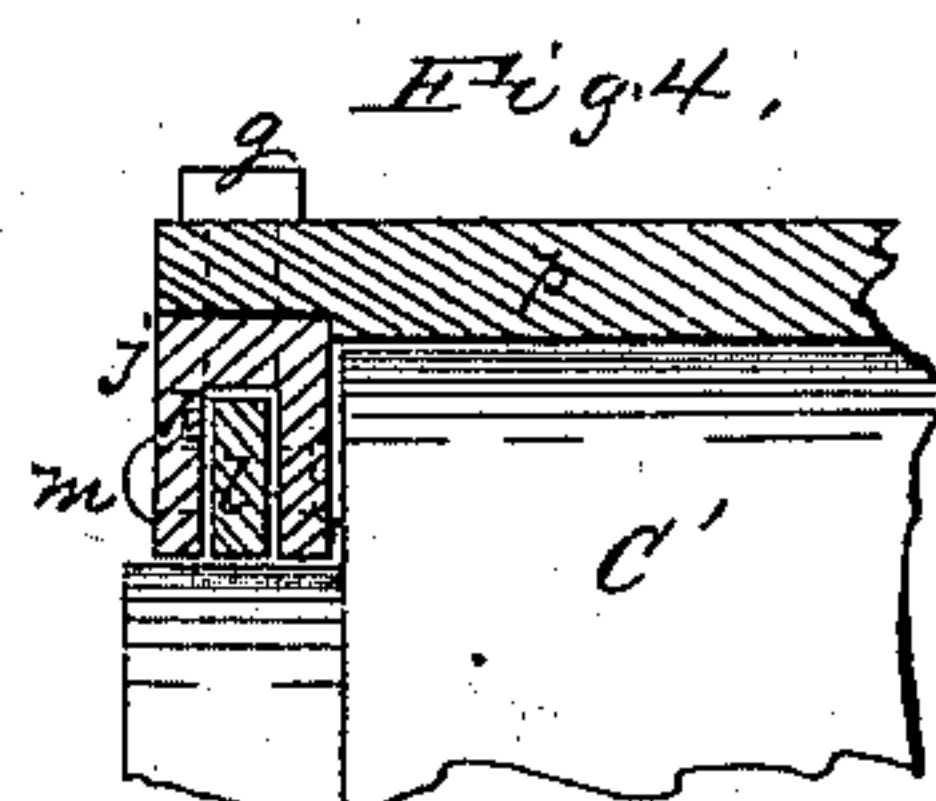
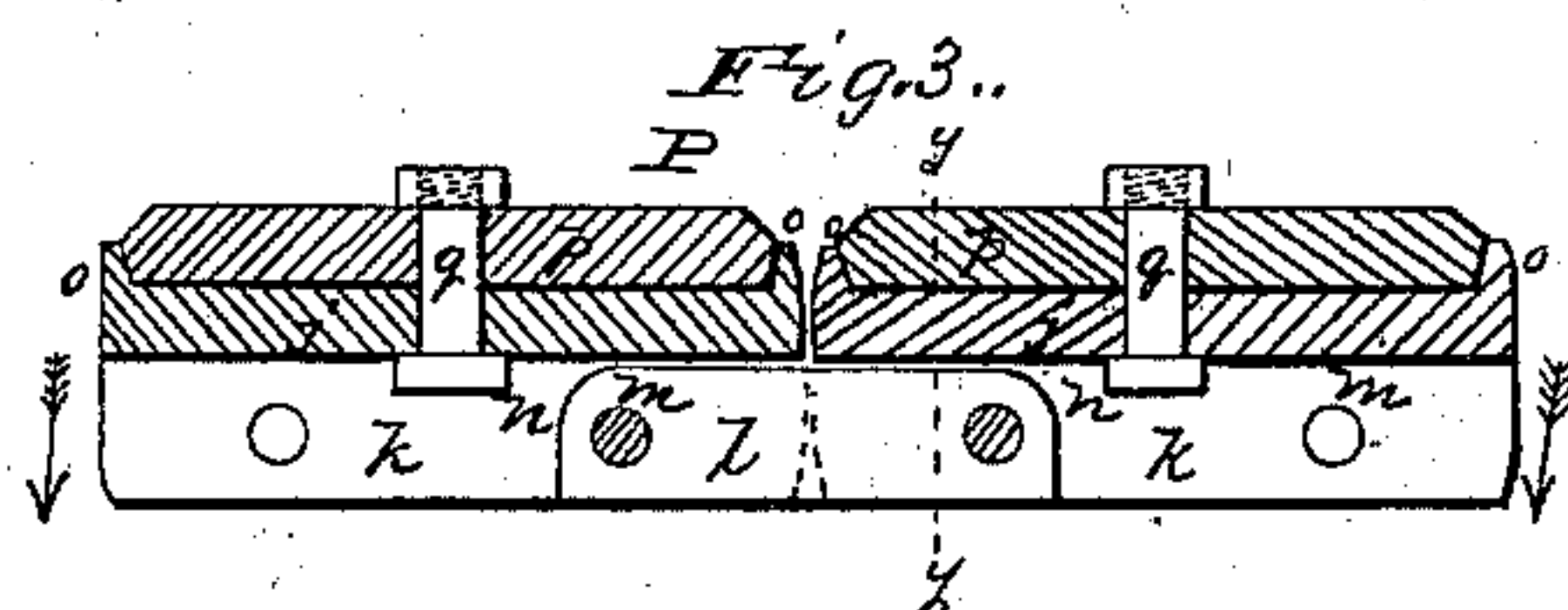
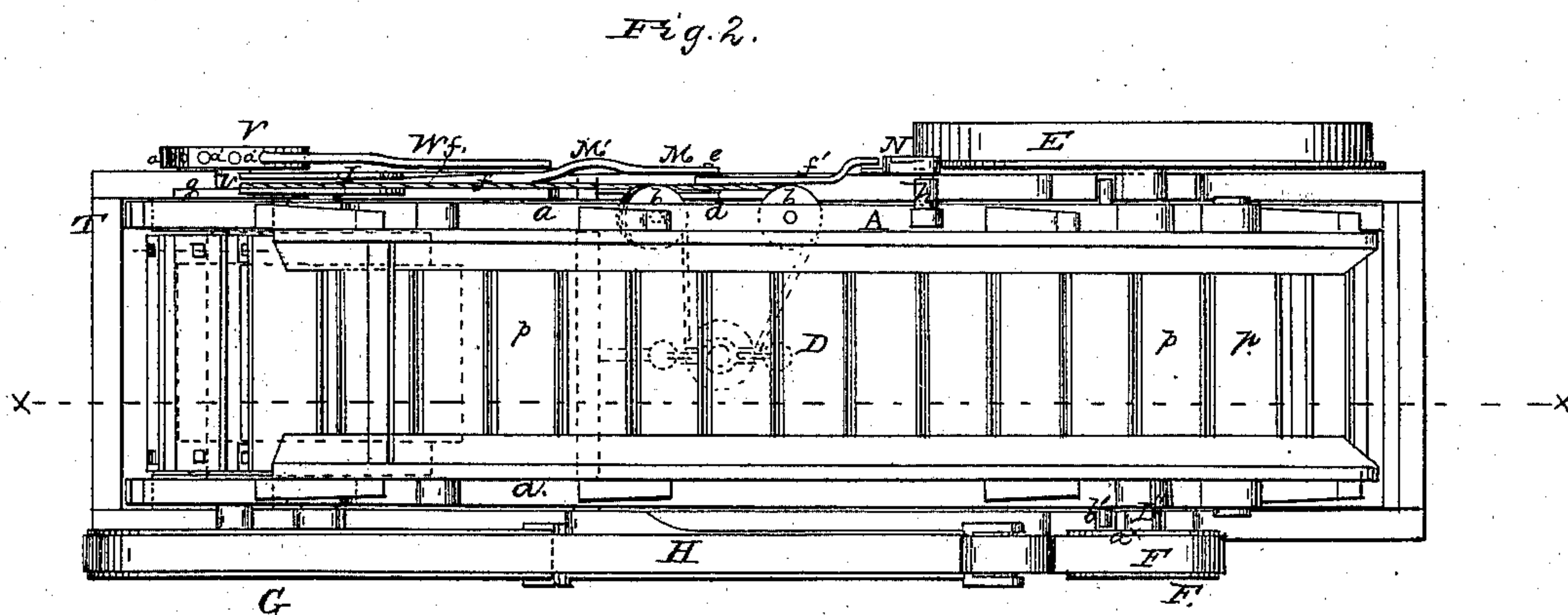
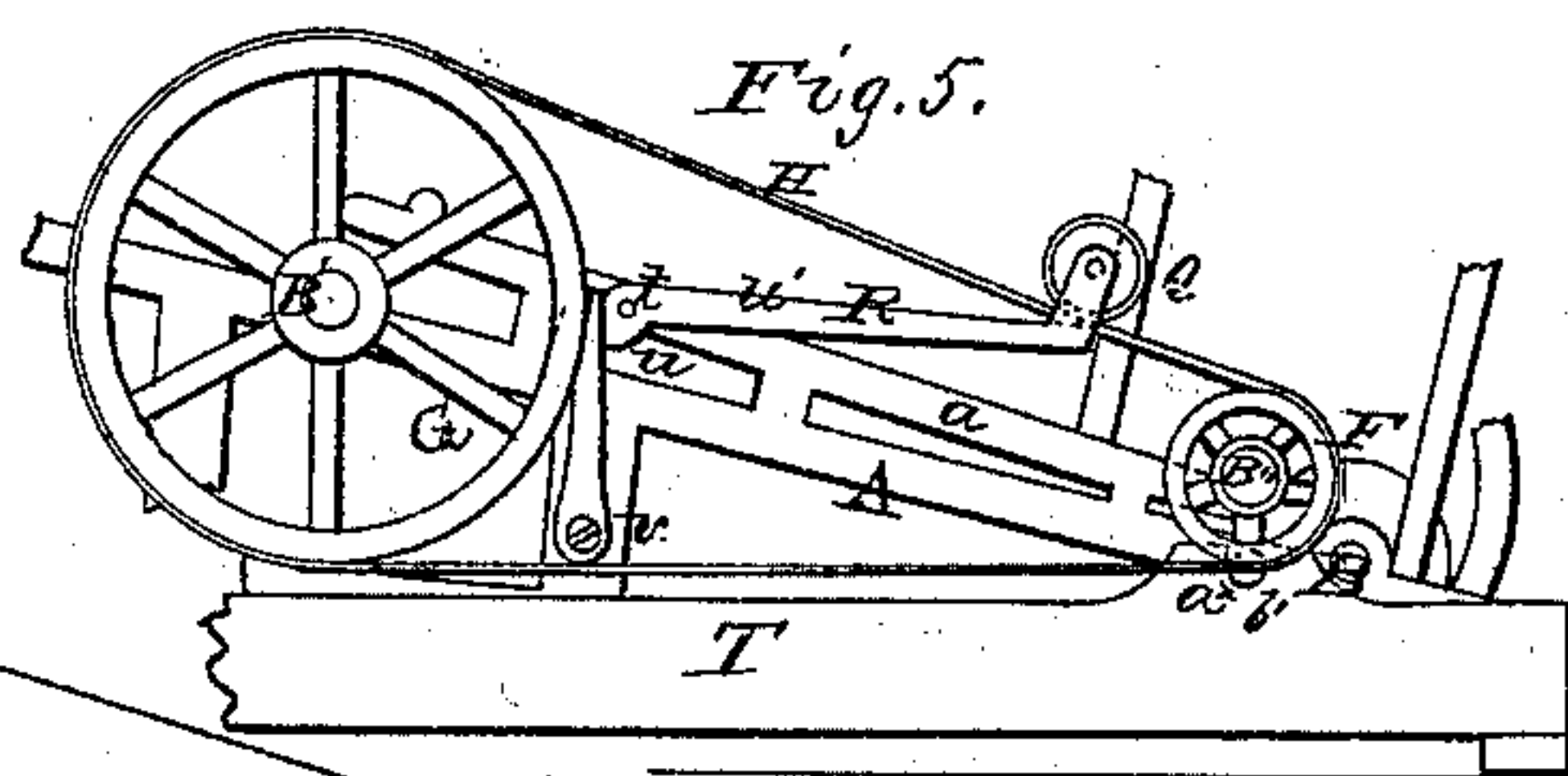
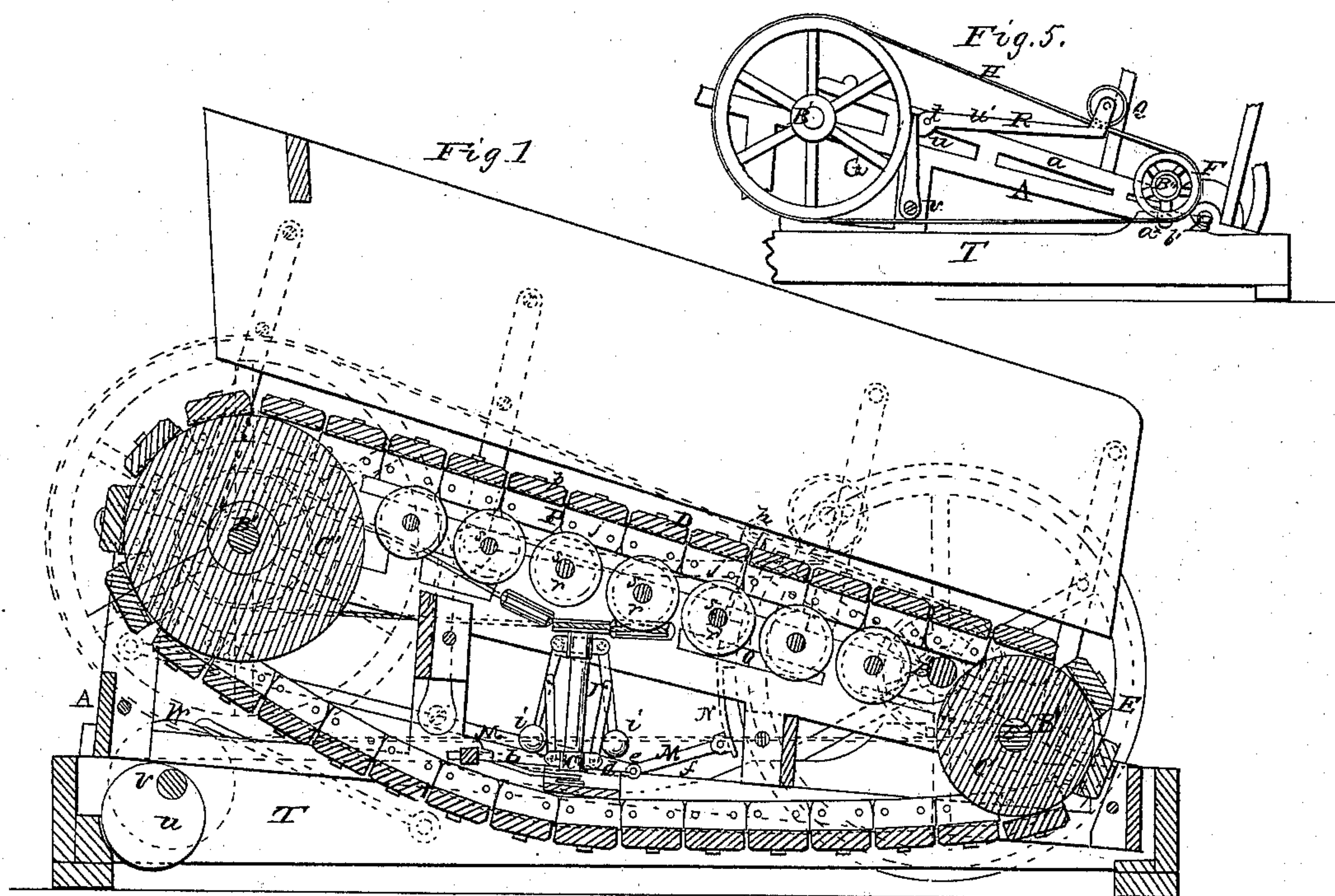


D. W. Hunt,
Horse Power,
No. 47,830,

Patented May 23, 1865.



Witnesses
Henry Morris
C. L. Lophoff

Inventor:
D. W. Hunt
per Munn & Co
attys

UNITED STATES PATENT OFFICE.

D. W. HUNT, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN HORSE-POWERS.

Specification forming part of Letters Patent No. 47,830, dated May 23, 1865.

To all whom it may concern:

Be it known that I, D. W. HUNT, of San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Horse-Powers; 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, making a part of this specification, in which—

Figure 1 is a side sectional view of my invention, taken in the line *x x*, Fig. 2; Fig. 2, a plan or top view of the same; Fig. 3, an enlarged longitudinal vertical section of two links of the chain pertaining to the same; Fig. 4, a transverse vertical section of the same, taken in the line, *y y*, Fig. 3; Fig. 5, a detached and diminished side view of a brake pertaining to the same.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates, first, to a novel and useful means employed for regulating the speed of the horse-power, whereby a steady and uniform motion of the same is obtained by an automatic mechanism. This speed-regulating mechanism consists of a ball-governor, combined with a brake, the latter being arranged to operate against the balance or fly wheel of the machine, as hereinafter fully set forth.

The invention relates, second, to a new and useful improvement in the construction of the endless platform, whereby the same is rendered rigid or inflexible in one direction—to wit, downward—under the downward pressure due to the weight of the animal, and at the same time rendered flexible in the other or opposite direction, and the use of rollers in the platform dispensed with, the platform being allowed to work on rollers and with much less friction than the ordinary platform in use.

The invention relates, third, to a brake attachment for stopping the machine in case the belt of the same should break—a contingency of frequent occurrence, and which is liable to injure either the horse or the machine.

The invention relates, fourth, to an improved means for giving the machine, and consequently the endless platform, a greater or less degree of inclination, as may be required.

The invention relates, fifth, to the manner of hanging the machine, whereby the adjust-

ment above mentioned may be made without affecting the belt by which motion is transmitted from the machine to the machinery to be driven.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents the frame of the machine, which may be constructed of cast-iron, and having its upper bars, *a a*, somewhat inclined, as shown in Fig. 1.

B B' are two shafts, which are placed transversely in the upper part of the frame A, and have drums C C' placed on them, over which an endless platform, D, works.

B'' is a shaft at the most depressed end of the upper inclined part of the frame A, and it has a balance or fly wheel, E, upon it at one end, and a pulley, F, at the opposite end, and the shaft B' has a pulley, G', at one end, around which and the pulley F of shaft D'' a belt, H, passes. The opposite end of the shaft B' has a smaller pulley, I, upon it.

J represents a ball-governor, which may be constructed in the usual way, and is placed within the frame A and endless platform D, as shown clearly in Fig. 1. This governor is rotated from the pulley I of the shaft B by means of a belt or rope, K, the latter passing around guide-pulleys *p p* at one side of the frame A, as shown in Fig. 2. The slide *c* of the governor J is connected with an arm, L, which is attached to a shaft, M', in the lower part of the frame A, one end of said shaft M' being connected by an arm, *d*, with the fulcrum-pin *e* of a toggle M, the outer end of one arm *f*, of which is attached to the frame A, as shown at *g*, the outer end of the other arm *f'* being connected to a curved bar, N, which is suspended at its upper end from a horizontal shaft, *h*, on the framing, and has a shoe, O, attached to it to bear against the periphery of the balance or fly wheel E. This toggle and shoe form a brake, which is operated through the medium of the governor as follows:

The endless platform D is actuated by the horse in the usual way, and when the motion or speed of the platform becomes too great the slide *c* of the governor, which is raised on the governor-shaft by the spreading or forcing out of the balls *i* under centrifugal force, will turn the shaft M', and the arm *d* will actu-

ate the toggle M, so that the shoe O will be pressed against the balance on fly wheel E and the speed of the machine checked. By this arrangement a very simple and perfect automatic speed-regulating device is obtained, one not liable to get out of repair or become deranged by use.

The endless platform D is constructed of two endless chains, P P, formed each of a series of links, *j*, of cast-iron, having longitudinal grooves *k* in their under sides extending their whole length. These links are connected together by wrought-iron plates *l*, which are fitted in the grooves *k* and secured to the links by rivets *m*, as shown clearly in Fig. 3, the ends of the plates *l* being rounded at their inner sides, as shown at *n*, to admit of the bending of the links *j* in the direction indicated by the arrows in Fig. 3. The links *j* are cast with flanges or lips *o* at their ends, to form good bearing-surfaces to prevent the bending of the links in the opposite direction. To the outer surfaces of the links *j* wooden slats *p* are attached by bolts *g*.

The chains P P work over the drums C C' of the shafts B B', and the upper part of the endless platform between the drums C C' is supported by friction-rollers *r*, which are placed on shafts *s*, the journals of the latter having their bearings in the bars *a a* of the frame A, the links *j* and plates *l* resting on said rollers.

By this mode of construction a very durable and strong endless platform is obtained, one which will operate with but little friction, be perfectly flexible in one direction so as to be capable of turning freely around the drums C C', and be rigid in the opposite direction, so as to present a firm bearing and foot-hold to the horse. No friction-rollers are required to be attached to the endless platform, the latter being simply supported at its upper part by rollers in the frame A underneath, where the animal stands.

The belt H has an idle-pulley, Q, resting upon it, as shown in Fig. 5. This pulley Q is fitted in one end of a lever, R, the fulcrum-pin *t* of which passes into one side of the frame A, the short arm *u* of said lever being in line with the periphery of the pulley G.

S is a shoe, the lower end of which is attached by a pin or bolt, *o*, to the frame A. This shoe S passes up between the pulley G and the short arm *u* of the lever R, and in consequence of the pulley Q resting upon the belt H the short arm *u* of the lever R is kept free from the shoe S, but in case the belt H should break or be casually cast off from the pulley G or F the long arm *u'* of the lever R will fall, and by its gravity will cause the short arm *u* to press the shoe S sufficiently hard against the pulley G to stop the machine.

Thus by this simple arrangement an automatic stop is obtained in case of the breaking or disarrangement of the belt H. The frame

A of the machine rests in a supplemental frame T, of rectangular form. The lowest end of the frame A rests directly on the frame T, but the opposite end rests on two cams, *w w*, placed on a shaft, V, which is placed transversely in the frame T. One end of this shaft has a wheel, V, attached to it, the periphery of which is perforated with holes *a'*, into any one of which a pawl, W, catches, said pawl being attached to one side of the frame A. (See Fig. 2.) By turning the shaft V it will be seen that the cams *w w* will raise and lower the front end of the machine, and that a greater or less degree of inclination may be given the endless platform D, as required, by thus adjusting the cams *w*, the latter being retained at any desired point by the pawl W. In this adjustment of the frame A the latter turns on journals *b' b'*, which are attached to the side of the frame A, and rest in bearings *a^x* on the frame T directly underneath the shaft B', on which the balance or fly E is placed. By this arrangement the belt which passes around the wheel E, and from which the power is taken, will not be affected by the adjustment of the frame A, as the shaft B'' is near the center of motion of the machine.

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

1. The ball-governor J, in combination with the toggle M and shoe O, the latter being attached to a swinging bar, N, or its equivalent, and placed in relation with the balance-wheel E, all being arranged and applied to a horsepower, substantially as and for the purpose herein set forth.

2. The endless platform D, provided with chains P P, constructed of cast-iron links *j*, having longitudinal grooves *k* to receive plates *l*, which are attached to the links by rivets *m*, substantially as herein set forth.

3. The brake or stop attachment composed of a pulley, Q, bearing on the belt H and attached to the lever R, in combination with the shoe S, interposed between the short arm *u* of said lever and the pulley G, to operate in the manner substantially as and for the purpose herein set forth.

4. The cams *w w* on the shaft V in the supplemental frame T, in connection with the pawl W and the perforated wheel V, or its equivalent, for adjusting the inclination of the frame A and endless platform D, substantially as described.

5. Hanging the frame A in the supplemental frame T by means of journals *b' b'*, attached to the sides of the frame A underneath and in line with the balance-wheel shaft B'', substantially as and for the purpose herein set forth.

D. W. HUNT.

Witnesses:

E. O. HUNT,
W. H. FISKE.