

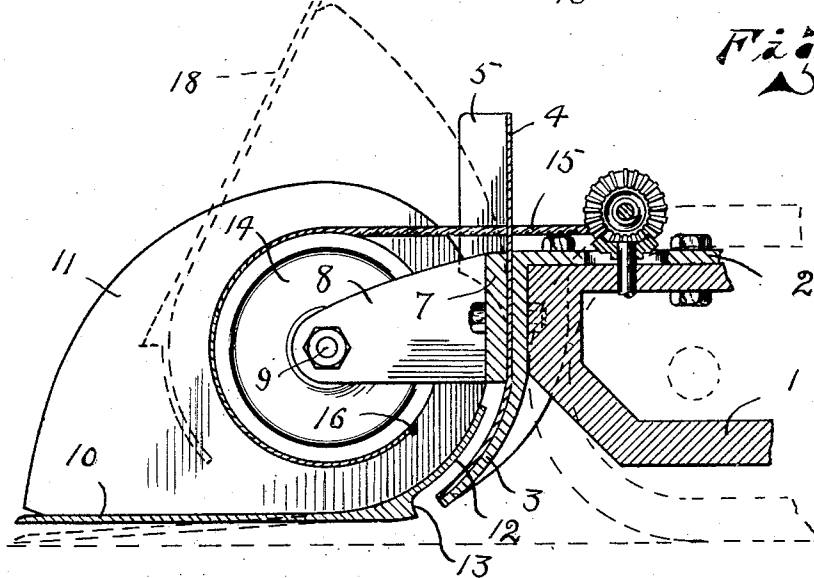
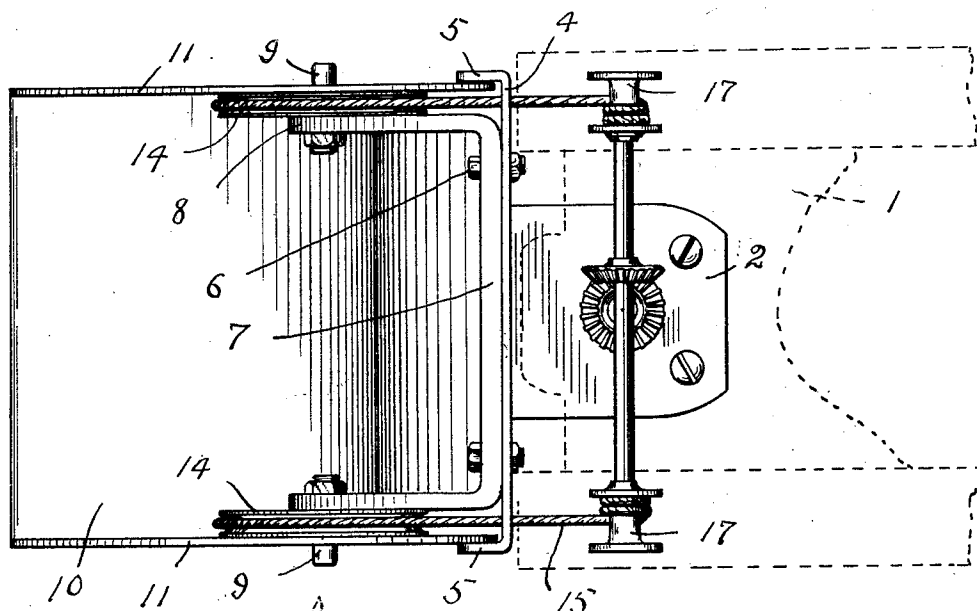
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MECHANICAL SHOVEL

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MECHANICAL SHOVEL

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This invention relates to mechanical shovels such as used for tunnelling purposes, underground mining, or the like, the principal objects of which are simplicity and practicality.

Another object is to produce a shovel of this type requiring the minimum movement of the shovel proper to accomplish loading or unloading thereof.

Another object is to provide novel and simple means for obtaining clearance from the ground during transportation of the shovel when either loaded or light.

Another object is to provide simple means whereby the digging thrust is applied as directly as possible from the power element to the lower digging edge of the shovel.

Still other objects and advantages of the invention will appear in the following description thereof.

Referring now to the accompanying drawings, forming part of this application, and wherein like reference characters indicate like parts:

Figure 1 is a top plan view of one of the improved shovels as applied to the forward end of a caterpillar tractor, and

Figure 2 is a central vertical section of Figure 1 showing portions of the device in elevation.

1 represents the forward end of any desired form of tractor preferably of the caterpillar type which is adapted for such use and to which I have illustrated my shovel as being attached by means of the bracket 2. This latter bracket may be of any desired construction, but I prefer to make same of cast metal and provide a central depending vertically curved support 3 formed integral therewith and in which support is securely fixed the sheet metal apron 4 which extends materially above the bracket 2 and provided with side flanges 5 at the uppermost corners thereof.

To the face of the apron 4 and centrally thereof is attached as by the bolts 6 the U-shaped metal yoke 7 provided with the horizontally projecting spaced arms 8 one at either extremity of the yoke and which arms carry at their outermost ends the pins or

gudgeons 9 upon which the rotatable shovel or scoop is mounted.

This scoop comprises the bottom member or lip 10, side members 11, and heel 12. The lip and heel are of one continuous piece forming the bottom of the shovel, but the latter is arcuate in shape and extends upwardly a considerable distance from the plane of the bottom and forms part of a true cylinder with the rearmost portions of the side members 11. The bottom member increases in thickness towards the rear thereof forming the shoulder 13, and which is so designed that when the shovel is in its most favorable position for digging it will abut the lower edge of the central member 3 of the bracket 2 forming an adequate stop or bumper for the lowermost action of the shovel, and it will be noted that the rear edge of the heel 12 of the bottom of the shovel is so terminated as to simultaneously bump or engage the lower edge of the yoke 7 forming a double retarding means. It will be noted also that this double engagement or bumper for the shovel acts as an adequate thrusting element when the shovel is driven to its work by the forward thrust of the tractor, thus applying such thrust directly to the bottom member of the shovel.

Furthermore when desirable to operate the shovel against a dump or wall of material to be used at an angle or with the lip pointed upwardly somewhat, the same may be readily accomplished by the gudgeons 9 taking the thrust with the bumper elements just described non-engaged. However in this event the upturned or arcuately shaped heel becomes advantageous in preventing any material falling over the heel of the shovel as the apron 4 is made to depend materially below the terminal edge of the heel as clearly seen in Figure 2 of the drawings.

As a means for rotating the shovel I have provided the sheave 14 fixed to either inner face of the side walls 11 and centered upon the gudgeons 9, they being intermediate of the side walls of the shovel and the arms 8 of the yoke. A line 15 is roven about each sheave the ends being fixed as at 16 thereto circumferentially and led backwardly

through suitable holes in the apron to the drums 17 for the manipulation of same and which drums may be operated and controlled in any desired manner well known in the art.

5 The shovel being thus mounted upon the gudgeons will normally tend to rock and feed itself downwardly until the bumper members are engaged when the limit of such downward action is prevented, and in order to
10 clear the ground when the tractor has accomplished the load of the shovel all that is necessary is to apply draft to the lines 15 sufficient to raise the shovel until its bottom is in horizontal position as in Figure 2,
15 when ample clearance is provided for such transportation. Then when unloading the process is certainly reduced to extreme simplicity in that a continuation of the draft on the lines will cause the shovel to assume
20 the position shown in dotted lines at 18, Figure 2, when the contents will fall vertically intermediate of the extreme edge of the heel and the lower edge of the apron 4 and in fact the shovel may readily be transported when
25 light in such position, to economize in space, etc.

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

30 1. A mechanical shovel comprising a bracket, a rotatable shovel mounted upon said bracket, an upstanding apron fixed to said bracket, and means for rotating the shovel, the apron limiting its rotation in one direc-
35 tion and the bottom of the bracket limiting its rotation in the other direction.

2. In a rotary shovel, a chassis frame, a bracket mounted upon the forward end of the chassis frame, an apron-like structure carried
40 by the bracket extending both above and beneath the frame, a yoke fixed to the bracket and having bracket like extensions upon either side thereof in which the shovel is jour-
45 nalled, and means for rotating the shovel for the purpose described.

3. A support for a rotary shovel comprising a U-shaped bracket, shovel supporting trunnions in the free ends of the bracket, a
50 shovel upon said trunnions externally of the bracket, and means whereby the shovel is dumped beneath the axis thereof by extreme elevation of the forward end of the shovel.

4. A rotary shovel comprising a supporting frame, a bracket fixed to the forward end
55 of the frame, an apron extending above and below the bracket and fixed thereto, a shovel mounted upon said bracket, and the apron forming a continuation of the bottom of the
60 shovel when in digging position.

5. A rotary shovel comprising a supporting frame, a bracket fixed to the forward end
65 of the frame, a shovel pivotally mounted in said bracket, an apron forming a continuation of the bottom of the shovel when in dig-
ging position, and limiting its movement in

one direction, and means whereby movement of the shovel in the other direction will dump same.

In testimony whereof I affix my signature.
ROY M. BAKER.

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