T. AHLBORN.

TAMPING MACHINE.

APPLICATION FILED MAY 24, 1912.

1,066,778.

Patented July 8, 1913.

2 SHEETS—SHEET 1.

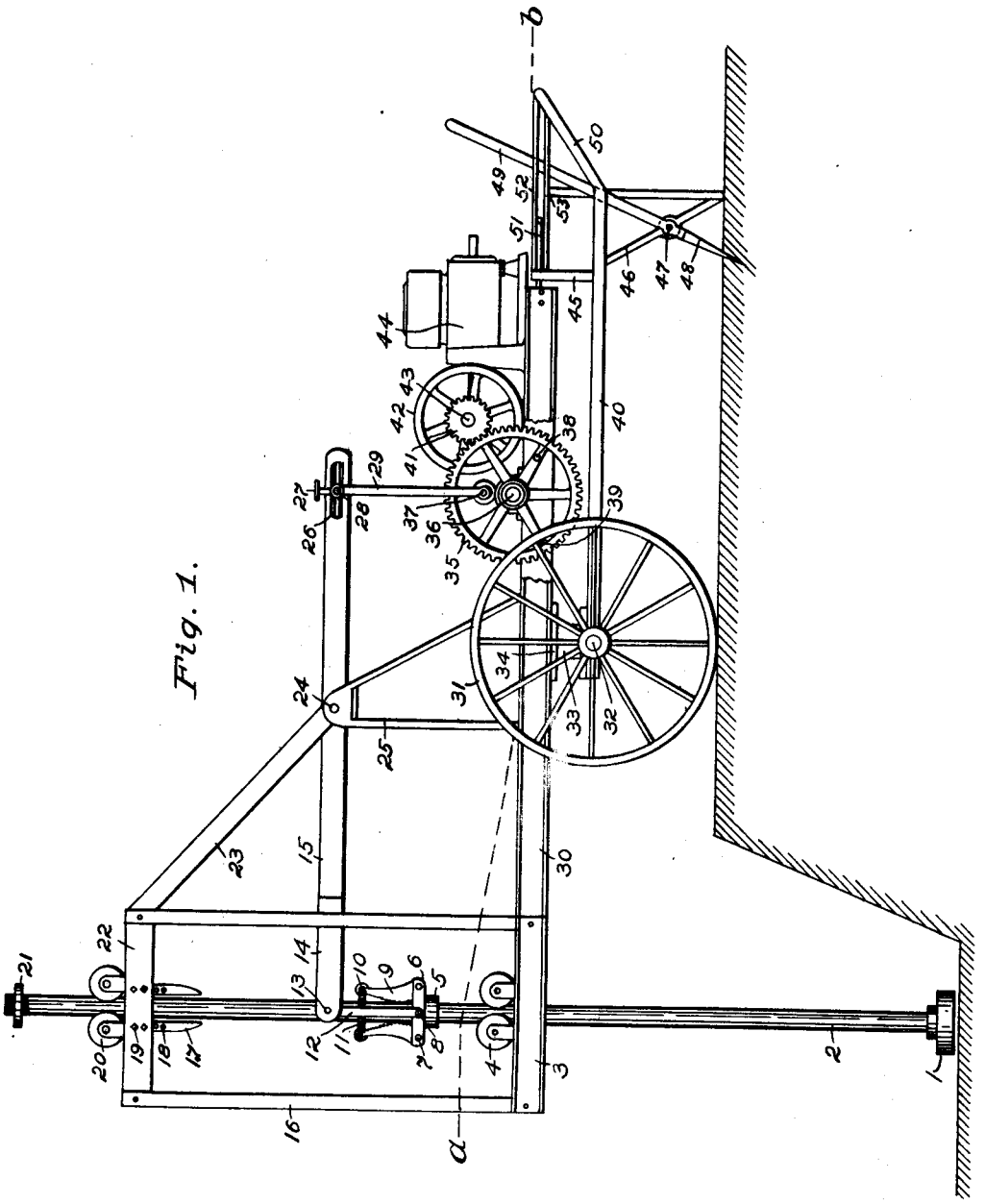


Fig. 1.

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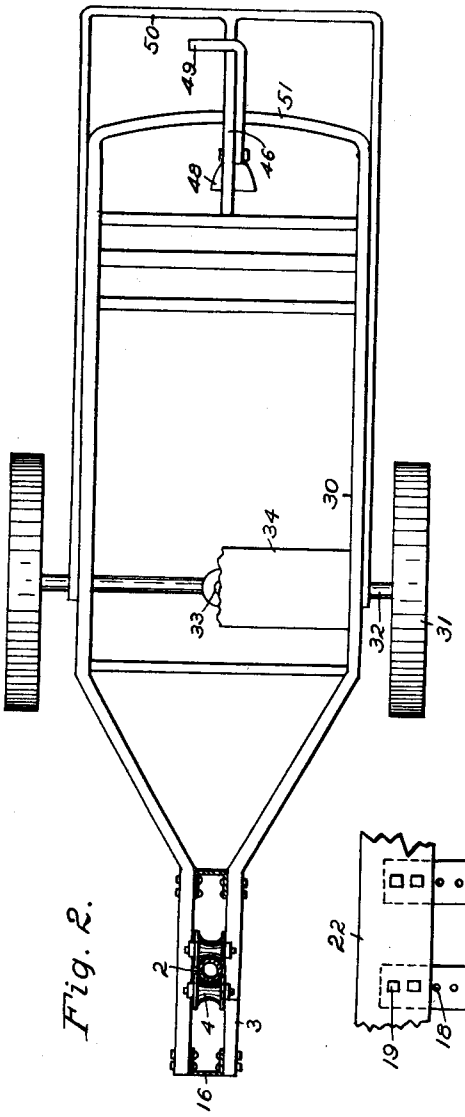


Fig. 2.

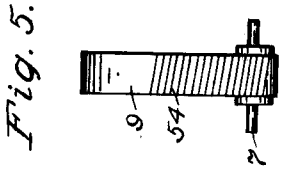


Fig. 5.

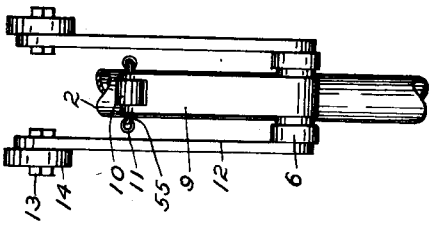


Fig. 4.

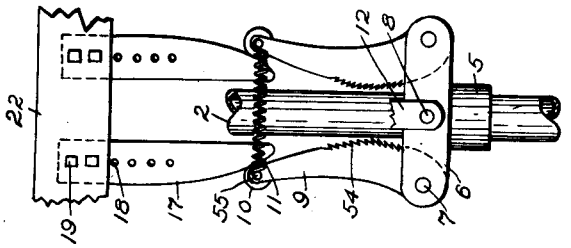


Fig. 3.

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UNITED STATES PATENT OFFICE.

THEODORE AHLBORN, OF WATERLOO, IOWA, ASSIGNOR TO THE WATERLOO CEMENT MACHINERY CORPORATION, OF WATERLOO, IOWA.

TAMPING-MACHINE.

1,066,778. Specification of Letters Patent. Patented July 8, 1913.

Application filed May 24, 1912. Serial No. 699,523.

To all whom it may concern:

Be it known that I, THEODORE AHLBORN, a citizen of the United States of America, and a resident of Waterloo, Blackhawk county, Iowa, have invented certain new and useful Improvements in Tamping-Machines, of which the following is a specification.

My invention relates to improvements in tamping machines, and the object of my improvement is to provide an efficient and inexpensive machine for general uses, with means for transporting it easily from place to place and other means for variably shifting the position of its tamping-head as desired. This object I have accomplished by the mechanism which is hereinafter described and claimed, and which is illustrated in the accompanying drawings, in which:

Figure 1 is a side elevation of said tamping machine. Fig. 2 is a plan view of the framework supporting said machine, taken on a section *a*—*b* of Fig. 1. Fig. 3 is an enlarged detail side elevation of the elastically-connected engaging-jaws with their deflecting spreader-fingers and connections, the connections and other parts acted upon by said jaws being broken away. Fig. 4 is an end elevation of the parts shown in Fig. 3, with parts of the framework, and the spreader-fingers removed. Fig. 5 is a detail of the engaging-jaws.

Similar numerals of reference designate corresponding parts throughout the several views.

Referring to Fig. 1, the framework of the tamping machine comprises a horizontal bed composed of connected side-bars 30, whose forward ends are converged and then projected forwardly, spaced narrowly apart, at 3, to project a considerable distance in advance of the carrying-wheels 31, to permit of the use of the tamping-shaft therebetween in a proper location for the use at that place of the tamping-head 1. At a sufficient distance above said prolonged bars 3 are similar and parallel bars 22, and the ends of the bars 3 and 22 are connected by risers 16 to form an open rigid rectangular vertical structure adapted to form a secure support for the tamping-shaft 2. The axle 32 of the carrying-wheels 31 is pivoted in a vertical sleeve 33 on the under side of a cross-beam 34 extending from one side-bar 30 to the other.

The numeral 40 denotes a pair of parallel bars extending rearwardly from the axle 32 and are connected rigidly at the rear by means of a cross-bar 50. The rear parts of said bars are somewhat raised, and a longitudinal bar 52 in the medial line of the framework connects said bar 50 with another cross-bar 45 farther forward between the bars 40. Another longitudinal bar 53 connects the bars 50 and 45 below and a little spaced apart from the upper bar 52. The numeral 51 denotes a cross-bar projected rearwardly from the side-bars 30 of the framework, and which is seated between the cross-bars 52 and 53 and slidable therebetween, being curved on an arc of which the radius is the distance from said bar 51 to the pivot of the axle 32. The rear part of the bars 40 has a supporting leg 46, to whose middle part a sharp-edged pike-lever 49 is medially pivoted at 47, with the sharp spadiform lower end 48 of which the ground below said bars may be engaged to shift the position of the machine slightly when desired. Thus, to move the whole machine backward or forward the pike is used, while to swing the machine on the pivot of the axle 32 to shift the tamping-head 1 from side to side, the arc-shaped cross-bar 51 is moved from side to side between the limiting bars 52 and 53.

Upon the framework bars 30, preferably located between the wheels 31 and the rear ends of said bars, is mounted a prime-mover 44, adapted to rotate a crank-shaft 43, the latter carrying a fly-wheel 42 and a pinion 41. The pinion 41 is in mesh with a gear-wheel 35, the latter having a crank-pin 37 on which is pivoted the lower end of a pitman 29, the upper end of said pitman being adjustably connected to the rear end of a walking-beam 15, by means of a pintle 28 adjustable in a slot 26 and secured by a set-screw 27. By means of this adjustable connection, the length of the rear arm of said walking-beam may be varied to correspondingly vary its length of stroke. Other crank-pins 38 and 39 are provided on the gear-wheel 35, which may be used with said pitman to aid in the varying of its stroke relative to its action on said walking-beam 15. The walking-beam is medially pivoted on a cross-shaft 24 in the spaced apart lugs of an upright 25, the latter secured to and

supported on the said framework immediately anterior to the carrying-wheels 31.

The vertical tamping-shaft 2 is preferably formed of tubular iron, with the tamping-head secured to its lower end, and a stop ring secured about its upper end above the bars 22. Spaced apart uprights are secured to the upper sides of the bars 22 and 3 on opposite sides of the shaft 2, and between them the antifriction concaved-faced rollers 20 and 4 are respectively rotatably mounted to bear on opposite sides of said shaft above said bars.

A sleeve 5 is loosely and movably mounted over the shaft 2, and located between the bars 22 and 3, and carries integral or fixed horizontal spaced apart bars 6 connected at their ends by fixed pins 7 which serve as pintles for the included lower ends of oppositely-located jaws 9 provided with serrations 54 on their opposed or inner faces. The upper ends of these jaws are somewhat curved outwardly and bifurcated, the antifriction rollers 10 being rotatably mounted in the bifurcations on pintles 55. The outer ends of the said pintles are extended beyond the outer sides of said jaws, and on each side of said shaft said pintles are connected by elastic coil springs 11, the latter serving to draw the jaws together normally to keep their serrations 54 engaged with the shaft.

The numeral 12 denotes a link on each side of the cross-bars 6, whose upper ends are pivoted at 13 to the forward end of the walking-beam 15, at the bifurcations 14 thereof, while the lower ends of said links are pivoted at 8 to the middle parts of said bars 6.

Fingers 17 are secured to the upper bars 22 by means of pins 19 set into orifices in said fingers and registering orifices in the bars 22. and depend on opposite sides of the shaft 2, and are spaced away therefrom a short space. There are a number of orifices 18 provided in said fingers in vertical alinement, whereby the fingers may be vertically adjusted to act variably upon the jaws 9 below them. The outer edges of the fingers 17 are narrowed downwardly by a gradual easy curve to serve as runways for the rollers 10 of said jaws.

When the machine has been placed in position as shown in Fig. 1, with the serrations 54 of the jaws 9 engaging the opposite sides of the tamping-shaft 2, and the motor 44 started, the walking-beam 15 is actuated to reciprocate vertically said jaws with the connected tamping-shaft 2. When the shaft 2 has approached near to its upper limit of movement, the rollers 10 on the jaws 9 engage the outer curved edges of the fingers 17 and are thereby forced apart against the tension of the springs 11 until the serrations 54 become disengaged from the shaft 2, when the latter immediately falls under the influence of gravity. The return stroke of the walking-beam carries down the jaws over the shaft 2, and the serrations, being upwardly directed slide over the shaft until the jaws arrive at their lower limit of movement, when the reversing of movement of the jaws to carry them upwardly causes the serrations to "bite" into the shaft and carry it up with them as before. Since the tubular shaft 2 is not in any way restrained from turning about its axis, the irregularities of the surface acted upon by the tamping-head 1 and other movements of the machine will tend to slowly rotate said shaft at times when it is not engaged with the jaws 9, whereby it will receive equal wear about its outer surface contacted by said jaws. Since the tamping-head 1 and the stop 21 are secured to said shaft by means of threaded connections, substitutions of new for worn out shafts are easily made.

As shown in Fig. 5, the engaging ribs or serrations 54 of the engaging-jaws 9 may be formed in an inclined relation thereto, whereby when the jaws engage the tamping-shaft, a partial rotation is made in the shaft which results in equal wearing of the surface of the shaft.

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

1. A tamping machine, comprising a frame, a reciprocatory body movably mounted in said frame, engaging-means detachably grasping said body, means for reciprocating said engaging-means, and means for detaching said engaging-means from said body when the former approaches one of the limits of movement.

2. A tamping machine, comprising a frame, a reciprocatory body movably mounted in said frame, elastically-connected engaging-jaws detachably grasping said body, means for moving said engaging-means and means for detaching said jaws from said body when the latter approaches one of the limits of movement.

3. A tamping machine, comprising a frame, a reciprocatory body movably mounted in said frame, elastically-connected engaging-jaws detachably grasping said body, means for reciprocating said jaws, and adjustable means for detaching said jaws from said body when said jaws approach one of the limits of movement.

4. A tamping machine, comprising a frame, a reciprocatory body movably mounted in said frame, serrated jaws detachably engaging said body on opposite sides thereof, a yieldable resilient connection between said jaws, spreader-fingers secured to said frame above said jaws and adapted to engage the inner faces of the jaws and spread them apart to release said body when the jaws have approached the upper limit of

their movement with said body, and means for reciprocating said jaws toward and from said spreader-fingers.

5. A tamping machine, comprising a framework pivotally mounted on carrying-wheels, anti-friction bearings in said framework located above each other, a reciprocatory shaft slidably mounted in said bearings and provided on its lower end with a tamping-head and on its upper end with a stop, spreader-fingers mounted in said framework on opposite sides of said shaft at its upper end, a sleeve slidably mounted on said shaft between said anti-friction bearings, serrated jaws pivoted to said sleeve on opposite sides of said shaft, resilient connections between the upper ends of said jaws, means for reciprocating said sleeve, said spreader-fingers being adapted to engage the said jaws to force them apart and release said shaft when said sleeve has approached nearly to its upper limit of reciprocation, and means for shifting said framework axially on said carrying-wheels, and other means for shifting the position of said carrying-wheels.

6. A tamping machine, comprising a framework mounted pivotally on carrying-wheels connected by an axle, a substructure rigidly connected with said axle and extending beyond said framework at one end, said framework being axially movable over said sub-structure, a pike-lever pivoted to said sub-structure and adapted for use in shifting the position of said wheels, a reciprocatory body movably mounted in the other end of said frame, engaging-means detachably grasping said body, and means for detaching said engaging-means from said body when the former approaches one limit of its movement.

7. A tamping machine, comprising a framework mounted on carrying-wheels connected by an axle, and a substructure connected to said axle, a reciprocatory tamping-body mounted in said framework, said frame-work being pivoted to said axle, and a pike-lever connected to said substructure and adapted to shift the framework a desired distance.

8. A tamping machine, comprising a frame, a reciprocatory body mounted in said frame, concaved rollers embracing opposite sides of said body to preserve the latter in the same line of movement, means for releasably grasping said body, means for releasing said grasping means at a determined location, a walking-beam, said grasping-means being connected to said walking-beam and moved by same to lift said body.

9. A tamping machine, comprising a frame, a reciprocatory body mounted in said frame, said frame having spreader-fingers on each side of said body, a pair of elastically-connected ribbed jaws on each side of said body, means for moving said jaws to and fro, the said spreader-fingers being adapted to release said jaws from said body at a certain limit of movement, and the ribs on said jaws being arranged thereon transversely and obliquely to cause them to impart a slight rotatory movement to the body when acting thereon.

10. A tamping machine, comprising a frame, a movable body mounted therein, a pair of movable jaws on opposite sides of said body, means for moving them releasably into engagement with said body, means for releasing said jaws from said body at a determined location, means for shifting said jaws in one direction with the body engaged therewith, the engaging faces of the jaws being obliquely serrated to cause them to slightly rotate said body when acting thereon.

Signed at Waterloo, Iowa, this 7th day of May, 1912.

THEODORE AHLBORN.

Witnesses:

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