E. W. Thomas.

Excavator.

No. 5,042. Patented Mar. 27, 1847.

Fig. 4

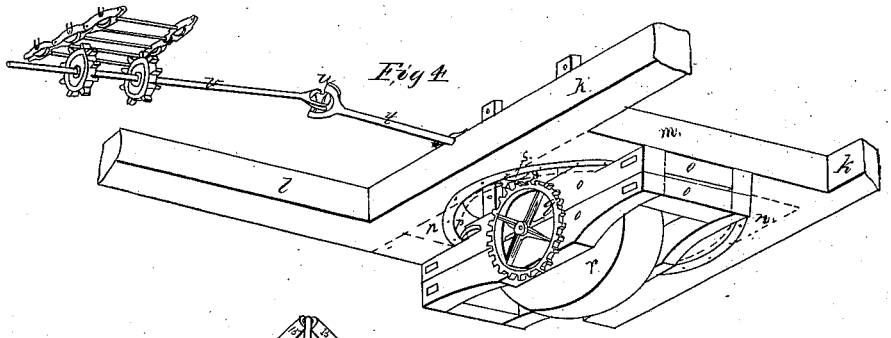


Fig. 6

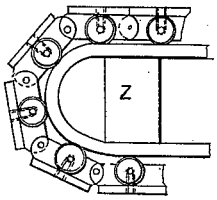


Fig. 1.

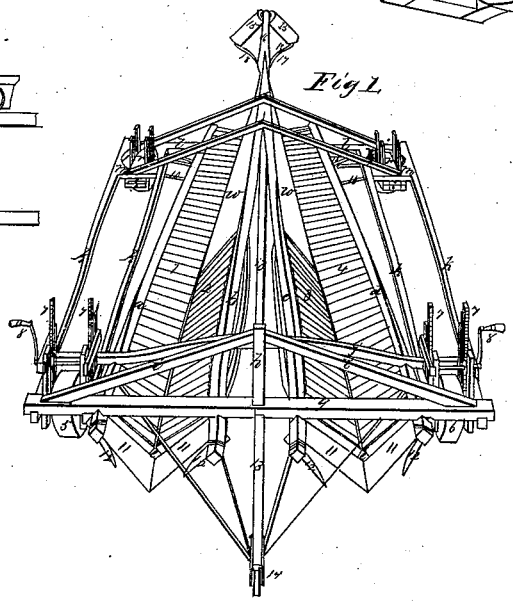


Fig. 5.

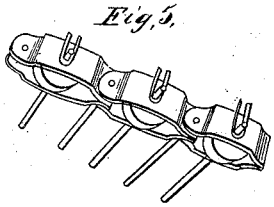


Fig. 2.

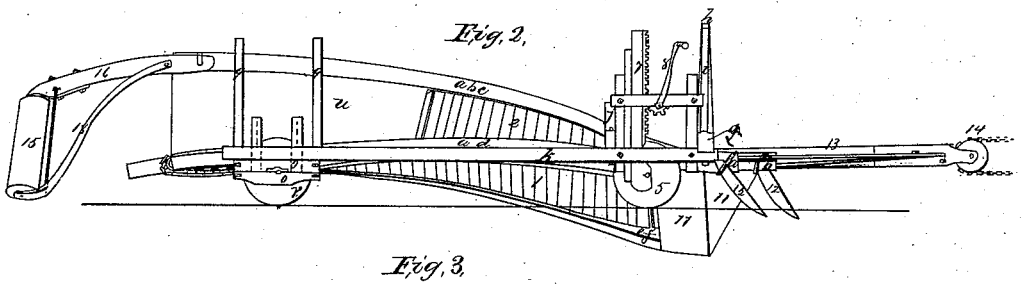
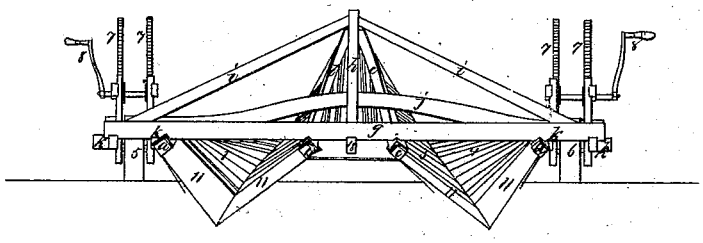


Fig. 3.



UNITED STATES PATENT OFFICE.

E. W. THOMAS, OF CHICAGO, ILLINOIS.

DITCHING-MACHINE.

Specification of Letters Patent No. 5,042, dated March 27, 1847.

To all whom it may concern:

Be it known that I, ELHANAN W. THOMAS, of the city of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Machine for Ditching and Fencing; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing, making a part of this specification, in which—

Figure 1, is a perspective view; Fig. 2 a side elevation; Fig. 3 a front elevation; Fig. 4, a perspective view of one of the truck wheels; Fig. 5, a perspective view of a part of the endless chain; Fig. 6, a side view of the chain passing over the end of the rail on its return. I proceed to construct a frame work of hard wood of any required dimension and support the same on four truck wheels; the frame consists of six twisted and curved quadrangular timbers running lengthwise of the machine as shown at *a*, *b*, *c*, *d*, *e*, *f*; the three pieces *a*, *e*, *b*, are connected by transverse girts being tenoned into them, the timber *a* being parallel to the timber *e*; and the timber *b* is also parallel with the next adjoining side of the timber *e*; therefore the transverse girts joining the timbers *a*, *e* and *b*, *e*, are at right angles to each other; also the transverse girts are inclined to the horizon in front of the machine, and are gradually twisting until the girts between *a*, *e*, become horizontal at the rear of the machine and the girts between *b*, *e*, become vertical at the rear; similar girts are framed into the timbers *c*, *f*, *d*, and placed in similar positions.

The front end of the timbers *a b c d* are bolted to a transverse front sill shown at *g* in the drawings, this sill is trussed by means of the king post *h* and the braces *i i*; a curved girt is also bolted to the timbers *a*, *b*, *c*, *d*, as shown at *j*; also four other timbers or shafts of the machine shown at *k*, *k*, *k*, *k*, running from front to rear of the machine and being bolted to the timbers *g* and *j*, and having cross pieces framed into them at the rear end as shown at *l*, *m*, in the perspective view Fig. 1, and also at *l*, *m*, on an enlarged scale at Fig. 4; the inside angles of the girts *l*, *m*, with the shaft *k*, *k*, are filled in with quarter circles of timber forming a circular curb as shown at *n*, *n*, on Fig. 4. A circular flange of iron is bolted to the under side of the timbers *k*, *k*, *l*, *m*, and the corner pieces *n*, *n*; this circular flange projects within the circular curb, forming a rail on which the truck wheel frame *o o o o* may be made to revolve in a horizontal direction. The truck frame *o*, *o*, is furnished with four horizontal friction rollers which bear against the circular vertical face of the curb thereby keeping the truck frame concentric with the curb; the friction roller is shown at *p*. The truck wheel *v*, has a cog wheel affixed to the inner end of its axis on the outside of the truck frame as shown at *q*. This cog wheel gears into the pinion *s*, on the end of the iron shaft *t*, which works the universal joint *u* and the shaft *v*, which has two pinions affixed to it, cogged so as to move the endless floors by the rods, forming the pivots of the chain. I form the chain with wrought or cast iron links put together as shown at Fig. 5. The endless floors are shown in the perspective view at 1, 2, 3, 4. The endless floors traverse from front to rear of the machine over the girts beforementioned which connect the twisted timbers *a*, *e*, *b*, and *c*, *f*, *d*. The floors return on the under side of the girts. A rail of cast or wrought iron is placed along on these girts upon which the railway wheels shown in each link of the chain rests. The manner in which the chain and wheels operate is shown at Fig. 6, *z* representing a section of one of the girts; the endless floors 2 and 3 pass about half the length of the machine and the twisting plane of the floor is continued by a wooden mold board as shown at *w w*.

The truck wheels 5, 6 are so arranged in a sliding frame that they may be raised or depressed by means of two racks and pinions as shown at 7, 7. The pinions are worked by the lever 8.

The center of the rear of the machine is supported by two truss frames as shown at 9, 9, 9, 9, and two suspension rods 10, 10 which pass entirely across under the machine and are attached to the timbers *k*, *k*; 11, 11, 11, 11, are four cutting edges of steel placed directly in front of the endless floors. These cutting edges are secured to the timbers *a*, *e*, *b*, and *c*, *f*, *d*; also 12, 12, 12, 12, are four knife shaped cutters of steel which are attached by bolts and straps to the timbers *a*, *b*, *c*, *d*. These knives stand directly in front of the cutting edges 11, 11, 11, 11; a strong timber passes lengthwise through the center of the machine as shown at 13,

this timber is furnished with a cast iron sleeve at the front end as shown at 14; also four iron draft rods pass from the front end of timber 13, and are attached to the timbers *a*, *b*, *c*, *d*; two cylindric rollers 15, 15 are placed in rear of the machine, their axis being inclined to the horizon; these rollers are attached by pivots to a curved timber shown at 16, this timber works on a pivot at 17; the lower end of the cylinders are supported by the iron strap 18.

The operation of the machine is as follows: A capstan or other powerful machine being placed ahead, and directly in front of the before described ditching machine, a chain or rope is passed over the sheave 14, and attached to the capstan or other engine of power. Then by giving motion to the capstan the machine is drawn forward by the chain and sheave 14. The cutting edges 11, 11, 11, 11, are forced into the earth and the right angled triangular pieces of earth detached by the cutting edges is carried by the motion of the endless floors 1, 2, 3, 4, to the rear of the machine and deposited on the surface of the ground between the two ditches, the twisting of the floor from an inclined to a horizontal and vertical position has the effect to place the two prisms of earth so detached, together at the rear of the machine with the sod in an inclined position, the rollers or cylinders 15, 15, press upon the sod of the embankment thus formed and a compact and durable fence is made between the two triangular ditches.

What I claim as my invention and desire to secure by Letters Patent is—

The combination of two ditching machines in the manner described, so that the sods cut from two parallel ditches shall be elevated and placed with the grass out, in a continuous ridge between said ditches at one operation in the manner and for the purpose herein set forth.

ELHANAN W. THOMAS. [L. S.]

Witnesses:
J. B. F. RUSSELL,
ARTHUR L. MCINTIRE.