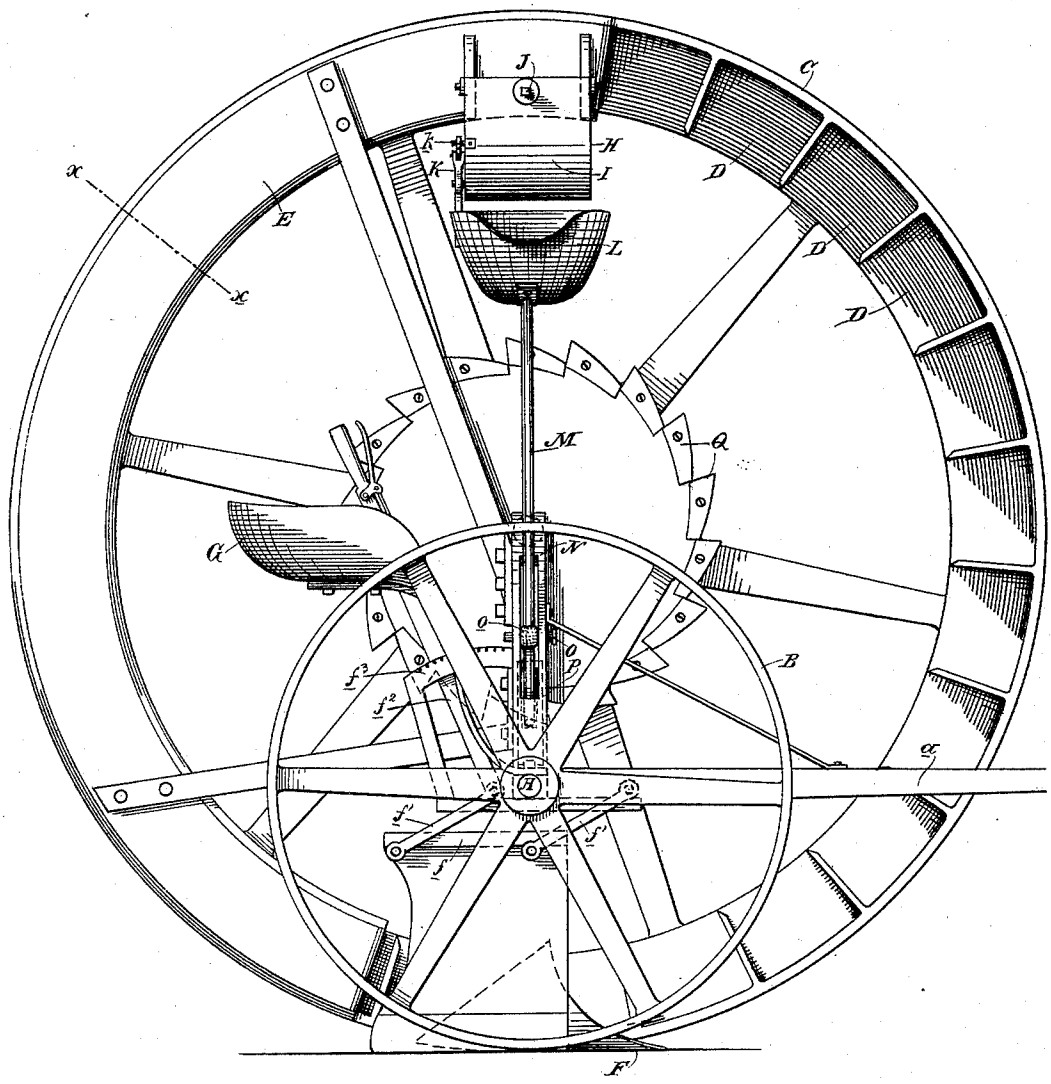
(No Model.) 2 Sheets—Sheet 1.

H. P. BENNETT.

EXCAVATOR.

No. 485,084. Patented Oct. 25, 1892.

Fig. 1.



Witnesses,
E. L. Thurse
H. F. Ascheck

Inventor,
Henry P. Bennett.
By Dewey & Co.
Attys.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

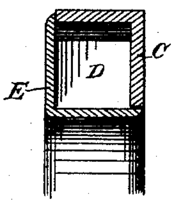
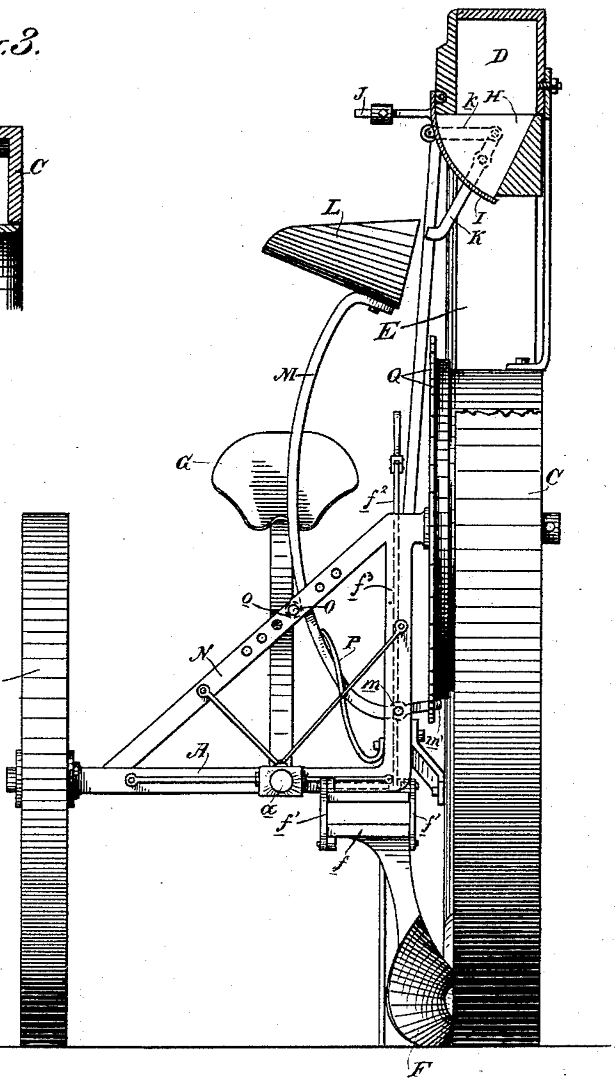


Fig. 2.



Witnesses,
B. F. Morse
W. F. Ascheck

Inventor,
Henry P. Bennett.
By Dewey & Co.
attys

UNITED STATES PATENT OFFICE.

HENRY PATRICK BENNETT, OF PHŒNIX, ARIZONA TERRITORY, ASSIGNOR OF ONE-HALF TO S. C. SYMONDS, OF SAME PLACE.

EXCAVATOR.

SPECIFICATION forming part of Letters Patent No. 485,084, dated October 25, 1892.

Application filed January 27, 1892. Serial No. 419,412. (No model.)

To all whom it may concern:

Be it known that I, HENRY PATRICK BENNETT, a citizen of the United States, residing at Phœnix, Maricopa county, Arizona Territory, have invented an Improvement in Excavators; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to the class of excavating or ditching machines.

It consists, essentially, in a plow, a rotating wheel provided with elevating-buckets, which receive the material from the plow and carry it upwardly, and a swinging or vibrating discharge-shovel to receive the material from the elevating-buckets and to throw it to one side.

My invention also consists in novel details of construction, combination, and arrangement hereinafter fully described, and specifically pointed out in the claims.

The object of my invention is to provide a simple, effective, and rapidly-operating excavator.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a side elevation of my excavator. Fig. 2 is a front view, the upper portion of the elevating-wheel being shown in section. Fig. 3 is a section on line x x of Fig. 1.

A is an axle having a pole a. On one end of the axle is a small wheel B and on the other end is the large wheel C, which has on the inner surface of its rim the series of buckets D. These buckets on their outer sides are inclosed by the wheel structure itself, while on their inner sides they are confined during approximately one-half their revolution by a fixed casing E, supported suitably from the axle.

F is the excavating-plow, the mold-board of which lies alongside of the rim of the wheel C and in position to turn the dirt into the exposed buckets D as they successively come around into position by the rotation of the wheel C. This plow is adjustable vertically, so as to take more or less dirt by being mounted upon and carried by a top frame f, operated by crank connections or links f', which are themselves actuated by means of a lever f^2, engaging a rack f^3 to hold it in proper position. This lever is within easy reach of a driver occupying the seat G.

At the upper end of the confining-casing E and in position to receive the dirt from the rotating buckets is a receiving-hopper H. This hopper is provided with a swinging gate I, held closed by a weighted arm J and adapted to be opened by a pivoted trip-lever K, which is connected with it by a link k.

L is the discharge-shovel. This is carried upon the upper end of a lever M, which is pivoted at m to the frame below, and has its lower end m' projecting inwardly toward the large wheel. The lever is guided by a slotted brace N, through which it passes, and its stroke is limited by an adjustable buffer-pin O, adapted to be located in different holes in the brace, said pin having a suitable cushion o upon it to receive the jar. A spring P acts upon the lever to throw the discharge-shovel outwardly. Secured suitably to the hub of the large wheel is a series of inclined planes or cams Q, which impinge successively upon the inner end m' of the pivoted shovel-lever M. These cams have the effect by bearing down upon said end to force the shovel inwardly, and upon the inward movement of the shovel it comes in contact with the trip-lever K, whereby the gate I of the receiving-hopper H is opened. When the cams relieve the end m' of the lever, the spring P throws the shovel outwardly, and the lever M of said shovel, coming in contact with the buffer-pin O, is suddenly arrested, and the contents of the shovel thereby thrown forcibly from it to the proper position of discharge.

The operation of the machine is as follows: It is to be drawn by horses secured to the tongue or pole a. The plow being lowered to the proper depth will turn the dirt into the buckets B, which, rotating with the wheel C, receive their loads successively and carry them up through the confining casing E to the upper portion of the wheel, where the dirt drops into the receiving-hopper H. During the movement of the wheel the inclined planes or cams Q operate the shovel L, whereby on the inner stroke it opens the gate of the receiving-hopper and receives its load, and the next moment, being relieved by the cam, it is thrown on the outward stroke by

its spring P, and thereby by contact with the buffer O projects its load outwardly over the small wheel of the machine and to the side of the ditch. The parts are so timed and arranged that the shovel shall be in position to receive a load as fast as the elevating-buckets discharge their several loads into the hopper.

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

1. In an excavating-machine having a rotating wheel provided with means for elevating the dirt, a vibrating shovel for receiving the dirt from said wheel and provided with a pivotally-secured lever, and a cam-wheel on the axis of the rotating wheel for actuating the shovel to cause it to throw the dirt to one side of the machine, substantially as herein described.

2. In an excavating-machine, the combination of a plow, a rotating wheel provided with a series of elevating-buckets adapted to successively receive the dirt from the plow and to carry it upwardly, a cam-wheel on the axis of the rotating wheel, and a vibrating discharge-shovel actuated by the cam-wheel and adapted to receive the dirt from successive buckets and to throw it to one side, substantially as described.

3. In an excavating-machine, the combination of the rotating wheel provided with the series of elevating-buckets, the discharge-shovel adapted to receive the material from the buckets successively, and the means for vibrating said shovel to bring it to position to receive its load and to discharge the same, consisting of the pivoted spring-controlled lever, upon which said shovel is mounted, and the series of inclined planes or cams carried by the wheel and acting on the pivoted lever, substantially as described.

4. In an excavating-machine, the combination of the rotating wheel provided with the series of elevating-buckets, the discharge-shovel adapted to receive the material from the buckets successively, and the means for vibrating said shovel to bring it to position to receive its load and to discharge the same, consisting of the pivoted lever, upon which said shovel is mounted, the series of inclined planes or cams carried by the wheel, acting on the pivoted lever to force it in, the spring to return it, and a buffer for limiting the stroke of the lever, substantially as described.

5. In an excavating-machine, the combination of the rotating wheel having the series of elevating-buckets, the confining-casing through which said buckets pass during a portion of their revolution, the receiving-hopper at the upper end of the casing, provided with a normally-closed gate, the vibrating discharge-shovel, and contact-levers connected with the gate of the receiving-hopper and operated by the vibrating shovel, whereby the gate is opened when the shovel is in position to receive the dirt from the hopper, substantially as described.

6. In an excavating-machine, the combination of the rotating wheel provided with a series of elevating-buckets, a receiving-hopper into which said buckets discharge the dirt, a gate controlling said hopper, a vibrating discharge-shovel, and contact-levers connected with the gate and operated by the shovel to effect the opening of the gate when the shovel is in position under the receiving-hopper, substantially as described.

7. In an excavator, the combination of the rotating wheel provided with the series of elevating-buckets, the receiving-hopper into which said buckets successively discharge the dirt, the pivoted weighted gate controlling said hopper, the vibrating discharge-shovel, and the pivoted trip-lever connected with the gate and lying in the path of the vibrating discharge-shovel, whereby it opens the gate, substantially as described.

8. In an excavator, the combination of a plow, a rotating wheel beside the plow and having on its rim the series of elevating-buckets, the confining-casing through which said buckets pass during a portion of their revolution, the receiving-hopper into which the buckets discharge their contents, said hopper having a trip-gate, the vibrating shovel for opening the gate and receiving the dirt from the receiving-hopper, the pivoted spring-controlled lever of said shovel, and the inclined planes or cams on the wheel, acting on the lever, substantially as described.

9. An excavating-machine consisting of an axle having on one end the large wheel provided with the series of buckets, the vertically-adjustable plow carried by said axle and arranged to throw the dirt into the buckets of the wheel, the confining-casing through which the buckets pass during a portion of their revolution, the receiving-hopper into which the buckets discharge the dirt, the trip-gate of said hopper, the vibrating discharge-shovel, the pivoted lever of said shovel, the series of inclined planes or cams on the wheel, operating on said lever to throw the shovel inwardly under the receiving-hopper and to open its gate, the spring to throw the lever and shovel outwardly, and the adjustable contact buffer-pin for limiting the stroke of the lever, substantially as described.

In witness whereof I have hereunto set my hand.

HENRY PATRICK BENNETT.

Witnesses:
LILLIE A. CRIDER,
H. S. ABBOTT.