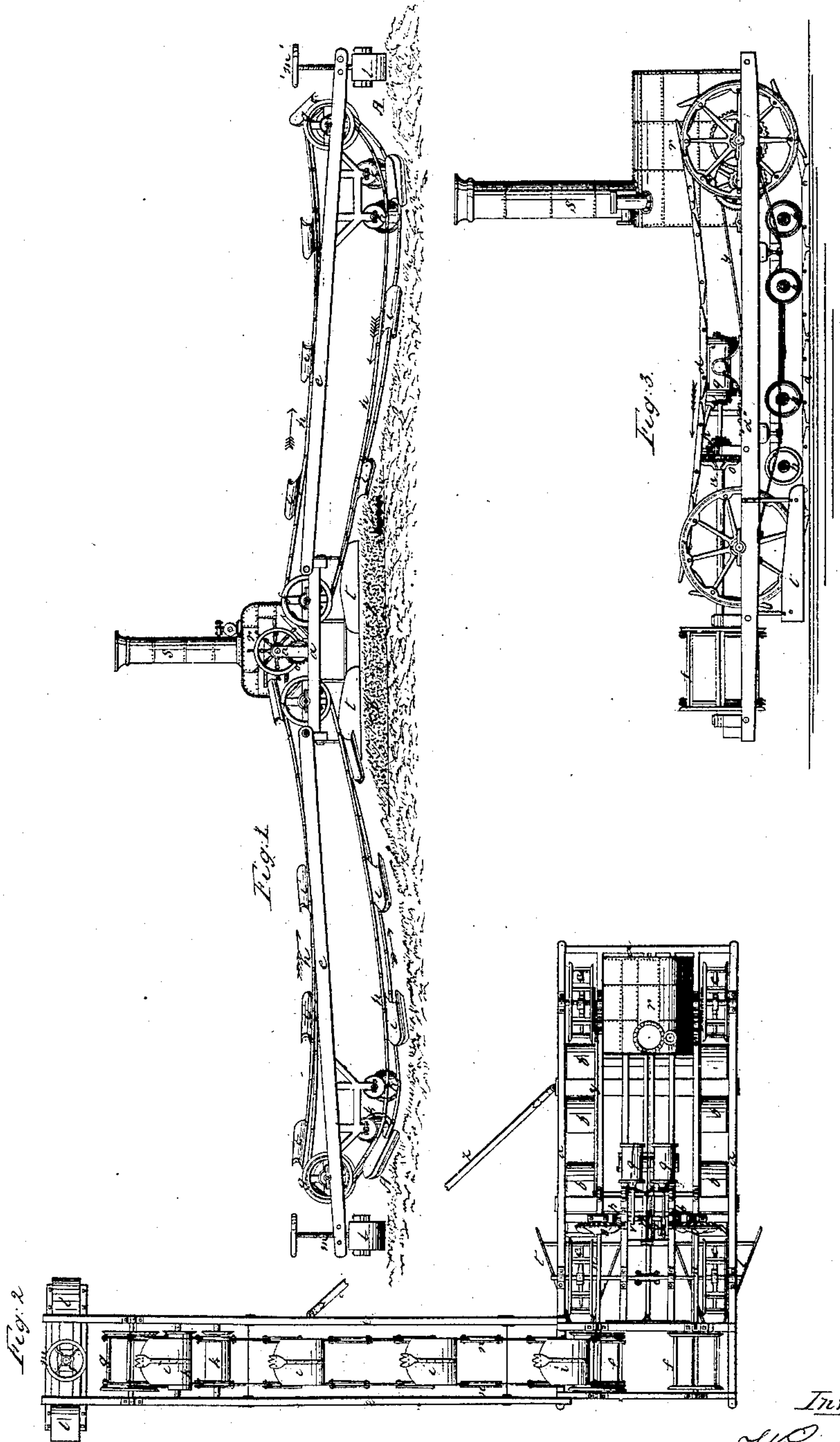


W. P. Miller,

Excavator and Grader,

N^o 24,946,

Patented Aug. 2, 1859.



Witnesses
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UNITED STATES PATENT OFFICE.

WARREN P. MILLER, OF MARYSVILLE, CALIFORNIA.

MACHINE FOR EXCAVATING AND GRADING.

Specification of Letters Patent No. 24,946, dated August 2, 1859.

To all whom it may concern:

Be it known that I, WARREN P. MILLER, of the city of Marysville, in the county of Yuba and State of California, have invented
5 a new and useful machine for excavating and grading rail or turnpike roads, (title, Excavating and Grading Machine;) 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 drawings, making a part of this specification, in which—

Figure one (1) is a front elevation; Fig.
15 two (2) a longitudinal section; and Fig. three (3) a side elevation.

Literal references to drawings: *a—*a, frame-work, or bed of car; *b—*b, tracks upon which the car is carried; *c—*c, wheels that
20 carry the trucks; *d—*d, the trucks; *e—*e, bucket ladders; *f—*f, tumblers to give motion to the chains; *g—*g, loose tumblers over which the chains run; *h—*h, endless chains; *i—*i, buckets or excavators; *j*, shaft connect-
25 ed with the eccentric, which gives motion to the feed bars; *k—*k, wheels or cylinders; *l—*l, broad wheels or trucks; *m—*m, screws with hand wheels; *n—*n, shafts of tumblers; *o—*o, bevel gears or cog wheels; *p—*p, pin-
30 ion wheels on engine shaft; *q—*q, steam engines; *r—*r, steam boiler; *s—*s, smoke pipe; *t—*t, scrapers or levelers; *u*, steering wheel; *v—*v, cranks on engine shaft; *w*, eccentric on engine shaft; *x—*x, rag wheels; *y—*y, feed
35 bars; *z*, brace to keep the bucket frame in position.

The nature of my invention consists in constructing and arranging one or more series of excavators upon endless chains being
40 propelled over and around pulleys or tumblers in such a manner as to fill and discharge while passing from one tumbler to the other, receiving the earth at the front or cutting end of the excavators, passing
45 the same through and discharging it from the rear end of the excavator, thereby saving the power that would be otherwise expended in elevating the earth to an unnecessary height, as in all known methods of
50 working dredging or excavating machines, and at the same time securing a cleaner and more perfect action of the machine. The same being mounted upon a carriage in such a manner as to be portable for the use and

purpose of excavating and grading rail or 5 turnpike rods,—propelled by steam or any other available power.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation. 6

I construct a carriage on the plan of Miller's steam traction car, with broad tracks, sufficient to sustain the weight of the machine, &c., upon a new made road without sinking. I extend the framework or bed 6 timbers over in front of the truck wheels sufficient to receive the bucket ladders (*e—e*) and support the outer ends of the shaft (*n. n.*) with the tumblers (*f. f.*) around which run the endless chains (*h. h.*) and 7 carry the buckets or excavators (*i. i.*); the steam engines (*q. q.*) give motion to the pinions (*p. p.*) and cog wheels (*o. o.*), which turn the tumblers (*f. f.*), thus giving motion to the endless chains (*h. h.*) and the excavators (*i. i.*) which enter the ground at A. A. and discharge at B. B. in front of the scrapers (*t. t.*); said scrapers, being of a triangular form, level the road as they advance. The cylinders or wheels (*k. k.*) under which 8 the endless chains pass, stand at an angle of about fifteen degrees, for the purpose of giving a proper inclination to the excavators as they enter the ground at A. A. and to facilitate the feeding of the same. The screws 85 (*m. m.*) with hand-wheels on top are for the purpose of elevating or depressing the outer end of the bucket ladders as may be required, and rest upon the trucks (*l. l.*).

w is an eccentric on the crank shaft of the 90 engines, and is connected with shaft (*j*) by means of pitman and crank, so as to give a vibratory motion to the feed bars (*y. y.*) which act on rag-wheels (*x. x.*), thus giving motion to the track wheels by means of inter- 95 mediate cog wheels, as shown on Fig. 3, whereby the car receives a forward motion.

I do not claim the construction and use of buckets or excavators arranged on endless chains, propelled over and around pulleys 10 or tumblers for the purpose of excavating, that principle having been known and used before. Nor do I claim any particular form of excavator, hook, plow or cutter, for the purpose of breaking the ground, or any par- 10 ticular or peculiarly constructed carriage for the transportation of the excavating and grading machine, steam engine, &c.

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

1. The use of the cylinders or wheels (*h. h.*) for the purpose of depressing the chains (*h. h.*) so as to give to the excavators (*i. i.*) a proper inclination, and thereby facilitate the feeding and working of the same.

2. I claim the construction and arranging of the excavators attached to endless chains, 10 worked in the manner above described, to-

wit: to fill and discharge while traversing from one tumbler to the other, on the lower plane (from A to B), for the use and purpose of excavating and grading rail and turnpike roads, substantially as set forth. 15

WARREN P. MILLER.

Witnesses:

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