

(No Model.)

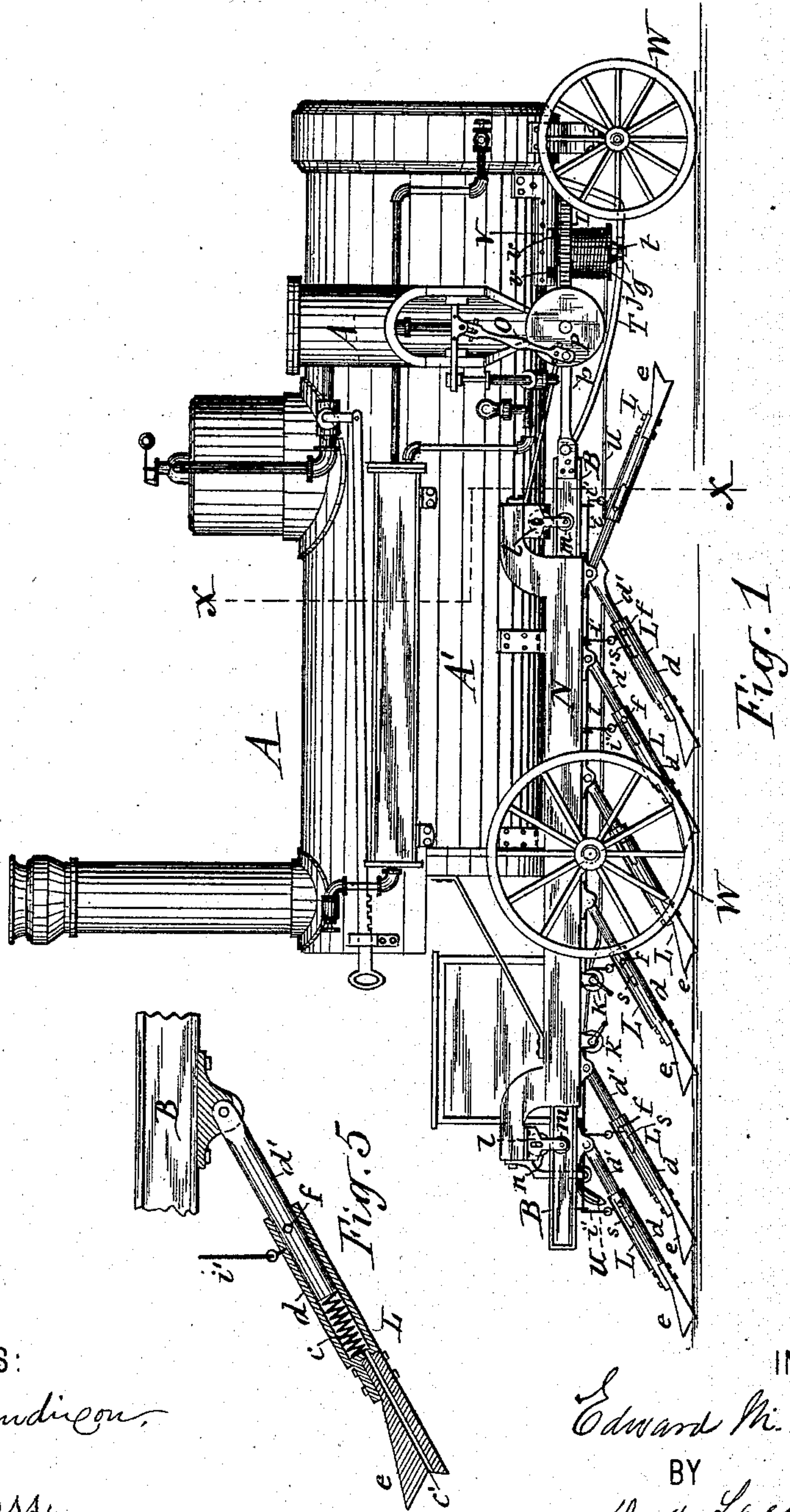
3 Sheets—Sheet 1.

E. M. KNOLLIN.

TRACTION ENGINE.

No. 388,692.

Patented Aug. 28, 1888.



WITNESSES:

C. L. Bendison,
J. J. Laass,

INVENTOR,

Edward M. Knollin,

BY

Dull, Laessle Dull

ATTORNEYS,

(No Model.)

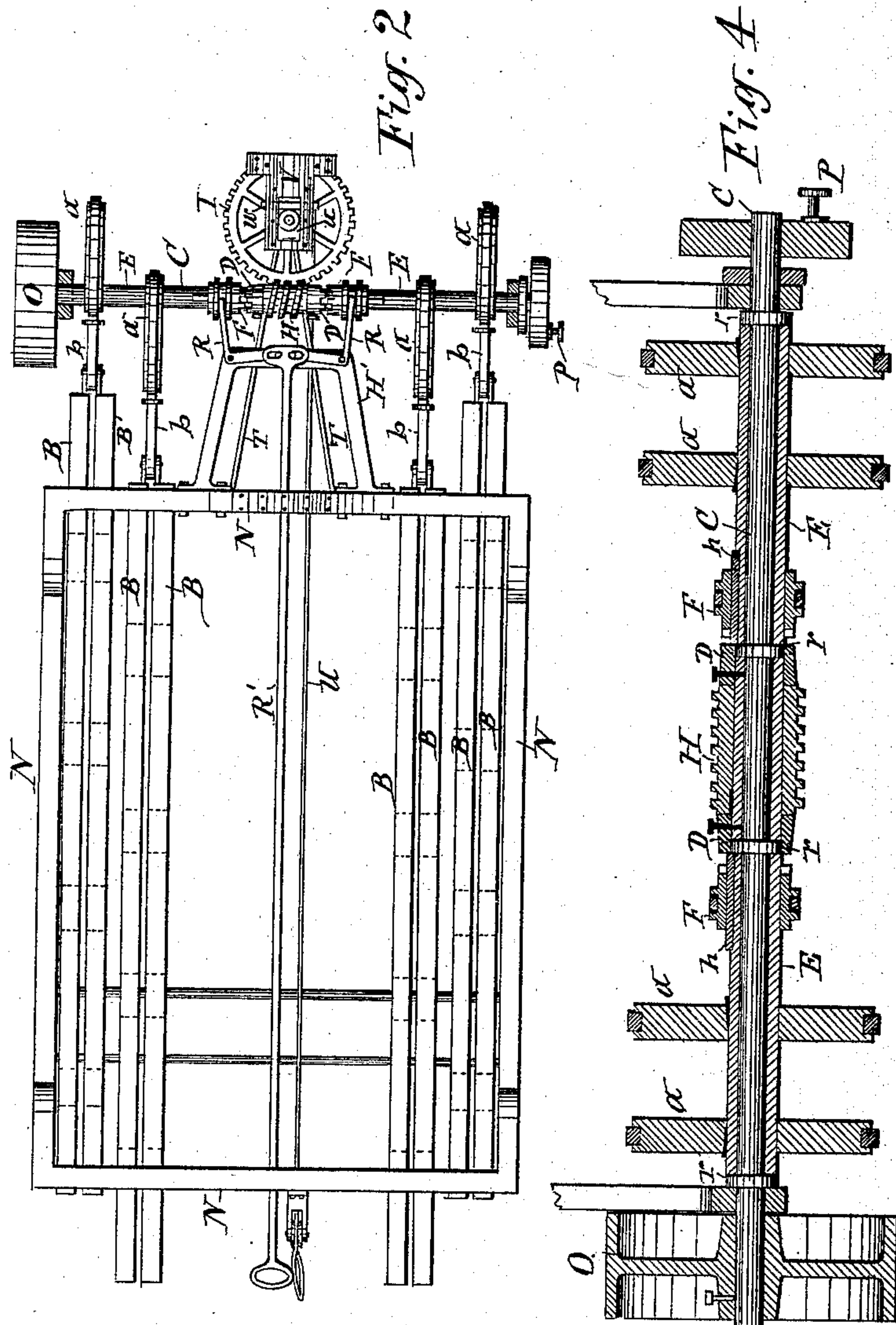
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WITNESSES:

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(No Model.)

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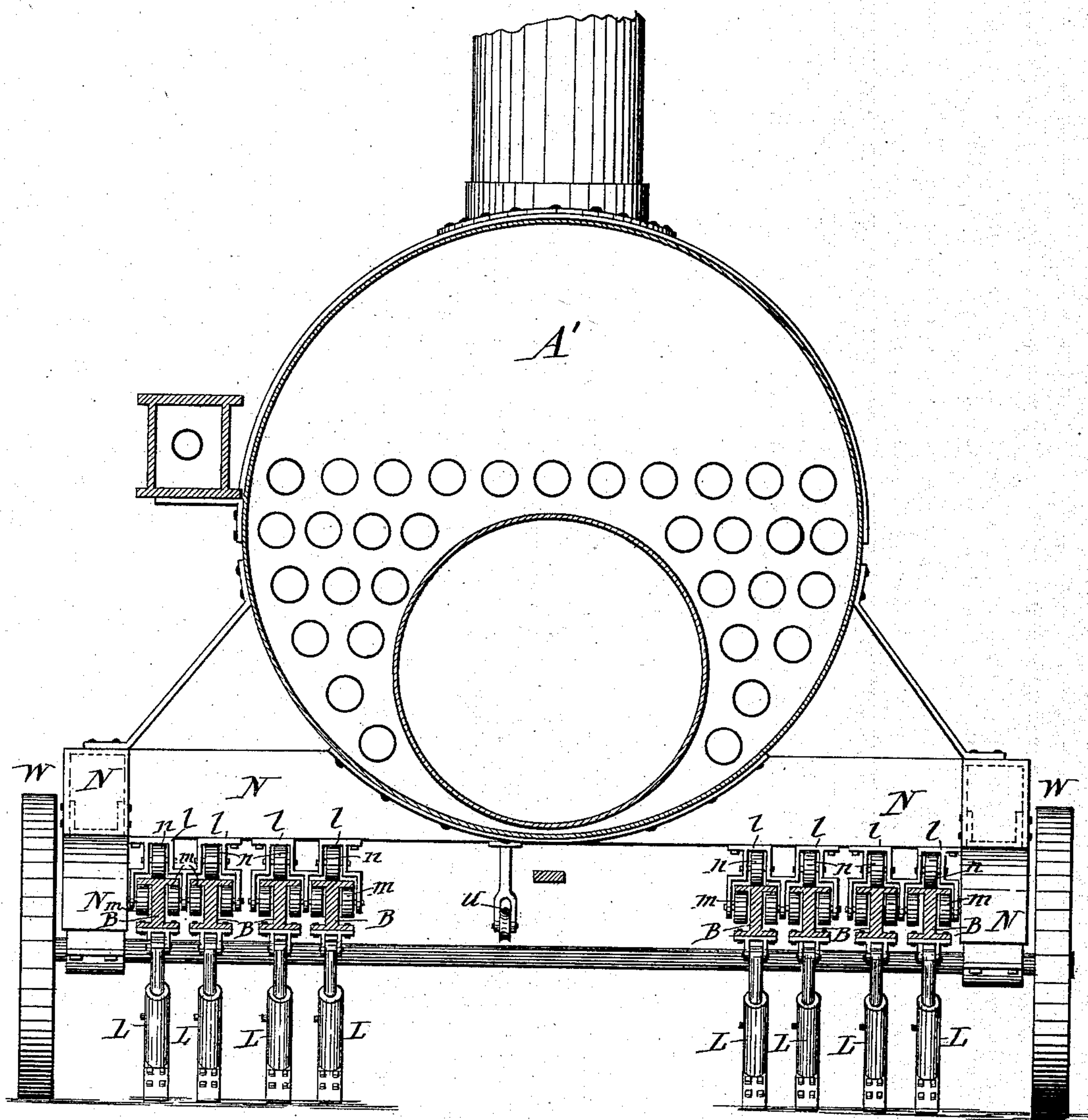


Fig. 3.

WITNESSES:

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UNITED STATES PATENT OFFICE.

EDWARD M. KNOLLIN, OF LACONA, NEW YORK.

TRACTION-ENGINE.

SPECIFICATION forming part of Letters Patent No. 388,692, dated August 28, 1888.

Application filed March 22, 1888. Serial No. 268,096. (No model.)

To all whom it may concern:

Be it known that I, EDWARD M. KNOLLIN, of Lacona, in the county of Oswego, in the State of New York, have invented new and
5 useful Improvements in Traction-Engines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention consists in a novel organization of a traction-engine designed for driving thrashing-machines, &c., and which is provided with means of superior capacity of exerting the tractive power of the engine, and is also adapted for drawing objects toward the
15 engine, all as hereinafter fully described, and specifically set forth in the claims.

In the annexed drawings, Figure 1 is a side elevation of a traction-engine embodying my invention. Fig. 2 is a plan view taken below
20 the boiler of the engine and showing the driving-shaft and its connection with the propelling mechanism. Fig. 3 is an enlarged vertical transverse section on line *x x*, Fig. 1. Fig. 4 is a longitudinal section of the driving-shaft, and Fig. 5 is an enlarged longitudinal section
25 of one of the propelling-legs.

Similar letters of reference indicate corresponding parts.

A represents a steam-engine of any suitable
30 and well-known type, mounted on carrying-wheels W W, to allow it to be transported on highways or on the ground from place to place, as may be desired.

N represents a stout rectangular frame, preferably formed of metal, and rigidly secured in a horizontal position to the lower portion of the exterior of the boiler A'. On suitable bearings on the said frame are carried longitudinally-movable bars B B, arranged lengthwise
40 of the engine A. Said bars I prefer to form of wrought-iron or steel of I shape in cross-section, and in order to obviate undue friction I form the aforesaid bearings of hangers or brackets *l l*, which are rigidly secured to the frame N, and have pivoted to them rollers *m m*, upon which the bars B B ride, and rollers *n n* are interposed between the top of the bars and frame N, as shown in Fig. 3 of the drawings. Said bars receive reciprocating motion from
45 the engine by the driving-shaft C, which is arranged crosswise of the engine or at right angles to the bars B B, and has affixed to one

end a crank, P, which is connected with the piston-rod *o* of the engine by a connection-rod, in the usual and well-known manner. The
55 opposite end of said driving-shaft has secured to it a driving-pulley, O, by which to transmit motion to a thrashing-machine or other machines usually driven by portable engines. To the central portion of the said driving-shaft is rigidly attached a worm-gear, H, for the purpose hereinafter explained, and on each end of said gear is a clutch-face, D. On the end portions of the driving-shaft are loosely mounted sleeves E E, which are con-
65 fined longitudinally by collars *r r*, fastened to the shaft at opposite ends of each sleeve, as shown in Fig. 4 of the drawings. The exterior of the end portion of each sleeve adjacent to the clutch-face D is provided with a spline, *h*,
70 and on said portions of the sleeves slide clutches F F, provided with grooves, through which the splines extend, and thus confine said clutches circumferentially on the sleeves, the clutches being adapted to interlock with the
75 clutch-faces D D, and when so interlocked motion is transmitted from the driving-shaft to the sleeves E E.

Suitable levers, R R, for shifting the clutches are pivoted to suitable supports, H', on the
80 frame of the engine, and preferably a rod, R', for operating said levers is connected at one end to said levers and extended to the rear end of the engine, to be convenient of access for manipulation by the engineer in charge.
85 To the outer ends of the sleeves are rigidly secured eccentrics *a a*, with which are connected the longitudinal movable bars B B by pitmen *b b*. By throwing the clutches F F into engagement with the clutch-faces D D the sleeves
90 E E, with their eccentrics *a a*, receive rotary motion when the engine is in motion, and the eccentrics impart reciprocating motion to the bars B B by means of the pitmen *b b*. The eccentrics are disposed at such position in rela-
95 tion to the axial center of the shaft as to move the bars B B respectively in opposite directions. To each of said bars I hinge a set of propelling-legs, L L, which are of sufficient length to cause them, when resting with their feet on the
100 ground, to lie obliquely or inclined in opposite direction from that in which the engine is to be propelled; and in order to allow the engine to be propelled backward as well as forward I in-

cline one or more propelling-legs on each bar B in opposite direction from the remainder of the legs, and preferably connect the said oppositely-disposed legs with each other in such a manner as to cause the rearwardly-inclined legs, when resting on the ground, to lift the forwardly-inclined legs, and vice versa. By setting the engine in motion the reciprocating bars B B cause the legs L L, which bear with their feet on the ground, to push the engine in opposite direction.

In order to relieve the propelling-legs from undue strain and concussion, I cushion the same, preferably by forming the leg of a sleeve, *d*, which is closed at one end and receives through its opposite end the free end of the stiff limb *d'*, which is hinged to the bar B. A spiral spring, *c*, is interposed between the inner or closed end of the sleeve and adjacent end of the limb *d'*, and a pin, *f*, projects from the side of the said limb and into a longitudinal slot, *s*, in the sleeve *d*, to unite the sleeve with the limb, as illustrated in Fig. 5 of the drawings. The foot *e* of the leg I prefer to form of a separate piece detachably connected to the leg, to allow the foot to be readily renewed or repaired when required. Said foot I provide with a ventiduct, *e'*, to admit air under the foot, and thus allow it to be readily released from the ground.

For raising the propelling-legs from the ground when desired I employ cables or chains *i i*, running lengthwise beneath the boiler of the engine, and provided with branches *i' i'*, which are connected to the respective legs. One end of each cable or chain is wound upon a drum or windlass, K, by which to control the movement thereof.

In a socket, *t*, on a brace, T, rigidly secured to the engine-frame, is stepped a shaft, *g*, on which are journaled a drum, J, and a gear-wheel, I, fastened to said drum. The hub of said gear-wheel projects through a slot, *u*, in a horizontal bracket, V, rigidly secured to the under side of the boiler, said slot allowing the gear-wheel to be moved toward and from or in and out of mesh with the worm H on the driving-shaft C, hereinbefore described. To retain the said gear-wheel either in or out of mesh with the worm, as may be desired, I provide the bracket V with transverse slots *v v*, respectively in front and rear of the hub of the gear-wheel, and insert into the requisite slot a key, *w*.

On the drum J is wound one end of a cable or chain, U, the opposite end of which is extended to the rear end of the engine, and can be drawn farther in said direction to allow it to be connected to an object desired to be moved toward the engine. In this operation the rearwardly-inclined legs L L are brought to bear on the ground to brace the engine and confine it in its position, and the clutches F F are thrown out of connection with the clutch-faces D D and the gear-wheel I thrown into engagement with the worm H. Then by starting the engine the driving-shaft C imparts rotary motion to the drum J, and by winding

thereon the cable or chain U the object attached thereto is drawn toward the engine. Said cable or chain may also be employed for drawing the engine up a steep hill by running the cable or chain ahead and tying it to a stationary object.

I am aware that prior to my present invention drums or windlasses with ropes or chains extended therefrom have been connected to locomotives for the purpose of either drawing the same up an ascending grade or drawing the train of cars to the locomotive; but in such cases the windlass was operated either by a rod connecting the crank of the windlass with the crank-pin of the driving-wheel of the locomotive or by pistons in steam-cylinders separate and distinct from the usual steam-cylinders which contain the pistons furnishing the power for the driving-wheels. Neither of such prior devices is adapted for a traction-engine designed to travel over an ordinary wagon-road and to furnish power for operating thrashing-machines and other machines remote from the engine, inasmuch as such latter engines are provided with a driving-shaft separate and distinct from the axles of the carrying-wheels, and on said driving-shaft are mounted power-transmitting devices adapted to be thrown into and out of gear therewith, and transmit either propelling motion to the carriage of the engine, or power to machines remote from the engine. My invention consists, chiefly, in the combination, with the said driving-shaft, of a windlass thrown into and out of gear with the said driving shaft, so that said engine is capable of performing its various functions by the medium of one and the same driving-shaft.

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

1. The combination, with an engine mounted on wheels, of longitudinally-reciprocating bars actuated by said engine and propelling-legs connected to said bars, as and for the purpose specified.
2. The combination, with an engine mounted on wheels, of longitudinally-reciprocating bars actuated by said engine and propelling-legs hinged to said bars, substantially as described and shown.
3. The combination, with an engine mounted on wheels, of bars connected movably longitudinally to the supporting-frame of the engine, a driving-shaft arranged transversely on the engine, eccentrics on said driving-shaft, pitmen connecting said eccentrics with the longitudinally-movable bars, and propelling-legs hinged to said bars, substantially as described and shown.
4. The combination, with the engine mounted on wheels, of the bars B B, arranged lengthwise the engine and movable longitudinally, the driving-shaft C, arranged crosswise of the engine, the clutch-faces D D, rigidly attached to said driving-shaft, sleeves E E, mounted loosely on said shaft at opposite sides of the

clutch-faces, clutches F F, adapted to slide longitudinally on said sleeves and locked circumferentially thereon, eccentrics *a a*, rigidly secured to the sleeves, and pitmen *b b*, connecting said eccentrics with the bars B B, and propelling-legs L L, connected to said bars, substantially as described and shown.

5. In combination with the engine mounted on wheels and reciprocating bars arranged lengthwise of the engine and actuated thereby, propelling-legs hinged to said bars, and cables or chains having branches connected, respectively, with the successive propelling-legs for lifting the same simultaneously out of their operative position, as set forth.

6. In combination with the engine mounted on wheels, and reciprocating bars arranged lengthwise of the engine and actuated thereby, propelling-legs pivoted to said bars, windlasses pivoted to the frame of the engine, and cables or chains wound at one end on said windlasses, and having the opposite end portions provided with branches connected with the successive propelling-legs, substantially as described and shown.

7. A traction-engine comprising a driving-shaft separate and distinct from the axles of the carrying-wheels, power-transmitting devices mounted independent of each other on said shaft, and adapted to be thrown in and out of gear therewith and transmit either propelling motion to the carriage of the engine or power to machines remote from the engine, a windlass mounted on the carriage of the engine and adapted to be thrown in and out of gear with the aforesaid shaft, and a cable or chain extended from said windlass, substantially as specified.

8. On a traction-engine of the class herein specified, the combination, with the driving-shaft C, separate and distinct from the axles of the carrying-wheels, and power-transmitting device on said shaft adapted to be thrown into

and out of gear therewith, and to either propel the carriage of the engine or transmit motion to machines remote from the engine, of the worm H on the said driving-shaft, the gear-wheel I, adapted to be thrown into and out of gear with the worm, the drum or windlass J, turning with the said gear-wheel, and a cable or chain wound at one end on the said drum, substantially as and for the purpose set forth.

9. The combination, with the engine mounted on wheels, of the driving-shaft C, worm H, rigid on said shaft, the shaft *g*, arranged adjustably toward and from the said worm, the gear-wheel I, and drum J, journaled on the shaft *g*, a cable or chain wound at one end on said drum, and braces adapted to sustain the engine in its position, as set forth.

10. The combination, with the engine mounted on wheels, of the driving shaft C, worm H, and clutch-faces D D, rigidly attached to said shaft, the sleeves E E, mounted loosely on said shaft and provided with splines *h*, the clutches F F, sliding on said splines, eccentrics *a a*, secured to the sleeves E E, the bars B B, arranged movably longitudinally, pitmen *b b*, connecting the eccentrics with the said bars, propelling-legs L L, connected to the bars B B, the gear-wheel I, adapted to be thrown in and out of gear with the aforesaid worm, the drum J, turning with the gear-wheel I, and the cable or chain *i*, wound on said drum, all combined substantially as described and shown, for the purpose set forth.

In testimony whereof I have hereunto signed my name in the presence of two witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 2d day of March, 1888.

EDWARD M. KNOLLIN. [L. S.]

Witnesses:

C. H. DUELL,
J. J. LAASS.