Shelby and State of Tennessee, have invented certain new and useful Improvements in Horse-Powers, of which the following is a specification:

Our invention relates to that class of horse-powers in which the power is obtained from one or more horses attached to the ends of levers or arms projecting from a wheel or shaft having a vertical axis, around which the horses walk in a circle. Horse-powers of this old style are extensively used for driving cotton-gins and other machinery which is located on the second floor of a building.

Adjustable gearing, central supports, and various other expedients have been devised to overcome the difficulties arising from the carrying of loads on the second floor, which interferes with the operation of the horse-power as ordinarily constructed, and frequently causes damage or breakage of machinery. We overcome the difficulty by providing a frame independent of the building-timbers, except at one end, where it is firmly supported by posts, which frame remains stationary, while the timbers forming and supporting the upper floor may rise and fall with a varying load without affecting the independent horse-power frame or the machinery attached thereto, at the same time retaining the old style of machinery, which is simple, cheap, and easily kept in order.

Our invention further consists, in combination with the said independent-frame horse-power, of rolling tooth-gearing, which adapts itself to any irregularity or change in the position of the parts, and works successfully even though the shaft be out of line.

In the accompanying drawings, Figure 1 is a perspective view of our independent-frame horse-power as applied within a building. Fig. 2 is a vertical section of the same. Fig. 3 is a perspective view, on a larger scale, of parts of the rolling tooth-gearing. Fig. 4 is an elevation of modified construction, and Fig. 5 represents detail views of the same.

A A^1 represent timbers constituting parts of the house-frame. B B are beams, attached to the cross-plate A^2 by bolts at *d*, independent of the main frame. Said beams are placed at a suitable distance apart, to allow the drum or pulley K to revolve between them, and are connected together by cross-ties, as follows: C is the cap or head-block, to which the combined box and bearing D are attached to support the end of master-shaft F, to which also the hanger and box E are attached to support the end of counter-shaft H. G is a bridge-tie, on which the other end of shaft H rests in box I. J are wedges, which are to bind and stiffen the horse-power frame.

The master-wheel shaft F is of cast-iron, with steel-pointed gudgeons *e* and *g* in each end, running in step L at bottom, and supporting the swinging frame on point of top gudgeon *e* to box D, as shown in detail in the drawing.

The horse-power frame is prevented from shifting laterally by means of the longitudinal beam O, secured at its ends to the posts P; or the same object may be effected, as illustrated in Fig. 4, by means of chafing-plates and set-screws *a a* secured to beams A^2 A^2 and end of cap or head-block C, as shown in Fig. 4, so as to allow the timbers A^2 A^2 to rise or fall as the weight on same may be diminished or increased without disturbing the gear of the machine. We also propose to use a bolt, *b*, with spiral spring attached to A^2 and C, as illustrated in Fig. 5, to prevent swinging frame from tilting.

M is the master-wheel; F, shaft for same, secured as before described. H is counter-shaft, on which the pinion *h* is fastened, working in segment *i* on master-wheel M. The bolt *b* and spring *c* are shown in detail, also the combined box D and gudgeon *e* for shaft.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination of the vertical master-shaft F and the independent frame B B, substantially as and for the purpose set forth.

2. The box D, cap C, and beams B, combined, substantially as set forth.

3. The combination of a vertical-shaft horse-

power, F M, an independent frame, B B, for supporting the upper journal of said horse-power, and building-frames A A^1, to which the horse-power frame or beams B are secured at one end, leaving them independent of said building-frame at the other end.

In testimony of which invention we hereunto set our hands this 24th day of November, 1877.

TILLMAN C. BETTIS.
J. WILSON HEATH.

In presence of—
JNO. J. SHEA,
HUGH B. CULLER.