A. H. VAN PELT.

APPARATUS FOR UTILIZING MOMENTUM.

APPLICATION FILED MAY 21, 1910.

1,002,610.

Patented Sept. 5, 1911.

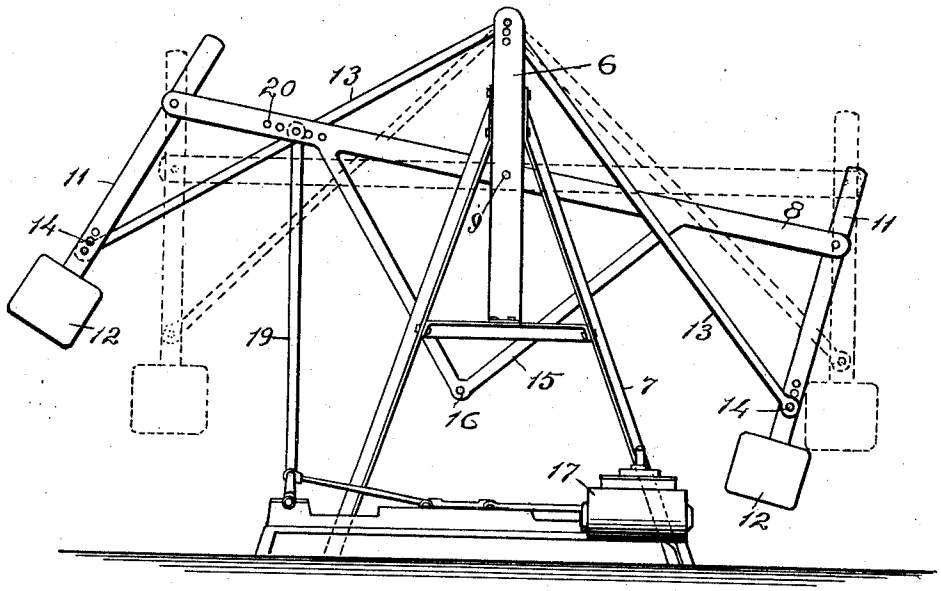

Fig. 1.

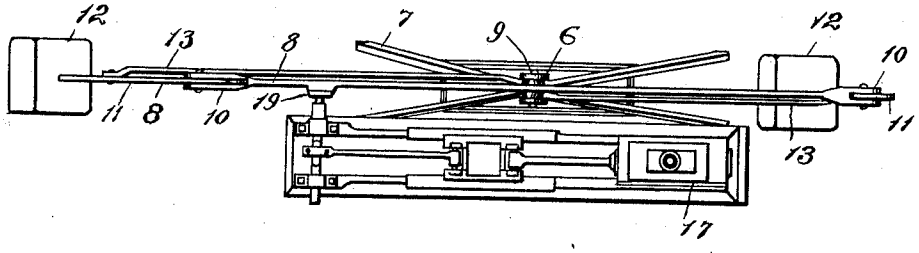

Fig. 2.

Witnesses:
E. L. Mason
Samuel D. Ware

Inventor:
A. H. Van Pelt,
By D. S. Irvin
Atty.

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ADA HENRY VAN PELT, OF LOS ANGELES, CALIFORNIA.

APPARATUS FOR UTILIZING MOMENTUM.

1,002,610. Specification of Letters Patent. Patented Sept. 5, 1911.

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To all whom it may concern:

Be it known that I, ADA HENRY VAN PELT, a citizen of the United States, and resident of Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Apparatus for Utilizing Momentum, of which the following is a specification.

My invention pertains to engines; and it has particular reference to means for utilizing momentum.

It is my purpose to dispense with the ordinary fly wheel and substitute therefor a weighted oscillating beam, which is provided with swinging pendants, so that I am able to obtain the benefit of the weighted bar as well as the pendulous motion which is set up by the oscillations or vibrations of the pendulum when properly connected up with an engine or other source of power.

One particular feature of the invention pertains to the manner in which the apparatus is connected up with the crank of the engine, whereby it will so conserve the momentum as to throw the crank past the dead center. To this end I provide a horizontal beam pivoted midway between its ends to a rigid frame so that it oscillates in a vertical plane. At each end of this beam is a vertical bar hinged thereto and freely swinging, the lower end of each vertical bar having a weight attached thereto. The frame to which the horizontal beam is attached projects upwardly beyond the pivotal point so as to provide a bearing for the hinged ends of two arms which project down and are hinged to the vertical bars below the hinged suspension points, so that as the horizontal beam oscillates the vertical bars are swung to and fro, pendulum-like, and during the swinging movement are not only raised above their normal position, but also swing simultaneously to and from the central hinged point of the horizontal beam. The crank of the engine shaft is attached by means of a link to the beam in such a manner that when the beam is exactly horizontal the crank pin of the engine is on a dead center, and as the oscillating beam, during its swing, has attained its greatest momentum, and thus serves to throw the crank past the dead center, all of which will now be set forth in detail.

In the accompanying drawings, Figure 1 is a side elevation of my improved mechanism for utilizing momentum, coupled up with an engine, and Fig. 2 is a top or plan view.

In constructing my invention I provide a suitable frame which, in this instance, is composed of two parallel members 6 secured together a suitable distance apart, having a spreading base 7, as shown. Between these members I place a horizontal beam 8, which is hinged midway between its ends, as at 9, to the vertical frame members 6. Each end of the beam is bifurcated, as at 10, and is adapted to receive a vertical bar 11, this bar having at its lower end a weight 12.

It will be observed that the frame members 6 project up beyond the pivotal point 9, and in the upper ends of the frame is a pin which serves as a hinge for two rods 13 which extend down in opposite directions and have their lower ends secured by a pin 14 to the vertical bars 11, this hinged point 14 being below the hinged point of the vertical bar 11.

The horizontal beam 8 has cast therewith, or permanently attached thereto, on the lower side a V-shaped pendant 15, the lower end of which has an eye 16 by means of which connections may be made by any suitable means with the crank pin of an engine, in case it is intended to use the apparatus with a vertical type of engine. In this case I show the invention applied to a horizontal type of engine 17, and in this instance the crank pin 18 of the engine is connected with the horizontal beam 8 by means of a link 19. In order to provide for a greater or less swing of the beam the latter has a series of holes 20 whereby the upper end of the link 19 may be hinged at varying points from the pivotal point 9.

The operation of the invention is as follows: It will be observed that the link 19 is of such length that the connecting rod 21 of the engine and the horizontal beam 8 are substantially parallel during the entire engine stroke, and also are so disposed relatively to each other that during the period that the crank pin of the engine is going around the dead center the swing of the vertical weighted bars 11 is at its maximum, and therefore serves to bring the crank around by the momentum.

A very important advantage in this type of mechanism for utilizing momentum is the fact that, unlike the ordinary fly wheel, no

part of the weight is attached to nor is it suspended on the engine shaft, and the energy of the engine stroke, during the efficient arc of its movement, is solely used to swing the weights, the return swing of the weights during the movement through the zone of least efficiency, on the part of the engine, being the period when the beam and pendulums are most efficient.

What I claim as new, is:

1. An apparatus for utilizing momentum, comprising a vertical frame, with a horizontal beam hinged therein and adapted to oscillate in a vertical plane, said beam having at each end a swinging bar with a weight at its lower end, and a connecting link from the lower end of each vertical bar to a point on the frame above the hinged point of the horizontal beam.

2. In apparatus for utilizing momentum, a vertical frame with a horizontal beam hinged therein, and adapted to oscillate in a vertical plane, said beam having at each end a pendulum to swing in the same plane, each of said pendulums being connected by a link extending from a point below its hinged point to a point on the frame above the pivotal point of the beam, an engine, and a link connecting said engine crank and beam, as set forth.

Signed at Los Angeles, in the county of Los Angeles and State of California, this 18th day of March, A. D. 1910.

ADA HENRY VAN PELT.

Witnesses:
J. S. ZERBE,
JOHN M. STANTON.