

M. H. Cornell,

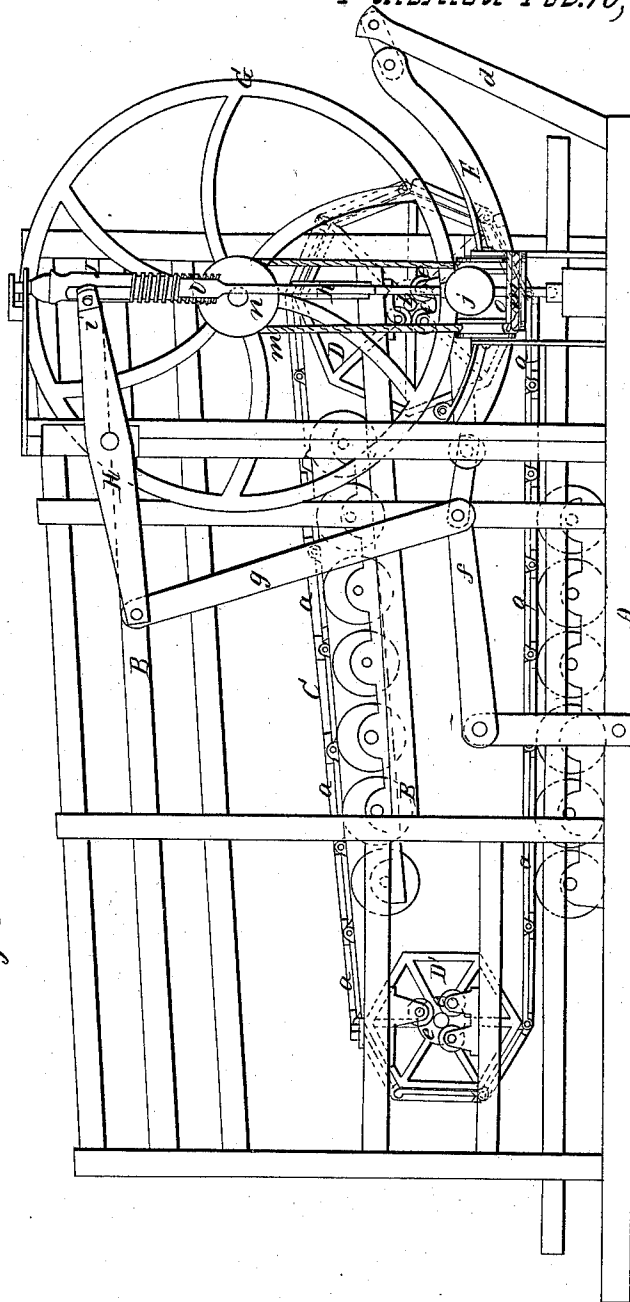
2 Sheets Sheet 1.

Horse Power.

N^o 8,717.

Patented Feb. 10, 1852.

Fig. 1.



2 Sheet. Sheet 2.

Horse Power.

Patented Feb. 10, 1852.



UNITED STATES PATENT OFFICE.

M. H. CORNELL, OF FEASTERVILLE, PENNSYLVANIA.

HORSE-POWER.

Specification of Letters Patent No. 8,717, dated February 10, 1852.

To all whom it may concern:

Be it known that I, MARTIN H. CORNELL, of Feasterville, in the county of Bucks and State of Pennsylvania, have invented a new and useful Improvement in Horse-Powers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form part of this specification, and in which—

Figure 1 represents a side elevation and Fig. 2 an end elevation of my improved self-regulating horse power.

In horse powers as generally constructed no efficient means are provided for regulating the speed; hence it frequently happens that when a portion of the machinery driven is thrown out of gear the remainder attains an inordinately high velocity from the increased speed of the horse, who, finding the load diminished, moves with greater speed.

The object of my invention is to obviate this defect and it consists in the combination of a governor and friction brake in such manner that as the speed increases beyond its proper limit the brake is brought into action to increase the resistance which the horse has to overcome.

The several parts of my horse power as represented in the accompanying drawings are all secured to a strong bed frame A upon which two side frames B B are mounted to support the moving platform C and the other parts of the mechanism. The platform is composed of an endless series of separate foot boards *a, a*, which are connected by links, which render it sufficiently flexible to enable it to pass easily around supporting drums. This platform is mounted upon two horizontal polygonal drums D, D', whose journals are supported upon friction wheel *e, e*. One of these drums (D) is larger than the other, and they are arranged in such relative positions that the lower faces of their barrels are at the same level, hence the upper portion of the platform supported by them is inclined while its lower portion is horizontal. The upper and lower portions of the platform are supported between the polygonal drums by friction wheels. The shaft *b* of the larger drum is fitted with a cogwheel E which gears into a pinion *c* secured to a shaft above. The latter is fitted with two fly wheels to equalize the motion, and constitutes the driving shaft from which the power exerted by the horse upon the plat-

form is taken off and transmitted by belts or otherwise to the machinery to be driven.

The apparatus for regulating the speed is situated in this instance at the side of the machine; it consists of a governor of peculiar form and of a friction brake. The friction brake consists of a curved beam F which embraces a portion of the rim of one of the fly wheels G, and is linked at one of its extremities to a standard *d* projected upward from the bed frame. Its opposite extremity is linked to a radius bar *f* and is also connected by a link rod *g* with the extremity of a lever beam H above. The opposite extremity *i* of this lever beam is forked to embrace a sleeve J which is constructed to slide upon the spindle of a governor K. The governor is supported in an erect position by suitable boxes in which the journals of its spindle are inserted. It is fitted with two fly balls *j, j*, whose rods are pivoted to the spindle. Above these ball rods are a pair of levers *k, k*, which are pivoted near their centers to the spindle and turn with it; their upper extremities are formed into jaws *l, l*, which embrace the lower extremity of the sleeve J. The latter has a screw thread cut upon it and the lever jaws have corresponding threads upon their adjacent faces, so that when the threads of the lever jaws are engaged with that on the sleeve, and the governor is revolving while the sleeve is prevented from revolving by the pins which connect it with the forked extremity of the lever beam, the threads of the jaws acting upon those of the sleeve will act as a nut to draw the sleeve downward, thus depressing the forked extremity of the lever beam and raising its opposite extremity and the friction brake connected therewith. The governor is driven by a belt or cord *m* from the fly wheel shaft, and the belt pulleys *n, o*, are of such relative sizes that when the platform, in moving, does not exceed the proper speed, the governor balls will not be sufficiently thrown out from the spindle to cause their rods to actuate the levers and force their jaws to embrace the sleeve. Hence at such a speed the brake will remain at rest in its lowest position out of contact with the fly wheel rim. If however the horse moves the platform beyond its proper speed the governor balls will diverge farther by reason of the increased speed imparted to the governor by the accelerated movement of the fly wheel shaft. As the balls diverge

their rods actuate the levers above, whose jaws close upon the sleeve and screwing it downward bring the friction brake in contact with the rim of the fly wheel, and thus check its speed by increasing the resistance to its motion. As the horse moderates his speed under the increased resistance the governor balls collapse, the lever jaws are released from the sleeve, and the friction brake drops to its lowest position, thus relieving the machine instantly of the extra resistance imposed upon it. In order to facilitate the action of the brake beam F it is lined with a spring bar which is fitted at its extremity with a friction roller *r*. This addition prevents the too sudden action of the brake and renders the pressure gradual and uniform.

The horse power I have thus described is well adapted to obtain the maximum effect which a horse can exert, for the platform drums are large and the arrangement of the whole driving apparatus upon friction rollers reduces the friction of the machine to such a slight amount that an inappreciable fraction of the power exerted by the horse will put the whole in motion. It is peculiarly adapted to the driving of light machinery where an excess of speed would endanger the machinery driven; and the solidity of the machine is such that it is not liable to breakage and consequently may be employed to drive the heaviest machinery to

which its power can be advantageously applied.

The machine represented in the accompanying drawing is constructed for a single horse but its dimensions may be increased to admit two or more horses as may be required. It is also obvious that the construction and arrangement of the governor and brake may be varied to suit particular cases or to meet the views of different constructors. A second friction brake should be applied to one of the fly wheels and should be connected with a hand lever by operating which the machine can, when required be quickly stopped by hand.

Having thus described my improved horse power what I claim therein as especially new and for which I solicit Letters Patent—

The method of regulating the motion by means of a brake worked by a governor constructed substantially as herein described so as to operate the brake with a force which increases with the velocity of the machine until the motion is checked and then instantly release the brake, so that no unnecessary labor may be imposed upon the animals when working at a proper speed.

In testimony whereof I have hereunto subscribed my name.

MARTIN HARRIS CORNELL.

Witnesses:

ROBERT BEANS,
LEMON BANES.