

(No Model.)

3 Sheets—Sheet 1.

A. D. BUCHANAN, Dec'd.

A. C. P. BUCHANAN, Administratrix.

ROAD RAMMING MACHINE.

No. 569,573.

Patented Oct. 13, 1896.

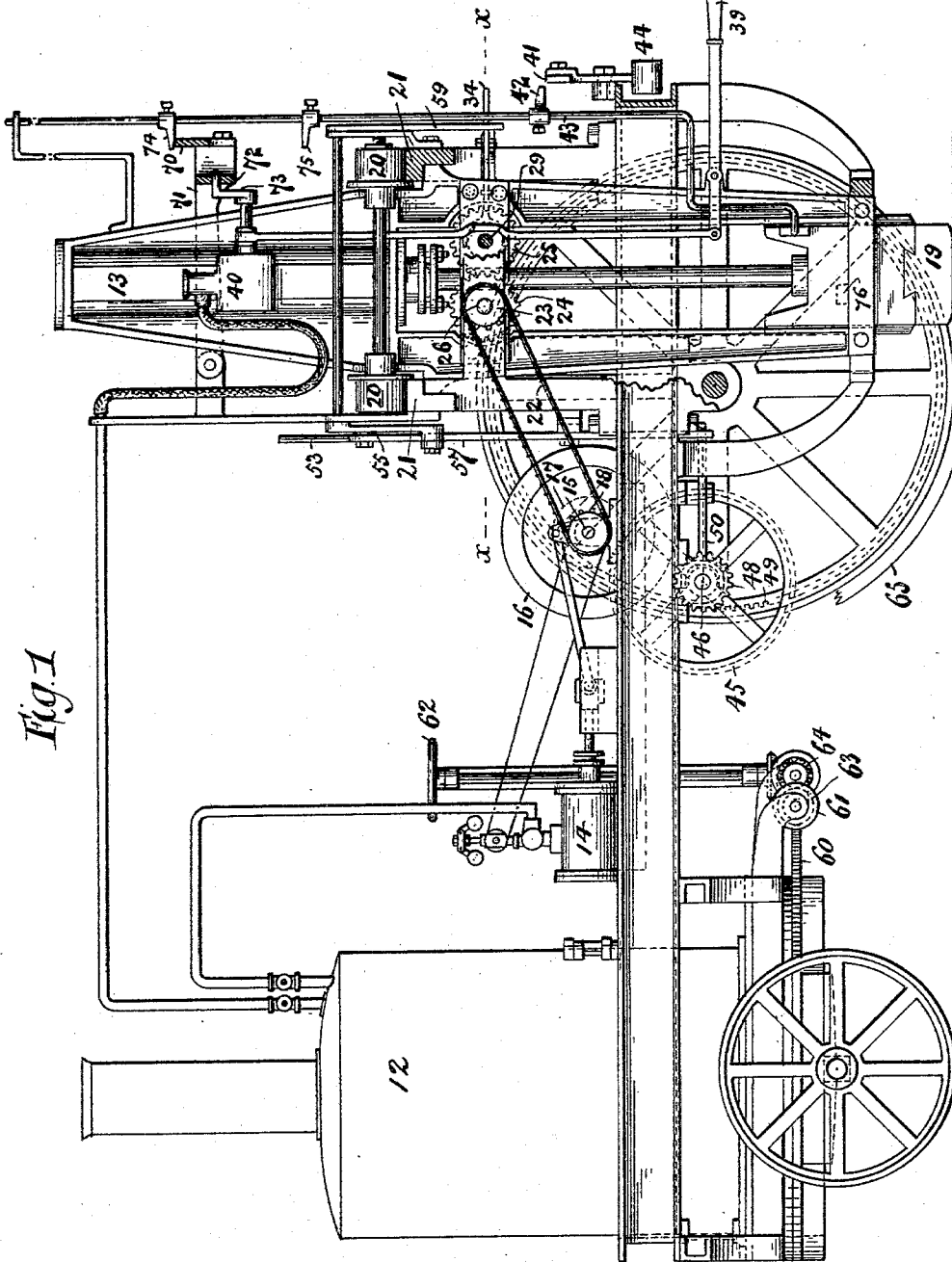


Fig. 1

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Fig. 3

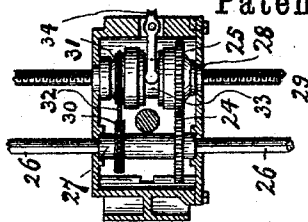
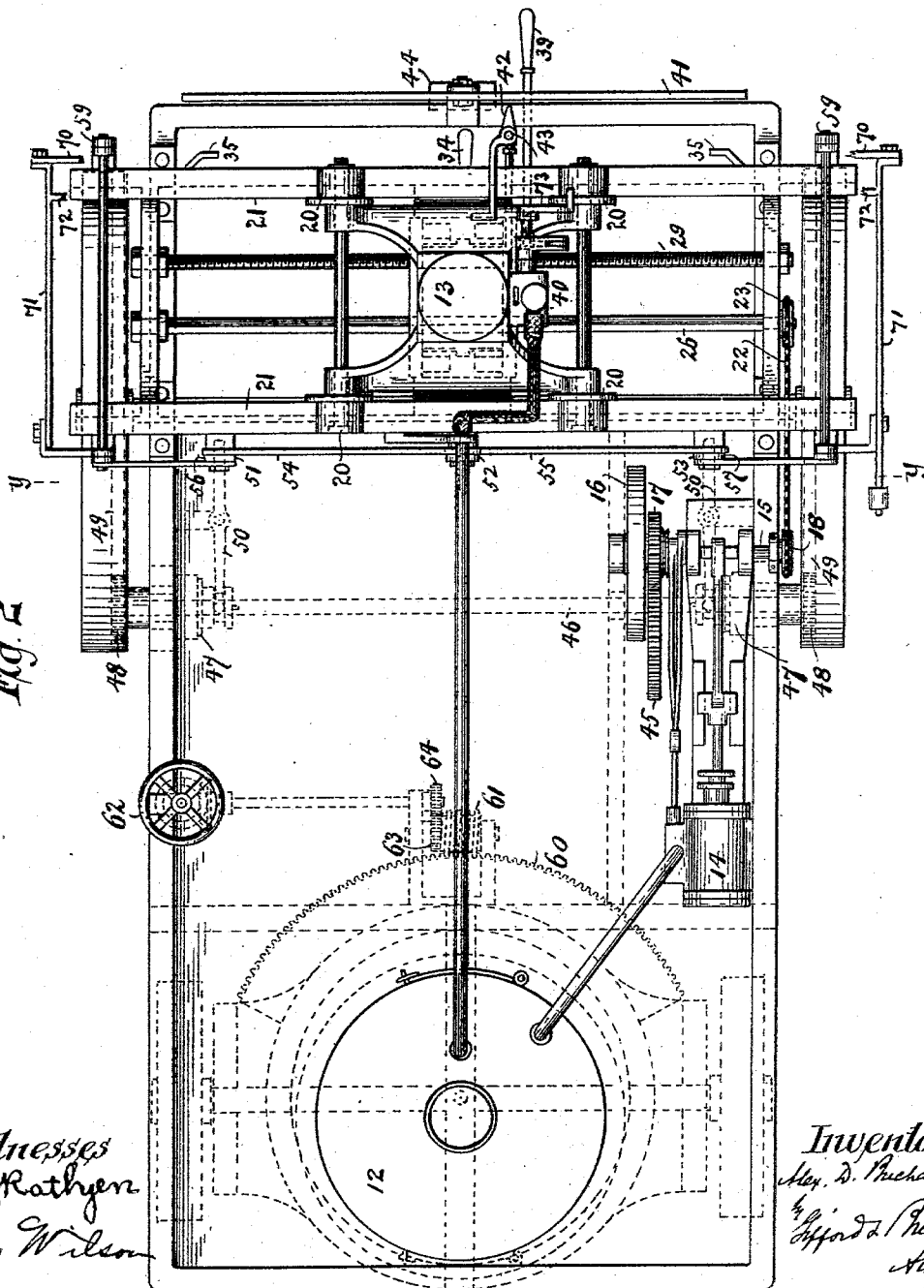


Fig. 2



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3 Sheets—Sheet 3.

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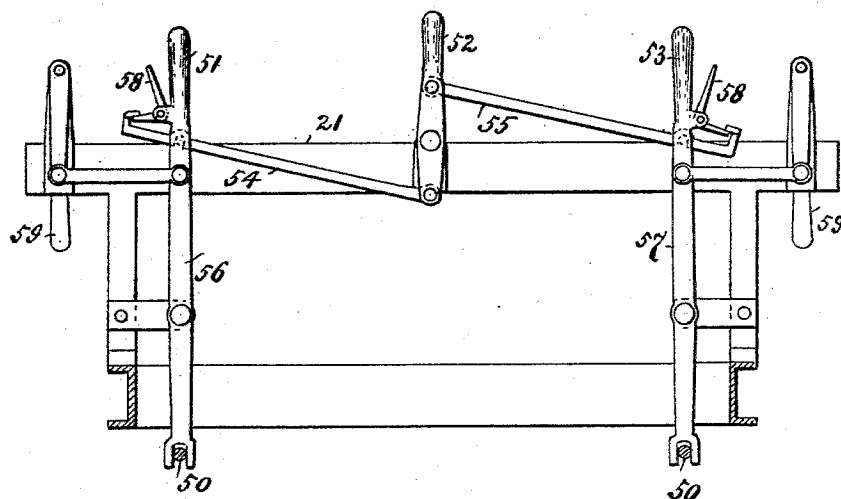
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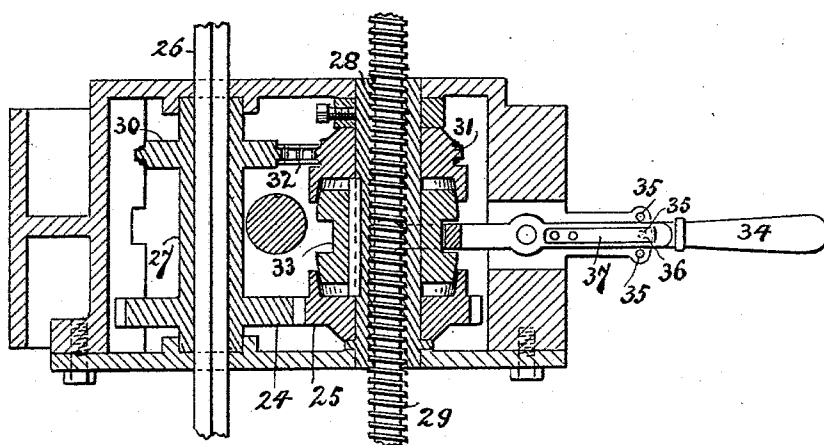
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Patented Oct. 13, 1896.

Fig 4



Figs



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UNITED STATES PATENT OFFICE.

ALEXANDER D. BUCHANAN, OF LONG ISLAND CITY, NEW YORK; ANNA C. P. BUCHANAN ADMINISTRATRIX OF SAID ALEXANDER D. BUCHANAN, DECEASED.

ROAD-RAMMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 569,573, dated October 13, 1896.

Application filed December 3, 1895. Serial No. 570,910. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER D. BUCHANAN, a citizen of the United States, and a resident of Long Island City, (Astoria,) in the county of Queens and State of New York, have invented certain new and useful Improvements in Road-Ramming Machines, of which the following is a specification.

My invention relates to improvements in machines for making or mending roads; and it consists of certain novel parts and combinations of parts pointed out in the claims concluding this specification.

The object of my invention is to provide a portable steam-hammer adapted to operate upon the material composing a road-bed (especially roads which are paved with stone) for the purpose of making or repairing the same.

In the accompanying drawings I have shown my invention embodied in the form which is at present preferred by me, and I will now describe the structure illustrated in said drawings.

Figure 1 is a side elevation of a machine; Fig. 2, a top view thereof, and Figs. 3, 4, and 5 views of detailed parts.

12 is a boiler, and 13 a steam-hammer, both being of ordinary and well-known construction. The boiler and hammer are carried upon a suitable truck, as shown. The boiler 12 supplies steam to operate the engine 14, which communicates motion to shaft 15, carrying a fly-wheel 16, a pinion 17, and a sprocket 18.

The hammer 19 is operated by steam conveyed from the boiler 12 by a suitable duct with flexible connections, as shown. This hammer and its operating parts are set in a frame supported by wheels 20 20, traveling from side to side of the machine on tracks 21.

The following is a description of the mechanism for causing the hammer and operating mechanism to travel at right angles to the line of travel of the track: Motion is communicated from the shaft 15 by sprocket 18, chain 22, sprocket 23, shaft 26, and gear-wheel 24 to gear-wheel 25. As shown in Figs. 2, 3, and 5, the shaft 26 is angular and is journaled at its ends in the frame of the machine.

27 is a sleeve free to travel longitudinally on said shaft, but fitted thereto so as to re-

volve therewith. Gear 24 and sprocket 30 are attached to sleeve 27. Gear 25 and sprocket 31 are loose wheels having concave faces carried on a nut 28, which nut is provided with an internal screw-thread engaging with the screw-thread on a stationary shaft 29, supported at its ends in the frame of the machine. Sprockets 30 and 31 are connected by means of chain 32, so as to cause wheel 31 to revolve in the same direction as wheel 30.

33 is a clutch having a longitudinal motion on, but keyed to, the nut 28.

34 is a handle by means of which the clutch 33 is shifted.

35 35 35 are depressions into which a projection 36 is pressed by a spring 37 when in position for engagement, forming stops for accurately determining the positions of the lever 34. Wheels 25 and 31 are constantly revolving in opposite directions. When the clutch is in the central position, (shown in Fig. 5,) it is not in engagement with either of these wheels, but when it is shifted to one side or the other it comes into frictional contact with one of them and is revolved, causing the nut 28 to turn and the carriage supporting the hammer to which it is attached to move sidewise in one direction or the other. By means of the handle 34 the operator can, therefore, cause the steam-hammer and its attendant mechanism to be shifted laterally to any desired position. When the hammer reaches the extreme position, either to one side or the other of the machine, the handle 34 will come in contact with the frame at 35 and the clutch 33 be automatically disengaged and further travel in that direction prevented.

The up-and-down motion of the hammer 19 is controlled by the lever 39, connected with the valve in the steam-chest 40 in the ordinary and well-known manner.

41 is a guide placed at the rear of the machine and in full view of the attendant as an aid to manipulating the hammer, so as to secure an even grade on the road-bed. This guide 41 is made to be readily detached and adjusted and is shaped so as to correspond with the curvature of the road on that part which is being operated upon by the hammer.

42 is an adjustable finger which is connected with a rod 43, which moves in unison with

the hammer, thereby furnishing, in connection with the piece 41, a guide in leveling the road.

44 is a pendulum by means of which the operator is informed of the inclination of the machine at any given time.

70 is an additional guide or gage bar, also having the shape of the road, attached to side bars 71, hinged to the frame of the machine and carrying a slotted cross-bar 72, engaging with a lever 73 to control the supply of steam to the hammer-actuating mechanism.

74 75 are adjustable stops attached to the rod 43, vibrated longitudinally by the hammer. By these means the hammer may be automatically controlled in its descent and ascent, since when it reaches the true road-level the stop 74, by depressing the gage-bar 70, operates the lever 73 to reverse the steam-valve in the chest 40. The stop 75 similarly reverses it at the end of the upstroke.

When conveying the machine from place to place, or when it is not in use, a stick 76 may be placed on the lower cross-bars of the frame, on which stick the hammer may rest.

The truck is moved forward by the following mechanism: Motion is communicated from shaft 15 through pinion 17, and gear-wheel 45, to shaft 46, this shaft being thereby kept in constant revolution. 47 47 (see Fig. 2) are clutches carrying pinions 48 48, meshing with teeth 49 on the rear wheels of the truck. The movable parts of the clutches 47 47 are controlled by levers 50 50, fulcrumed on the frame of the machine. These levers are operated by the mechanism shown in Fig. 4 to throw the clutches 47 into or out of action to control the pinions 48 48.

The mechanism by which the clutches 47 47 are controlled is shown in Fig. 4. 51, 52, and 53 are handles connected by links 54 and 55. 56 57 are levers fulcrumed on the frame of the machine and engaging with the levers 50 50 at their free ends. The handles 51, 52, and 53 are so connected by the links 54 and 55 that when either of these handles is operated levers 56 and 57 move in opposite directions, so as to simultaneously control clutches 47. 58 58 are triggers for disengaging the links 54 55 when it is desired to operate one of the levers 56 or 57 without operating the other, this being desirable where it is desired to turn the truck in a small space. 59 59 are handles operating these same levers 56 and 57, placed, for the convenience of the attendant, at either side of the machine.

The steering mechanism consists of a curved rack 60, attached to the fifth-wheel of the truck, in which rack worm 61 engages, said worm being connected with the handle or guiding-wheel 62 by means of gears 63 and 64.

65 is a removable tire in addition to the ordinary tire of the wheel, which may be employed to bring the machine to the proper level when its normal level from any cause is not conveniently otherwise obtained.

The operation of the device above described will be readily understood from the foregoing description. The operator, by means of the handle 39, controls the blows of the hammer 19 in the ordinary and well-known manner and by means of the handle 34 causes the hammer to travel transversely backward and forward, as may be desired. By means of the handles 51, 52, 53, and 59 the machine is caused to move longitudinally to bring the hammer 19 over another part of the road, where the hammering operation is continued. By means of the handle 62 the fireman in charge of the boiler controls the direction of longitudinal motion of the machine.

In the foregoing specification I have incidentally referred to some of the modifications which might be adopted in the practice of my invention, but I have not endeavored to specify all the modifications which might be employed, the object of this specification being to instruct persons skilled in the art to practice my invention in the form at present preferred by me and to enable them to understand its nature; and I desire it to be distinctly understood that mention by me of a few modifications is in no way intended to exclude others not referred to, but which are within the spirit and scope of my invention.

Many of the details and combinations illustrated and above described are not essential to the several inventions broadly considered. All this will be indicated in the concluding claims, where the omission of an element or the omission of reference to the detailed features of the elements mentioned is intended to be a formal declaration of the fact that omitted elements or features are not essential to the inventions therein severally covered.

What I claim is—

1. In a road-making machine, the combination with a truck on which it is mounted, of a steam-hammer mounted on a transverse track, an engine driving a constantly-rotating shaft, a screw-and-nut connection between the truck and the frame of said hammer, friction-disks mounted on said nut constantly rotated by said shaft in opposite directions and a clutch mounted on and keyed to said nut but having a longitudinal motion thereon by means of which said nut is caused to rotate in either direction to shift said hammer transversely.

2. In a road-making machine, the combination of a boiler and a steam-hammer with a truck on which they are mounted and a guide for indicating the true road level.

3. In a road-making machine, the combination of a boiler and a steam-hammer with a truck on which they are mounted, a guide for indicating the true road level and a pendulum for indicating the level of the truck.

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