Nov. 22, 1927.

1,650,255

A. E. BANNISTER

MECHANICAL SHOVEL

Filed Aug. 4, 1926

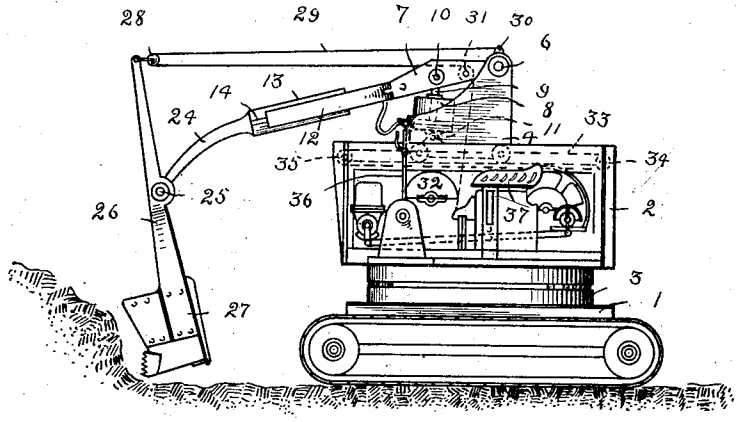


Fig. 1.

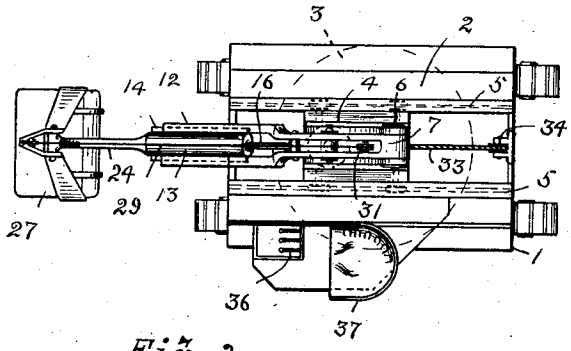


Fig. 2.

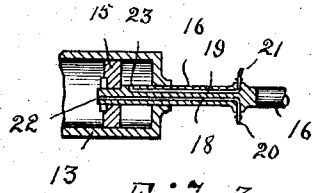


Fig. 3.

Inventor

ALFRED E. BANNISTER.

By Geo. Stevens.

Attorney

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UNITED STATES PATENT OFFICE.

ALFRED E. BANNISTER, OF DULUTH, MINNESOTA.

MECHANICAL SHOVEL.

Application filed August 4, 1926. Serial No. 126,999.

This invention relates to mechanical shovels and has particular reference to one designed for use in restricted spaces, for example, as in tunnels or the like in the operation of mines.

The principal object of the invention is that of simplicity of construction in conjunction with positive and effective operation.

Other objects and advantages of the invention will appear in the further description thereof.

Referring now to the accompanying drawing, forming part of this application, and in which like reference characters indicate like parts:

Figure 1 is a side elevation of one of the improved shovels,

Figure 2 is a top plan view, and

Figure 3 is an enlarged section of the inner end of the jib piston and rod therefor.

The embodiment of the invention here illustrated is applied to a self propelled vehicle, preferably of caterpillar traction with the ground, the chassis being illustrated at 1, surmounted by the housing 2, there being any suitable form of turntable construction shown at 3 intermediate of the housing and the chassis. The housing 2 is preferably of rectangular form and contains the operating mechanism which may be either steam, electric, air or gas. Upon the top of the housing 2 is mounted a carriage 4 for fore and aft operation thereupon, there being suitably spaced tracks thereupon indicated at 5 in which the carriage is operable, the same being common in mechanical shovel construction. This carriage, however, is novel in that the rearmost portion thereof extends upwardly, pivotally supporting as at 6 the crane or jib 7 which latter is operated vertically hydraulically as by the cylinder indicated at 8, the piston rod 9 of which is pivotally connected as at 10 to the jib and the lower end of the piston is pivotally supported as at 11 upon the forward end of the carriage; the fluid to the piston 8 being supplied and controlled in any desired manner not specifically shown, as it forms no part of the present invention.

The forward end of the jib 7 is bifurcated and formed into two spaced guideways indicated at 12 intermediate of which the cylinder 13 is mounted, it having fins or slides 14 longitudinally the sides thereof which fit within the guides 12 so that the cylinder 13 is reciprocably mounted therebetween. A piston 15 and piston rod 16 are provided for said cylinder 13, the piston operating therein and the opposite end of the rod pivotally connected as at 17 in the jib. The piston rod 16 has formed substantially the entire length thereof holes 18 and 19, access to the outer end of which occur as at 20 and 21 respectively, while their opposite ends terminate, that of 18 at 22 in front of the piston 15, and that of 19 at 23 back of the piston 15, so that when air, oil, water or whatever fluid is used is admitted at either side of the piston, it will force the cylinder 13 in either direction desired. The piston 13 forms an integral part of the auxiliary jib 24, which is preferably slightly arcuate in form and carries pivotally as at 25 the dipper stick 26 which has at its lower end the dipper 27 and at its upper end a sheave block 28 through which the line 29 is roven, one end of which is fixed as at 30 and the other end lead over the sheave 31 in the jib proper directly to the winding drum indicated at 32 which as before stated may be controlled in any desired manner as is also the power fluid to the cylinder 13.

The operation of the carriage 4 may be accomplished in any desired manner as by the line indicated at 33 passing over the sheave 34 at one end and sheave 35 at the other end and thence to the winding drum as desired, the operating levers for the mechanism being shown at 36 in close proximity to the operators seat 37 at the side of the machine, such arrangement also being common in the art.

From the foregoing it is evident that I have devised a simple and practical mechanical shovel, principally in respect to the jib operating mechanism.

Having thus described my invention, what I claim and desire to secure by Letters Patent, is:

1. In a mechanical shovel the combination with the chassis and machinery housing therefor and a reciprocable carriage thereupon, of a jib pivotally mounted within the carriage, and a cylinder beneath the jib and forward of the pivotal connection thereof for raising and lowering same.

2. In a mechanical shovel, the combination with the chassis and machinery housing therefor and a reciprocable carriage thereupon, of a jib pivotally mounted within the carriage, a cylinder beneath the jib and for-

ward of the pivotal connection thereof for raising and lowering same, and a second cylinder reciprocably mounted in the free end of the jib.

3. In a mechanical shovel, the combination with the chassis and machinery housing therefor and a reciprocable carriage thereupon, of a jib pivotally mounted within the carriage, a cylinder beneath the jib and forward of the pivotal connection thereof for raising and lowering same, a second cylinder reciprocably mounted in the free end of the jib, and an extension upon said last mentioned cylinder for pivotally supporting the dipper stick.

In testimony whereof I affix my signature.

ALFRED E. BANNISTER.