(No Model.)

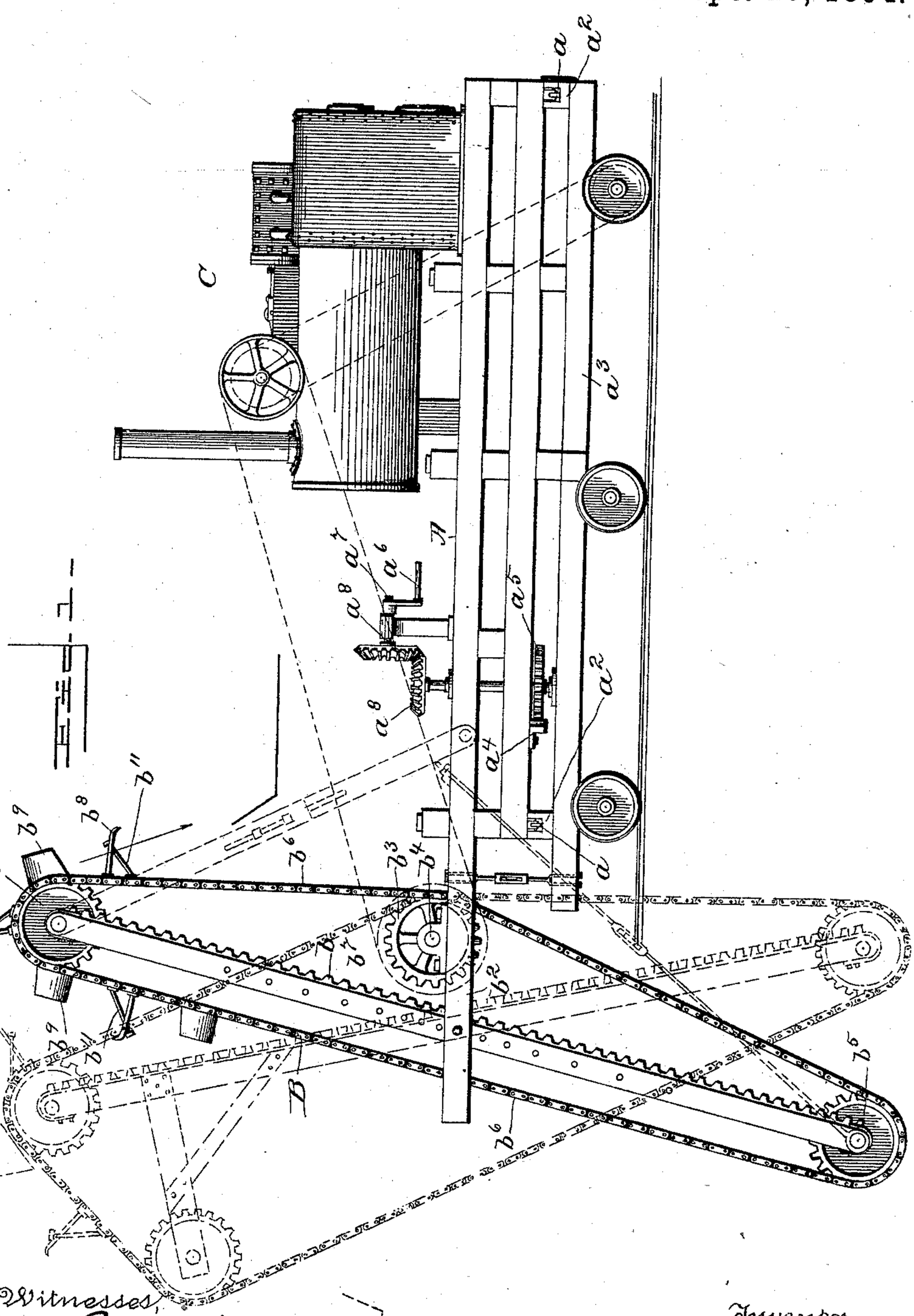
2 Sheets—Sheet 1.

T. P. SMART.

EXCAVATOR.

No. 526,641.

Patented Sept. 25, 1894.



Witnesses,
W. H. Lumphrey.
Harry Holgate

Inventor,
TERRENCE P. SMART,
by Geo. H. Holgate
his Attorney.

(No Model.)

2 Sheets—Sheet 2.

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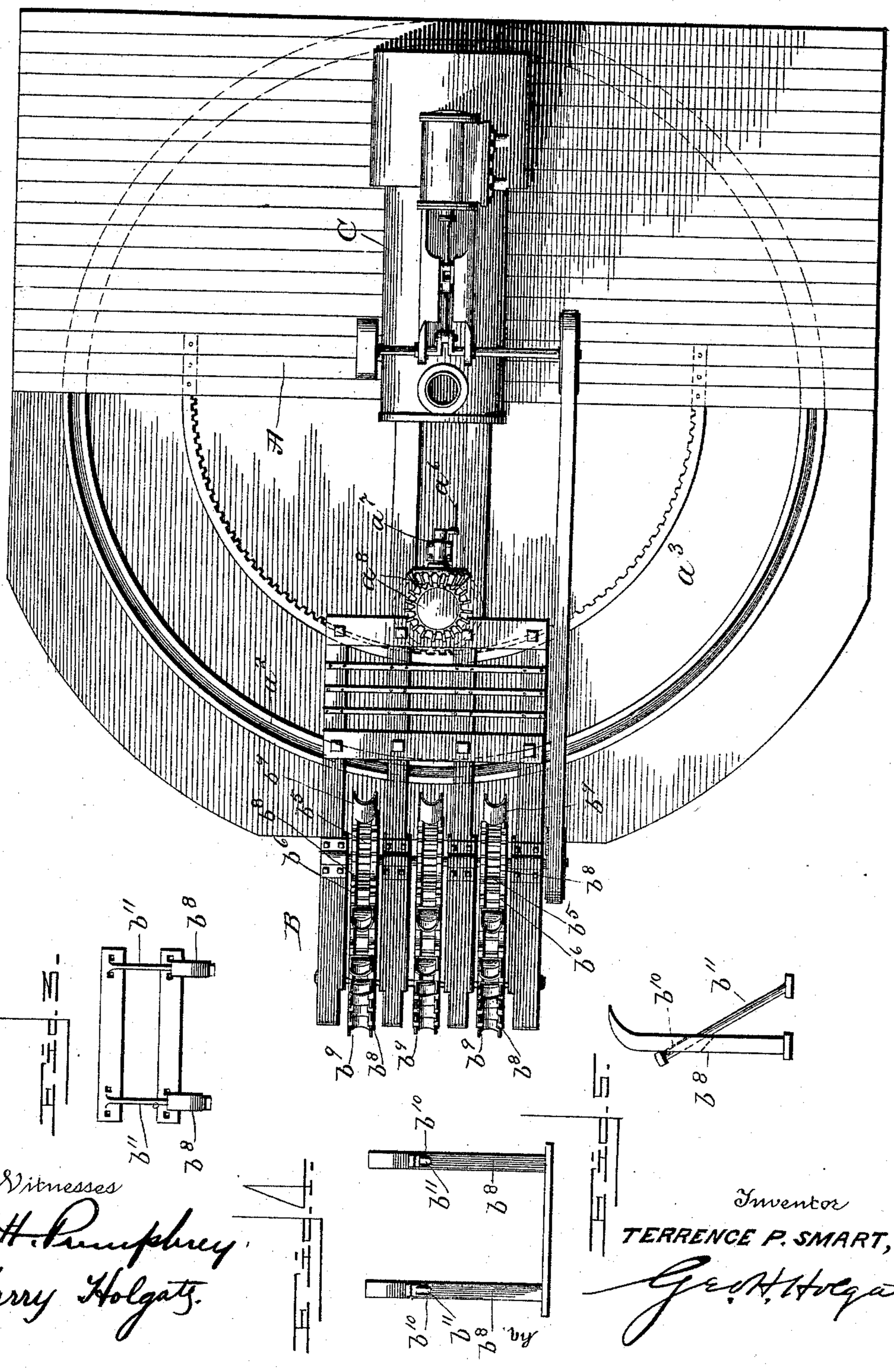

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UNITED STATES PATENT OFFICE.

TERRENCE PETER SMART, OF PHILADELPHIA, PENNSYLVANIA.

EXCAVATOR.

SPECIFICATION forming part of Letters Patent No. 526,641, dated September 25, 1894.

Application filed June 15, 1894. Serial No. 514,660. (No model.)

To all whom it may concern:

Be it known that I, TERRENCE PETER SMART, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Improvement in Excavators, of which the following is a specification.

The invention relates to excavators.

The object is to produce a machine by which the breaking up and removal of earth will be effected in an expeditious and economical manner; and further, by which the depth or width of a cut may be readily varied, without interruption or interference with the operation of the machine.

With these objects in view, my invention consists in the improved construction and combination of parts, as more fully described and pointed out in the claim.

The invention is illustrated in the accompanying drawings, wherein like letters of reference indicate corresponding parts in the several views.

Figure 1, is a view in elevation, of one embodiment of the invention, showing a traversing table, mounted upon a portable frame or truck, an excavator, vertically adjustable, by means of an attached rack and gearing, the excavator being an endless chain, running over terminal sprocket wheels of a swinging beam, and having thereon, alternately arranged, earth breaking projections, of a hook-like form, and carrying buckets, a motor upon the frame, a power transmitting connection from the power shaft of the motor, to the driving sprocket wheel of the chain, and gearing by which the frame is traversed. Fig. 2, is a view in plan, showing the portable supporting frame, the traversing table mounted upon the frame, and a plurality of excavators arranged in a parallel series. Figs. 3, 4, and 5, are views in detail, of the picks or projections for breaking up the earth, showing them arranged in pairs upon the chain, that is, side by side, the projections proper, curved at the outer ends, and flattened to serve as cutters, thereby facilitating a ready engagement with the earth, also stays, working freely through slots in the shanks of the projections, and headed to form stops or shoulders by which the movement of the projections is limited; the stays being suitably secured at their inner ends to the chain.

In the drawings: A, represents a suitable traversing table, mounted upon wheels or rollers a, grooved or otherwise formed to work in curved guides, or upon a track a^2, preferably circular, and formed in or fixed to a portable frame truck, or a scow, a^3, the table, as illustrated, being designed to be traversed manually, through gearing, comprising a curved rack a^4, secured to the under side of the table, and an intermeshing gear a^5, driven from an operating crank a^6, upon the shaft carrying the gear, or upon a separate shaft, a^7, connected by beveled gears a^8. If found desirable, this adjustment may be effected by the application of power from a motor direct to the crank shaft.

B, represents the excavator proper, which is mounted upon a removable bolt or shaft b, in a manner to swing between beams projecting from the table, and is vertically adjustable, by means of the attached rack b^2, and a gear b^3, which is the driving gear, carried by a shaft b^4, the adjustment being effected by lifting the swinging beam, until the rack is engaged by the gear. The bolt is then removed, to free the beam, and on rotation of the gear, the beam will be raised or lowered to a proper position, when the bolt is inserted through co-incident openings, of which there are a series in the swinging beam, of the movable and stationary beams, to afford a pivotal center or axis, about which the excavator is free to swing. At opposite ends of the swinging beam, suitable braces may be pivoted, as indicated by dotted lines, in Fig. 1, and secured to the table. Over sprocket wheels b^5, at or adjacent to the ends of the supporting beam, is a sprocket chain b^6, which also, passes around and is driven by the gear b^3, serving as a sprocket wheel. Upon the chain, alternately, or if found desirable, otherwise arranged, are earth breakers and carriers b^8, b^9, the devices for breaking up the earth, being hook-like cutters or projections, fixed to the chain, and the carriers or conveyers, the well-known scoops. To prevent undue strain upon the hooks and chain, a yielding connection is provided, by slotting the hook shanks, as at b^{10}, to receive stays or

braces b^{11}, one end of which is attached to the chain, and the opposite or free end, passed through the slot, and headed to form a stop for limiting the movement of the hook. These hooks are preferably arranged in pairs, by being placed side by side, upon the chain, but may be used singly, or in any number desired.

C represents a suitable motor, from which power is transmitted to drive the excavator, and if desired, also the traversing gear of the table, and the frame or truck a^3.

As shown in Fig. 2, any number of the excavators may be mounted, by being arranged side by side, and singly or collectively adjusted, without alteration in the construction.

In Fig. 1, of the drawings, a slightly modified construction of the excavator is indicated, by dotted lines, and consists in rearranging the breakers and carriers, by which the delivery will be reversed, and further, in the employment of an extension from the main support or beam, for the purpose of directing the delivery or discharge.

Having fully described the invention, what I claim as new, and desire to secure by Letters Patent, is—

An excavator comprising an endless chain, suitably supported and driven, having arranged thereon a series of projections or cutters yieldingly sustained on said chain by means of braces attached to said chain, and a series of carrying buckets, as specified.

In testimony whereof I have affixed my signature in the presence of two subscribing witnesses.

TERRENCE PETER SMART.

Witnesses:

W. H. PUMPHREY,

F. M. GORMLEY.