C. A. Mann, Jr.

Excavator.

No. 14,966. Patented May 27, 1856.

Fig. 1

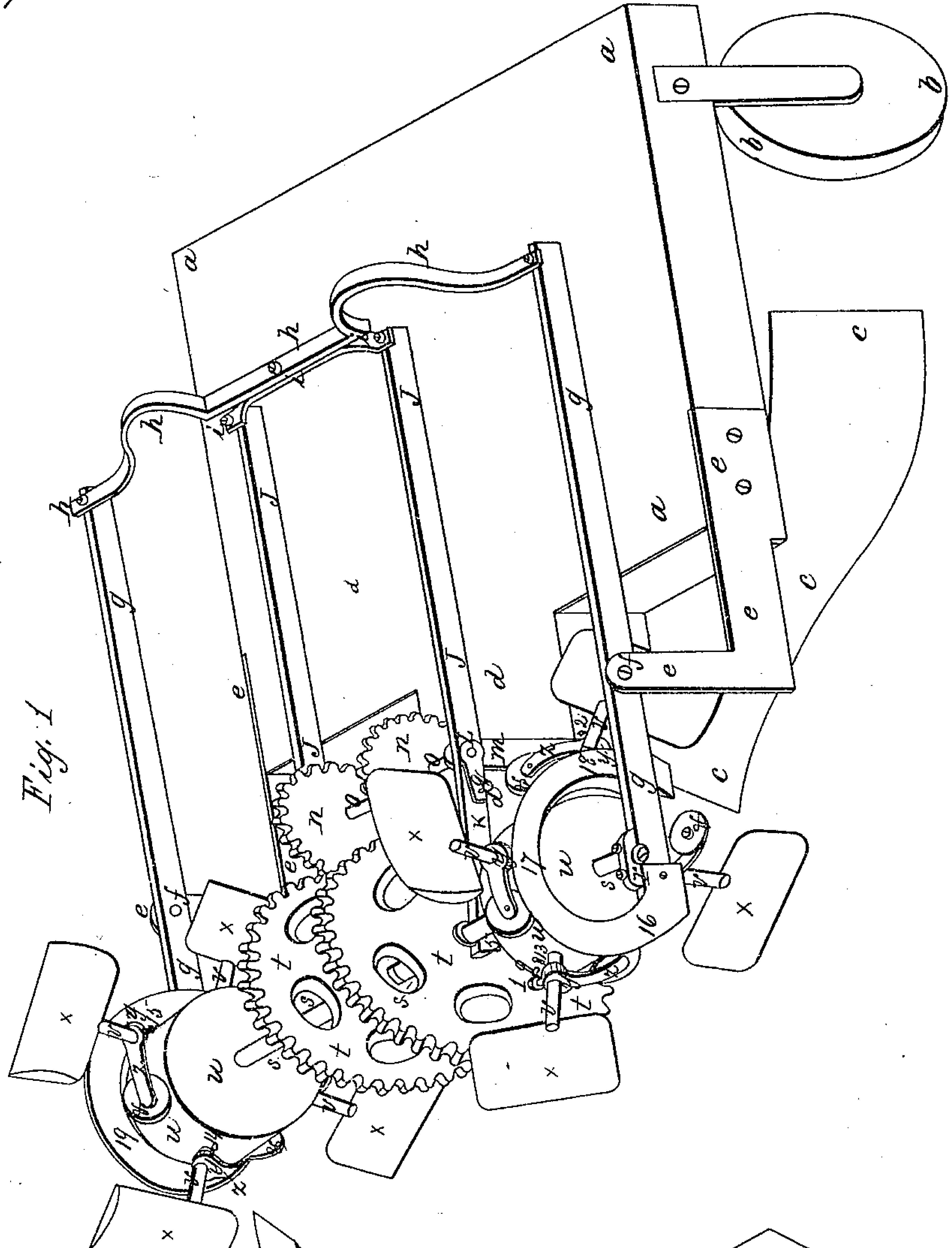
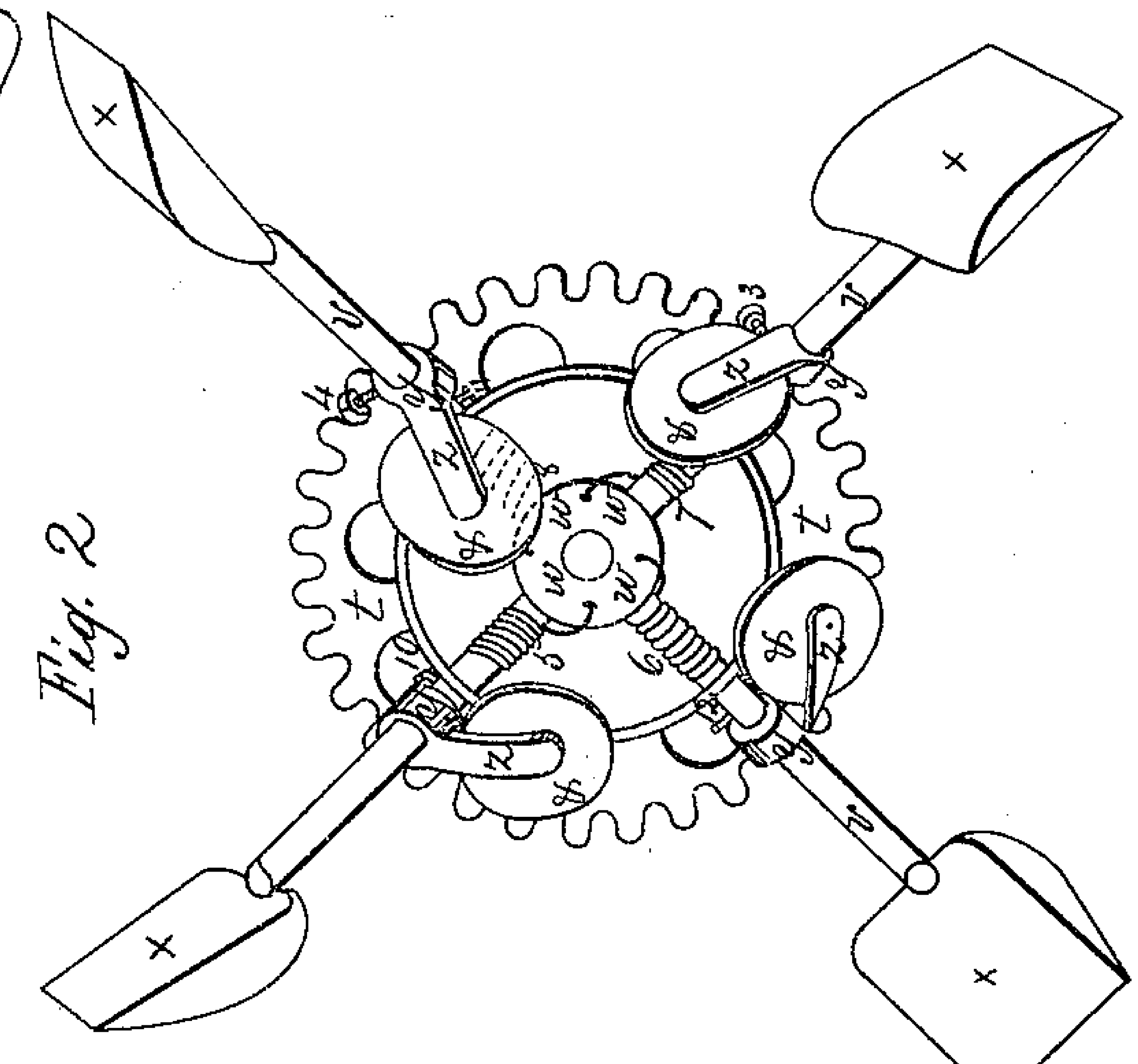


Fig. 2



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UNITED STATES PATENT OFFICE.

CHARLES A. MANN, JR., OF PIKE, NEW YORK.

EXCAVATOR.

Specification of Letters Patent No. 14,966, dated May 27, 1856.

To all whom it may concern:

Be it known that I, CHARLES A. MANN, Jr., of the town of Pike, in the county of Wyoming and State of New York, have invented and made certain new and useful Improvements in Machines for Excavating Earth, Snow, and for other Purposes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a perspective view of the machine complete. Fig. 2, is a side view of the mechanism employed to operate the scoops or shovels.

Description.—To enable others to construct my machine, I herewith describe the same as follows, viz.:

I employ a truck or platform mounted on truck wheels or other suitable wheels, as shown in Fig. 1—*a*, *a*, *a*, *a*, the platform; *b*, *b*, the wheels. To the front of the truck I arrange a scraper a plow device *c*, *c*, *c*. The front of the platform has a neck extension part *d d* in order to leave a suitable space for the arrangement of the required mechanism. On each side of the truck are attached substantial standards as at *e*, *e*, *e*, *e*, *e*, *e*, *e*, Fig. 1, or of any suitable shape. In the upper end thereof are journal boxes or bores, into which work short journals or axles *f f*. Upon these axles is hung a framing, formed of two lateral rails or bars *g*, *g*, *g*, *g*, of suitable length and dimensions. The backward ends of these rails are connected by a yoke-like connection, formed similar to shape shown in Fig. 1 at *h*, *h*, *h*, *h*. This yoke connection is bolted or screwed by its center onto a central cross tie *i*, *i*, to the ends of which are bolted or screwed two central rails or bars *j*, *j*, *j*, *j*, arranged at suitable distances from each other and parallel with the bars *g*, *g*. The forward ends of the central rails are bent or curved upward slightly as at K, and these rails are also hung by pivots or axles, as at L, which pivots work in standards or uprights *m*. It must be observed that this framing is hung or suspended at about one-third of its length, and designed to admit of being elevated or depressed or adjustable up and down, as occasion may require, and also affording a leverage principle. Transversely or across from and within or between the rails or bars J, J, J, J, are arranged two driving wheels *n*, *n*, hung upon one common shaft *o*, *o*, to the extreme ends of which, outside of the uprights or standards *m*, is attached a crank arm P, having a winch *q*, to which may be attached pitman or piston rods as occasion may require.

To the ends of the rails *g*, *g*, J, J, are journal boxes *r*, into which work the ends of axles *s*, *s*, *s*, *s*, to the inner ends of which are arranged master wheels *t*, *t*, *t*, *t*, working or meshing into the driving wheels *n*, *n*. The cogs or teeth of these master wheels are cut obliquely or at a suitable angle, and the axles *s*, *s*, of these wheels are set or arranged to incline at a suitable angle outward from the center of the machine instead of arranged to work horizontally. Attached to these inclined axles *s*, *s*, are short cylindrical chambers *u*, *u*, *u*, *u*, and at proper or required intervals upon the periphery thereof are four (or more) arms *v v v v v v v v* of suitable length, inserted into openings or holes in the rim or periphery, and their ends extending into the interior of the cylinder or chamber and entering a core or center hub formation *w*, Fig. 2, which core or hub is formed solid. To the outward ends of these arms are attached scoops or shovels of any desired form of construction, similar to *x x x x x x x x*. Around the arms are arranged collars *y y y y y y y y*, with finger like projections or extensions *z z z z z z z z*, to which are attached friction disks & & & & & & & &. These collars *y* are attached to the scoop arms *v*, *v*, by set screws 1, 2, 3, 4, Figs. 1, 2, so as to admit of any required adjustability up and down, right or left. Around the part of the arms, within the cylinder chambers, are coiled or spiral springs 5, 6, 7, 8, Fig. 2, the ends of which are confined respectively to the arms and the face of the core or hub, as shown in Fig. 2. To the cylinder chamber, on the periphery thereof, are inserted check pins or stops 9, Figs. 1, 10, 11, 2, and corresponding pins are inserted in the arms as at 12, 13, 14, 15, Figs. 1, 2. To the front ends of the lateral rails or bars *g*, *g* are arranged bowed plates, 16, 17, 18, 19, one end of which is bolted or screwed on to the outside, and the other end screwed or bolted on to the inside of the rails *g*, *g*, so as to be obliquely across the rails, *g*, *g*. These bowed plates 16, 17, 18, 19 are so formed that they shall present

broad oblique surfaces or sides inwardly of the framing to answer the purpose of an oblique cam.

The operation of my excavating machine is as follows, viz: If to be used in clearing the tracks of railroads, the machine is to be arranged on car wheels and attached in front of a locomotive engine, in such a manner, as to admit of communicating or transmitting the power thereof through connection rods or other suitable appliances attached to the crank arm P. Or the whole machine may be constructed with a suitable engine power, to set in motion the machine upon the track, and to communicate power to the driving wheels *n n*, which revolve the master wheels *t*, *t*, *t*, *t*, which revolving toward the back part of the truck set the arms and scoops in motion, and as they move around the friction disks & & & & & roll upon the bowed plates or oblique cams 16, 17, 18, 19, and as the arms are carried around, owing to the oblique surface of the plates 16, 17, 18, 19, the disks & & thereby are caused to turn or change the position of the scoops or shovels. For instance, the shovels that first operate upon the obstacle to be removed are presented squarely or broadly thereto, scoop or shovel up, to their capacity, and in passing upward and over, the cam plates 16, 17, 18, 19, acting on the friction disks & & & & tilt or deflect the scoops when they arrive at a required point, and thereby empty or relieve themselves by throwing out and depositing their supply over the sides of the machine, as it advances along. The scoops or shovels may be made to tilt more or less by so arranging the cams or bowed plates 16, 17, 18, 19, as to bring about the desired result. It may be remarked that the scoops or shovels can be attached to the ends of the arms, so as to be more or less dished, in order to take up a greater or less amount of matter. The arms may also be constructed so as to be lengthened or shortened according to requirements. As the framing *g g g g* J J J J *i i* works on the joint axles L, the whole mechanism is adjustable, or can be graduated up and down, to suit any counteracting pressure or resistance. It is necessary to state that as the arms turn or work around and as the scoops or shovels tilt it is requisite to bring them again to their original position, which is brought about through the intervention of the spiral springs 5, 6, 7, 8, incased within the cylinder chamber, *u*, Fig. 2.

In attaching the scoops or shovels to the arms it will be seen that they are not attached immediately in the middle of their lengths, but instead are attached at about one third of their length, and the excess of the length extending inwardly toward the center of the machine. Now as the scoops or shovels are not attached at their middles, the excess of weight and pressure will be against the excess of extent of the shovels, and in order to counteract any undue resistance or strain and tendency to yield and turn or tilt around any suitable check or stop device may be used, but it must be so arranged as not to interfere with or counteract the action of the friction disks and cams.

My excavating machine may be employed with a slight modification or arrangement so as to be alike applicable to the excavating and removing of loose earth and for dredging purposes, as well also for excavating snow and removing it from the tracks of railroads.

Having given as clear and exact description as is considered requisite to enable others to construct and operate my improvements, what I claim as new and original with myself and desire to secure by Letters Patent of the United States is as follows, viz:

1. I claim the construction and arrangement of the cylindrical chambers *u u*, formed with the inserted semi-rotating arms *v*, *v*, *v*, *v*, *v*, the scoops, *x*, *x*, *x*, *x*, the fingers and friction disks *y*, *z*, &, with the combination therewith of the springs 5, 6, 7, 8, Fig. 2, the whole operated through the obliquely arranged wheels *t t t t*, in combination with the bowed cam plates 16, 17, 18, 19, Fig. 1, substantially as described.

2. I also claim the arrangement of said devices in combination with the adjustable, or graduating framing *g*, *g*, J, J, and the plow attachment *c*, *c*, *c*, specifically as set forth.

CHARLES A. MANN, JR. [L. S.]

Witnesses:

JOHN S. HOLLINGSHEAD,

WM. CARMACK, JR.