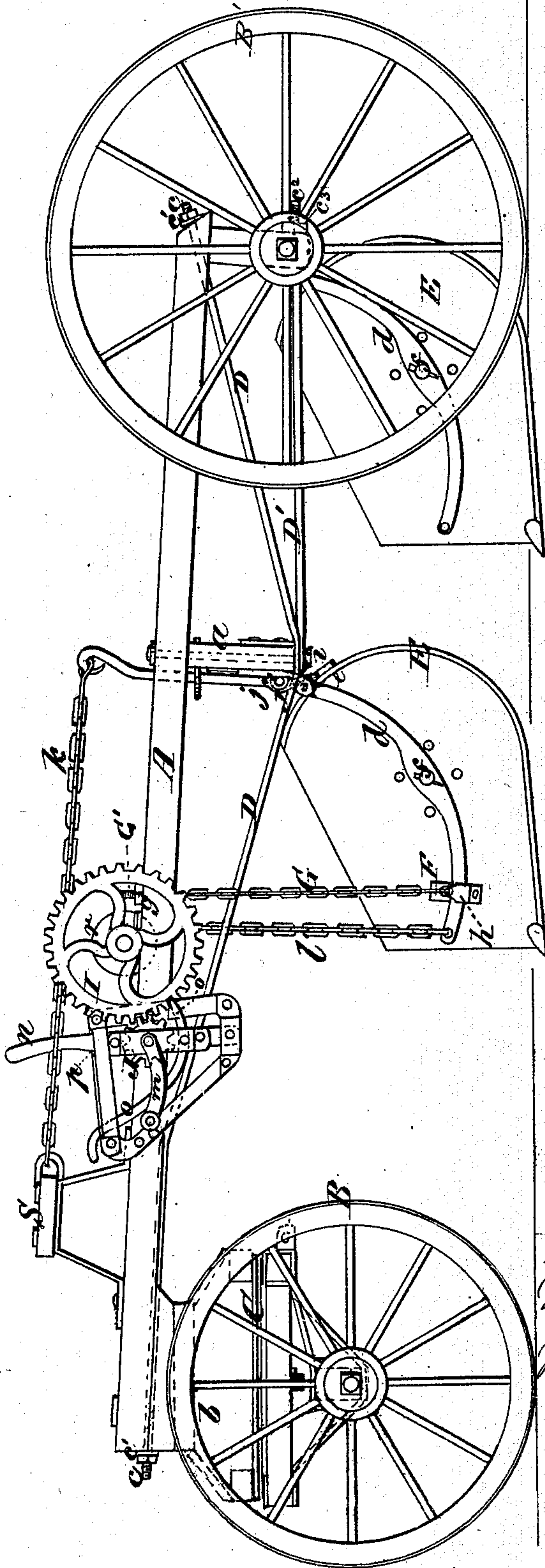


D. JUDD.
Excavators.

No. 144,679.

Patented Nov. 18, 1873.

Fig. 1.



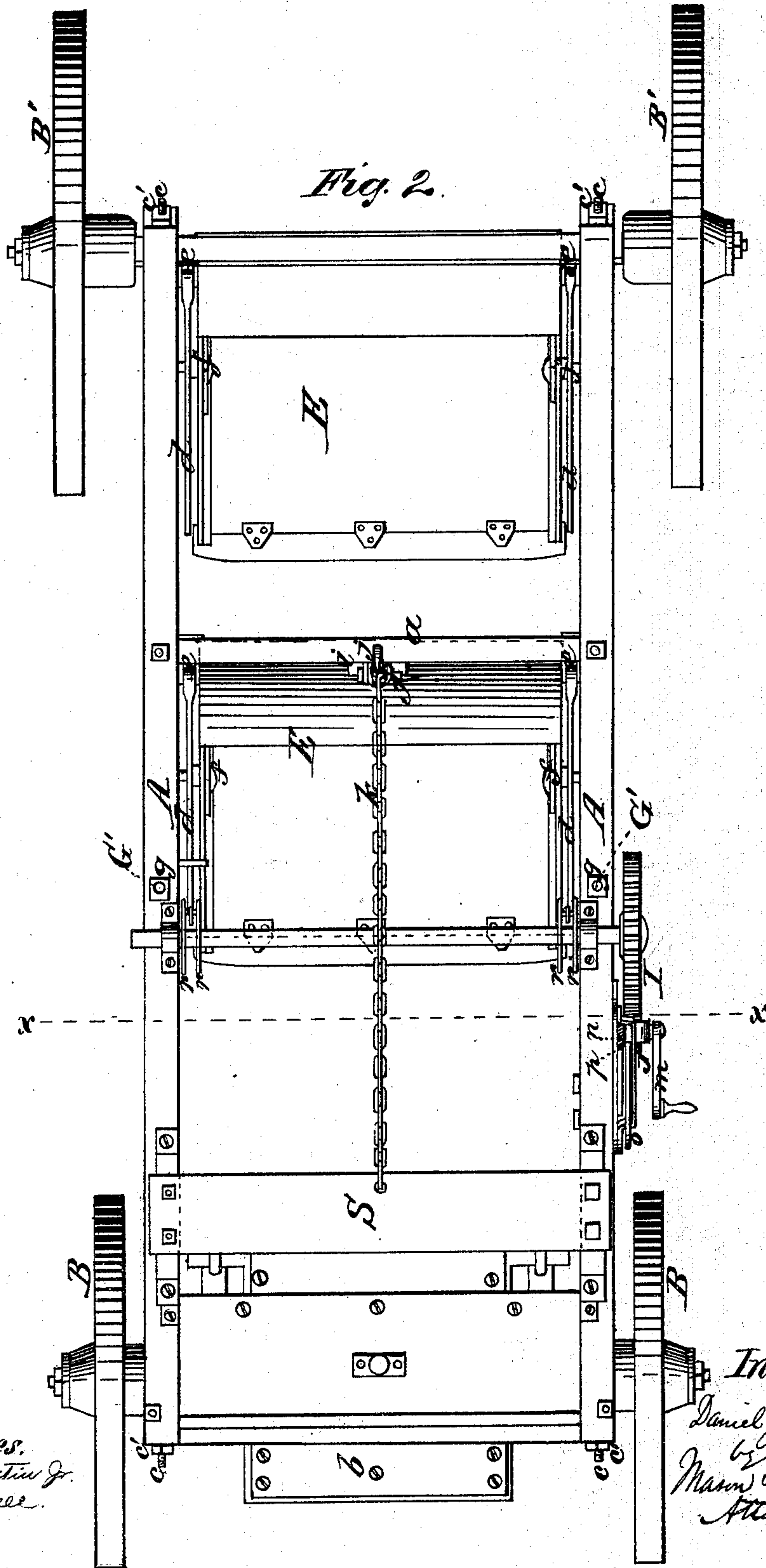
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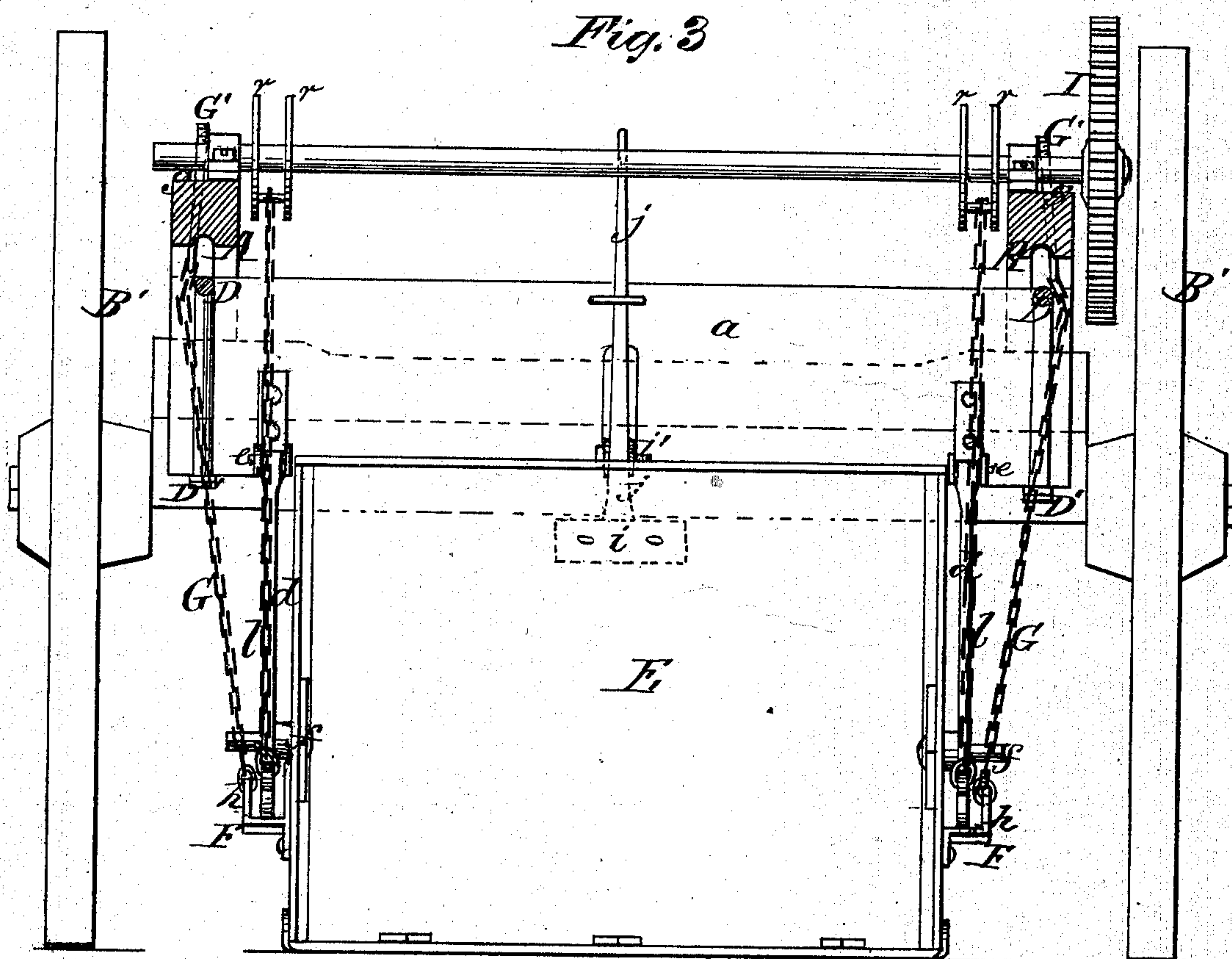
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3 Sheets--Sheet 3.

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UNITED STATES PATENT OFFICE.

DANIEL JUDD, OF HINSDALE, NEW YORK.

IMPROVEMENT IN EXCAVATORS.

Specification forming part of Letters Patent No. **144,679**, dated November 18, 1873; application filed October 29, 1873.

To all whom it may concern:

Be it known that I, DANIEL JUDD, of Hinsdale, in the county of Cattaraugus and State of New York, have invented a new and useful Improvement in Excavators; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings making part of this specification, in which—

Figure 1, Plate 1, is a side elevation of the improved excavator; Fig. 2, Plate 2, a top view of the same. Fig. 3, Plate 3, is a transverse section on the line *x x* of Fig. 2.

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

My present invention consists in certain improvements in the excavator patented by myself July 10, 1866. The first part of said improvements relates to the construction, bracing, and staying of the wheeled frame, which supports and carries excavating-scoops, and the mechanism by which said scoops are controlled; second, to the devices used for adjusting the scoops to the proper depth; and, third, to the combination of devices used for controlling the scoops during the digging, transporting, and dumping operations.

By reference to my former patent, it will be seen that the manner of constructing and bracing the wheeled carriage differs from my present plan in this: The beams A, which in said patent are made with a raised curved portion near their front ends, are now made straight, and in place of said raised curved portion a pillar-block, *b*, of greater height than the one before used, is applied upon the top circle-plate of the fifth-wheel C, in order to have the front end of the beams high enough to allow the front wheels B of the wheeled frame to pass under the beams when turning the excavator around. In connection with these straight backwardly-inclining beams, I use, instead of the wooden braces shown in my said patent, iron truss-rods D of suitable dimensions, say five-eighths-inch round iron, and then, instead of being located on the top of the beams A, are placed below the same and under a fulcrum-board, *a*. The ends of said rods are constructed with screws *c*, and passed through the ends of the beams A, as shown. By means of nuts *c*¹ applied on the screwed ends of the

rods, a proper tension is secured. For the purpose of further sustaining the wheeled frame, especially the hind axle, I extend straining-rods, D' from the hind axle to the fulcrum-board *a*, and on the ends of these rods I form screws *c*² and apply nuts *c*³, as shown.

The frame thus constructed and braced is cheaper and stronger than the one with curved beams and top braces; and the means adopted for strengthening the beams and keeping the frame at a proper tension—viz., the suspended truss-rods and straining-rods with screwed ends and nuts thereon—is a more desirable one than that shown in my said patent, as it greatly reduces the weight without weakening the frame.

In hanging each of the scoops E, I employ two levers, *d*, the rear ends of which, for the forward scoop, are pivoted to the board *a* near its side extremities, and for the rear scoop to the hind axle, as shown at *e e*. The axles or journals on which the scoops turn are located near the center of the levers, as shown at *f f*. These axles are located near the balancing center of the scoops. The scoops are similar in form and construction to those shown in my former patent. Near the front end of the scoop on each side there are brackets F, to which chains G G attach, and then pass up through the beams A and connect with adjusting-screws G' G', which have nuts *g* on their ends, as shown. The chains suspend the forward ends of the scoops, and the adjusting-screws and nuts serve for varying the depth, as required. The brackets to which the chains are attached are constructed of an angular or loop form, as shown at *h*, so as to serve for preventing lateral displacement of the front ends of the levers, and also as stops for arresting the scoop in its rotation back after the load in the same has been discharged. In connection with these stops on the brackets, I employ a stop, *i*, on the rear or back of each scoop, and a lever-latch, *j*, on the board *a*, for the purpose of securing the scoop in proper position while the digging operation is being performed. The lever-latch is pivoted near its lower end to the board *a*, as shown at *j'*, and from the upper end of the lever a chain, *k*, extends to the driver's seat S, by which the latch can be released from the stop. There is also a pin extending from

the inner side of one of the beams, for stopping the elevation of the front end of the scoop when the proper height has been attained. For elevating the front end of each scoop to a transporting position after a load has been dug and collected in the scoop, windlass-chains *l* are attached to the front ends of the levers *d d*, as shown. These chains are wound upon the shaft between broad circular plates *r r*, which form what may be termed grooved pulleys. The windlass-shaft has a spur-wheel, *I*, on one of its ends, and this gears with a pinion, *J*, the shaft of which is furnished with a hand-crank, *m*, by which the windlass-shaft is turned and the chains *l* wound up. The pinion, as in my former patent, is attached to an adjusting-lever, *n*, which has a curved stop-pawl, *o*, pivoted to it. The lever is loosely fitted at its lower end, so that it may be pressed sidewise out of a stop-notch, *p*. By moving the lever, after it is adjusted out of the stop-notch, toward the front of the machine, the pinion is thrown out of gear with the spur-wheel; so, also, is the stop-pawl *o*; and this being done, the chains unwind and the front end of the scoop descends to a digging position. The axles or journals of the scoop are so located, with respect to the balancing center of the scoop, that, when the scoop is empty, it is inclined to remain in nearly a level position; but when filled with earth the load preponderates forward; consequently, when the latch is disengaged, the scoop revolves and discharges its load, after which the scoop revolves back by its own gravity.

The levers *d* and scoop *E* being raised to a transporting height, the pawl *o* and pinion *J* are disengaged by passing the lever *n* laterally out of the notch and forward, which allows the levers and scoop to fall to the earth. The team now draws the scoop forward until it is sufficiently filled, when the pawl and pinion are brought back in contact with spur-wheel *I* of

the windlass-shaft, and, by means of the crank *m*, the load is elevated sufficiently to transport.

If two scoops are used on the one frame, as shown, each is to be furnished with mechanism, such as herein shown and described, for controlling it. In the use of two scoops, the hind one is brought into use after the front one has been filled and elevated, as just described.

To dump or discharge the load, the team is driven to a convenient place, and the lever-latch *j* is then drawn forward with the chain *k* by the driver, so as to clear the stop *i*. This allows the scoop (the levers remaining stationary) to revolve forward and thus discharge its load. When the scoop is relieved of its load and has passed forward till it is clear of its dump, the scoop revolves back by its own gravity, and the stop of the bracket arrests it, and the latch secures it in a transporting position. All is accomplished without stopping the team to dump the load.

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

1. The combination of the excavator-scoops *E* with the beams *A*, under-braces *D*, stays *D'*, and fulcrum-board *a*, substantially in the manner and for the purpose described.

2. The combination of the suspending and adjusting chains *G*, levers *d*, and scoop *E*, substantially as and for the purpose set forth.

3. The combination of the scoop *E*, levers *d*, chains *G* and *l*, and the windlass mechanism, arranged as described, all substantially as and for the purpose set forth.

4. The brackets *F*, constructed to serve as stops to the scoop in its rotation, in combination with the lever-latch *j* and stop *i*, substantially as and for the purpose described.

DANIEL JUDD.

Witnesses:

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REUBEN E. REYNOLDS.