

UNITED STATES PATENT OFFICE.

HORACE WICKHAM, JR., OF CHICAGO, ILLINOIS.

IMPROVEMENT IN MACHINE FOR MOTIVE POWER.

Specification forming part of Letters Patent No. 105,870, dated July 26, 1870.

I, HORACE WICKHAM, Jr., of Chicago, county of Cook, in the State of Illinois, have invented a Machine for Motive Power, of which the following is a specification:

Nature and Objects of the Invention.

My invention relates to a machine for transmitting motion; and consists in the peculiar construction of a hollow rocking beam, and also, in combination therewith, certain devices for transmitting and regulating the motion of the machine, as will be hereinafter more fully described.

Description of the Accompanying Drawing.

Figure 1 is a side elevation, partly in section, and Fig. 2 an end elevation, of the machine.

General Description.

A is the bed or table, upon which the standards for supporting different parts of the machine are secured. B B are the standards for supporting rocking beam F. This rocking beam is pivoted at the center to the standards by the ring D and set-screws *b b*. B' are the standards for supporting the other parts of the machine, consisting of the governor, fly-wheel, &c. F is the rocking beam, constructed in two parts, F' and F'', and secured together by the bands E E'. The upper tube, F', is made straight, and the lower tube, F'', is made in the form of a W, as clearly shown in the drawing. These tubes F' and F'' are connected together at their ends, inside of the bands E' and E'', in such a manner as to allow the ball used to pass from the lower tube to the upper one by means of the hinged inclined runway C and valve C', and from the upper one to the lower, inside of the band E'', by the opening therein. The inclined runway C is hinged at one end to the upper tube, F', at the bottom of its opening or exit, inside of the band E', while the other end rests on the valve C'. This valve C' has attached on its under side a pin, *c*, which projects down through a hole in the band E' a sufficient distance, so that when the pin strikes the upper standard, B'', secured to the bed or table, as the rocking beam oscillates, it will raise the valve a short distance above the upper tube, F'. The valve

is made to incline toward the opening in the upper tube, so that the ball when raised on the valve will roll into the same by means of the hinged inclined runway C.

H is a ball, which runs in the tubes F' and F''. This ball is charged with a necessary amount of quicksilver, for giving more weight to the same, and also for giving a much quicker momentum to the ball. This ball is to be used in the rocking beam for the purpose of unbalancing, and also to exert the pressure of its specific gravity on the same at whatever point or position it may be in, and in so doing it assists in oscillating it.

I is a rod secured to the band I', which is made adjustable on the rocking beam. To this rod I is attached the upper end of the pitman J, the lower end of the pitman being secured to the crank-shaft K, upon which is mounted the fly-wheel L and gear-wheel M.

The rocking beam F is provided, on the opposite end to which the pitman is attached, with a rod, N, on which is placed an adjustable weight, N', which is secured at any desired point by means of the set-screw *n*. This weight N' is for the purpose of counterbalancing the adjustable band provided with the rod I, to which the pitman is attached, and also the pitman.

The governor R is for the purpose of regulating the motion of the machine, and is operated through the medium of the gear-wheel M on the crank-shaft K, which meshes into a pinion, O, on the straight shaft P, which revolves the bevel-wheel S on the same. This bevel-wheel meshes into the bevel-pinion T on the upright shaft of the governor, for revolving the same. This governor is constructed in the usual manner, excepting in using the cut-off valve, as in steam-engines, which is dispensed with, and an automatic brake is used and operated by means of the rise and fall of the governor-balls.

The automatic brake consists of an elastic band, V, one end of which passes up through a hole in the guide-rod V', projecting from the standard that supports the governor, and is connected to an arm, *w*, projecting toward and partly around the upright shaft of the governor. The tension of said band is regulated by nuts and screw-thread on the end of said

band. The other end of said band passes under a wheel, S', on the shaft P, and is secured to a projecting arm, w', on the standard that supports the governor.

The crank-shaft K is counterbalanced by a projecting weight, K'.

I do not wish to confine myself to the precise construction of the rocking beam as shown and described, as I intend using in lieu thereof wires or rods, arranged in the form and shape of the rocking beam described, with mounted weights arranged to roll on them, which, in connection with the other parts of the machine, will accomplish the same result.

The lower tube, F'', can be made semicircular in form and shape, instead of the form and shape of a W. Any number of rocking beams may be used, and more than one ball can be used in the rocking beam by having inclined runways and valves on each end of said beam, the rocking beam so arranged that the balls drop from one tube to the other at the center of the beam, and rolling alternately from the center to the ends of the beam.

Operation of the Machine.

The rocking beam is oscillated by any power operating alternately on each end of the same, and which transmits motion to the other parts

of the machine through the medium of the pitman and crank-shaft; and for applying power to any other machine a pitman is secured on the opposite side of the rocking beam to which the pitman J is attached, or, instead thereof, pulleys and endless belts on the shafts P or K.

The spokes of the fly-wheel are charged with quicksilver, for the purpose of giving weight to the same at any desired point as it passes from the center to the circumference of the wheel.

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

1. The rocking beam F, constructed substantially as described, and for the purpose specified.
2. The rocking beam provided with the weighted ball H, for the purpose specified.
3. The combination of the rocking beam F, ball H, rod I, pitman J, crank-shaft K, fly-wheel L, bevel and gear wheels M S, pinions O and T, and governor R and automatic brake V, constructed and arranged substantially as herein described, and for the purpose set forth.

HORACE WICKHAM, JR.

Witnesses:

OTTO LEISSRING,
S. C. PARKE.