

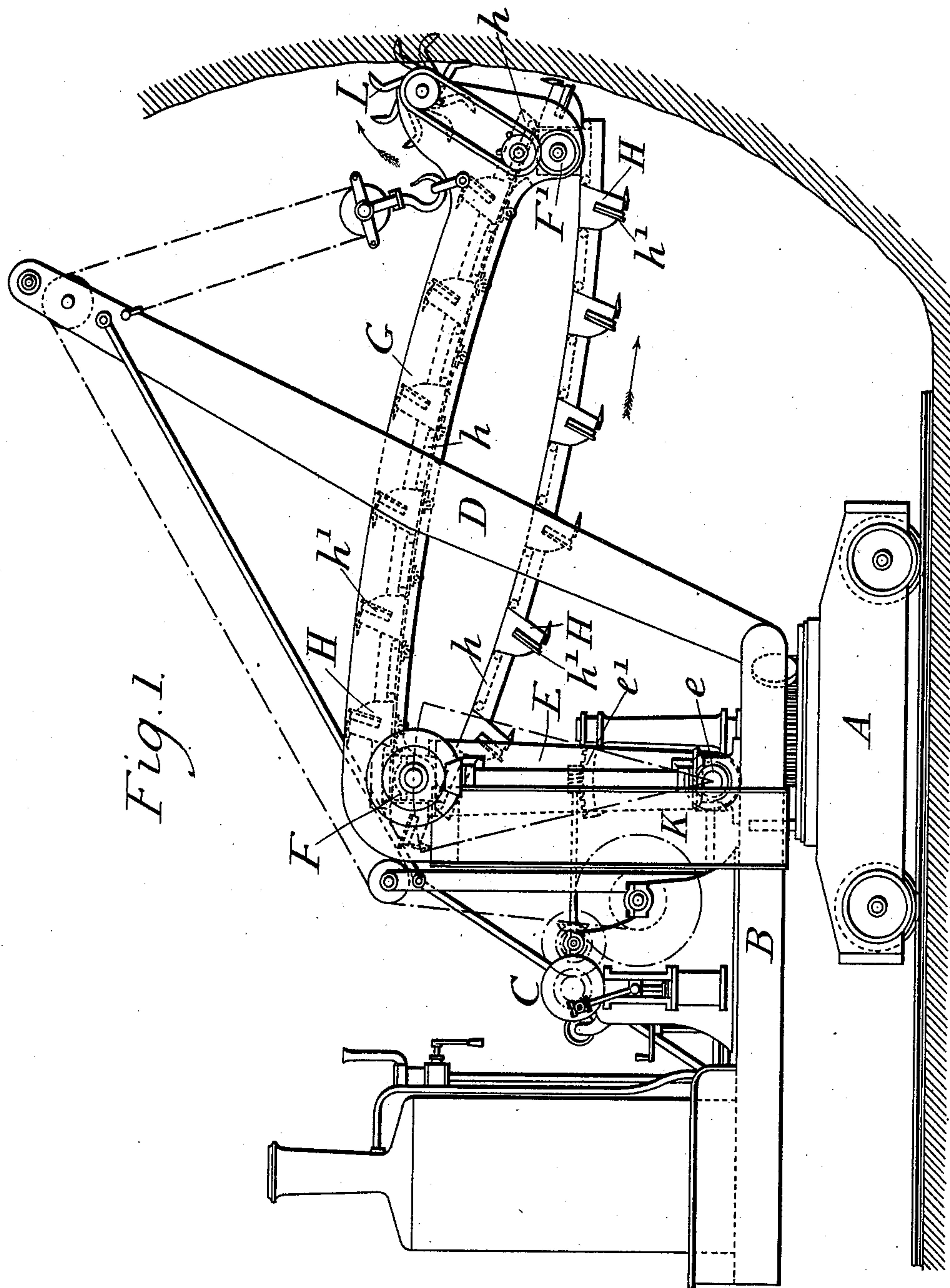
(No Model.)

5 Sheets—Sheet 1.

A. CRYER & E. C. NEWBY.
EXCAVATING MACHINERY.

No. 602,309.

Patented Apr. 12, 1898.



Witnesses,
Thos. A. Gunn
Robert Everett.

Inventors.
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Edgar C. Newby.
By James L. Norrie.
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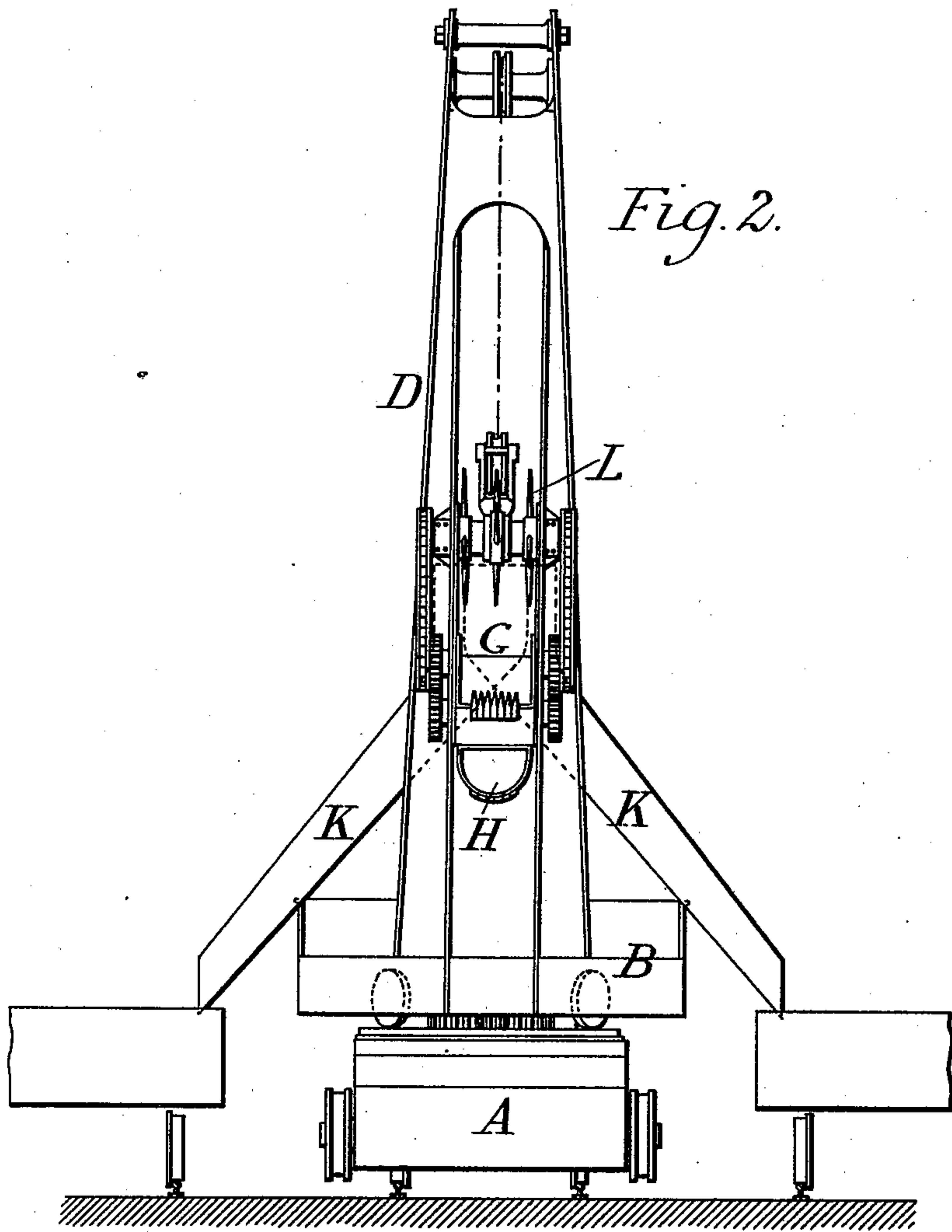
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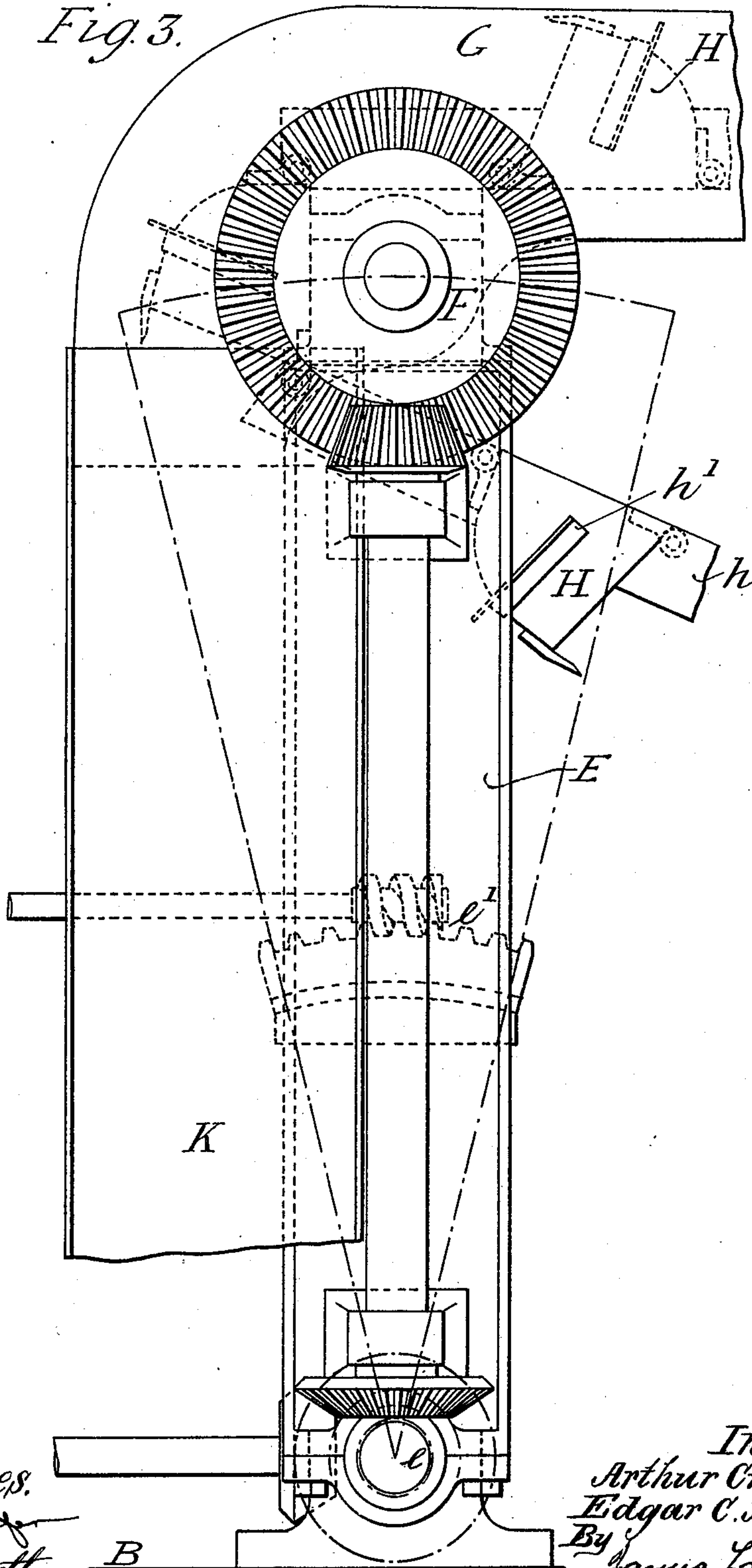
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Fig. 3.



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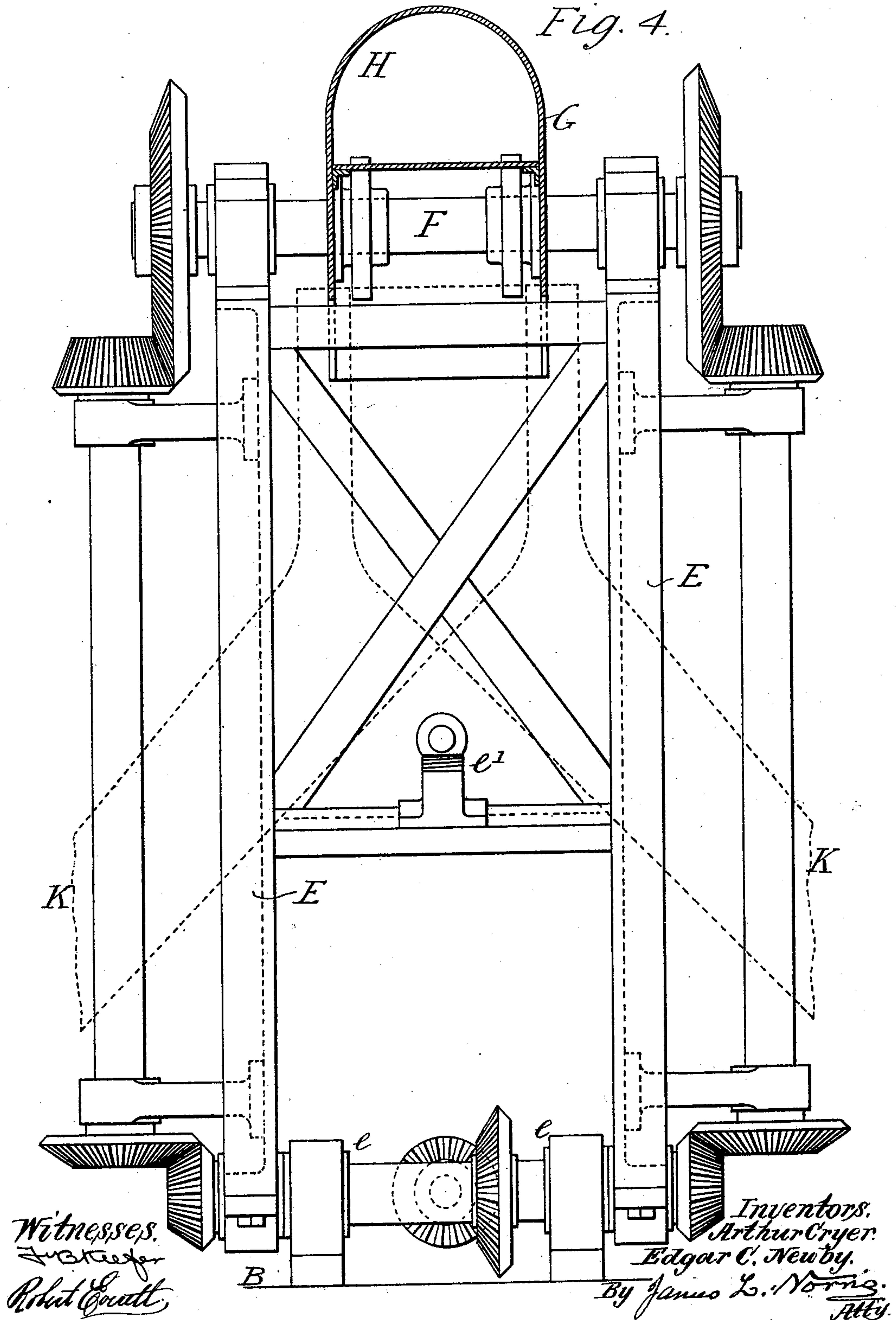
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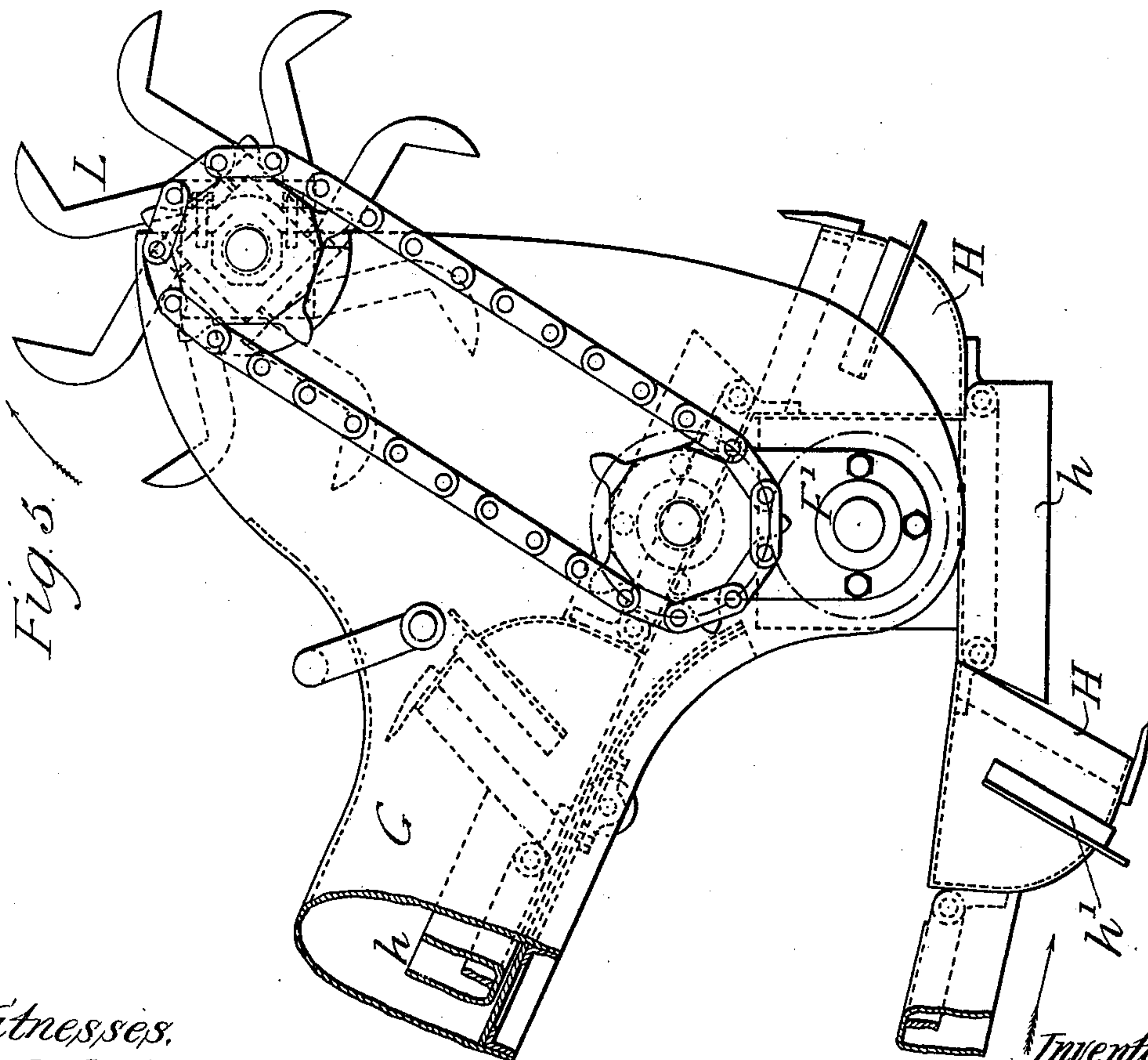
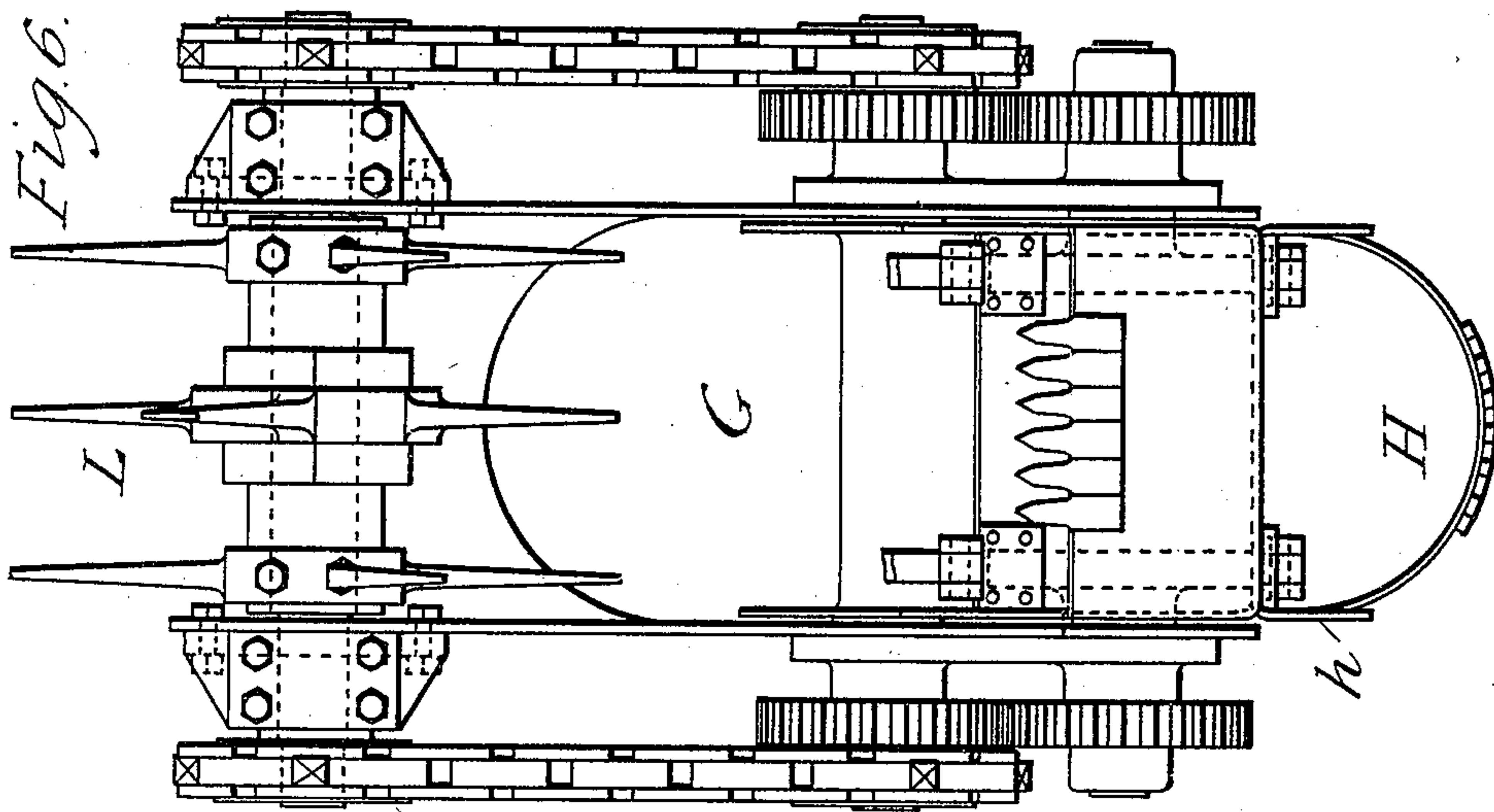
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UNITED STATES PATENT OFFICE.

ARTHUR CRYER AND EDGAR CHARLES NEWBY, OF CARDIFF, ENGLAND.

EXCAVATING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 602,309, dated April 12, 1898.

Application filed September 29, 1896. Serial No. 607,320. (No model.)

To all whom it may concern:

Be it known that we, ARTHUR CRYER, engineer, residing at 55 Alfred street, and EDGAR CHARLES NEWBY, engineer, residing at 3 Moira Place, Cardiff, in the county of Glamorgan, England, citizens of England, have invented certain new and useful Improvements in Excavating Machinery, of which the following is a specification.

The object of this invention is an excavating-machine especially adapted for effecting railway or dock cuttings and the like, the principal part of the machine being caused to travel upon a temporary railway at the bottom of the cutting toward the bank that has to be cut away.

Figures 1 and 2 of the accompanying drawings are respectively a side view and an end view of a machine according to our invention. Figs. 3 and 4 are respectively a side and a front view of the oscillating frame E, and Figs. 5 and 6 are similar views of the excavating-head and its gearing.

A is a strong truck having on it a revolving base-frame B, on which are placed a suitable engine and boiler and gearing C for working the excavating mechanism. On the front of the base-frame B is a jib D; also, on the front part of the base-frame is pivoted on trunnions at *e* an upright frame E, on the top of which bearings are formed for a strong shaft carrying a tumbler F, such as the top tumbler of a dredger. This tumbler is caused to revolve by bevel-gear, or it might be by other connections from the engine-gearing C. A hollow boom G, pivoted on trunnions concentric with F, projects forward from the frame E, its front end, on which is mounted another tumbler F', being suspended from the jib D. Around the tumblers F and F' is a chain of dredging-buckets H, which as the tumblers revolve travel in the direction of the arrows, the full buckets passing upward at the front end of the boom and traveling back through the boom, while the empty buckets travel forward under the boom and ascend along the face of the work to be excavated. Between each pair of the buckets H there is a tray or open-ended trough *h*, these trays forming with the flat sides of the buckets a continuous floor on which the excavated material is carried, whatever be the inclination of the boom, to chutes

K, arranged on the frame E, down which the material descends into wagons preferably placed on temporary rails on either or on each side of the apparatus. Each bucket H has at its mouth steel scrapers or teeth and on its sides and back a scraper *h'* to clear away material that may be deposited on the inside of the boom G.

In order to facilitate the excavation, we arrange at the end of the boom additional cutting or digging apparatus consisting of a shaft mounted a little in advance of the mouths of the buckets H and driven by chain or other gear from the tumbler F'. On this shaft are fixed revolving picks L, which may be made, as shown, of a number of bent steel bars having their ends so shaped as to penetrate, loosen, and break down portions of the material to be excavated. The direction in which the picks revolve being opposite to that of the tumblers F', the material dug out by the picks falls into the buckets H and is carried away, as before described.

The boiler is placed at the rear of the base-frame, so as to form a counterpoise to the excavating machinery.

By means of the engine and gearing C suitable barrels are driven for raising and lowering the jib and boom and gear for turning the base-frame horizontally and for moving the truck backward or forward; also, by means of suitable gearing, such as a worm and toothed segment *e'*, on the frame E this frame can be moved for some distance to and fro on its trunnions *e*, as indicated by the dotted lines in Fig. 1.

As the material is excavated in front of the machine the boom G is advanced for fresh cuts by moving the frame E step by step till it attains the dotted position somewhat inclined beyond the upright. It is then moved back till it is as far inclined backward, and then the truck A is advanced a distance equivalent to the stroke of the frame E.

Having thus described the nature of this invention and the best means we know of carrying the same into practical effect, we claim—

1. An excavating-machine comprising a truck, a revolving base-frame thereon carrying boiler, engine, hoisting and crane gear, a pivoted upright frame and a jib, a boom having its one end pivoted to the upright frame

and its other end suspended from the jib, a chain of dredging-buckets and a set of revolving picks carried by the boom, all arranged and operating substantially as described.

- 5 2. In combination with the dredging-buckets H, the trays *h* and scrapers *h'* substantially as and for the purpose set forth.

In testimony whereof we have signed our

names to this specification, in the presence of two subscribing witnesses, this 16th day of 10 September, A. D. 1896.

ARTHUR CRYER.

EDGAR CHARLES NEWBY.

Witnesses:

JNO. P. COX,

H. T. HAVILAND.