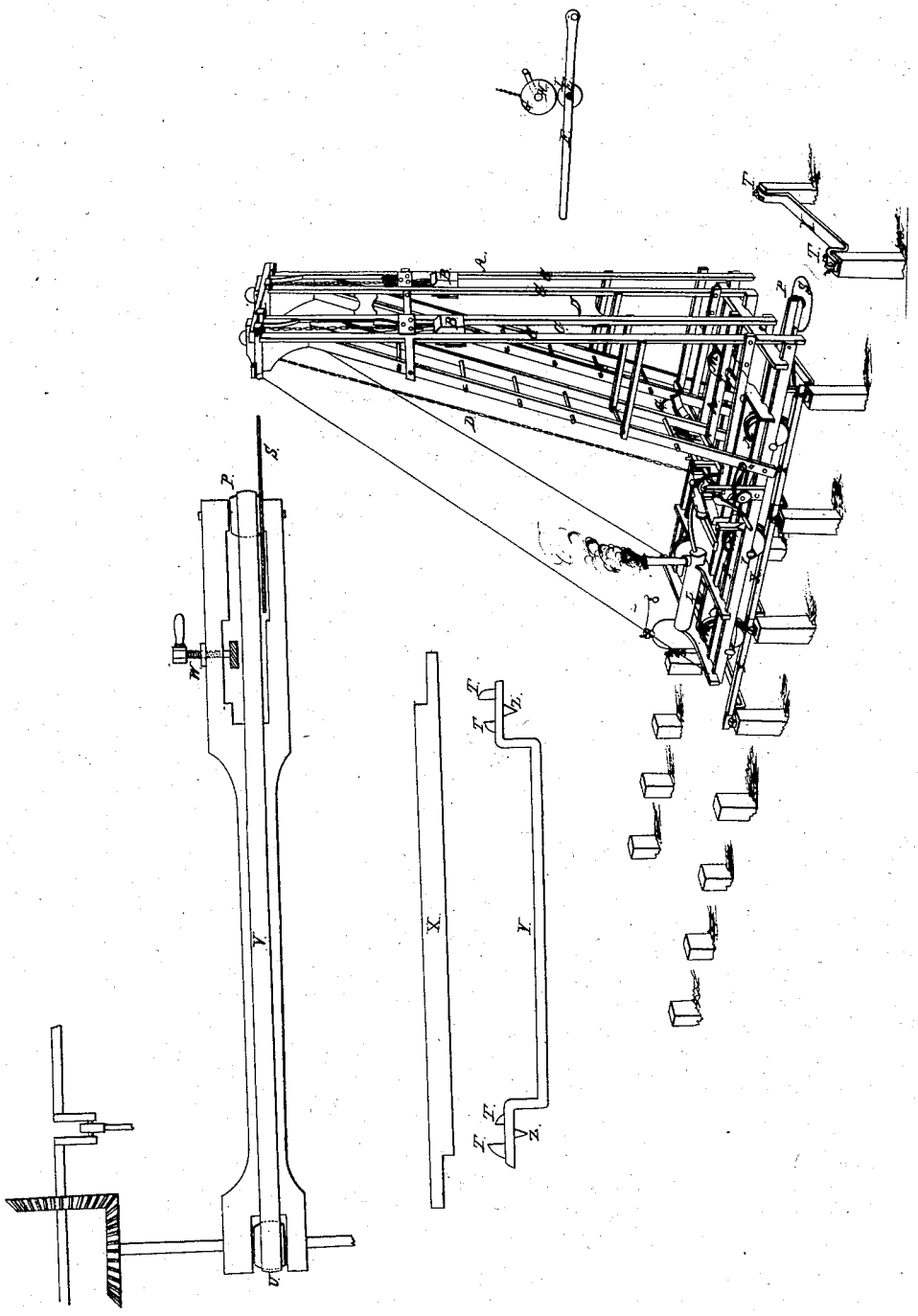
S. Cram.

Pile Driver.

No. 785. Patented Jun. 14, 1838.



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UNITED STATES PATENT OFFICE.

SMITH CRAM, OF NEW YORK, N. Y.

PROGRESSIVE PILE-DRIVING AND GRADING MACHINE FOR MAKING RAILROADS.

Specification of Letters Patent No. 785, dated June 14, 1838.

To all whom it may concern:

Be it known that I, SMITH CRAM, of the city, county, and State of New York, have invented a new and useful machine for driving piling, sawing them off at a prescribed grade, and moving on the foundations thus placed and graded, called "Cram's Progressive Pile-Driving and Grading Machine," which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

The nature of the invention of the subscriber consists in the combination, arrangement, and adaptation of certain mechanical principles, producing a machine for driving piling, sawing them off at a prescribed grade, and moving on the foundations thus placed and graded, embracing in its combinations an improved mode of driving wooden piles or piling into the earth as a foundation for rail roads or other purpose, and for sawing them off at a prescribed grade in the prosecution of its journey, and moving itself upon shifting ways, resting upon the foundation, thus placed, and graded; to the operation of which steam power can be advantageously applied.

To enable others skilled in the art, of which this is a branch, to make and use my machine, I proceed to describe its construction and operation, and which is as follows:

I construct my progressive pile driving machine A (if for placing and grading piling foundations for a rail road of a given width of track) according to any of the known forms, but so arranged as to drive a double row of piling as it proceeds, with hammers, B B, of a weight, that suits the general solidity of the ground in which it is intended to operate, and the circumstances of the particular case. In a low alluvial country I use them of between 6 or 700 lbs. I place the uprights C C C C between which the piling is placed, of the exact width of the intended track, from center to center, with the ordinary followers or monkeys, which descend by their own gravity, after the hammers, when they have become disengaged at the top of the uprights; and the hammers are raised by the ordinary means of a rope or chain D, passing around a windlass E, the pulley I of which is brought into contact, by means of a lever F, with one of larger dimensions G upon the main shaft H, to which the power is applied; or by an endless chain passing around both the pulleys mentioned, with a tightening pulley worked by a lever to give them effect when desired. The former mode, however, I have, on trial of both, found preferable. The uprights are braced in the usual manner by ladders descending from the top to the base or ground work of the machine, supported by the usual fastenings and braces. I place the base of the machine upon and across the axles L of two, three, or more pair of small cast iron car-wheels M, with flanges made in the manner of rail road-burden car-wheels. I use them of about twenty inches diameter as the best; and three pair I have yet found the most useful in practical operation and just the width of the track. The projection of the base of the machine consists of a suitable number of lineal pieces of timber of a proper width and depth—two of which are on the outside of the wheels—are all connected by transverse timbers, forming the frame of the platform; upon which, if steam power is used, (and I have as yet tried no other) the boiler and engine can be conveniently placed and secured.

The saw S for grading or taking off the tops of the piling, when driven to a proper depth, is circular, and of suitable size to effect its object—is placed in a frame at the forward part of the machine, between the two pair of uprights; and by means of a central pulley a few feet in its rear, is enabled to vibrate or move from one side to the other, and reach both of the piles, one after the other, and saw them off with precision. The central or band pulley V of the saw is connected with ordinary bevel cog gearing with the main shaft, and which may be thrown in and out of gear by means of a lever in which the gudgeon of the upright shaft turns,—said lever moving horizontally on a pin inserted in some convenient part of the frame. V driving band, P pulley on saw shaft.

The manner by which the saw is adjusted to a higher or lower grade or level, as may be found necessary in order to preserve a required grade, is, by means of a screw W, at the top of the frame of the saw shaft or axle, by which it is raised or depressed, at will, by the attendant.

The machine, when in operation, is placed

upon its own ways, or upon ways contrived for it, which consist of iron rails X X of a suitable length, to reach the prescribed distance, at which the piling may be determined to be placed, linearly apart. After driving and grading the first pair of piles, the machine is moved forward—projecting a sufficient distance in advance to place two more, which are, from necessity, transversely opposite each other. These having been driven and graded, the rails and cross tie, which the machine has left in the rear, by its advance, are now brought to the front and placed upon the tops of the last two pair of piles driven, which thus enables the machine to advance again, its prescribed distance; and so onward. The shifting rails are of sufficient size to support the weight of the machine, and their ends are scarfed so as to allow them to be lengthened or shortened, to suit the incidental variation of the position of the graduated head of the piling. The ends of the rails are also placed between two iron pins T T upon a cross tie of iron Y so constucted with small projecting points Z on the under side as to be pressed by the weight of the machine into the piling, and prevents any lateral sliding.

What I claim as my invention and desire to secure by Letters Patent, is,

The combination of the power of driving the two rows of piles with that of the grading saw,—together with the scarfed, shifting rails and cross ties by which the machine can be moved forward upon the foundation placed and graded, in the prosecution of its purpose; which last, to wit, the scarfed rails and pointed cross-ties being made movable with the advance of the work, as before described, is practically claimed as new, in combination with the mode of making foundations for rail roads and other purposes, over alluvial soil, swamps, or other places, by means of the progressive double or single pile driving machine moving on wheels over the track already formed in advance of the machine, by itself; and graded at any angle by means of the circular saw adjusted by the registering screw.

SMITH CRAM.

Witnesses:
WM. P. ELLIOT,
WM. BISHOP.