

H. D. MORGAN & H. SCHOBY.
TAMPING MACHINE.

APPLICATION FILED OCT. 21, 1909.

972,563.

Patented Oct. 11, 1910.

2 SHEETS-SHEET 1.

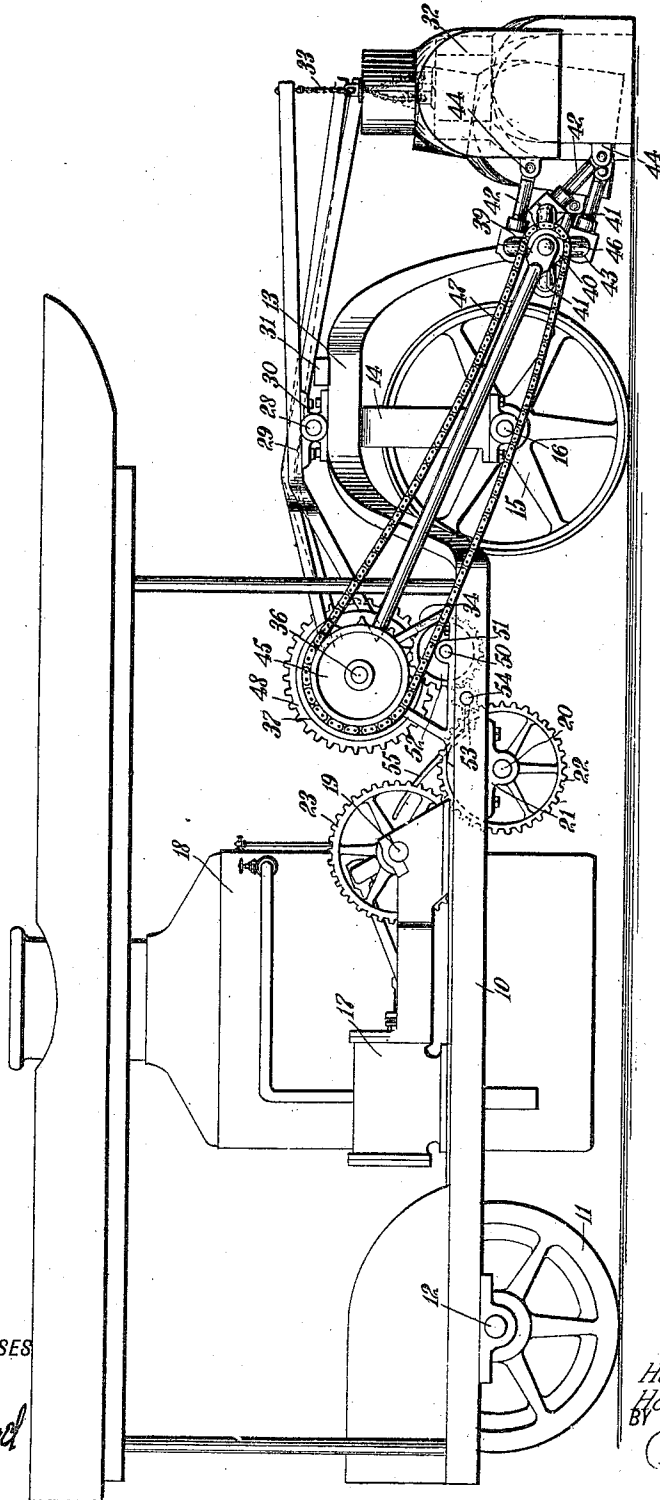


Fig. 1

WITNESSES
Sam. J. Laffie
E. H. Brachvogel

INVENTORS
Harry D. Morgan
Howard Schoby
BY *Munroe*
ATTORNEYS

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The drawing consists of two parts: Fig. 2 (top) and Fig. 3 (bottom).

Fig. 2 is a side view of a mechanical assembly. It features a central vertical shaft (13) with several gears (35, 36, 37, 38, 39) mounted on it. A horizontal shaft (14) is connected to the central shaft via a gear (35). A large flywheel (15) is mounted on the horizontal shaft. A lever (16) is connected to the flywheel and has a roller (17) at its end. A series of rollers (18, 19, 20, 21, 22) are arranged horizontally. A vertical rod (23) is connected to the lever and has a roller (24) at its end. A horizontal rod (25) is connected to the lever and has a roller (26) at its end. A vertical rod (27) is connected to the lever and has a roller (28) at its end. A horizontal rod (29) is connected to the lever and has a roller (30) at its end. A vertical rod (31) is connected to the lever and has a roller (32) at its end. A horizontal rod (33) is connected to the lever and has a roller (34) at its end. A vertical rod (35) is connected to the lever and has a roller (36) at its end. A horizontal rod (37) is connected to the lever and has a roller (38) at its end. A vertical rod (39) is connected to the lever and has a roller (40) at its end. A horizontal rod (41) is connected to the lever and has a roller (42) at its end. A vertical rod (43) is connected to the lever and has a roller (44) at its end. A horizontal rod (45) is connected to the lever and has a roller (46) at its end. A vertical rod (47) is connected to the lever and has a roller (48) at its end. A horizontal rod (49) is connected to the lever and has a roller (50) at its end. A vertical rod (51) is connected to the lever and has a roller (52) at its end. A horizontal rod (53) is connected to the lever and has a roller (54) at its end. A vertical rod (55) is connected to the lever and has a roller (56) at its end. A horizontal rod (57) is connected to the lever and has a roller (58) at its end. A vertical rod (59) is connected to the lever and has a roller (60) at its end. A horizontal rod (61) is connected to the lever and has a roller (62) at its end. A vertical rod (63) is connected to the lever and has a roller (64) at its end. A horizontal rod (65) is connected to the lever and has a roller (66) at its end. A vertical rod (67) is connected to the lever and has a roller (68) at its end. A horizontal rod (69) is connected to the lever and has a roller (70) at its end. A vertical rod (71) is connected to the lever and has a roller (72) at its end. A horizontal rod (73) is connected to the lever and has a roller (74) at its end. A vertical rod (75) is connected to the lever and has a roller (76) at its end. A horizontal rod (77) is connected to the lever and has a roller (78) at its end. A vertical rod (79) is connected to the lever and has a roller (80) at its end. A horizontal rod (81) is connected to the lever and has a roller (82) at its end. A vertical rod (83) is connected to the lever and has a roller (84) at its end. A horizontal rod (85) is connected to the lever and has a roller (86) at its end. A vertical rod (87) is connected to the lever and has a roller (88) at its end. A horizontal rod (89) is connected to the lever and has a roller (90) at its end. A vertical rod (91) is connected to the lever and has a roller (92) at its end. A horizontal rod (93) is connected to the lever and has a roller (94) at its end. A vertical rod (95) is connected to the lever and has a roller (96) at its end. A horizontal rod (97) is connected to the lever and has a roller (98) at its end. A vertical rod (99) is connected to the lever and has a roller (100) at its end.

Fig. 3 is a cross-sectional view of the device, showing the internal components and the arrangement of the rollers (18, 19, 20, 21, 22) and the lever (16). It shows the mechanical linkage between the flywheel (15) and the rollers, and the arrangement of the various rods and rollers.

Ben. Loffe
John K. Brechvogel

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HARRY D. MORGAN AND HOWARD SCHOBY, OF PLAIN CITY, OHIO.

TAMPING-MACHINE.

972,563.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, HARRY D. MORGAN and HOWARD SCHOBY, citizens of the United States, and both residents of Plain City, in the county of Madison and State of Ohio, have invented a new and Improved Tamping-Machine, of which the following is a full, clear, and exact description.

This invention relates to tamping machines for use in road-making and for like purposes, and relates more particularly to a machine of this class in which movable tampers are used for compacting earth or other road material and the like, and have associated therewith means for raising and lowering the tampers, and means for otherwise actuating them, so that while they are in contact with the surface of the ground they are undergoing no horizontal movement.

The object of the invention is to provide a simple, strong and efficient tamping machine, which can be used for road-making or for other like purposes in which it is necessary to compact earth or other material to render the same smooth and hard, which can be used in combination with a roller, as well as without the roller, by means of which material can be thoroughly compacted, which is rapid and efficient in operation, which is not affected by irregularities in the surface upon which it is working, and which prevents the piling up of soft material before the roller, if the same is used in connection therewith.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views, and in which—

Figure 1 is a side elevation of an embodiment of our invention; Fig. 2 is a plan view of the tamping mechanism proper, showing the means for actuating the tampers; and Fig. 3 is an enlarged, transverse section on the line 3—3 of Fig. 2, certain parts being broken away.

Before proceeding to a more detailed explanation of our invention it should be clearly understood that while we have shown for example, in the accompanying drawings, the tamping mechanism associated with a

road roller of common type, the roller does not necessarily form a part of our invention, though we prefer to employ it in connection therewith. The tampers can be mounted upon a suitable supporting frame other than that of the roller, provided a proper motor is employed for actuating the tamper-controlling devices and for advancing or propelling the supporting frame upon the ground. The roller is the machine generally employed to-day, for compacting or hardening road material or the like, and our invention is intended for use as an auxiliary to the roller. If the material is soft, when a roller is first passed over the same it tends to push the material ahead of it and the operation is therefore inefficient. By first tamping the material down hard either by hand or by our tamping machine, this disadvantage is obviated. Furthermore, if the material is spread irregularly so that depressions and irregularities are formed, the operation of the roller, owing to the length of the same, is not uniform. Our individually-operable tampers however, are unaffected by such irregularities, and compact the earth to an equal degree, regardless of depressions or elevations. Needless to say, certain of the details of construction shown for example herewith, form no part of our invention and can be varied in accordance with individual preference and special conditions, without departing from the underlying spirit of the invention. As will appear more clearly hereinafter, we provide means for raising the tampers to permit them to drop gravitationally to the ground to effect the tamping action, and at the same time we provide means for advancing the tampers in the direction of movement of the frame, and for permitting them to rest upon the ground without horizontal movement, in order to avoid a scraping action, which would necessarily injure the road surface.

Referring more particularly to the drawings, we have shown for example, a road roller having a frame 10 supported at the rear upon a roller drum 11 journaled at the under side of the frame by means of a suitable axle 12. At the forward end, the frame sides have inwardly and upwardly offset parts 13 under which is pivoted a yoke 14. The forward supporting roller drum 15 is journaled by means of a shaft 16 in bearings at the ends of the yoke sides in the usual manner. The yoke is pivoted and is con-

trollable by suitable mechanism to permit the roller to be steered when it is traveling upon the ground.

A prime mover of any suitable type is 5 mounted upon the roller frame, and as shown for example in the drawings, may consist of a steam engine 17 supplied with steam from a suitable boiler 18, and having a driving shaft 19. A main shaft 20 is 10 journaled in bearings 21 of the frame and has a gear wheel 22 in mesh with a gear wheel 23 carried by the engine shaft 19. A propelling shaft 24 is arranged longitudinally of the roller frame, being journaled in 15 suitable bearings, and has a bevel gear 25 in mesh with a similar gear 26 carried by the main shaft 20, a suitable bracket 27 having both shafts journaled in bearings thereof. The shaft 24 serves to operate the propelling means (not shown) for advancing 20 the roller in the usual manner.

Mounted upon the parts 13 of the frame sides is a shaft 28 extending transversely 25 of the roller frame. Levers 29 are movably carried upon the shaft 28 by means of bearings 30 and each has the rear end downwardly disposed. A stop bar 31 extends transversely of the frame sides in front of 30 the shaft 28, and serves to limit the downward movement of the levers. Each of the latter, at the forward projecting end carries a tamper 32 of any suitable form and weight, and secured thereto by chain sections 33 or other suitable link. The tampers 35 naturally have the lower surfaces smooth and are of any suitable number, as shown for example herewith, four in number.

Each of the frame sides has mounted thereon a carrier 34, at the upper end of 40 which is a bearing 35. In these bearings 35 is journaled a shaft 36 having a plurality of crank disks 37. These crank disks have laterally extending pins 38, each disk having two pins substantially 180° apart. The 45 pins are adapted to engage at the rear ends of the levers to depress these ends when the shaft 36 is rotated, so that the levers can be actuated to raise the tampers.

At the forward ends of the parts 13 are 50 located bearings 39, in which is journaled a crank shaft 40 having a plurality of cranks 41 corresponding in number to the tampers. Each crank controls a connecting rod 42 pivotally mounted upon the crank 55 by means of a bearing end 43 and pivotally secured at a bracket 44 of the corresponding tamper. The shafts 36 and 40 have sprocket wheels 45 and 46 respectively, operatively connected by a chain 47 so that the 60 crank shaft can be driven through the agency of the shaft 36. The latter has a gear wheel 48 in mesh with a pinion 49 mounted upon a shaft 50 journaled under the shaft 36, in bearings 51. The shaft 50 65 has a gear wheel 52 in mesh with a pinion

53 mounted upon a spindle 54 and in mesh with the gear wheel 22, so that the shaft 50 is operatively connected with the driving shaft of the prime mover. Suitable means 55 are provided for shifting the pinion 53, 70 which is slidable, to render the tamper-actuating mechanism inoperative, so that if desired the device can be used as a road roller without the cooperation of the tampering mechanism.

By the provision of two crank pins 38 on 75 each of the disks 37, each lever is raised and permitted to fall twice during a revolution of the shaft 36. The sprockets 45 and 46 are so proportioned that the crank shaft 80 makes two revolutions for each revolution of the shaft 36. Consequently, each upward and downward movement of a tamper is accompanied by a forward movement and a corresponding backward movement of the 85 connecting rod controlling the tamper. The driving mechanism and the parts controlling the same are so proportioned that the backward movement of the connecting rod is equal to the forward movement of the 90 frame, and consequently, as each tamper comes into contact with the ground it remains at rest and there is no scoring or scraping of the surface.

Having thus described our invention, we 95 claim as new and desire to secure by Letters Patent:—

1. In a machine of the class described, a frame adapted to be propelled upon the ground, a movable tamper carried thereby, 100 means for raising and lowering said tamper from and to the ground, and means for advancing said tamper in the direction of the movement of said frame.

2. In a machine of the class described, a 105 frame adapted to be propelled upon the ground, a movable tamper, means for raising said tamper and for releasing the same to permit its gravitational return to the ground, and means for moving said tamper 110 in the direction of travel of said frame, said last-mentioned means permitting said tamper to rest upon the ground while said frame travels a predetermined distance.

3. In a machine of the class described, a 115 frame adapted to be propelled upon the ground, a movable tamper, means for raising said tamper and for releasing the same, whereby said tamper returns to the ground 120 gravitationally, and means operable simultaneously with said first means, for advancing said tamper in the direction of travel of said frame while said tamper is being raised, said last-mentioned means having a movement in a direction counter the 125 direction of travel of said frame while said tamper is resting upon the ground.

4. In a machine of the class described, a frame, a prime mover thereon, a lever, a tamper associated with said lever, mech- 130

anism operable by said prime mover for raising said lever, and for releasing the same to permit said tamper to fall to the ground, a crank controlling said tamper, to move the same in a horizontal direction, and means connecting said crank and said lever-operating mechanism.

5. In a machine of the class described, a frame adapted to be propelled upon the ground, a prime mover for actuating same frame, a pivoted lever, a tamper associated with said lever, a shaft having a crank disk, said disk controlling said lever to raise the same and to release it, a crank for moving said tamper horizontally, and means operatively connecting said crank and said shaft.

6. In a machine of the class described, a frame adapted to travel upon the ground, a movable tamper carried by said frame, means for raising said tamper and permitting the same to return to the ground gravitationally, means for moving said tamper forward, and means for permitting said tamper to rest upon the ground during a forward travel of said frame substantially equal to the distance said tamper was moved forward.

7. In a machine of the class described, a frame adapted to be propelled upon the ground, a movable tamper, means for raising said tamper and for releasing the same, whereby said tamper returns to the ground gravitationally, and means operable simultaneously with said first means, for advancing said tamper in the direction of travel of

said frame while said tamper is being raised, said last-mentioned means being inoperative with respect to said tamper while the same is in contact with the ground.

8. In a machine of the class described, a roller, a prime mover carried by said roller and having means for propelling the roller, a movable tamper carried by said roller, means actuated by said prime mover for raising and lowering said tamper, and means actuated by said prime mover, for advancing said tamper in the direction of movement of the machine.

9. In a machine of the class described, a frame, roller drums supporting said frame, a prime mover carried by said frame, means actuated by said prime mover for advancing said frame, a lever pivoted upon said frame, a tamper associated with said lever, a shaft having a crank disk controlling said lever, a crank for reciprocating said tamper and operatively connected with said shaft, and means for operatively connecting said shaft and said prime mover, said last-mentioned means being adapted to be operatively and inoperatively disposed.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

HARRY D. MORGAN.
HOWARD SCHOBY.

Witnesses:

O. F. HARGER,
C. W. HORN.