

No. 754,592.

PATENTED MAR. 15, 1904.

D. McDONALD.
DIGGING AND LOADING MACHINE.

APPLICATION FILED JAN. 30, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

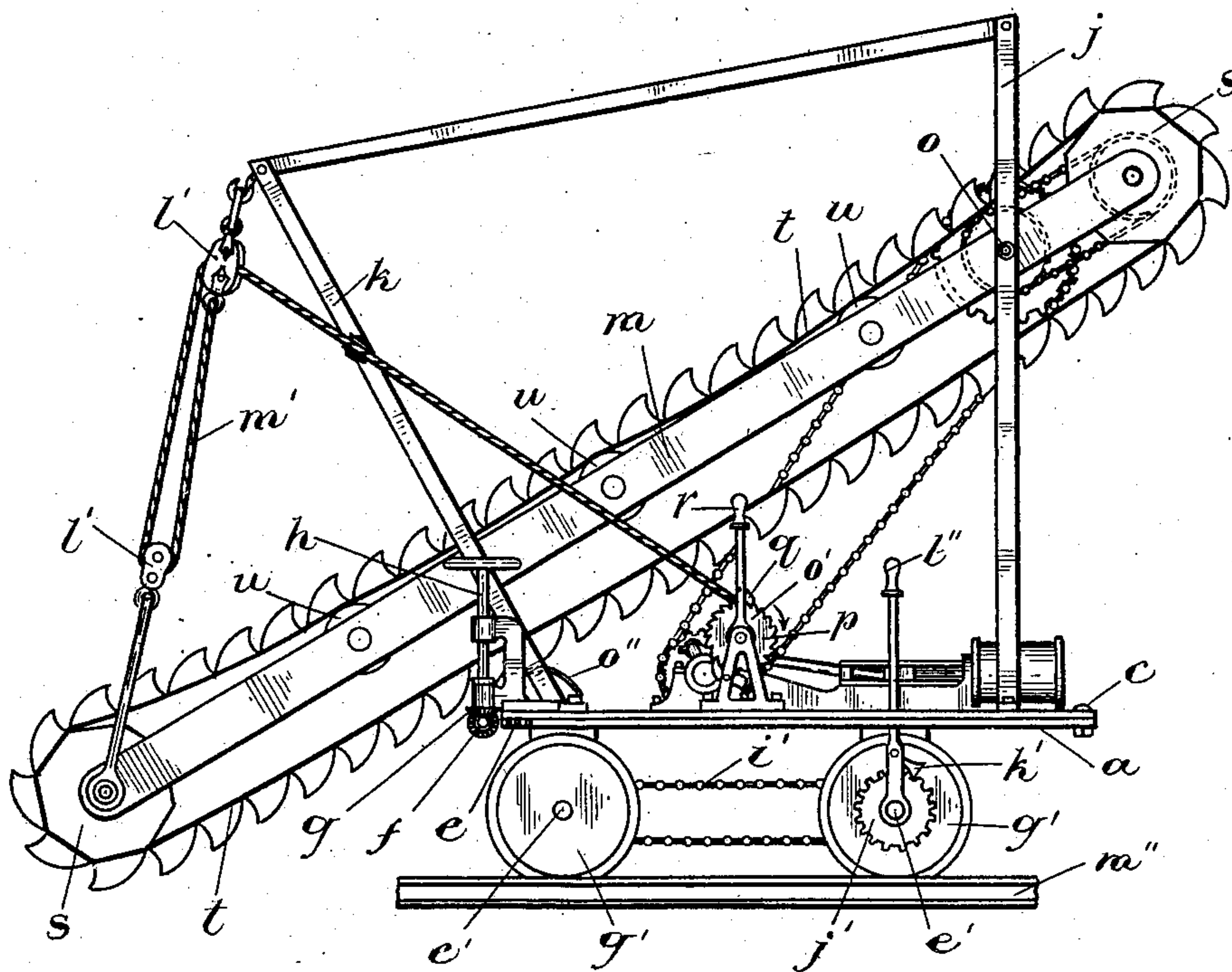


Fig. 1.

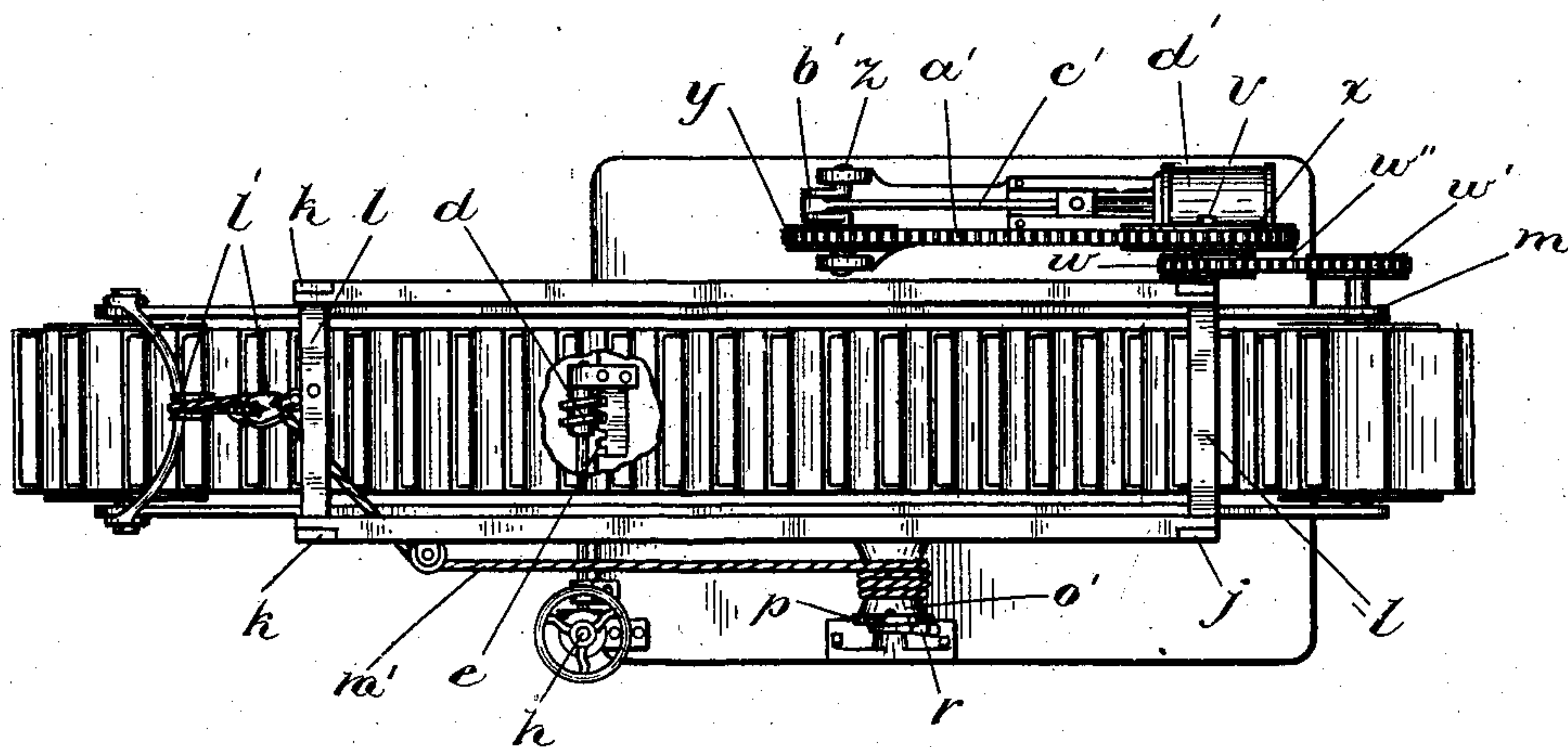


Fig. 2.

Witnesses.

W. S. Guest
L. S. Brock.

Inventor.

Dan. McDonald
by C. H. Riches
his attorney

No. 754,592.

PATENTED MAR. 15, 1904.

D. McDONALD.
DIGGING AND LOADING MACHINE.

APPLICATION FILED JAN. 30, 1903.

NO MODEL.

2 SHEETS—SHEET 2.

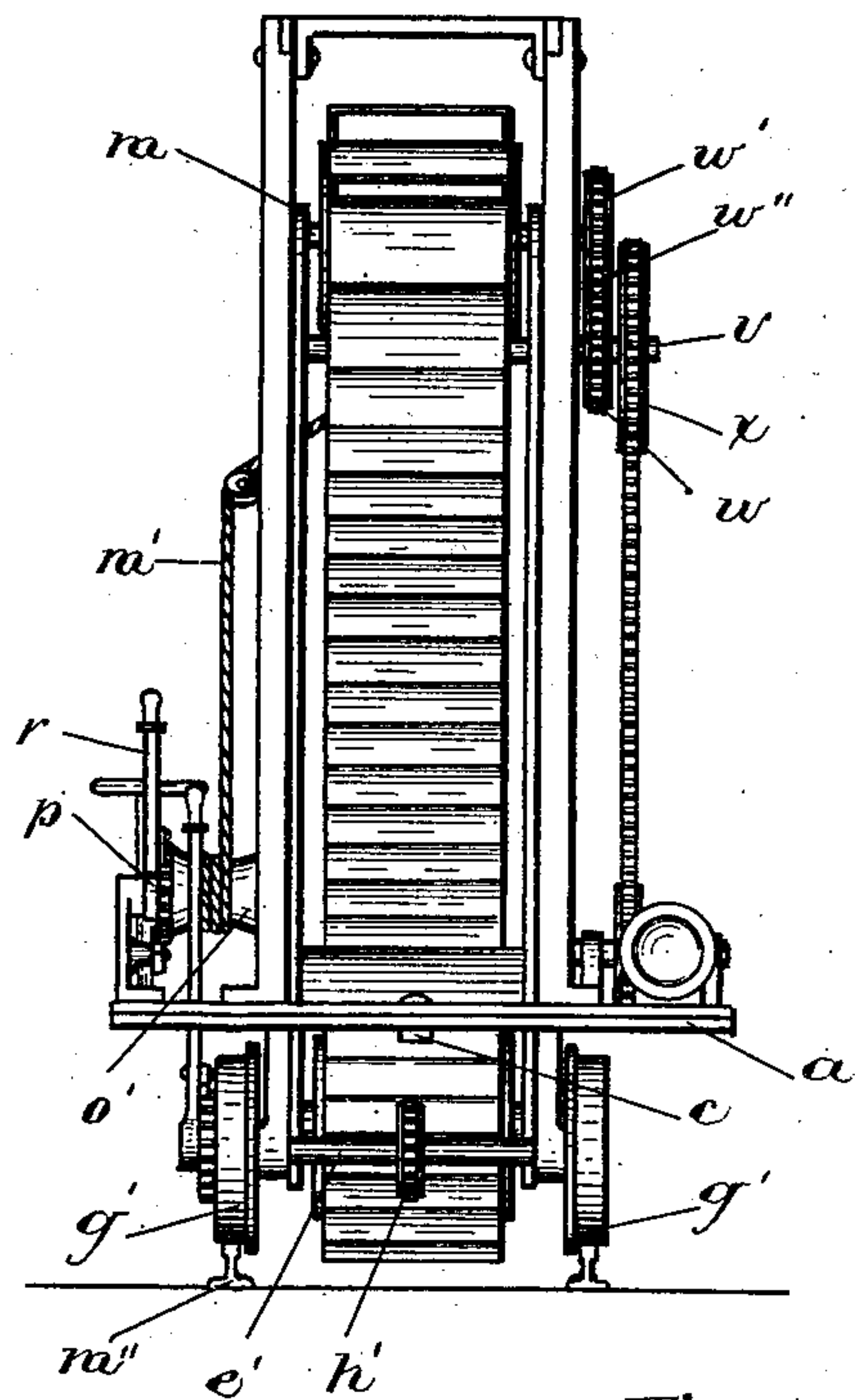


Fig. 3.

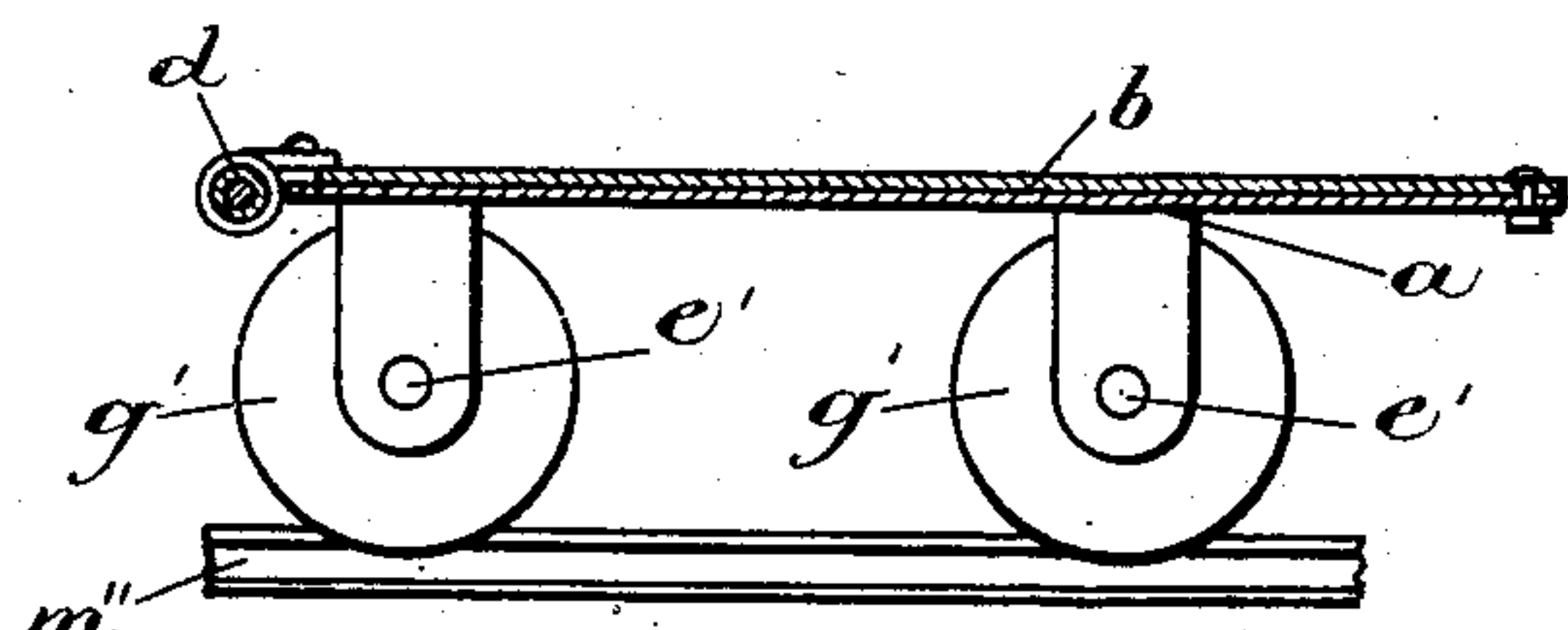


Fig. 4.

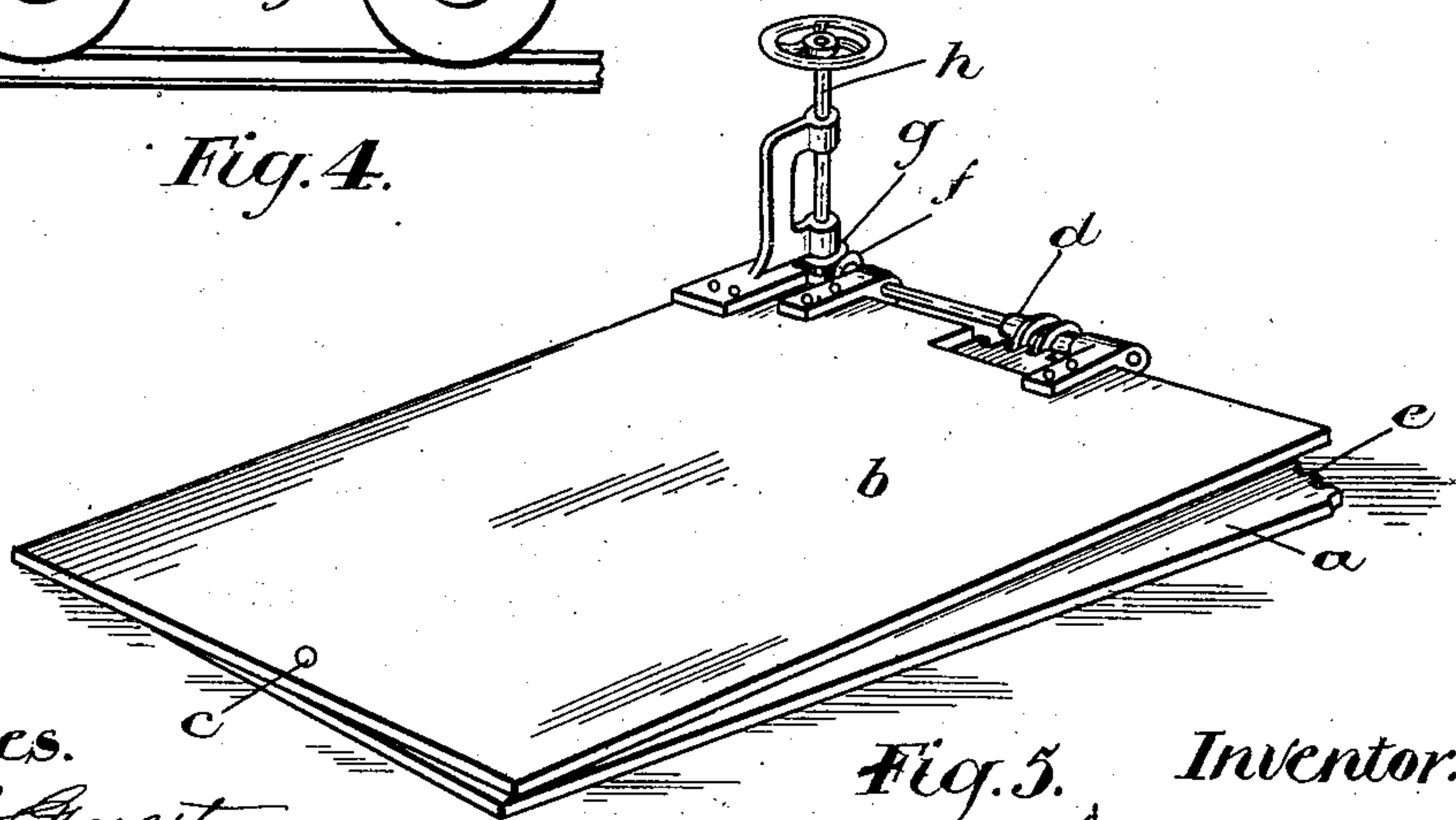


Fig. 5.

Witnesses.

W. S. Guest
L. F. Brock.

Inventor.

Dan McDonald
by C. H. Riches
his attorney

UNITED STATES PATENT OFFICE.

DANIEL McDONALD, OF BRUCE MINES, CANADA.

DIGGING AND LOADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 754,592, dated March 15, 1904.

Application filed January 30, 1903. Serial No. 141,123. (No model.)

To all whom it may concern:

Be it known that I, DANIEL McDONALD, residing at Bruce Mines, in the district of Algoma and Province of Ontario, Canada, have invented certain new and useful Improvements in Digging and Loading Machines; and I hereby declare that the following is a full, clear, and exact description of the same.

This invention relates to a digging and loading machine designed especially for mining and other underground work, having for its object the construction and arrangement of the operative parts in such a manner that they can be manipulated by one operator.

In carrying out the invention I employ one or more buckets or scrapers connected to a carrier chain or belt revolubly mounted in a carrier-frame and driven by a suitable motor. The carrier-frame is adjustably connected to the main frame, and the main frame is supported on a movable truck or platform and fitted with an adjusting-gear whereby its relative position to the movable truck or platform can be laterally altered from time to time as the work progresses without varying the lateral position of the movable truck or platform.

In the drawings, Figure 1 is a side elevation of the complete apparatus, showing the construction and relative position of the various parts. Fig. 2 is a plan view of the same. Fig. 3 is an end elevation of the same. Fig. 4 is a longitudinal section through the movable truck. Fig. 5 is an enlarged perspective view of a portion of the truck and table, showing the adjusting-gear for moving the table relatively to the truck.

Like letters of reference refer to like parts throughout the specification and drawings.

Supported on the top of the movable truck or platform *a* is a swing-table *b*, pivotally connected thereto by a swing-bolt *c*, from the center of which the swing-table oscillates during its lateral adjustment. Journaled in bearings connected to the swing-table *b* is a worm-shaft *d*, meshing with a curved rack *e*, connected to the movable truck or platform *a*, the curvature of the rack being described from the center of the swing-bolt *c*, and fitted to the worm-shaft *d* is a bevel-pinion *f*, meshing

with a corresponding bevel-pinion *g*, fitted to a pinion-shaft *h*, journaled in bearings connected to the swing-table. The rotation of the pinion-shaft causes the swing-table to oscillate either to the right or to the left on a curve described from the center of the swing-bolt to bring the buckets or scrapers at the loading end of the machine into engagement with the work without materially shifting the position of the delivery or unloading end of the same and without necessitating any change in the lateral position of the movable truck or platform.

Rigidly connected to the top of the swing-table are two sets of standards *j* and *k*, respectively, braced by cross-stays *l*, and contained between the standards *j* and *k* is a carrier-frame *m*, having near its front end guide-geons *o*, journaled in the standards *j*, so as to permit of the front end of the carrier-frame being lowered or raised as the rear end is respectively raised or lowered. Connected to the top of the standards *j* and to the rear end of the carrier-frame is a block and tackle *n*, the rope *m'* of which, after passing through the uppermost pulley-block, is wound on a drum *o'*, mounted on a swing-table *b*, and connected to the drum *o'* is a ratchet-wheel *p*, with which engages a pawl *q*, pivoted to the operating-lever *r*. The rotation of the drum *o'* in the direction indicated by arrow winds the rope *m'* to raise the loading end of the carrier-frame, and the rotation of the drum in the reverse direction unwinds the rope to lower it. Journaled in the ends of the carrier-frame are drums *s*, around which passes the carrier-belt *t*, and journaled in the carrier-frame between the drums *s* are idlers *u* to support the loaded buckets or scrapers as they pass from the loading to the unloading end of the frame. Journaled in the carrier-frame contiguous to the drum *s*, at the front end thereof, is a shaft *v*, upon which are mounted two sprocket-wheels *w* and *x*, and mounted on the mandrel of the drum *s* is the sprocket-wheel *w'*, around which and the sprocket-wheel *w* passes a sprocket-chain *w''* to transmit motion from the shaft *v* to the drum *s* to drive the carrier-belt *t*. Passing around the sprocket-wheel *x* and around a sprocket-wheel *y*, mounted on a

driving-shaft z , is a sprocket-chain a' , and forming part of the driving-shaft z is a crank b' , to which is connected the piston-rod c' of the engine or motor d' , by means of which the shaft z is driven.

The axles e' for the movable truck or platform are journaled in suitable boxings connected to the under side of the top of the movable truck or platform, and mounted upon the axles e' are the track-wheels g' . Mounted upon the axles e' , between the track-wheels g' , are sprocket-wheels h' , around which passes a sprocket-chain i' , and mounted on one of the axles e' is a ratchet-wheel j' , with which engages a pawl k' , pivoted to a lever l' , fulcrumed on the axle on the outer side of the ratchet-wheel j' for the purpose of rotating it. By means of the lever l' and ratchet-wheel j' the movable truck or platform can be shifted along the track-rails m'' .

Connected to the loading end of the swing-table is an inclined guard o'' , with which engage the buckets as they return from the unloading to the loading end of the carrier-frame, the purpose of the guard being to prevent the buckets or scrapers coming into contact with the swing-table or the machinery mounted thereon.

Instead of connecting the block and tackle to the standards k I may, if I so desire, connect it to the brace l , uniting the upper ends of the standards k , this brace l being substantially arc-shaped to give plenty of clearness to the buckets or scrapers as they pass from the loading to the unloading end of the carrier-frame when the carrier-frame is in its most elevated position.

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

1. In a digging and loading machine the

combination of a movable truck or platform, a swing-table mounted thereon, a worm-shaft for the swing-table, a rack connected to the movable truck or platform meshing with the worm-shaft, a pinion-shaft, intermeshing bevel-pinions mounted on the pinion-shaft, worm-shafts, a main frame supported by the swing-table, a carrier-frame journaled at one end to the main frame, an adjustable gear for raising and lowering the other end of the carrier-frame, drums mounted in the carrier-frame, a carrier-belt passing around the drums, buckets connected to the carrier-belt, a sprocket-wheel for driving the carrier-belt, a motor and means for transmitting motion from the motor to the sprocket-wheel, substantially as specified.

2. In a digging and loading machine the combination of a movable truck or platform, a swing-table mounted thereon, a worm-shaft for the swing-table, a rack connected to the movable truck or platform meshing with the worm-shaft, a pinion-shaft, intermeshing bevel-pinions mounted on the pinion and worm shafts, a main frame supported by the swing-table, a carrier-frame journaled at one end to the main frame, an adjustable gear for raising and lowering the other end of the carrier-frame, drums mounted in the carrier-frame, a carrier-belt passing around the drums, buckets connected to the carrier-belt, a sprocket-wheel for driving the carrier-belt, a motor, means for transmitting motion from the motor to the sprocket-wheel, and means for shifting the position of the movable truck or platform, substantially as specified.

Bruce Mines, January 14, 1903.

DANIEL McDONALD.

In presence of—

ALBERT GRIGG,
F. W. SNIDER.