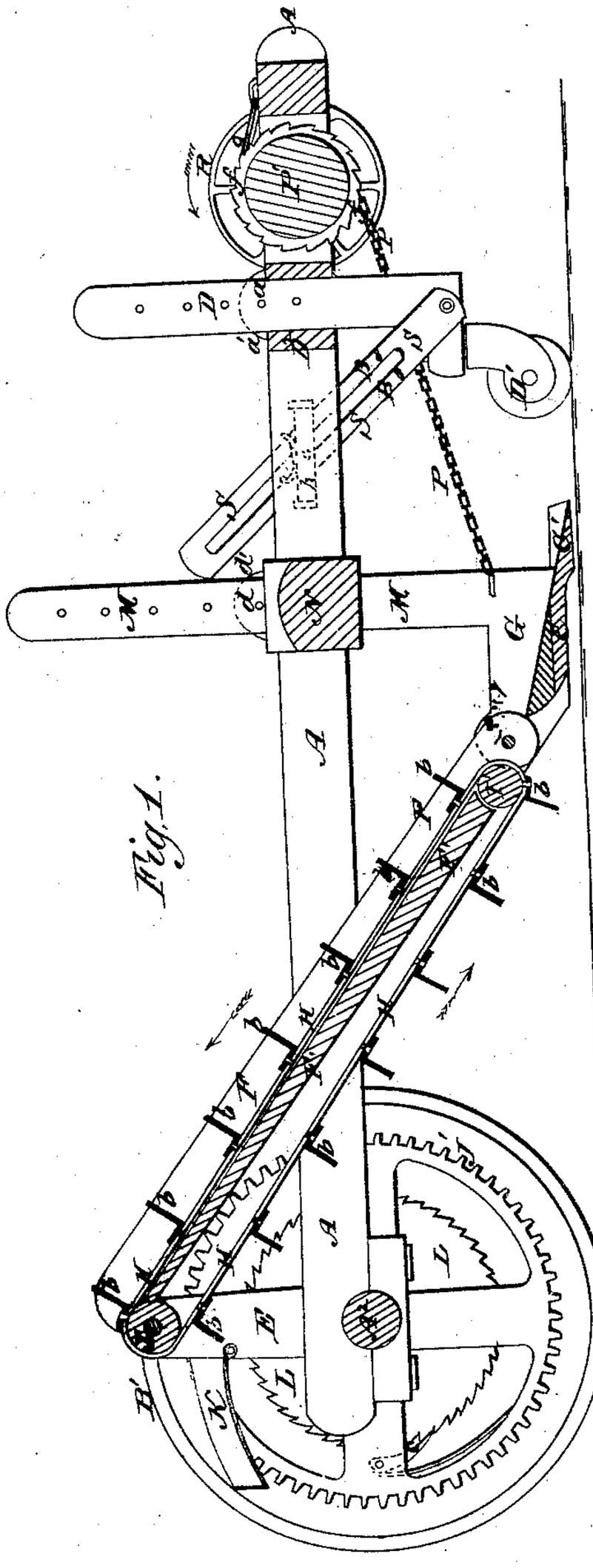
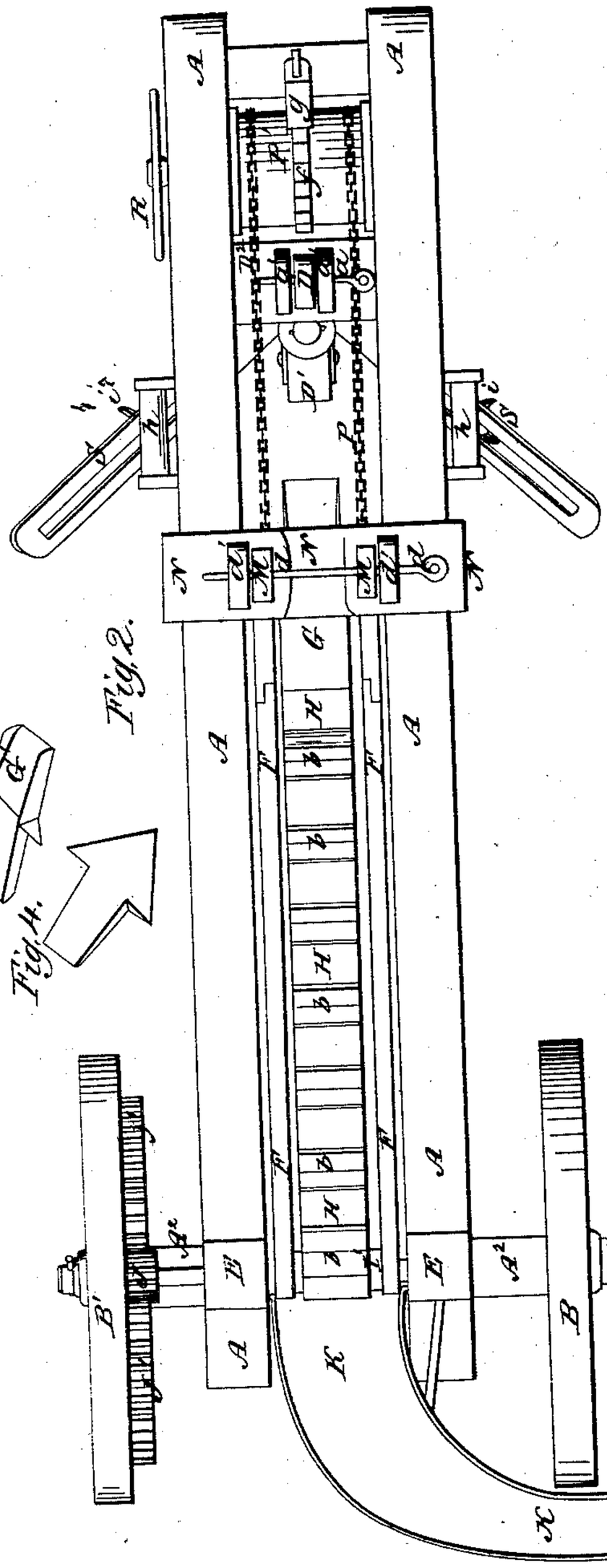
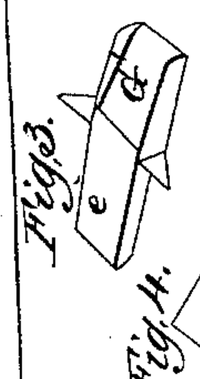
J. Masters.

Excavator.

No. 28,387. Patented May 22, 1860.







Witnesses.

R. S. Spencer.

G. W. Coombs.

Inventor.

John Masters

per Munn & Co

UNITED STATES PATENT OFFICE.

JOHN MASTERS, OF WAUKEGAN, ILLINOIS.

DITCHING-MACHINE.

Specification of Letters Patent No. 28,387, dated May 22, 1860.

To all whom it may concern:

Be it known that I, JOHN MASTERS, of Waukegan, in the county of Lake and State of Illinois, have invented a new and useful Improved Ditching and Draining Machine; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a longitudinal vertical section taken through the entire machine, from front to rear, showing the adjustable parts of the machine in two positions. Fig. 2 is a top or plan view of the complete machine showing the inclined adjustable wings or colters, and the curved discharging trough. Figs. 3 and 4 show perspective views of the shovel points detached from the shovel.

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

The object of this invention is to obtain a machine which will form a ditch and elevate and discharge the excavated earth to one side of the ditch however deep it is found desirable to dig down.

The machine is to be drawn along by a team in the usual manner of plowing, and passed back and forth over the ditch until the required depth has been attained. It is to be so constructed that the digging and elevating parts can be adjusted—raised or depressed—and braced rigidly and securely so as to form a strong and powerful machine. The shovel for digging or excavating the earth is to be so regulated that it will not dig too deep, and thus hinder the progress of the machine; and besides regulating the depth of cut a provision is made for cutting down the sides of the ditch so as to prevent the earth from falling in by constant washing forming therefor inclined sides with a narrow bottom. The shovel is to be furnished with a detachable shoe or point so that it may readily be removed and another of the same or of a different pattern introduced in its stead; and the several parts are to combine strength with lightness and simplicity of construction.

For effecting these objects the novelty of my invention consists in making the parts vertically adjustable and at the same time in keeping them securely braced and supported; and it further consists in combining with an adjustable caster wheel standard two inclined and adjustable colters for cutting down each side of the ditch before the shovel, so that this earth will be received upon the shovel and elevated and discharged to one side of the ditch; and it further consists in combining with an adjustable shovel and elevator and caster wheel a chain, or chains, and windlass for keeping said shovel and elevator securely braced: all as will be hereinafter described and represented.

To enable those skilled in the art to fully understand my invention I will proceed to describe its construction and operation.

In the drawings, A A represent two beams of a suitable length and strength, which are supported in their rear ends by the axle A^2, of the wheels B, B′, which wheels run on the surface of the ground and are separated sufficiently to keep on each side of the ditch. The front ends of the beams are supported by a standard D, having on its lower end a caster wheel D′, Fig. 1, which standard may be adjusted—raised or depressed—and fixed in its adjusted position by a bolt *a*, Fig. 2, which passes through eyes *a*′, on the cross piece D^2, through which the standard passes.

E, E are two posts projecting up from the rear part of beams A, A, over the axis of the axle A^2, for supporting the rear and highest end of the conveyer or trough F; a bar passes across from post to post and the side bars F, F, of the trough are hung from this bar, and forced down and are suitably jointed to the sides of shovel G, Fig. 1. The trough is furnished with a solid bottom F′, over which the earth from shovel G, is carried by an endless belt, H, of buckets *b*, which pass over rollers I, I′, placed at each extreme end of the trough. The roller I, is driven by the main wheel B′, through the medium of a pinion J, and hoop wheel J′, which is secured to the axle of the driving wheels, so that, as the machine is moved forward, the chain of buckets or elevators will move in the direction indicated by the arrows Fig. 1, and receive the earth from shovel G, and conduct it over the trough F, the sides of which prevent it from escaping or falling from the buckets to the rear of the machine, where it is received by a curved or inclined trough K, which conducts the earth to a point for discharge, sufficiently remote from the side of the machine and edge of the ditch to be out of the way.

The machine may be backed or turned around without giving a reverse movement

to the chain of buckets, on account of the ratchet wheel L, and pawl *c*, which disengages the roller I, from the main wheel E′.

The shovel G, is attached to and forms a part of two standards M, M, which proceed up and pass through a cross brace N, through each end of which the beams A, A, pass. These two standards are vertically adjustable in the piece N, and can be fixed at any point by a bolt *d*, which passes through eyes d′, and through holes punched through each standard; the cross brace N, is itself longitudinally adjustable on the beams A, A. The shovel G, has an inclined bottom, and a dove-tail wedge slot in its bottom or sole, which receives and holds the shovel point G′, by a corresponding dove-tail tongue *e*, Figs. 3 and 4.

P are strong chains, which are securely attached to staples, projecting from the standards M, above their shovel and pass forward and are connected to the drum of windlass P′. This windlass is in the front end of the machine, has its bearings in the two beams and is turned by a hand wheel R, and prevented from recoiling by a ratchet wheel *f*, and pawl *g;* these chains are to be tightened up by this windlass when the standards M, are raised, and let out when the standards are depressed, but kept always tight when the machine is in operation.

S S are two slotted colters, the lower ends of which are strongly pivoted to the bottom of the adjustable caster standard D, they proceed up from this point in an inclined flaring position, and are secured to pieces, *h*, *h*, on the outside of the frame, by nuts *i*, *i*, the necks of which pass through the slots in the colters for the purpose of allowing the casters to be adjusted with their standard D. The front edges of these colters are kept sharp for the purpose of cutting down the sides of the ditch as the work proceeds.

In adjusting the shovel G, and lower end of the trough F, it is necessary to keep the standard vertical or rather perpendicular to the beams A, A, and in order to admit of any degree of adjustment, being given to the shovel, the trough must be jointed to the shovel sides and the brace N, must be capable of a longitudinal movement, as before described, the chain P, is therefore necessary with this arrangement to give strength to the parts. The caster wheel precedes the shovel and rests on the bottom of the ditch and by adjusting this, as described, the shovel may be made to cut shallower or deeper, as occasion requires. The three standards M, M, and D, are depressed as the ditch increases in depth, the beams and hind wheels are thus kept above the surface of the ground. The adjustment is very simple; two bolts are merely removed, and the standards set at any desired point, when they are replaced. The earth, as it is loosened by the shovel is pressed back and received immediately by the buckets which deposit it in the inclined trough, which conducts it to a suitable place for deposit.

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

1. The combination with the trough and elevators, of the adjustable standards M, M, adjustable cross-brace N, chain P, and windlass P′, arranged and operating substantially as set forth.

2. In combination with the adjustable caster-wheel, and standard D, the two adjustable inclined slotted colters, S, S, arranged as and for the purposes herein set forth.

JOHN MASTERS.

Witnesses:
E. PEYN FEENY,
HOMER COOK.