

Dec. 15, 1942.

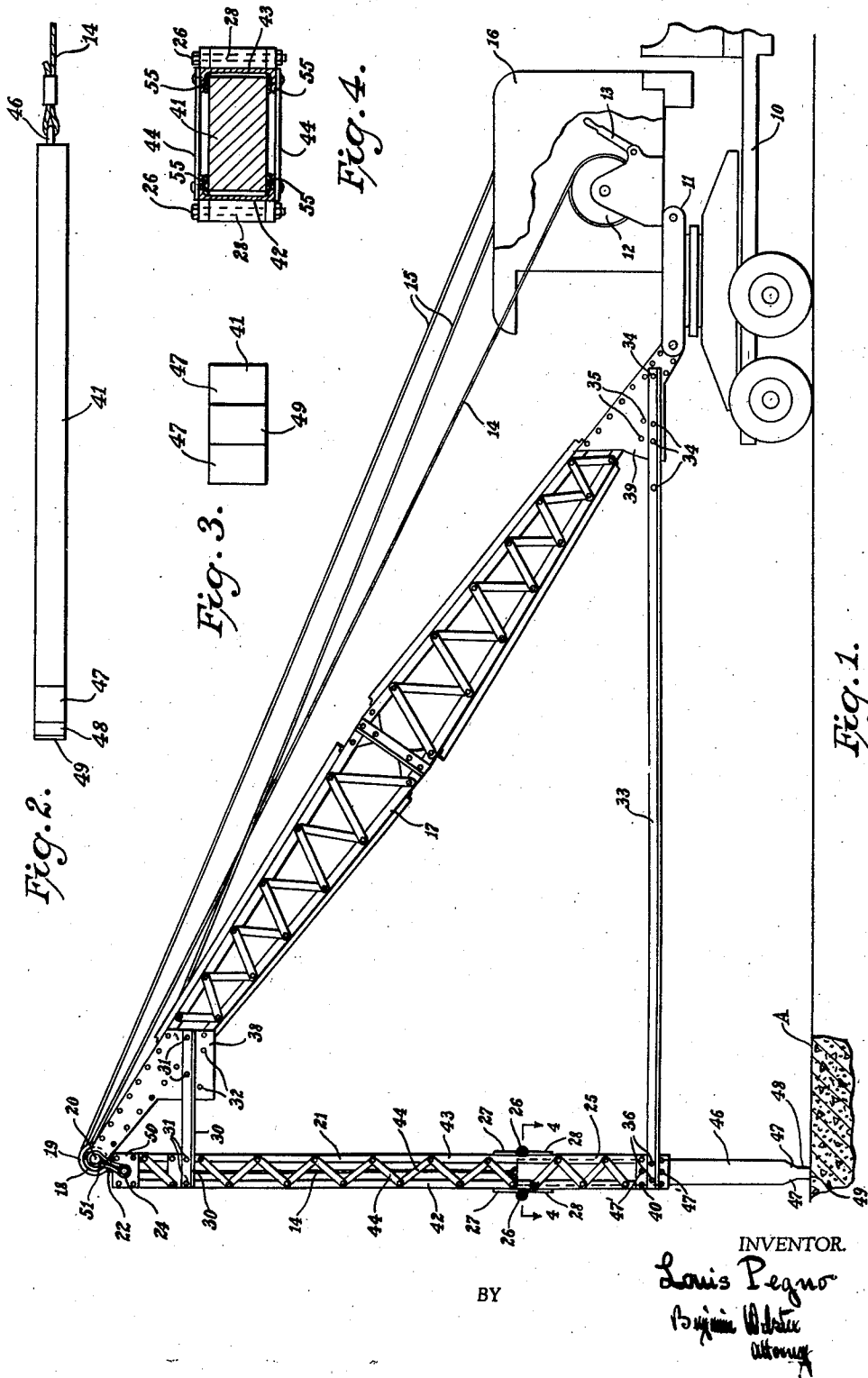
L. PEGNO

2,304,845

ROAD BREAKER

Filed Aug. 8, 1940

2 Sheets-Sheet 1



BY

INVENTOR.

Louis Pegno
By *James H. White*
Attorney

Dec. 15, 1942.

L. PEGNO

2,304,845

ROAD BREAKER

Filed Aug. 8, 1940

2 Sheets-Sheet 2

Fig. 5.

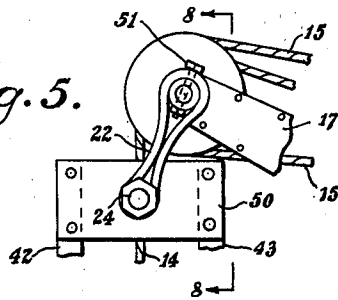


Fig. 6.

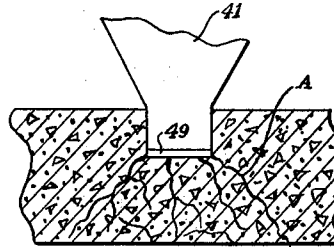
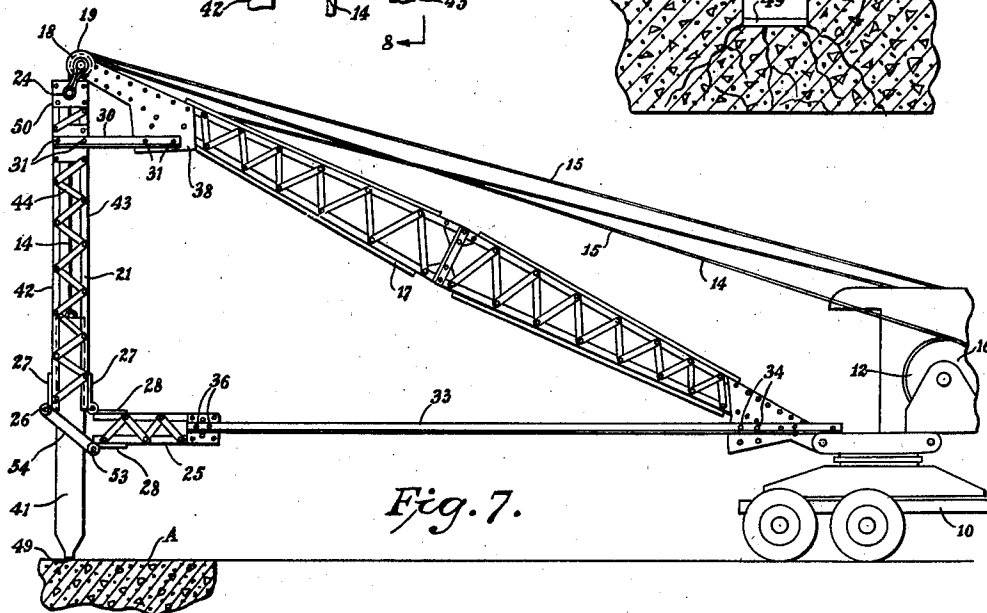


Fig. 7.

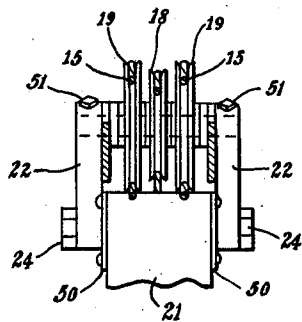
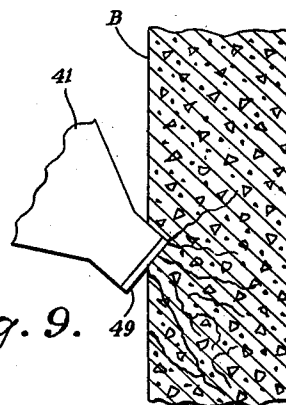


Fig. 8

Fig. 9.



BY

INVENTOR.
Louis Pegno
Benjamin W. White
Attorney

UNITED STATES PATENT OFFICE

2,304,845

ROAD BREAKER

Louis Pegno, Jackson Heights, N. Y.

Application August 8, 1940, Serial No. 351,807

14 Claims. (Cl. 262—15)

This invention relates to breakers and more particularly to road breakers for breaking up the concrete top layer of a road or pavement.

The objects of the invention, among others, are: To provide a hammer for up and down reciprocation and mounted on the boom of a crane, which latter may be mounted on a truck; to provide a four-sided frame structure of structural steel having a central lengthwise opening rectangular in cross-section mounted on the boom of a crane, a hammer slidable in said opening, said hammer being rectangular in cross-section and made of cast steel at least six feet long and having a weight of at least half a ton, said hammer mounting on the lower end a flat bit of hard steel rectangular in cross-section and having an area substantially one-third that of the cross-section of the hammer whereby upon lifting and letting fall the hammer a hard concrete roadway may be broken up and substantially pulverized at a great saving in time and labor as compared with other known methods and devices, probably a saving of over three-fourths; to provide a cable or rope on the boom for lifting the hammer; to provide a support for the hammer, in which the hammer can be reciprocated up and down, vertically or obliquely suspended from the boom of the crane; the oblique suspension is useful in breaking side walls; to provide means for lifting and letting fall the hammer intermittently; to provide a frame structure that maintains the hammer in an up and down slidable position; to provide a second boom connected with and for bracing the frame; to provide means whereby the lower end of the frame is tiltable at a right angle to the frame for securing said end rigidly on the end of and in line with the second boom for operation under bridges or culverts; to provide means for supporting the hammer in a raised and inoperative position for travel from one place to another; and to provide a very simple, but durable structure of low manufacturing cost.

Other objects will appear as the description proceeds.

Reference is made to the drawings in which—

Figure 1 is a side view showing an operative position, but with one of the boom wheels omitted, and a part of the crane truck broken away.

Figure 2 is an enlarged side view of the hammer laid flat.

Figure 3 is an enlarged bottom view of the hammer.

Figure 4 is an enlarged cross-section on the line 4—4 of Figure 1.

Figure 5 is an enlarged side view of the top of the boom.

Figure 6 is a section of a concrete roadway showing a bit in operation.

Figure 7 is a side view similar to Figure 1 but showing the boom lowered and the hammer frame shortened for operation under a bridge.

Figure 8 is a view on the line 8—8 of Figure 5.

Figure 9 is a view showing the device in operation on a concrete wall looking along the wall, the wall sectioned.

A crane truck 10 may be the well known Lorain-40 or any other type having the usual rotatable platform 11 mounting a cable drum 12, which is under the control of an operating lever 13 for winding or unwinding thereon an operating cable or rope 14, and the usual cables 15 controlled in a cab 16 mounted on the turntable or platform 11 and attached to a boom 17 for raising and lowering it. The boom 17 may be 35 feet long or any other desired length and pivotally mounted on the platform 11 to turn when the latter is turned. A wheel 18, mounted centrally of a pivot rod 20 in the outer end of the boom 17, carries the operating cable or rope 14, and two wheels 19, one on each side, carry the cables 15 for controlling the height of the boom 17.

The frame structure 21 is preferably formed with two similar oppositely disposed channel plates 42 and 43 secured together at opposite sides by obliquely disposed links 45, the ends of which are riveted on the sides of the plates. Vertical guides 55 may be secured in the plates 42 and 43 and engage the sides of a hammer 41, which is rectangular in cross-section.

Straps 22, formed of flat steel, may be looped over the ends of the rod 20 at the top and over bolts 24 secured on opposite sides of a top plate 50 fastened at the top of the frame 21. The straps 22 locked nonrotatably on the ends of the rod 20 by bolts 51 passed thru the rod 20 with the nut lying within the strap 22, on either side, or otherwise. It is clear that the frame 21 is pivotally suspended.

The lower part 25 of the frame 21 may be removable or tiltable to shorten the frame 21 for operation under bridges or for travel, but in travel the hammer 41 is lifted up and the lower end tied by a reinforcing cable (not shown) passed thru the frame 21 and attached to the boom 17. On opposite sides of the frame 21 bolts 26 pass thru ears on the lower ends of the shives 27 and the upper ends of shives 28 which are fast on the outsides of channels 42 and 43 respectively of the frame 21.

A brace 30 near the top may be secured to the frame 21 and to a plate 38 on the boom 17 by bolts 31. Supplemental bolt holes 32 permit adjustment of the brace for other positions of the boom 17. A secondary boom or brace 33 may be secured on a plate 39, fast on the boom 17 near the bottom, by bolts 34, and supplemental bolt holes 35, where desired, permit adjustment of the secondary boom 33 for lowering the boom 17, and bolts 36 secure secondary boom 33 to a plate 40 on the sides of the frame 25. Supplemental bolt holes 47', where required, permit a 90 degree adjustment so that the lower part 25 can be made a rigid extension of the secondary boom 33 as shown in Figure 7.

Referring to Figures 2, 3, and 4, the guides 55 may be positioned inside the channels 42 and 43 and contact the flat sides of the hammer 41 to ease its sliding up and down in the frame 21. The hammer 41 may be cast steel, 12 inches by 6 inches in cross-section, ten feet long, and have a weight of from 2500 to 3000 pounds, and be suspended from the cable 14 by a ring 45 secured at the top. Near the bottom of the hammer 41 are inwardly beveled walls 47 to provide a central end 48 rectangular in cross-section, 4 inches by 6 inches. A flat bit 49 of the same size as the end 48 and formed of hard steel may be welded on the end 48 and replaced as required by wear. In use the hammer 41 may be lifted one or two feet and let fall by actuating the drum 12 thru lever 13 and releasing it, intermittently, or to any other height according to the drop blow required to break up the concrete. Well known trip devices or any known structure may be attached for giving intermittent up and down action.

As shown in Figure 7 a brace 54 may be secured on one or opposite sides between the separated shives 27 and 28 and secured by bolts 26 and a bolt 53.

As shown in Figure 9, to break a vertical concrete wall B, the brace 30 and secondary boom 33 may be adjusted and the frame 21 swung on its pivots 24 and inclined at any desired angle which may be 40 degrees.

By moving the crane truck 10 four inches at a time straightways along a roadway, a straight trench is easily and accurately broken up without cracking the concrete on either side, but yet thoroly pulverizing the roadway so that the residue is easily shoveled up.

Having shown and described one embodiment of my invention, but realizing that, in view of my disclosure, many changes, omissions, or substitutions of parts, and changes in form and material, will readily occur to those skilled in the art, I do not limit myself to the exact forms and material shown herein.

I claim:

1. In a road breaker, in combination, a crane, a boom on the crane, a hammer mounted on the boom for up and down reciprocation, a frame structure for slidably supporting the hammer, a second boom for reinforcing said frame, means for simultaneously varying the length of said frame and said second boom, and a cable on the first boom for lifting and letting fall the hammer intermittently.

2. In a road breaker, in combination, a crane, a boom on the crane, a hammer mounted on the boom for up and down reciprocation, a frame structure for slidably supporting the hammer, a second boom for reinforcing said frame, the lower end of said frame being tiltable at a right angle to the frame and attachable rigidly to and in

line with the end of said second boom, and a cable on the first boom for lifting and letting fall the hammer intermittently.

3. In a road breaker comprising in combination a crane, a boom on the crane, a frame structure mounted on the boom for slidably supporting a hammer and holding it against rotary movement, and a cable on the boom for lifting and letting fall the hammer intermittently, a hammer rectangular in cross-section and slidably supported in said frame, said hammer having inwardly beveled lower walls and a centrally located rectangular lower end of substantially less area than the horizontal cross-sectional area of the body of said hammer.

4. The construction defined in claim 3, together with a hard flat bit rectangular in cross-section secured to the lower face of said hammer.

5. The construction defined in claim 3, together with a hard flat bit rectangular in cross-section welded to the striking face of said hammer, whereby the breaking surface of said hammer is replaceable when worn or damaged.

6. In a road breaker comprising in combination a crane, a boom on the crane, a frame structure swingably mounted on the boom for slidably supporting a hammer and holding it against rotary movement, a cable on the boom for lifting and letting fall the hammer intermittently, and means for holding said frame in predetermined position relative to a vertical line, a hammer rectangular in cross-section and slidably mounted in said frame, said hammer comprising an integral lower end portion having opposite walls inwardly spaced with relation to the corresponding walls of the body of the hammer and a flat rectangular lower end of substantial width but of substantially less area than the horizontal cross-sectional area of the body of said hammer, said walls adjacent said end being positioned approximately at right angles thereto and said flat end being spaced from said body, whereby said hammer is adapted to strike a blow with its flat end against material to be broken when reciprocated in a vertical direction and to strike a sharp angular edge against material to be broken when reciprocated in an angular direction relative to such material.

7. In a road breaker comprising in combination a crane, a boom on the crane, a frame structure mounted on the boom for slidably supporting a hammer and holding it against rotary movement, and means for lifting and letting fall the hammer intermittently: a hammer rectangular in cross-section and slidably mounted in said frame, said hammer comprising an integral lower end portion having opposite walls inwardly spaced with relation to the corresponding walls of the body of the hammer and a flat rectangular lower end of substantial width but of substantially less area than the horizontal cross-sectional area of the body of said hammer, said walls adjacent said end being positioned approximately at right angles thereto and said end being spaced from said body, whereby said hammer is adapted to strike a blow with its flat end against material to be broken when reciprocated in a vertical direction and to strike a sharp angular edge against material to be broken when reciprocated in an angular direction relative to said material.

8. In a road breaking device comprising in combination a crane, a hammer, means for lifting and letting fall the hammer intermittently, and guide means permitting sliding movement of the hammer but preventing relative rotation

between the hammer and the guide means, said hammer having inwardly beveled lower walls and a centrally located rectangular lower end of substantially less area than the horizontal cross-sectional area of the body of said hammer.

9. In a road breaking device comprising in combination a crane, a hammer, means for lifting and letting fall the hammer intermittently, and guide means permitting sliding movement of the hammer but preventing relative rotation between the hammer and the guide means, said hammer having a body portion, an intermediate portion, and a lower striking portion, said intermediate portion having opposite inwardly beveled walls, said lower portion having a flat lower striking end and walls which are positioned approximately at right angles to said lower end, and said lower portion being of substantially less cross-sectional area than the horizontal cross-sectional area of the body portion.

10. In a road breaking device comprising in combination a crane, a hammer, means for lifting and letting fall the hammer intermittently, and guide means permitting sliding movement of the hammer but preventing relative rotation between the hammer and the guide means, said hammer having an elongated body portion, an intermediate portion, and a lower striking portion, said intermediate portion having opposite inwardly beveled walls, said lower portion having a flat lower striking end and walls which are positioned approximately at right angles to said lower end, and said lower portion being of substantially less cross-sectional area than the horizontal cross-sectional area of the body portion.

11. In a road breaking device comprising in combination a crane, a hammer, means for lifting and letting fall the hammer intermittently, and guide means permitting sliding movement of the hammer but preventing relative rotation between the hammer and the guide means, said hammer having a body portion, an intermediate portion, and a lower striking portion, said in-

intermediate portion having opposite inwardly beveled walls, said lower portion having a flat lower striking end and walls which are positioned approximately at right angles to said lower end, the area of said lower striking end being approximately one-third of the horizontal cross-sectional area of the body portion, and said hammer being of substantially elongated form in proportion to its width.

12. A hammer for a road breaking device or the like, having a body portion, an intermediate portion, and a lower striking portion, said intermediate portion having opposite inwardly beveled walls, said lower portion having a flat lower striking end and walls which are positioned approximately at right angles to said lower end, and said lower portion being of substantially less cross-sectional area than the horizontal cross-sectional area of the body portion.

13. A hammer for a road breaking device or the like, having an elongated body portion, an intermediate portion, and a lower striking portion, said intermediate portion having opposite inwardly beveled walls, said lower portion having a flat lower striking end and walls which are positioned approximately at right angles to said lower end, and said lower portion being of substantially less cross-sectional area than the horizontal cross-sectional area of the body portion.

14. A hammer for a road breaking device or the like, having a body portion, an intermediate portion, and a lower striking portion, said intermediate portion having opposite inwardly beveled walls, said lower portion having a flat lower striking end and walls which are positioned approximately at right angles to said lower end, the area of said lower striking end being approximately one-third of the horizontal cross-sectional area of the body portion, and said hammer being of substantially elongated form in proportion to its width.

LOUIS PEGNO.