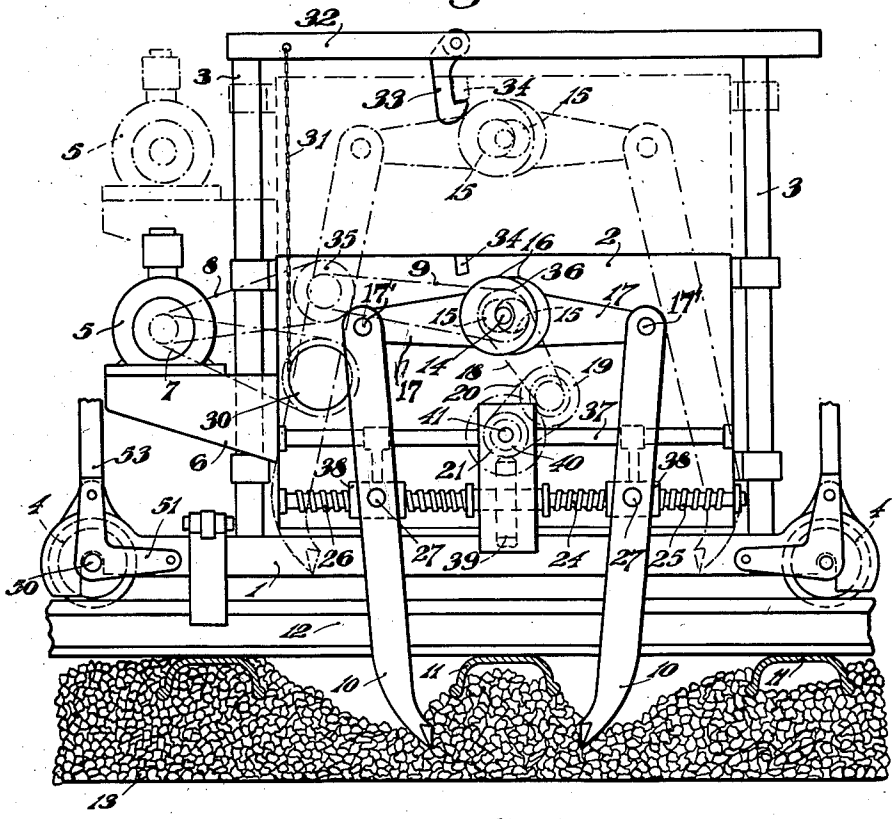
Sept. 1, 1936. A. SCHEUCHZER 2,052,943

BALLAST TAMPING MACHINE

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Fig. 1



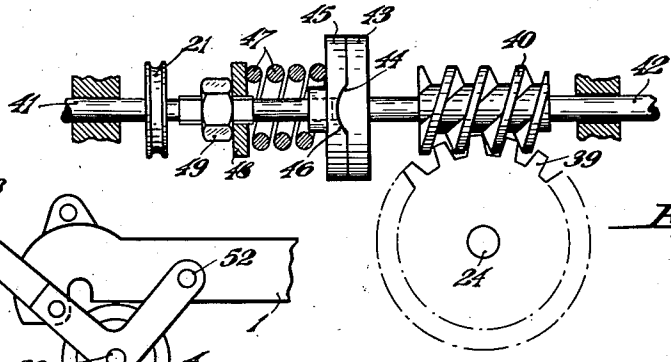


Fig. 2

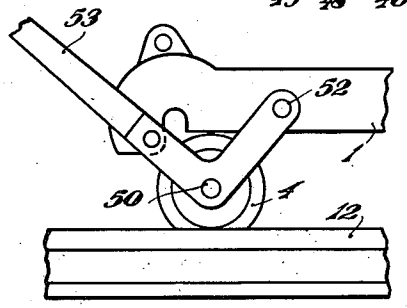


Fig. 3

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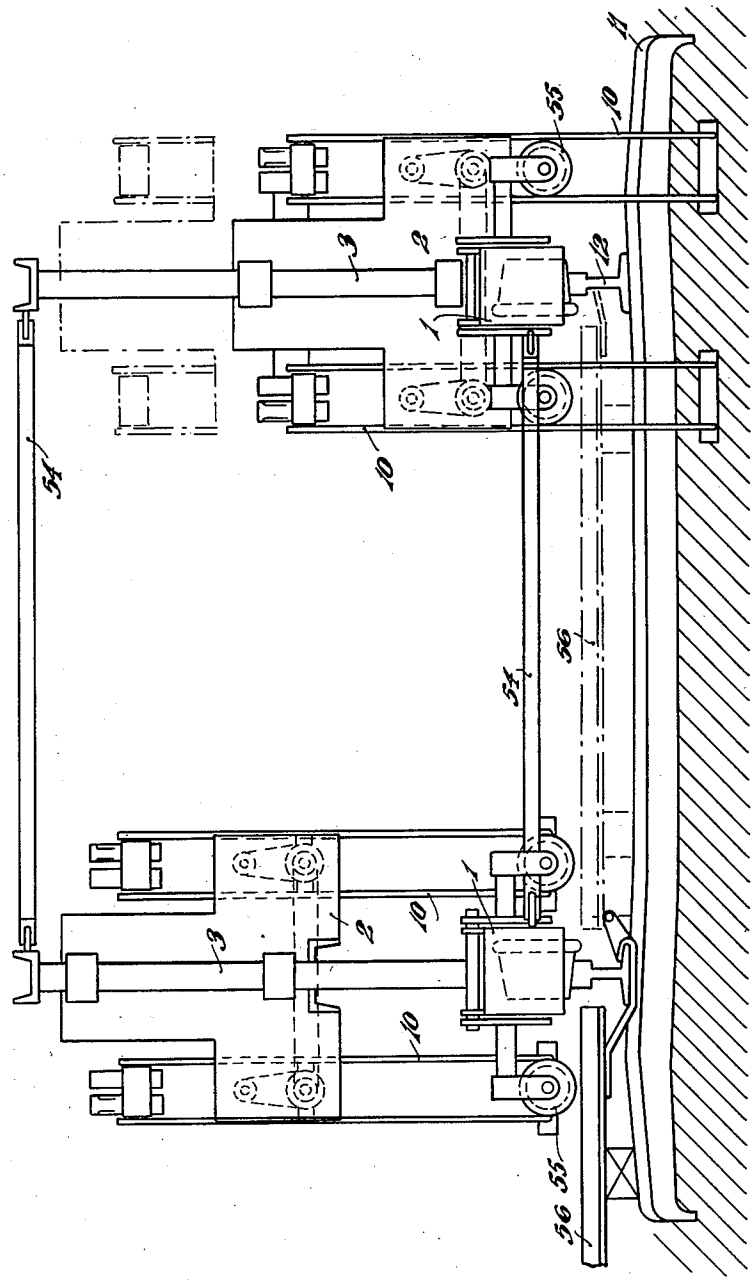


Fig. 4

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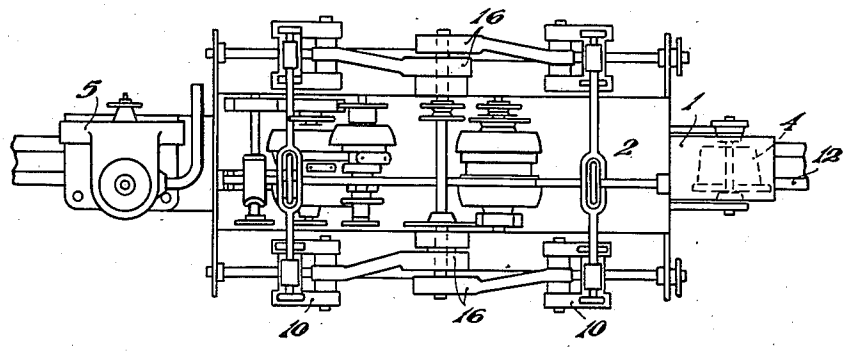
Glascock Downing & Seebold
Attys.

Sept. 1, 1936. A. SCHEUCHZER 2,052,943

BALLAST TAMPING MACHINE

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Fig. 5



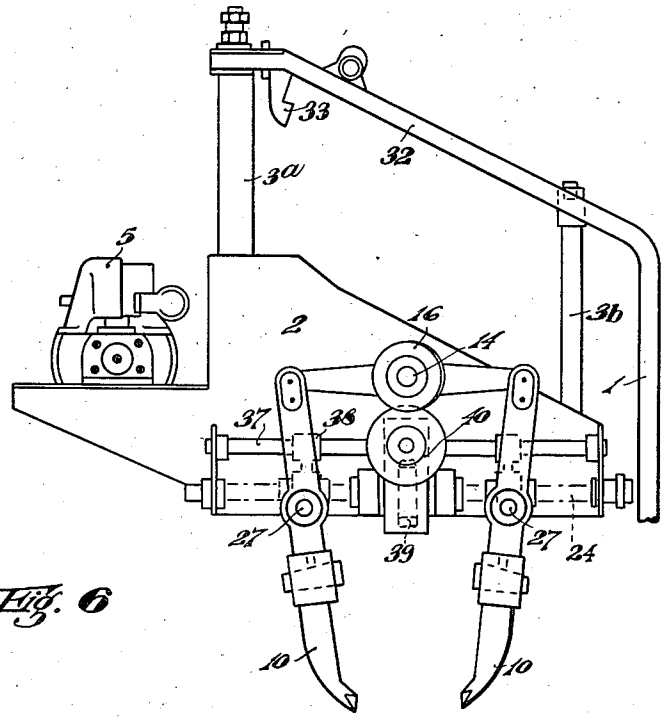


Fig. 6

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UNITED STATES PATENT OFFICE

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BALLAST TAMPING MACHINE

Auguste Scheuchzer, Lausanne, Switzerland

Application August 25, 1934, Serial No. 741,492
In Switzerland August 26, 1933

3 Claims. (Cl. 104—12)

This invention relates to ballast tamping machines and constitutes an improvement on the tamping machine disclosed in my prior application Ser. No. 631,431 of September 1, 1932.

The tamping machine according to the said prior application comprises a truck which is adapted to travel on a railroad track and which supports a vertically movable frame carrying pairs of cooperating tamping tools which may be lowered into the ballast at either side of a tie of the track. The two tamping jaws of each pair of tamping tools are connected to a motor which imparts to them a vibratory movement while the two cooperating jaws may simultaneously be moved to approach each other to compress the ballast gradually and to urge it towards the tie.

The object of the present invention is the provision, in a tamping machine of the type above referred to, of driving means including a friction clutch for controlling the approaching movement of the cooperating tamping tools, so that when the ballast beneath one tie has become sufficiently compressed and its resistance against being further tamped and compressed becomes excessive, the clutch will automatically disengage and consequently the further approaching movement of the tamping tools will be stopped.

In the accompanying drawings,

Figure 1 is a lateral elevation of a ballast tamping machine according to the invention.

Figure 2 shows a detail of the tamping jaw actuating mechanism.

Figure 3 shows a detail of the truck.

Figure 4 is a front elevation of a modified machine.

Figure 5 is a plan view of this machine, but showing only one of the tamping units.

Figure 6 is a lateral elevation of a tamping unit.

The represented tamping machine comprises a truck 1 mounted on wheels 4 which travel on the rails 12 of a railroad track having steel ties 11. A movable frame 2 can slide vertically up and down along standards 3 mounted on the truck. An electric motor 5 is mounted on a bracket 6 carried by the movable frame 2. An internal combustion motor could also be used as a power source and which would preferably be mounted on the truck 1. For raising the movable frame 2, the motor 5 is connected, for instance by a belt drive 7, to a chain drum 30 carried by the frame 2 and around which is wound a chain 31 attached to the fixed cross beam 32. A pivoted hook 33 is also mounted on this cross beam and can engage with a projection 34 on the movable frame when this frame is in its raised position as is shown in broken lines in Fig. 1. Instead of using a chain drive, the movable frame could also be raised by means of a compressed air motor.

A chain 8 connects the motor 5 to a wheel 35 and this latter is connected by a chain 9 to a wheel 36 mounted on a shaft 14 on which are fixed two eccentrics 15. A chain 18 connects the wheel 36 to a wheel 19 and this latter is connected by a chain 20 to a wheel 21 mounted on a shaft 41 which drives by means of a friction coupling a coaxial shaft 42 carrying a worm 40 in mesh with a worm wheel 39 keyed to a screw 24 having two opposed threads 25 and 26.

Each jaw 10 of a pair of cooperating tamping tools is rotatably mounted on a pin 17' carried by an eccentric rod 17 and the head 16 of each of the two eccentric rods 17 is mounted on one of the eccentrics 15. Each tamping jaw 10 is pivoted intermediate its length on a pin 27 carried by a nut 38 engaged on the screw threads 25 and 26, respectively, and slidably mounted on a guide bar 37 extending parallel to the rails 12 of the track.

Figure 2 shows the driving connection between the two shafts 41 and 42. A coupling disk 43 is rigid with the shaft 42 and provided with a projecting portion 44. A second coupling disk 45 is mounted for rotation with the shaft 41 but can slide along this shaft and is provided with a recess 46 coacting with the projection 44 of the disk 43. A spring 47 is inserted between the disk 45 and a washer 48, and the pressure exerted by the spring 47 on the disk 45 may be adjusted by means of a nut 49 screwed on a threaded portion of the shaft 41.

The operation of the described tamping machine is the following:

When the truck 1 moves along the railroad to the place where the ballast is to be tamped, the tamping tools are in their raised position. The truck will be stopped so that the tools arrive vertically above the tie beneath which the ballast must be tamped. Two cooperating jaws 10 are then lowered into the ballast 13 at either side of the tie 11 as shown in Fig. 1. The motor 5 is then started to rotate the shaft 14. The eccentrics 15 turn with the shaft and impart a reciprocating motion to the two eccentric rods 17. The jaws 10 will pivot on their nuts 38 and their lower ends effect a vibratory movement in the ballast. At the same time the shaft 41 is also started to rotate the wheel 39 and screw 24 in such a direction that the nuts 38 are slowly closed together. The tamping ends of the jaws 10 also approach each other and urge the ballast towards

the tie. After some time of operation of the tamping jaws, the ballast has firmly settled and the resistance against the movement of the jaws will increase and finally become greater than the force with which the shaft **24** is driven through the intermediary of the friction clutch constituted by the two disks **43** and **45**. The disk **45** slips then relative to the disk **43** and this latter as well as the screw **24** will not turn any more, and the tamping jaws so will not approach any further towards each other. This slipping of the clutch thus indicates that the ballast beneath one tie has been sufficiently tamped; the movable frame **2** may then be raised, and the truck **1** moved to bring the tamping jaws in alignment with the next following tie to be tamped.

A device is provided for raising the truck **1** to increase its clearance above the track in order to conform with railroad regulations when the machine is shipped and constitutes a car of a freight train. For this reason each end of the two axles **50** of the truck carries a lever **51** one end of which is rotatably connected to the truck **1** at **52**. The other end of the lever extends into an operating arm **53**, so that when this arm is turned downwards the other end of the lever **51** will be raised and the truck **1** lifted off the wheels **4**. Means will be provided to maintain the arms **53** in their lowered position during transportation of the machine.

The modified tamping machine according to Figs. 4 to 6 comprises two identical tamping units, each being provided with two pairs of tamping tools, each of which operates adjacent to one of the rails of the track. Each unit has a separate truck **1** and the two trucks are connected together by cross beams **54**. A single truck could also be provided for both tamping units. The truck **1** of each unit comprises auxiliary wheels **55** destined to roll on a cross track **56** in order to enable the machine to be shunted to the side of the main track for giving passage to trains. The movable frame of each tamping unit moves along a single standard *3a*, while the standards *3b* may serve to determine the exact working position of the tamping jaws. The drawing device, including the friction clutch, for controlling the movement of the screw **24** will be the same as had been described relative to Figs. 1 and 2.

I claim:

1. A ballast tamping machine comprising a truck adapted to travel on a railroad track, a vertically movable frame on the truck, pairs of cooperating tamping tools carried by said frame, each pair of tools comprising two tamping jaws pivoted on the movable frame, means for lowering and raising the frame to bring the tamping jaws into operating position into the ballast or to remove them out of the ballast, means for imparting a vibratory movement to the tamping jaws, means acting on the pivots of the tamping jaws for varying the distance between two cooperating tamping jaws and means responsive to the resistance offered by the ballast against being tamped for rendering said distance varying means inoperative.

2. A ballast tamping machine comprising a truck adapted to travel on a railroad track, a vertically movable frame on the truck, pairs of cooperating tamping tools carried by said frame, each pair of tools comprising two tamping jaws pivoted on the movable frame, means for lowering and raising the frame to bring the tamping jaws into operating position into the ballast or to remove them out of the ballast, means for imparting a vibratory movement to the tamping jaws, means acting on the pivots of the tamping jaws for approaching two cooperating tamping jaws towards each other or moving them away from each other, and means responsive to the resistance offered by the ballast against being tamped for limiting the approaching movement of cooperating tamping jaws.

3. A ballast tamping machine comprising a truck adapted to travel on a railroad track, a vertically movable frame on the truck, pairs of cooperating tamping tools carried by said frame, each pair of tools comprising two tamping jaws pivoted on the movable frame, a motor carried on the truck, motor operated means for imparting a vibratory movement to the tamping jaws, a screw rotatably mounted on the movable frame and provided with two oppositely threaded portions, a nut slidable on each of said threaded portions, the two tamping jaws of one pair of tools being each pivoted on one of said nuts, and means operatively connecting the screw to the motor for imparting a movement of rotation to the screw to thereby move the nuts and vary the distance between the tamping jaws of a pair of tamping tools, said means including a friction clutch whereby the connection between the screw and the motor is disengaged when the resistance offered by the ballast against the action of the tamping tools arrives at a predetermined value.

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