

[54] **DRIVE FOR VIBRATING A TRACK MAINTENANCE MACHINE TOOL**
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 [22] Filed: **Apr. 7, 1971**
 [21] Appl. No.: **132,048**

[30] **Foreign Application Priority Data**
 Apr. 17, 1970 Austria3537
 [52] U.S. Cl.104/12, 60/52, 91/329, 104/8, 167/34, 173/119
 [51] Int. Cl.E01b 27/16, E01b 37/00
 [58] Field of Search.....104/12, 7, 10, 11, 104/13, 1.34; 60/52; 173/119, 121; 91/329, 340, 218; 167/34, 137

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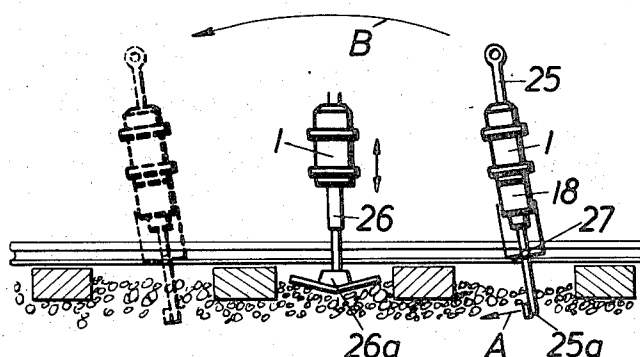
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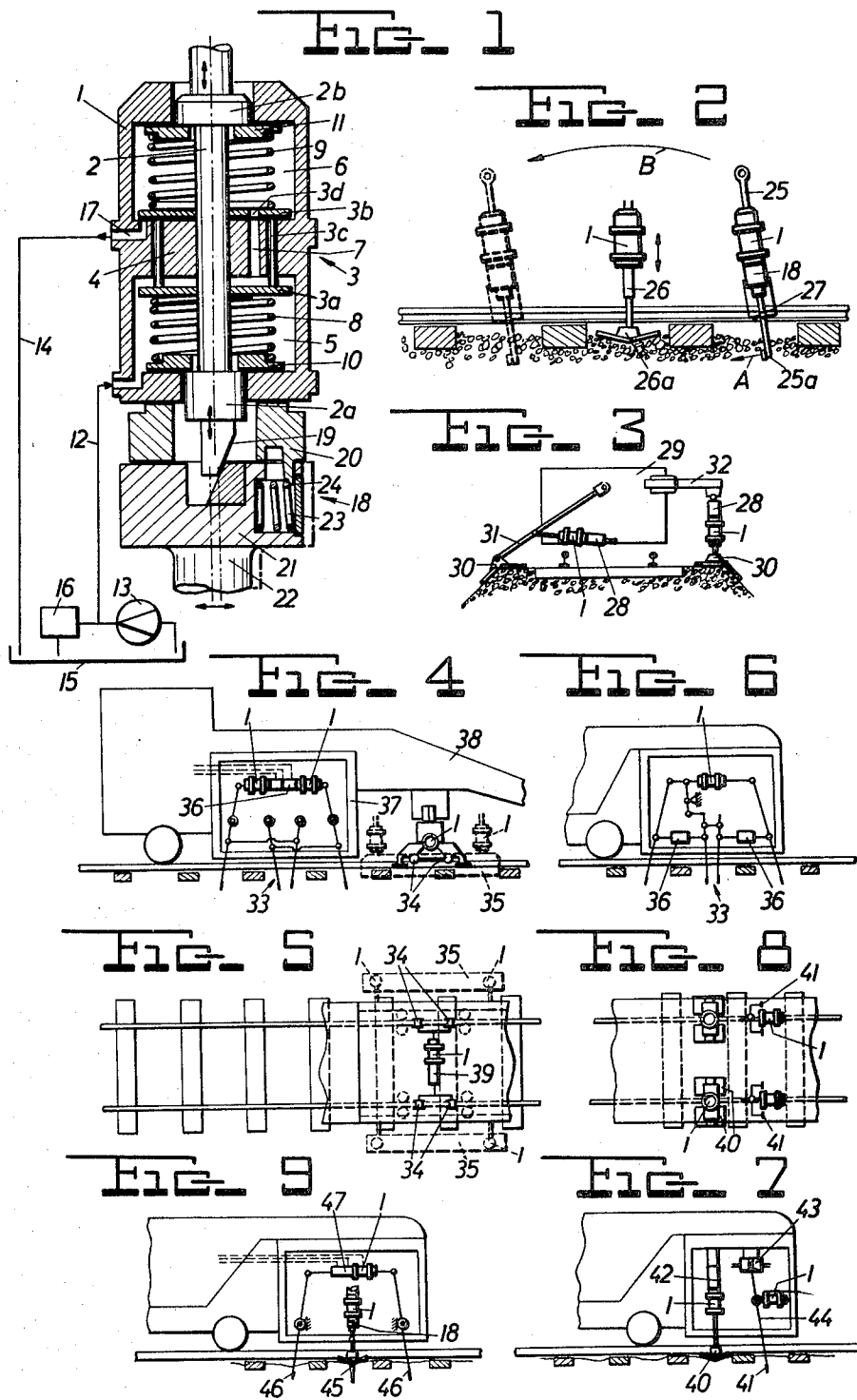
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[57] **ABSTRACT**

A drive for vibrating a track maintenance tool, such as a ballast tamper or a track lining unit, comprises a pneumatic or hydraulic motor with two pistons which are linearly reciprocated under the pressure of a unidirectionally flowing pressure fluid whose alternating pressure direction is controlled by a valve in the motor.

21 Claims, 9 Drawing Figures





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DRIVE FOR VIBRATING A TRACK MAINTENANCE MACHINE TOOL

The present invention relates to improvements in a drive for vibrating a tool of a railroad track maintenance machine, such as tie tamping tools, surface ballast tampers and track lining units.

Hydraulically and pneumatically operated drives for track maintenance working tools have been proposed not only for moving such tools in a working direction but also for vibrating the tools while they work on the track. For instance, it has been suggested to vibrate a group of tie tamping tools by means of a hydraulic drive consisting of two coaxially arranged cylinders housing respective pistons independently reciprocated in opposite directions, the piston rods of the two cylinders being operatively linked to respective tamping tools to vibrate them in response to the reciprocatory piston movements. However, this arrangement has found no practical application in commercially available track maintenance machines because the transmission of the piston movements to the tools has posed difficult structural problems and the efficiency of vibration, i.e. the frequency of the vibratory movements, was too low since the pressure fluid moving the pistons back-and-forth in the cylinders was alternately supplied to one and the other cylinder chamber to alternate the pressure fluid flow against the pistons. In addition, the vibrated tool had to be arranged on the machine in a location dependent on the connection to the drive rather than where it was most advantageous for the work it was to perform.

Similar difficulties have been encountered with hydraulic motors driving a crank shaft to which the tools are operatively connected for being vibrated upon rotation of the shaft. The use of such a crank shaft for vibrating a group of tie tamping tools, for instance, makes the position of the tools dependent on that of the shaft and hydraulic drive motor.

At least some of these disadvantages have been overcome by one of our previous proposals according to which a ballast tamping tool has a holder which carries the ballast engaging tool part and a hydraulic motor causing the tool part to vibrate while it engages the ballast. The entire unit forms a vertically adjustable lever reciprocable in the direction of track elongation for tamping ballast under an adjacent tie. Such a structural unit may be mounted on the machine at the most advantageous position for effectuating the work without being tied to a specific location of a drive since the drive is incorporated into the unit itself.

Hydraulic or pneumatic drives in the form of motors with linearly reciprocating piston means have been proposed for causing the oscillating motion of vibratory conveyors and the like because of their compact construction.

It is a primary object of this invention to provide a universally useful pressure fluid operated drive for vibrating all types of tools of a railroad track maintenance machine. For this purpose, the drive must produce a sufficiently high vibratory frequency of the tools to make them efficient in commercial operations and, additionally, must be so compact and readily connectable to the tool or tools it is to vibrate that the entire operating unit may be advantageously positioned on the machine for most efficient tamping, lining, etc.

The above and other objects are accomplished in accordance with the invention with a pressure fluid oper-

ated motor operatively connected to the tool and including a linearly reciprocating piston means and means for continuously supplying a unidirectionally flowing pressure fluid to the piston means for reciprocating the same.

Thus, we have found that the manifold and special problems encountered in the operation of track working tools on track maintenance machines are advantageously solved with the use of this type of tool vibrating drive. Such a drive forms a compact constructional unit which is structurally simple and requires little space so that it may be used universally with such different tools, for instance, as reciprocating tie tamping tool, track lining units or surface ballast tampers. Since this type of motor comprises all driving parts necessary for vibrating one or more tools mounted on the machine, it may be mounted advantageously in any position where it will least interfere with the work of the machine.

Since the pressure fluid is supplied continuously to the motor in a unidirectional flow, rather than being supplied for constantly alternating flow in opposite directions, the efficiency of the drive, i.e. the vibratory frequency, is greatly increased in comparison with the type of hydraulic drive motor conventionally used for vibrating track maintenance tools. This, in turn, produces a more accurate and durable track positioning with the aid of such tools because more efficiently vibrated tie tamping tools, for instance, penetrate more quickly and readily into the ballast during the tamping operation, more efficiently vibrated track lining units, for instance, make it possible to move the track laterally to a desired position even where it is embedded in an old and hard ballast bed, and more efficiently vibrated surface tampers will better compact the ballast so as to provide a more durable ballast bed.

According to one feature of the present invention, the motor comprises a housing with a transverse wall dividing the housing into two chambers and having a bore for interconnecting the chambers. A flip-flop valve means is mounted on the transverse dividing wall for alternately opening and closing the bore upon linear reciprocation. A piston rod is slidably journaled in the dividing wall and extends axially through the housing, with two pistons respectively mounted on the rod in respective ones of the housing chambers. A pressure fluid inlet leads to one chamber and a pressure fluid return line is connected to the other chamber. The flip-flop valve means is positioned to close the return line when it opens the connecting bore and to open the return line when it closes the connecting bore. Spring means is mounted in the housing to exert axial pressure on the flip-flop valve means in alternate directions to produce the linear reciprocation thereof.

A pressure fluid operated motor of this type is not only readily adjustable in respect of the frequency of piston reciprocations, i.e. vibratory frequency, in dependence on the flow rate of the pressure fluid but also in respect of the reciprocatory stroke of the pistons in dependence on the pressure of the fluid. This ready adjustability of the motor makes it possible to attune the vibratory drive as much as desirable to the local operating conditions, particularly the spot conditions of the ballast bed. Thus, the frequency and amplitude of the vibrations may be readily changed in accordance with such parameters as the size of the ballast rocks and the density of the ballast, etc.

According to one embodiment of this invention, which is particularly useful when the motor is arranged coaxially on a single tamping tool, a mechanism may be operatively connected respectively to the linearly reciprocating piston means of the motor and to the tool for changing the direction of the reciprocating movement. Thus, a vertical reciprocation of the motor pistons may be converted into a horizontal vibratory motion of the tool extending in the same direction, for instance, as the reciprocation of the tool in the direction of track elongation.

The above and other objects, advantages and features of the invention will become more apparent from the following detailed description of certain now preferred embodiments thereof, taken in conjunction with the accompanying drawing wherein

FIG. 1 is a vertical section showing a hydraulic motor used as a drive for vibrating track maintenance tools, including a mechanism for changing the direction of the reciprocatory movement and a hydraulic supply circuit for the motor;

FIG. 2 schematically illustrates a motor of this type associated, respectively, with a single surface ballast tamper and a single tie tamping tool;

FIG. 3 is a schematic front view of an arrangement wherein the motor is associated with surface tampers designed to tamp the flanks of a ballast bed;

FIG. 4 is a schematic side view of a twin tie tamping unit and a track lining unit each associated with a motor of the indicated type;

FIG. 5 is a top view of the track lining unit shown in FIG. 4;

FIG. 6 is a schematic side view of another type of twin tie tamping unit incorporating the motor;

FIG. 7 is a schematic side view of another tamping arrangement incorporating the motor;

FIG. 8 is a top view of the arrangement of FIG. 7; and

FIG. 9 is a schematic side view of yet another tamping arrangement incorporating the motor.

Referring now to the drawing and first to FIG. 1, the motor is shown to comprise a housing 1 having two axially spaced end walls and a transverse wall 4 dividing the motor housing into two chambers 5 and 6. A bore 7 in the dividing wall interconnects the chambers. A flip-flop valve means 3 is mounted on the transverse dividing wall for alternately opening and closing the bore 7 upon linear reciprocation. The illustrated flip-flop valve means 3 includes two valve plates 3a and 3b each of which is mounted in one of the chambers 5, 6 adjacent the dividing wall 4. A plurality of spacing rods 3c interconnects the two valve plates, the length of the spacing rods exceeding the width of the dividing wall 4 and the spacing rods being slidably journaled in the wall for linear reciprocation therein in an axial direction. A piston rod 2 is slidably journaled in the dividing wall and extends axially through the motor housing 1. Two pistons 2a and 2b are mounted on the rod in respective ones of the motor housing chambers 5 and 6 to constitute a piston means mounted for linear reciprocation in the direction of the axis of the motor. In the illustrated embodiment, the piston rod 2 slidably passes through the valve plates 3a and 3b, and the pistons 2a and 2b are respectively slidably journaled in axial bores in the end walls of housing 1.

A pressure fluid inlet in the one chamber 5 receives pressure fluid from supply line 12 and a pressure fluid return line 14 is connected to the other chamber 6. The

valve plate 3a in the one chamber 5 extends over bore 7, which interconnects the chambers, and the plate 3b in the other chamber 6 extends of another bore 17 in wall 4, which is connected to the return line 14, while leaving the chamber interconnecting bore 7 uncovered by means of a port 3d in registry with bore 7. As will be appreciated from FIG. 1, the flip-flop valve means 7 is thus positioned to close the return line 14 when it opens the connecting bore 7 and to open the return line when it closes the connecting bore.

Spring means is mounted in the motor housing to exert axial pressure on the flip-flop valve means in alternate directions to produce the linear reciprocation thereof. The illustrated spring means comprises a compression spring 8 in chamber 5 and a compression spring 9 in chamber 6. One end of each spring bears against a respective one of valve plates 3a, 3b and the other end of each spring bears against a respective spring seat 10, 11 movable with, and in the direction of, a respective one of pistons 2a, 2b. In the illustrated embodiment, each spring seat is an annular member having an outer diameter exceeding the diameter of the associated piston and an inner diameter smaller than the diameter of the piston to leave an annular clearance between the piston rod and the associated piston whereby the pressure fluid has access to the pistons.

The above-described motor operates as follows:

In the piston means position illustrated in FIG. 1, the motor is shown in the idling condition, i.e. no hydraulic fluid is supplied to the motor. The bias of spring 9 having been chosen to exceed that of spring 8, the flip-flop valve 3 is depressed in the absence of fluid pressure in the motor housing so that valve plate 3a is spaced from bore 7 and thus keeps communication between the chambers 5 and 6 open through this bore 7 and port 3d while valve plate 3b is pressed against the other bore 17 in dividing wall 4 to close access to pressure fluid return line 14.

The hydraulic circuit for the motor includes a hydraulic fluid sump 15, an adjustable pump 13 delivering fluid from the sump to supply line 12, and a pressure relief valve 16 connecting the supply line with the sump.

When the pump 13 is operated for continuously supplying unidirectionally flowing hydraulic fluid through line 12 to the pistons 2a, 2b, the fluid will flow through the inlet in chamber 5 and through bore 7 into chamber 6 to press against piston 2b, thus causing the piston rod 2 to move in one axial direction, i.e. upwards. This piston rod movement takes along spring seat 10 in the one chamber 5 in the same direction to compress spring 8 associated therewith until the pressure or load of the spring 8 exceeds the fluid pressure in the other chamber 6 holding down valve plate 3b. At this instant, i.e. when the pressure of spring 8 exceeds the pressure of the fluid in chamber 6, this spring pressure axially moves the associated valve plates 3a upwards to close bore 7 and simultaneously causes valve plate 3b in the other chamber 6 to open the return line 14 to relieve the fluid pressure in chamber 6 by draining the fluid through bore 17. While the pressure of spring 8 increases gradually and linearly as the piston rod 2 rises, the movement of the valve means occurs in one sudden impact at the moment when the spring pressure in one chamber exceeds the fluid pressure in the other chamber.

The reciprocating movement occurs in the same manner. As the fluid pressure in chamber 6 decreases due to the drain of fluid through bore 17 while no additional fluid can pass through closed bore 7, it increases proportionally in chamber 5 which continues to receive fluid through its inlet while it is closed off from chamber 6 by valve plate 3a. This increased fluid pressure causes the piston 2a to move axially downwardly, i.e. in the opposite direction from the previous stroke, while simultaneously holding valve plate 3a pressed against dividing wall 4 to keep bore 7 closed. The downward piston rod movement takes along spring seat 11 in the other chamber 6 in the same direction to compress spring 9 associated therewith until the pressure or load of spring 9 exceeds the fluid pressure in the one chamber 5 holding valve plate 3a up against the dividing wall 4 in a manner analogous to the previously described stroke. At this instant, i.e. when the pressure of spring 9 exceeds that of the fluid in chamber 5, the corresponding impact reverses the valve movement and correspondingly the direction of piston movement. This reciprocating movement consisting of successive impacts exerted in opposite directions continues as long as the pump 13 supplies pressure fluid unidirectionally through the fluid inlet in chamber 5.

During the operation of the motor, the flip-flop valve means can never be in an unstable condition because the compression springs 8, 9 cause each axial movement of the piston rod to be effected by instantaneous impact. When the motor idles and no pressure fluid is supplied, the valve plates could assume an intermediate position when neither of plates 3a, 3b is in contact with the dividing wall 4. This could cause some difficulty in starting the motor, wherefore the pressure of one spring is set differently from that of the other spring so that one of the valve plates will be pressed against the dividing wall 4.

In the illustrated embodiment, the motor also comprises a mechanism 18 operatively connected respectively to the linearly reciprocating piston means and to a tool for changing the direction of the reciprocating movement although it will be clearly understood that such a mechanism will be required or desirable only for the operation of certain types of track maintenance working tools. The illustrated mechanism is arranged to convert the linear reciprocating movement of the piston means 2a, 2b into a reciprocating movement extending in a direction perpendicular thereto, i.e. from vertical to horizontal.

As shown herein, a tool holder 22 has a connecting head 21 which is mounted for transverse vibrating movement (see horizontal, two-headed arrow) on an intermediate mount 20 fixed to one of the end walls of the motor housing 1. The connecting head is slidably mounted on a guide track in the mount and is biased against the piston means of the motor by a spring 23 bearing respectively against the connecting head and a stop 24 projecting from mount 20. The mechanism 18 includes two cooperating inclined planes 19 respectively mounted coaxially with the piston means and projecting from one free end of piston rod 2 and in a recess in the connecting head 21 so that the vertical reciprocating motion of the piston rod is translated into a horizontal reciprocating motion of the tool holder. If desired, the stop 24 may be adjustably mounted on mount 20 so as to regulate the bias of spring 23. The

right-hand end position of the connecting head and tool holder is indicated in chain-dotted lines in FIG. 1.

The use of the above-described drive in connection with tie tamping tools, track lining units and surface ballast tampers is schematically illustrated in FIGS. 2 to 9 which will now be described as far as pertinent to the present invention.

FIG. 2 shows a tie tamping tool 25 with ballast tamping jaw 25a which is constituted as a lever reciprocable in the direction of arrow A for tamping ballast under an adjacent tie. The reciprocating piston rod of motor 1 extends along the longitudinal axis of the tool and the vertical reciprocation is translated into a horizontal oscillation or vibration by mechanism 18 so that the vibration of the tool is effectuated in the same direction as its reciprocation in the direction of track elongation.

In the illustrated embodiment, the tamping jaw 25a is further pivotal about pivot 27 to assure proper transmission of the vibratory motion from mechanism 18 to tamping jaw 25a.

FIG. 2 also shows a ballast surface tamper 26 which is vibrated by a coaxially mounted motor 1 in a vertical direction. Arrow B indicates the sequence of operation of the two tampers 25, 26 which are mounted on the same machine.

FIG. 3 illustrates the use of the invention in connection with a surface ballast tamper 30 for tamping the flank of the ballast bed. One of the tampers 30 is shown mounted on a bracket 32 extending laterally from the machine frame 29, and this tamper is pressed vertically downwardly by a hydraulic motor 28 mounted coaxially with the tamper and the piston rod of vibrating motor 1, the motors 28 and 1 forming a structural unit together with the tamper. The other tamper 30 is mounted on a laterally extending lever 31 one end of which is linked to the machine frame 29 while the ballast tamping plate is linked to the other end of the lever. In this case, the coaxially mounted vibrating motor 1 and hydraulic motor 28 for pressing the lever 31 and thus the tamping plate against the ballast bed flank form a structural unit extending in a plane oblique to the plane of the track.

The universal application of the motor 1 to a great variety of track maintenance tools is further illustrated in FIGS. 4 to 6.

Referring to FIGS. 4 and 5, there is shown the frame 38 of a track tamping and lining machine which supports a vertically movable carrier 37 on which is mounted a twin tamping tool unit which consists, in a generally known manner, of two groups of pairs of opposing tie tamping tools which are reciprocable in the direction of track elongation by hydraulic motor 36. Vibrating motors 1 for each group of tools are mounted coaxially with the hydraulic motor 36 to form a compact structural unit therewith.

The machine frame 38 also supports a generally known type of track lining unit comprising pairs of rail gripping rollers 34 engaging the track rails. A hydraulic motor 39 and vibrating motor 1 form a structural unit operatively connected to the track gripping rollers and extending therebetween for substantially horizontal movement, as best seen in FIG. 5.

In the range of the track lining unit and laterally adjacent the rails are mounted ballast surface tampers 35 which are also vibrated by motors 1 arranged between the tamping plates and the points of attachment to machine frame 38.

The modified twin tie tamping tool unit of FIG. 6 has separate hydraulic motors 36 for reciprocation of the tools of each group while a single vibrating motor 1 is centrally mounted for vibration of the tools of both groups. For this purpose, the motor 1 is shown operatively connected to the upper ends of the outer tools of each pair of tools while a transmission element connects one of the inner tools of one pair to the outer tool of this pair for transmitting the vibration to the inner tool. This inner tool, in turn, is linked to the inner tool of the other pair to transmit its vibration thereto.

FIGS. 7 and 8 show a track tamping machine combining a ballast surface tamper 40 with a pivotal tie tamping tool jaw 41. The surface tamper is operated by the structural unit of coaxially mounted hydraulic motor 42 for depressing the tamper and vibrating motor 1 arranged vertically below hydraulic motor 42. The tie tamping tool 44 is reciprocated in the direction of track elongation by hydraulic motor 43 which moves the upper end of the tool in this direction while vibrating motor 1 is linked to the intermediate pivot of the tool. This type of tamping machine is intermittently moved from tie to tie during the tamping operation so that each tie is first tamped and the subsequent crib is then tamped.

In the tamping machine of FIG. 9, a pair of pivotal tie tamping tools 46 are so arranged that the tools enter into the cribs adjacent to two adjacent ties while a surface tamper 45 is aligned with the crib between the two ties. The surface tamper 45 is vibrated by vertically extending motor 1 provided with mechanism 18 for converting the vertical reciprocation of the motor into a horizontal vibration. The pair of tools 46 are operated by the structural unit consisting of hydraulic motor 47 and vibrating motor 1, the hydraulic motor moving the upper ends of the tamping tools in the direction of track elongation to pivot the tools about intermediate fulcrums. This type of tamping machine is intermittently moved by distances of two ties during the tamping operation.

The universal usefulness of the vibrating motor for track maintenance working tools according to the present invention has been illustrated by way of example only in connection with some possible embodiments. Many other arrangements will readily occur to those skilled in the art, particularly after benefiting from the present teaching. In all embodiments where the tools are to be moved in a working direction, it will be advantageous to combine the motor for moving the tools with the vibrating motor in a compact structural unit, with the two motors being preferably coaxially arranged.

What is claimed is:

1. A drive for vibrating a tool of a railroad track maintenance machine, comprising a track working apparatus and a pressure fluid operated motor operatively connected to the tool and including a linearly reciprocating piston means and means for continuously supplying a unidirectionally flowing pressure fluid to the piston means for reciprocating the same.

2. The vibrating drive of claim 1, wherein the motor comprises a housing, a transverse wall dividing the motor housing into two chambers and having a bore for interconnecting the chambers, a flip-flop valve means mounted on the transverse dividing wall for alternately opening and closing the bore upon linear reciprocation, a piston rod slidably journaled in the dividing wall and extending axially through the housing, the piston means

consisting of two pistons respectively mounted on the rod in respective ones of the motor housing chambers, a pressure fluid inlet in one of the chambers and a pressure fluid return line connected to the other chamber, the flip-flop valve means being positioned to close the return line when it opens the connecting bore and to open the return line when it closes the connecting bore, and spring means exerting axial pressure on the flip-flop valve means in alternate directions to produce the linear reciprocation thereof.

3. The vibrating drive of claim 2, wherein the flip-flop valve means includes two plates, each of the valve plates being mounted in one of the chambers adjacent the dividing wall, and a plurality of spacing rods interconnecting the two plates and exceeding in length the width of the dividing wall, the spacing rods being slidably journaled in the wall for linear reciprocation therein in an axial direction, the piston rod slidably passing through the valve plates, the plate in the one chamber extending over the bore, the pressure fluid return line being connected to the other chamber through another bore in the dividing wall, and the plate in other chamber extending over the other bore while leaving the chamber interconnecting bore in the dividing wall uncovered.

4. The vibrating drive of claim 3, wherein the motor housing has two end walls, the respective chambers being defined between one of the end walls and the dividing wall, each of the end walls having an axial bore and the pistons being respectively slidably journaled in the axial bores of the housing end walls.

5. The vibrating drive of claim 4, wherein the spring means comprises a compression spring in each of the motor housing chambers, one end of each spring bearing against a respective one of the valve plates and the other end of each spring bearing against a respective spring seat movable with, and in the direction of, a respective one of the pistons, pressure fluid supply against the piston in the other motor housing chamber from the inlet through the connecting bore causing the piston rod to move in one direction and thus to move the spring seat in the one chamber in the same direction to compress the spring associated therewith until the pressure of the associated spring exceeds the fluid pressure, at which point the spring pressure axially moves the associated valve plate in said one direction to close the bore in the dividing wall and simultaneously causes the valve plate in the other chamber to open the return line to relieve the fluid pressure in the chamber while causing the fluid pressure in the one chamber to increase against the piston in the one chamber to move the piston rod and the spring seat in the other chamber in the opposite axial direction, thus compressing the spring associated therewith until the pressure of the latter spring exceeds the fluid pressure in the one chamber, at which point the latter spring pressure axially moves the latter valve plate in the opposite axial direction to close the return line and simultaneously causes the valve plate in the one chamber to open the bore in the dividing wall, the reciprocal movements continuing as long as the pressure fluid is supplied unidirectionally through the fluid inlet.

6. The vibrating drive of claim 5, wherein the pressure of the springs in the two chambers differs in the absence of fluid pressure whereby the flip-flop valve means keeps the chamber interconnecting bore open

and the return line closed in the absence of fluid pressure.

7. The vibrating drive of claim 5, wherein each of the spring seats is an annular member having an outer diameter exceeding the diameter of the associated piston and an inner diameter smaller than the diameter of the piston to leave a clearance between the piston rod and the associated piston, the annular member being fixed to the associated piston for movement therewith.

8. The vibrating drive of claim 1, further comprising a mechanism operatively connected respectively to the linearly reciprocating piston means and to the tool for changing the direction of the reciprocating movement.

9. The vibrating drive of claim 8, wherein the direction changing mechanism is arranged to convert the linear reciprocating movement of the piston means into a reciprocating movement extending in a direction perpendicular thereto.

10. The vibrating drive of claim 9, wherein the tool has a connecting head connected to said mechanism, a stop is mounted on the motor laterally adjacent the connecting head and the piston means, a spring is mounted between the connecting head and the stop, the connecting head being mounted for transverse movement in respect of the piston means against the bias of the spring, and the mechanism including two co-operating inclined planes respectively mounted on the piston means and the connecting head for translating the reciprocating movement of the piston means into the transverse movement of the connecting head.

11. The vibrating drive of claim 1, wherein the tool is a tie tamping tool.

12. The vibrating drive of claim 1, wherein the tool is a track lining unit.

13. The vibrating drive of claim 1, wherein the tool is a surface ballast tamper.

14. The vibrating drive of claim 1, wherein the tool is a tie tamping tool arranged in a group with like tie tamping tools all arranged to tamp ballast under an adjacent tie, and a separate one of said motors is operatively connected to each of the tie tamping tools of the group.

15. The vibrating drive of claim 1, wherein each of the motors further comprises a mechanism operatively connected respectively to the linearly reciprocating piston means and to the respective tool for changing the direction of the reciprocating movement, the reciprocating movement of the piston means being vertical and the reciprocating movement of the tool being horizontal.

16. The vibrating drive of claim 1, wherein the tool is a tie tamping tool arranged in a group with like tie tamping tools all arranged to tamp ballast under an adjacent tie, and a single one of said motors is operatively connected to all of said tamping tools for vibration thereof.

17. The vibrating drive of claim 1, wherein the tool is a track lining unit including track gripping members engaging the track rails, and the motor is operatively connected to the track gripping members and extends therebetween for substantially horizontally reciprocating the piston means of the motor.

18. The vibrating drive of claim 1, wherein the tool is a surface ballast tamper having a substantially vertical axis, and the motor is arranged in the axial direction of the tamper thereabove for substantially vertically reciprocating the piston means of the motor.

19. The vibrating drive of claim 1, wherein the tool is a surface ballast tamper for tamping the flank of the ballast bed, and further comprising means for pressing the tamper against the ballast bed flank, the motor being arranged for reciprocation of the piston means in the direction of the tamper pressure in a plane extending obliquely to the plane of the track.

20. The vibrating drive of claim 1, further comprising a pressure fluid drive for moving the tool in a working direction, and the pressure fluid operated motor being associated with the pressure fluid drive in a constructional unit.

21. The vibrating drive of claim 20, wherein the pressure fluid drive and the pressure fluid operated motor are arranged adjacently along a single axis.

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