A vibratory tamper comprises a roller assembly, a chassis, a frame, and a vibrator. The roller assembly includes a roller drum having a roller surface. The chassis is supported on the roller assembly. The chassis includes a body and a grip. The frame is engaged by the grip of the chassis. The frame includes a handle positioned to be used by an operator to support at least a portion of the frame during operation of the vibratory tamper. The vibrator is supported on the chassis and operable to transfer vibration through the chassis to the roller assembly.
METHOD AND APPARATUS FOR STAMPING CONCRETE


BACKGROUND

[0002] The present disclosure relates to a method and apparatus for stamping concrete with a form to develop a pattern in the surface of the concrete. More specifically, the present disclosure relates to a vibratory device and a method of using the device that imparts force to a form positioned on the surface of the concrete to imprint the surface of the concrete.

[0003] Stamping concrete stretches the surface to make an imprint in the surface of the concrete. Stamping includes the use of a form or system of forms which are acting on by manually tamping the form into the surface of the concrete to make the imprint. Generally, force is applied to the forms by manually tamping on the forms. Timing of the application of the tamping force is critical as it must occur during the curing process of the concrete at a time when there is sufficient moisture in the concrete to fill the voids created by the forms. However, if the concrete is to dry, the imprint will result in cracking of the surface of the concrete which is not acceptable.

[0004] Mechanical devices such as vibrating plate and roller tampers are used for tamping and compacting soil and gravels. Such devices are too heavy to be used on concrete stamping forms of the type that are used to imprint uncured concrete. Such devices are too large to be used in the areas where stamped concrete is normally desired, such as patios, sidewalks and the like. In addition, the magnitude of the vibration of traditional vibrating plate or rolling tampers cannot be controlled to the extent necessary to prevent damage to the concrete surface during the stamping process.

SUMMARY

[0005] The present application discloses one or more of the features recited in the appended claims and/or the following features which, alone or in any combination, may comprise patentable subject matter:

[0006] According to a first aspect of the present disclosure, a vibratory tamper comprises a roller assembly, a chassis, a frame, and a vibrators. The roller assembly includes a roller drum having a roller surface. The chassis is supported on the roller assembly. The chassis includes a body and a grip. The frame is engaged by the grip of the chassis. The frame includes a handle positioned to be used by an operator to support at least a portion of the frame during operation of the vibratory tamper. The vibrators are supported on the chassis and operable to transfer vibration through the chassis to the roller assembly.

[0007] In some embodiments, the frame comprises at least one leg, a handle, and a clamp coupled to the leg and the handle. The handle may engage with the clamp so that vibration transferred through the leg is dampened by a free end of the handle.

[0008] In some embodiments, the vibrators include a variable speed prime mover.

[0009] In some embodiments, the roller assembly comprises a drum. In some embodiments, the mass of the drum is variable. In some embodiments, the drum is coated in an elastomeric material.

[0010] In some embodiments, the roller assembly includes a shaft supporting the drum, a pair of roller brackets supported on the shaft and engaged with the chassis. The roller brackets each includes a pair of opposed tapered roller bearings engaged with the shaft to support the shaft for rotation relative to the roller brackets.

[0011] In some embodiments, the vibratory tamper comprises an auxiliary handle that is expandable to extend the length of the frame.

[0012] In another aspect of the present disclosure, a vibratory tamper comprises a roller assembly, a chassis, a frame, and a vibrators. The roller assembly includes at least one roller drum having a roller surface. The chassis is supported on the roller assembly. The frame is supported by the chassis and includes a handle positioned to be used by an operator to support at least a portion of the frame during operation of the vibratory tamper. The vibrators are supported on the chassis and operable to transfer vibration through the chassis to the roller assembly.

[0013] In some embodiments, the roller assembly comprises two rollers supported on a single shaft, each roller comprises a roller drum having a roller surface. In some embodiments, the shaft is fixed to the chassis. In some embodiments, each of the rollers is supported on the shaft by a pair of opposed tapered bearings.

[0014] In some embodiments, the vibratory tamper comprises an auxiliary handle that is expandable to extend the length of the frame.

[0015] In some embodiments, each of the drums is coated in an elastomeric material.

[0016] In some embodiments, the vibrators comprises a variable speed prime mover. In some embodiments, the variable speed prime mover includes a speed control and the vibratory tamper further comprises a throttle control coupled to the speed control. The throttle control may include a variable position stop adjustable to vary the maximum speed of the throttle control.

[0017] In yet another aspect of the present disclosure, a manually manipulable vibratory tamper comprises a roller assembly, a chassis, a frame, and a vibrators. The roller assembly includes a roller drum having a roller surface. The roller surface is configured to engage a surface to be worked by the vibratory tamper with a line of contact. The chassis is supported on the roller assembly. The chassis includes a body and a grip. The frame is engaged by the grip of the chassis. The frame includes a handle positioned to be used by an operator to support at least a portion of the frame during operation of the vibratory tamper. The vibrators are supported on the chassis and operable to transfer vibration through the chassis to the roller assembly to impart a working vibration to the surface to be worked through the line of contact.

[0018] In some embodiments, the vibratory tamper further comprises an auxiliary handle that is movable between a stowed position and a use position.

[0019] In some embodiments, the auxiliary handle is movable to a position wherein the auxiliary handle is engages the working surface to support at least a portion of the frame.

[0020] In some embodiments, the roller assembly comprises two rollers, each roller supported on a single shaft by a pair of opposed tapered bearings. The shaft may be fixed to
the chassis. In some embodiments, the vibrator comprises a variable speed prime mover that includes a speed control. In some embodiments, the vibratory tamper further comprises a throttle control coupled to the speed control and the throttle control includes a variable position stop adjustable to vary the maximum speed the throttle control may transfer to the speed control.

[0021] Additional features of the present disclosure will become apparent to those skilled in the art upon consideration of illustrative embodiments exemplifying the best mode of carrying out the disclosure as presently perceived.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] The detailed description particularly refers to the accompanying figures in which:

[0023] FIG. 1 is a perspective view of an operator utilizing a vibratory tamper to apply mechanical vibratory force to a system of forms to form a pattern in a surface of a concrete slab.

[0024] FIG. 2 is an enlarged perspective view of the vibratory tamper of FIG. 1 with portions omitted.

[0025] FIG. 3 is an end view of a chassis of the vibratory tamper of FIG. 1 showing the connections between handle assembly, vibrator, and roller assembly of the vibratory tamper of FIG. 1.

[0026] FIG. 4 is a front view of the vibratory tamper of FIG. 1.

[0027] FIG. 5 is a perspective view of a handle assembly of the vibratory tamper of FIG. 1.

[0028] FIG. 6 is a perspective view of a roller of the vibratory tamper of FIG. 1, the roller including a drum supported on a shaft, the shaft having bearing surfaces configured to be supported in a bearing assembly and threaded portions to retain the roller in engagement with the bearing assembly.

[0029] FIG. 7 is an exploded perspective view of a bearing bracket that includes a bearing housing supporting a bearing assembly to receive the shaft of the roller of FIG. 6.

[0030] FIG. 8 is a cross-sectional view of the bearing housing of FIG. 7 taken along lines 8-8.

[0031] FIG. 9 is a perspective view of a roller tamper that may be used in a conjunction with the vibratory tamper of FIG. 1 to complete a process of apply a pattern to the surface of a concrete slab.

[0032] FIG. 10 is a perspective view of a vibratory roller tamper similar to the roller tamper of FIG. 9, the vibratory roller tamper including a vibrator to induce vibration in the roller tamper to work uncured concrete.

[0033] FIG. 11 is a perspective view of the vibratory roller tamper of FIG. 10 positioned on a system of forms and positioned in a resting position with a leg moved to an out of the way position and the vibratory roller tamper resting on a roller assembly and a head of the vibrator.

[0034] FIG. 12 is a partially exploded assembly view of a roller assembly of the vibratory roller tamper of FIG. 10.

[0035] FIG. 13 is a cross-sectional view of the roller assembly of FIG. 12 taken along lines 13-13 shown in FIG. 10.

[0036] FIG. 14 is a side view of another embodiment of a vibratory roller tamper with an auxiliary handle in a supporting position.

[0037] FIG. 15 is similar to FIG. 14, with the auxiliary handle in a stowed position.

[0038] FIG. 16 is similar to FIGS. 14-15, with the auxiliary handle in an extended position.

[0039] FIG. 17 is a perspective view of a throttle control assembly of the vibratory roller tamper of FIG. 14.

[0040] FIG. 18 is an exploded assembly view of the throttle control assembly of FIG. 17.

DETAILED DESCRIPTION

[0041] A vibratory tamper 10 is controlled by an operator 12 to apply a vibratory tamping force to a system 18 of forms 14 to impart a pattern 16 to a surface 20 of a concrete slab 22 as suggested in FIGS. 1-8. Referring now to FIG. 2, vibratory tamper 10 includes a vibrator 24 which is supported on a frame 26. Vibratory tamper 10 also includes a roller assembly 28 releasably coupled to the frame 26. Operator 12 controls the operation of vibrator 24 so that vibration is transferred from vibrator 24 through frame 26 to roller assembly 28 and ultimately to a roller surface 30 as vibration is transferred to forms 14. The mechanical energy of the vibration imparted to roller surface 30 is transferred to forms 14 through the line of contact between roller surface 30 and forms 14. Operator 12 controls the speed of a prime mover 32 of vibrator 24 which thereby controls the magnitude of vibration of a head 34 of vibrator 24. Prime mover 32 is illustratively embodied as an internal combustion engine, but may be an electric motor in other embodiments. In some embodiments the electric motor may be powered by an AC power source through a power cord (not shown). In other embodiments, the electric motor may be powered by a battery supported on frame 26 or integral to prime mover 32.

[0042] Vibratory tamper 10 is modularly constructed with head 34 of vibrator 24 releasably secured to frame 26. Roller assembly 28 is also releasably secured to frame 26. Frame 26 includes a handle assembly 36 and a chassis 38. Two hand screws 40, 41 are each supported on a grip 42 that moves relatively to a body 44 of chassis 38. Hand screws 40, 41 are used to clamp a pair of legs 46, 48 to chassis 38 by creating a clamping force between grip 42 and body 44 of chassis 38.

[0043] Roller assembly 28 is releasably secured to chassis 38 by a pair of lever screws 50, 52 that are engaged with a pair of roller brackets 54, 56 to connect roller brackets 54, 56 to body 44 of chassis 38. Similarly, a lever screw 58 is used to apply a clamping force through a clamp 60 to head 34 of vibrator 24. Clamp 60 is bolted to body 44 of chassis 38 so that vibration is transferred from clamp 60 through body 44 into roller brackets 54, 56.

[0044] Frame 26 includes legs 46, 48, a stand 62, a main tube 64, and a handle 66. Legs 46, 48 are each L-shaped with a main portion 68 and a spar 70 that extends from main portion 68 in a generally perpendicular orientation with a bend 72 formed in respective parts 46, 48. Each spar 70 is secured to chassis 38 as described above. Main portions 68, 68 of legs 46, 48 are secured together by a clamp 74 positioned near bends 72, 72. Two additional clamps 76, 78 are positioned on main portions 68, 68 of legs 46, 48 on ends of main portion 68, 68 away from bends 72, 72. Clamps 76, 78 clamp legs 46, 48 to main tube 64. Main tube 64 is secured at a first end 80 to handle 66 by a handle clamp assembly 82. A second end 84 of main tube 64 is positioned between legs 46, 48. Main tube 64 is positioned so that end 80 and end 84 are each positioned at approximately the same distance on either side of clamps 76, 78. It has been found that the end 84 of main tube 64 being free, dampens vibrations transferred through legs 46, 48 and clamps 76, 78 to main tube 64 so that vibration experienced at handle 66 is reduced by the dampening effect of end 84 being free. The dampening effect of
free end 84 of main tube 64 has been found to significantly reduce the vibration felt by operator 12 when controlling vibratory tamper 10.

[0045] Stand 62 is clamped to main tube 64 through a clamp assembly 94. Stand 62 is adjustable relative to main tube 64 and may be positioned to support handle assembly 36 from the ground when vibratory tamper 10 is not in use. Thus, the vibratory tamper 10 rests with the stand 62 engaged with the ground along with roller surface 30 engaged with the ground.

[0046] Vibrations transferred through chassis 38 to roller assembly 28 through roller brackets 54, 56. Roller assembly 28 includes a roller 96 shown in FIG. 6. Roller 96 includes a drum 98 supported on a shaft 108. Drum 98 includes a cylindrical body 100 which has an outer diameter that defines roller surface 30. In the illustrative embodiment, cylindrical body 100 is formed of steel. In other embodiments, cylindrical body 100 may be formed of aluminum. Drum 98 is enclosed and may be filled or partially filled with sand or water to vary the mass of roller 96. The ability to vary the mass of the drum 98 by changing the fill permits the drum 98 to be tailored to a particular application. Also, the material used in filling the drum 98 may be varied to change the vibratory response of the roller assembly 28. For example, a partial fill of sand may provide dampening as compared to an unfilled drum 98. In some embodiments, the cylinder body 100 may be coated with polyurethane or another similar elastomeric or pliable material to control the vibration transferred through to forms 14. The thickness of the coating may also be varied to change the performance or to tailor vibratory tamper 10 to specific applications.

[0047] Drum 98 is supported on shaft 108 and rotates with shaft 108. Shaft 108 is secured to end plates 110, 112 with a main body 102 of shaft 108 welded to end plates 110, 112 at the respective ends of drum 98. Shaft 108 is formed to include a bearing surface 104 at opposite ends of shaft 108. Bearing surfaces 104, 104 are supported in tapered roller bearings housed in each roller bracket 54, 56 as will be described below. Shaft 108 is also formed to include threaded portions 106 at opposite ends of shaft 108. Threaded portions 106 are used to secure roller 96 to roller brackets 54, 56 as will be described in further detail below.

[0048] Each of the roller brackets 54, 56 include a bearing assembly 114. For simplicity, only roller bracket 54 will be discussed in detail. It should be understood that roller bracket 56 has a similar construction in a mirror image to roller bracket 54. Roller bracket 54 is supported in a housing 116 includes two bearing races 118, 120 supported in bearing housing 116. Each bearing race 118, 120 supports a respective tapered roller bearing 122, 124. Bearing surface 104 of shaft 108 of roller 96 is supported on roller bearings 122, 124. Threaded portion 106 of shaft 108 extends through roller bearing 122 and a washer 126 to engage a castle nut 128. Castle nut 128 threateningly engages threaded portion 106 to secure bearing assembly 114 to shaft 108. Castle nut 128 is secured to shaft 108 utilizing a cotter pin (not shown) as is known in the art. The end of shaft 108 is secured by a cover 132 that is secured to bearing housing 116 by a number of screws 130.

[0049] Roller bearing 124 is positioned in bearing housing 116 and engages a seal 136. Seal 136 is held in by a number of screws 130, the heads of which overlap the seal to maintain the seal in position. Races 118 and 120 are positioned in housing 116 and separated by a flange 138 formed in a cavity 140 in housing 116. Flange 138 and maintains the proper spacing between tapered roller bearings 122, 124. It has been found that tapered roller bearings 122, 124 which are illustratively Timken part number L44643 CONE roller bearings, available from The Timken Company, Canton, Ohio, have sufficient durability to withstand the vibration experienced by roller assembly 28 and provide sufficient life under normal use conditions.

[0050] In use, a pattern 16 is formed on a concrete slab 22 quickly and consistently with use of vibratory tamper 10. The uncured concrete slab 22 is poured and finished to form a surface 20 at a final grade. An operator 12 or assistants to the operator 12 apply a system 18 of forms 14 to surface 20 at an appropriate time. Operator 12 then selects a vibratory speed of prime mover 32 which is effective to cause forms 14 to vibrate the surface 20 with pattern 16. Operator 12 progressively moves over forms 14 with roller surface 30 in contact with forms 14. Moving vibratory tamper 10 back and forth over forms 14 with a consistent oscillatory motion, operator 12 progressively stamps pattern 16 into surface 20. Forms 14 are moved progressively across surface 20 as slab 22 cures. The speed of prime mover 32 is varied depending on changing conditions of slab 22 to provide a consistent pattern 16 across slab 22. Completed portions of pattern 16 may be colored or further finished by operator 12 or assistants to the operator 12.

[0051] Additional finish work may be accomplished utilizing a roller tamper 200 shown in FIG. 9. Roller tamper 200 includes a frame 202 that includes a stand 204 that clamps to a handle 206 by a clamp assembly 208. Handle 206 includes a grip 210 and a grip 212. Two rollers 214, 216 are supported from handle 206. Rollers 214, 216 are free to roll relative to handle 206 about an axis 218. Rollers 214, 216 are weighted to apply additional force to a form 14 or to other forms as will be described in further detail below. Because forms 14 that create most of pattern 16 are rigid, they cannot reach all the way up to a wall or the edge of concrete slab 22 effectively. To solve this problem, flexible skins (not shown), formed with the desired pattern, are used around the perimeter of a slab 22 before the stamping process described above begins. Operator 12 uses the roller tamper 200 to create the impression on the surface 20. Roller tamper 200 is heavy enough to create pattern 16 using the flexible skins with minimal effort. Grips 212 and 210 may be used to add additional pressure, if necessary.

[0052] In yet another embodiment, a vibratory roller tamper 300 includes a vibrator 324 supported on a frame 326 and operable to induce vibration in a roller assembly 328 as shown in FIG. 10. Frame 326 includes a stand 204 supported on a handle 306. Stand 204 clamps to handle 306 by a clamp assembly 208. Handle 306 includes a grip 310 and a grip 312. Roller assembly 328 includes two rollers 314, 316 supported on a single shaft 308 (seen in FIGS. 12 and 13). Handle 306 is secured to a plate 330 that is supported on shaft 308. A head 334 of vibrator 324 is supported in a clamp assembly 360 which is supported on plate 330 so that vibration from the head 334 is transferred to the roller assembly 328.

[0053] Referring now to FIG. 12, the plate 330 is shown supported on the shaft 308 with rollers 314 and 316 supported on shaft 308 and secured to shaft 308. Shaft 308 includes two threaded portions 336 and 338 at opposite ends and two bearing surfaces 340, 341 positioned between the threaded portions 336 and 338. The respective rollers 314, 316 are each positioned on the shaft 308 and secured by respective castle nut 342, 344 and castle nut washer 346, 348 as is known in the
art. The castle nuts 342, 344 each thread onto a respective threaded portion 336, 338 to secure the respective rollers 314, 316.

[0054] Referring now to FIG. 13, the structure of rollers 314 and 316 is similar. The following discussion of the assembly of roller 314 may be applied to roller 316 as well. Roller 314 includes a drum 350 secured to a bearing housing 352 by two plates 354 and 356. The plates 354 and 356 are each welded to both the drum 350 and the bearing housing 352. The bearing housing 352 is formed to include two bearing seats 362 and 364 that each support an outer race 366 of respective tapered roller bearings 368 and 370. The inner race 372 of each tapered roller bearing 368 and 370 is supported on the shaft 308. The shaft 308 is formed to include a bearing seat 374 that locates the inner race 372 of bearing 368. The castle nut washer 348 engages the inner race 372 of bearing 370 when the castle nut 344 is positioned on the threaded portion 338 of shaft 308. A plate 376 is positioned on the bearing housing 352 and secured with a number of fasteners 378.

[0055] In use, the vibratory roller tamper 300 is operated so that the vibrator 324 induces vibration in the roller assembly 328 and the roller assembly 328 is moved over a system 318 of forms 320. The stand 204 may be positioned out of the way during use with a clamp assembly 208 positioned so that it reduces the vibration transferred to the grip 312 of the handle 306. The head 334 of vibrator 324 is positioned so that the vibratory roller tamper 300 may be parked so that the head 334 and roller assembly 328 support the vibratory roller tamper 300 as shown in FIG. 11.

[0056] In another embodiment of a vibratory roller tamper shown in FIGS. 14-18, the vibratory roller tamper 400 is similar to the vibratory roller tamper 300 with the stand 204 omitted and replaced with an auxiliary handle 404 that functions as both a stand and a handle, depending on the orientation of the auxiliary handle 304. The vibratory roller tamper 400 also includes a roller assembly 402 that is similar to the roller assembly 328 with a polyurethane coating 403 applied to a drum 405.

[0057] Referring to FIG. 14, the auxiliary handle 404 is shown positioned in a support position in which the handle 306 is supported from the ground 401 and the vibratory roller tamper 400 is maintained in an upright position without the support of a user.

[0058] Referring now to FIG. 15, the auxiliary handle 404 is shown in a stowed position. The clamp assembly 208 may be loosened to allow the auxiliary handle 404 to pivot relative to the clamp assembly 208 to the stowed position. The auxiliary handle 404 includes a bent arm 408. The bent arm 408 includes a first length 410 and a second length 412 separated by a bend 414 that is positioned to complement a bend 416 in the frame 326. Once the auxiliary handle 404 is positioned adjacent the frame 326, the clamp assembly 208 is tightened to secure the auxiliary handle 404 in the stowed position of FIG. 15.

[0059] The auxiliary handle 404 may also be positioned in a use position as shown in FIG. 16. The clamp assembly 208 is loosened to permit the auxiliary handle 404 to pivot relative to the frame 326 to the use position and the clamp assembly 208 tightened to retain the auxiliary handle 404 in the use position. In the use position, the auxiliary handle 404 may be used by an operator to work over a surface with the vibratory roller tamper 400 without having to walk on the work surface or the forms 14.

[0060] As shown in FIG. 14, the vibratory roller tamper 400 also includes a throttle control 420 supported on the frame 326. The throttle control 420 is shown in FIG. 17 and includes a throttle adjuster 422 and a throttle stop 424. The throttle adjuster 422 includes a throttle actuator 426 that is movable relative to a throttle base 428. The throttle actuator 426 is engaged with a Bowden cable 430 and operable to transfer rotation of the throttle actuator 426 about an axis 432 through the Bowden cable 430 to a speed control on the prime mover 32 as is known in the art. The Bowden cable 430 has a sheath 434 that is supported on throttle base 428 and a movable cable 436 that is secured to the throttle actuator 426 to move with the throttle actuator 426 and transfer the motion through the sheath 434 to the speed control 435 on the prime mover 32.

[0061] As shown in FIG. 18, the throttle base 428 includes a clamp 438 that engages the frame 326 to secure the throttle control 420 to the frame 326. The throttle base 428 includes a cylindrical member 440 onto which the throttle actuator 426 is received with the cylindrical member 440 providing a bearing surface 442 which is engaged by the throttle actuator 426 during pivoting about axis 432. The throttle actuator 426 is retained by an actuator cap 444 engaged by fastener 446 that is threaded into the throttle base 428 and provides a clamping force that resists movement of the throttle actuator 426 about the axis 432, but allows the throttle actuator 426 to be rotated when sufficient force is applied.

[0062] The throttle stop 424 includes a stop base 448 and an adjustable stop assembly 450 engaged with the stop base 448. The stop base 448 is secured to the throttle base 428 by a fastener (not shown). The adjustable stop assembly 450 includes a threaded member 452 that is engaged with a threaded channel 454 formed in the stop base 448. The adjustable stop assembly 450 also includes a lock 456. In the illustrative embodiment, the threaded member 452 includes a shaft 458 and a head 460. The shaft 458 engages the channel 454 and rotation of the shaft 458 changes the position of the shaft 458 in the channel 454. The end of the shaft 458 is positioned to be engaged with a stop surface 462 on the throttle actuator 426 to provide to limit rotation of the throttle actuator 426. By varying the position of the shaft 458 in the channel 454, the amount of rotation of the actuator 426 that is permitted about the axis 432 may be varied to thereby change the maximum setting for the speed of the prime mover 32. The lock 456 is illustratively a bias member or spring that is captured between the stop base 448 and head 446 of the threaded member 452. As the shaft 458 of the threaded member 452 is rotated, the bias of the lock 456 resists rotation. Under normal operating conditions, the prime mover 32 develops vibration, but the bias force of the lock 456 is sufficient to prevent the threaded member 452 from rotating without a force applied by an operator to overcome the locking action.

[0063] Depending on operating conditions, a user may vary the position of the shaft 458 to vary the maximum speed of the prime mover 32 to optimize operation of the vibratory roller tamper 400. As the condition of the material being worked changes, the maximum operating speed may be varied to maximize the performance of the vibratory roller tamper 400.

[0064] Although certain illustrative embodiments have been described in detail above, variations and modifications exist within the scope and spirit of this disclosure as described and as defined in the following claims.
1. A vibratory tamper comprising
a roller assembly including a roller drum having a roller
surface,
a chassis supported on the roller assembly, the chassis
including a body and a grip,
a frame engaged by the grip of the chassis, the frame
including a handle positioned to be used by an operator
to support at least a portion of the frame during operation
of the vibratory tamper, and
a vibrator supported on the chassis and operable to transfer
vibration through the chassis to the roller assembly.
2. The vibratory tamper of claim 1, wherein the frame
comprises at least one leg, a handle, and a clamp coupled to
the leg and the handle, the handle engaged with the clamp so
that vibration transferred through the leg is dampened by a
free end of the handle.
3. The vibratory tamper of claim 1, wherein the roller
assembly comprises a drum.
4. The vibratory tamper of claim 1, wherein the roller
assembly comprises a drum.
5. The vibratory tamper of claim 1, wherein the mass of the
drum is variable.
6. The vibratory tamper of claim 1, wherein the drum is
coated in an elastomeric material.
7. The vibratory tamper of claim 1, wherein the roller
assembly includes a shaft supporting the drum, a pair of roller
brackets supported on the shaft and engaged with the chassis,
the roller brackets each including a pair of opposed tapered
roller bearings engaged with the shaft to support the shaft for
rotation relative to the roller brackets.
8. The vibratory tamper of claim 1, wherein the vibratory
tamper comprises an auxiliary handle that is expandable to
extend the length of the frame.
9. A vibratory tamper comprising
a roller assembly including at least one roller drum having
a roller surface,
a chassis supported on the roller assembly,
a frame supported by the chassis, the frame including a
handle positioned to be used by an operator to support at
least a portion of the frame during operation of the
vibratory tamper, and
a vibrator supported on the chassis and operable to transfer
vibration through the chassis to the roller assembly.
10. The vibratory tamper of claim 9, wherein the roller
assembly comprises two rollers supported on a single shaft,
each roller comprising a roller drum having a roller surface.
11. The vibratory tamper of claim 10, wherein the shaft is
fixed to the chassis.
12. The vibratory tamper of claim 11, wherein each of the
rollers is supported on the shaft by a pair of opposed tapered
bearings.
13. The vibratory tamper of claim 12, wherein the vibratory
tamper comprises an auxiliary handle that is expandable to
extend the length of the frame.
14. The vibratory tamper of claim 12, wherein each of the
drums is coated in an elastomeric material.
15. The vibratory tamper of claim 12, wherein the vibrator
comprises a variable speed prime mover.
16. The vibratory tamper of claim 15, wherein the variable
speed prime mover includes a speed control and the vibratory
tamper further comprises a throttle control coupled to the
speed control, the throttle control including a variable posi-
tion stop adjustable to vary the maximum speed the throttle
control may transfer to the speed control.
17. A manually manipulable vibratory tamper comprising
a roller assembly including a roller drum having a roller
surface, the roller surface configured to engage a surface
to be worked by the vibratory tamper with a line of
contact,
a chassis supported on the roller assembly, the chassis
including a body and a grip,
a frame engaged by the grip of the chassis, the frame
including a handle positioned to be used by an operator
to support at least a portion of the frame during operation
of the vibratory tamper, and
a vibrator supported on the chassis and operable to transfer
vibration through the chassis to the roller assembly to
impact a working vibration to the surface to be worked
through the line of contact.
18. The manually manipulable vibratory tamper of claim
17, further comprising an auxiliary handle that is moveable
between a stowed position and a use position.
19. The manually manipulable vibratory tamper of claim
18, wherein the auxiliary handle is moveable to a position
wherein the auxiliary handle engages the working surface
to support at least a portion of the frame.
20. The manually manipulable vibratory tamper of claim
19, wherein the roller assembly comprises two rollers, each
roller supported on a single shaft by a pair of opposed tapered
bearings, the shaft fixed to the chassis, and wherein the vibra-
tor comprises a variable speed prime mover that includes a
speed control and the vibratory tamper further comprises a
throttle control coupled to the speed control, the throttle con-
trol including a variable position stop adjustable to vary the
maximum speed the throttle control may transfer to the speed
control.