2 Sheets--Sheet 1.

J. W. GONCE.

Excavator.

No. 164,829. Patented June 22, 1875.

Fig. 1.

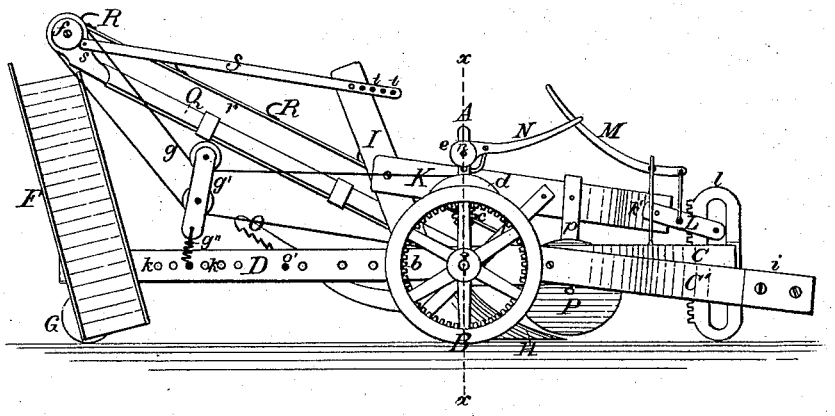
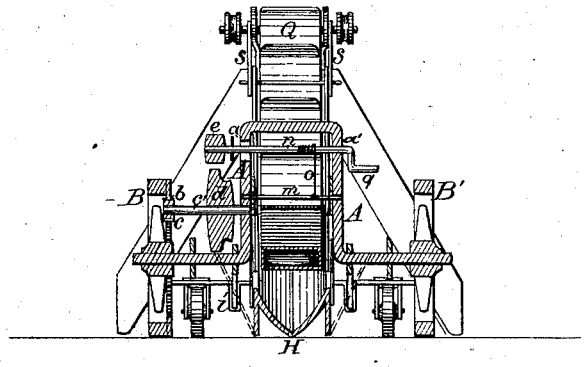


Fig. 3.



Attest:

C. F. Smith & Co.

Wm. Bagger

Inventor:

John Wisdom Gonce.

by Louis Bagger

Att'y.

2 Sheets--Sheet 2.

J. W. GONCE.

Excavator.

No. 164,829. Patented June 22, 1875.

Fig. 2.

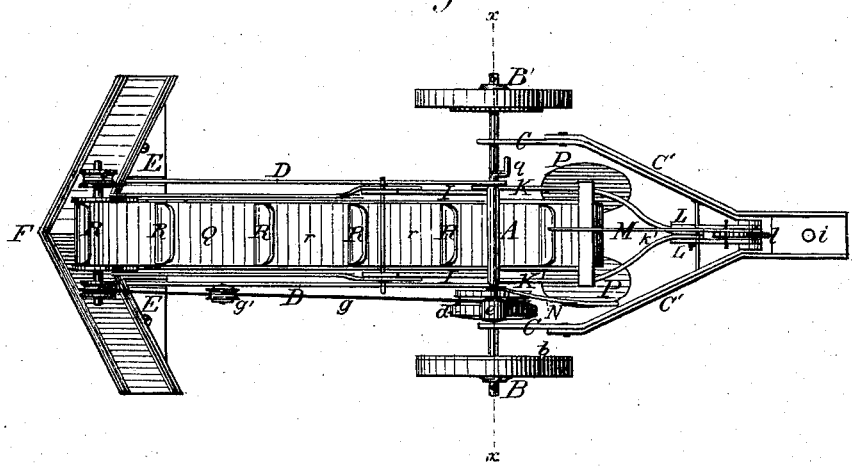
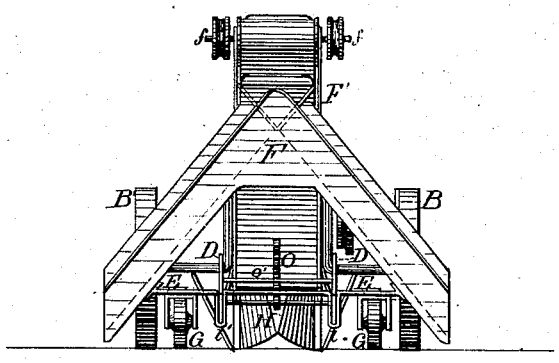


Fig. 4.



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Inventor:

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by Louis Bagger
Att'y.

UNITED STATES PATENT OFFICE.

JOHN WISDOM GONCE, OF JACKSON COUNTY, ALABAMA.

IMPROVEMENT IN EXCAVATORS.

Specification forming part of Letters Patent No. **164,829**, dated June 22, 1875; application filed March 1, 1875.

To all whom it may concern:

Be it known that I, JOHN WISDOM GONCE, of the county of Jackson and State of Alabama, have invented certain new and useful Improvements in Ditching and Excavating Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings and to the letters of reference marked thereon, which form a part of this specification.

Figure 1 is a side elevation. Fig. 2 is a top view. Fig. 3 is a transverse vertical section through a plane indicated by the line *x x* in Figs. 1 and 2; and Fig. 4 is a view of the slip with its rollers and tilting-board, which forms part of my machine.

Similar letters of reference indicate corresponding parts in all the figures.

My improvement relates to that class of ditching or excavating machines in which the dirt is removed from the plow and deposited on the banks of the excavation by an elevator operated by the drive-wheels of the machine; and it consists in the arrangement and combination of the various parts, as hereinafter more fully set forth and pointed out in the claims.

A is the axle, which is bent upward, as shown in Fig. 3. B B′ are the wheels, one of which, B, has a concentric inverted gear-wheel, *b*, that engages with a pinion, *c*, by which the shaft *c′* and friction-wheel pulley *d* are operated. The frame consists of two main parts, one extending forward, and the other backward, of the axle, and both rigidly secured thereto. The forward part consists of two converging arms, C, pivoted to the sides of which are two other converging outside arms or shafts, C′, to which the pole and whiffletree are attached at *i*. Back of the axle extend two beams, D, to the ends of which a cross-beam, E, carrying the slip F, is secured adjustably. This adjustability is effected by a series of holes, *k k k*, in the beams D, and corresponding holes made in the depressions *l′* of the cross-beam E, (see Fig. 4,) in which the beams D slide, so that the cross-beam E and slip F may be advanced or receded, and secured in any given position by the holes *k*, and suitable pins, bolts, or set-screws. The cross-beam E has rollers G to carry the weight of that part of the machine, and relieve the strain from the necks of the horses. The "slip" or dirt-board F consists of two boards, converging at the top, and having raised sides, so as to form gutters or chutes for the dirt after it leaves the elevator. Upon the top ridge is hinged (in such a manner that it may be removed at will) a tilting-board, F′, which, by means of hooks and braces, may be secured in either of the positions shown in Fig. 4, so as to throw all the excavated dirt to one side of the ditch only. Within the frame C is the plow H with its attachments. The plow does not differ materially from the plows or cutters usually employed in this class of machines, it having the shape of two plows joined together, with the mold-boards facing each other. The plow is rigidly secured to, and between, two oblique standards, I, and these are secured to beams K, which pass under the top of the axle A, and converge in front at *k′*. At the converging point they are pivoted to a short double arm, L, which clasps a vertical rack, *l*, and within which (between the two sides composing the arm L) there is a pinion and spring-pawl, (not shown in the drawing,) so that the arm L, and with it the beams K, may be secured in any given position, high or low, upon the ratchet *l* by operating the lever M. In this manner the standards I and plow H may be adjusted while the machine is in motion.

In order further to facilitate raising or lowering of the plow and elevator, there is a cross-beam, *m*, between the two beams K and just under the top of the axle A. To this is secured a chain or rope, which passes upward and around a shaft, *n*, which has its bearings in the upward-projecting arms of the axle A. One of these bearings *a* has a sliding boxing, so that the shaft *n* may be moved up or down in it. Upon the other side of the axle, on the projecting end of the shaft, is a friction-pulley, *e*, which, by raising the lever N, is thrown into gear with the friction-surface of the pulley *d*, already described.

By this combination, when the machine is in motion and the lever N is raised, the pulley *e* and shaft *n* will revolve, winding up the

chain *o*, and thus hoisting up the beams K, standards I, and plow H. The latter is retained in its position by a ratchet, O, pivoted to the back of the plow, and engaging with a rod, *o'*, secured between the beams D, already described.

P denotes colters, each formed by a sharp-edged circular disk, pivoted upon arms *p* that are secured upon the beams K, and project downward in front of the plow, one on each side. The position of these colters is inclined, so that they will not only help to cut, but also slope and shape the sides of the ditch.

When the machine is not at work the plow and elevator may be raised by turning the crank *q*, by which the shaft *n* and chain *o* are operated.

The elevator Q consists of an inclined chute, provided with an endless chain, *r*, carrying the scrapers R. The bottom of the chute or open trough Q is inserted between the standards I and pushed well down over the plow, so that the scrapers R may readily reach and remove the dirt as it is loosened by the plow.

The endless chain is operated by a drum at each end of the chute in the usual manner, the top one of which is made to rotate by a pulley, *f*, and endless band *g*, which latter is operated by passing around a groove on the inside of the friction-pulley *d*. *g'* is a band-tightener, consisting of two pulleys inserted, one above the other, in a forked arm, and secured, by a spiral spring, *g''*, to one of the holes in the beam D, so that the band *g* will be taut, and operate the pulley *f* and endless chain *r* without regard to the pitch given to the plow and elevator. The latter is secured and its pitch adjusted by movable arms S hinged at *s*, and provided with holes *t t t*, so that they may be adjustably secured to the sides of the standards I, as shown.

The whole machine is suitably braced, to afford the requisite strength and rigidity to the various parts thereof; and a seat for the driver is attached to the top of the axle.

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

1. The combination of the bent axle A, frame C, rack *l*, arm L, plow-beams K, standards I, and plow H, substantially as and for the purpose specified.

2. The combination of the bent axle A, having the bearings *a a'*, shaft *n*, crank *q*, friction-pulley *e*, and lever N, substantially as and for the purpose specified.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

JOHN WISDOM GONCE.

Witnesses:

W. H. BOGART,

J. L. BLAKE.