No. 654,728. Patented July 31, 1900.

H. GRAMS.

TRACTION ENGINE.

(Application filed May 5, 1900.)

(No Model.)

FIG. 1.

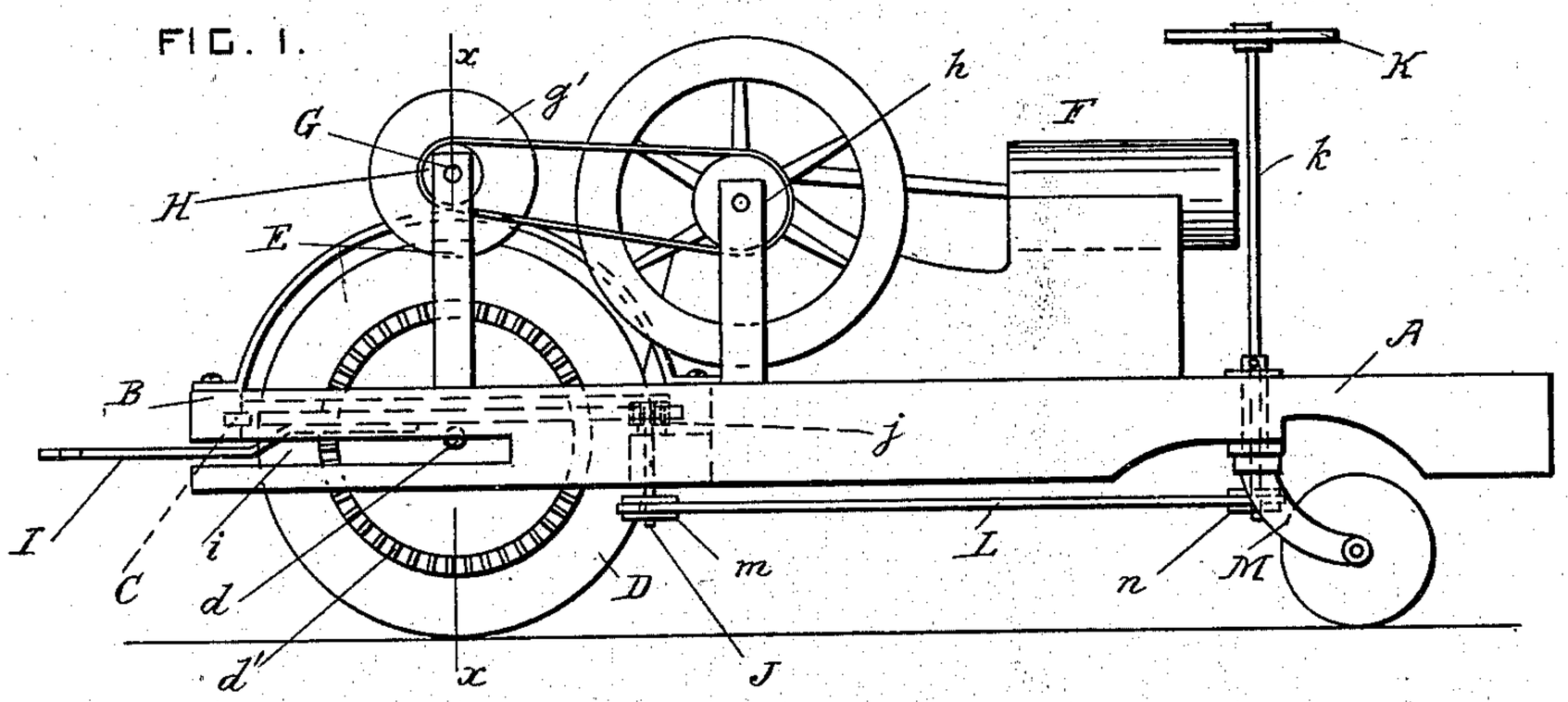


FIG. 2.

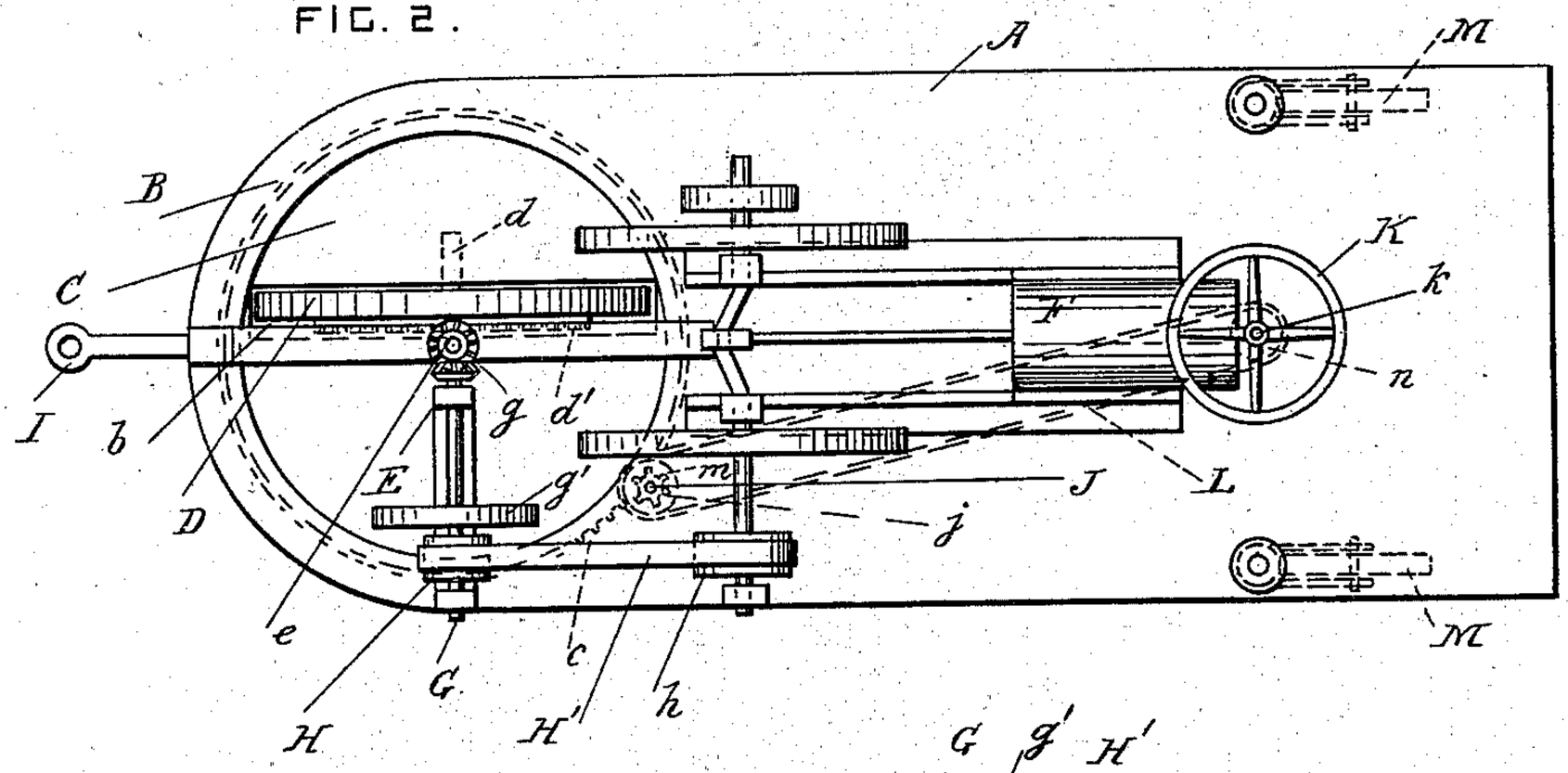
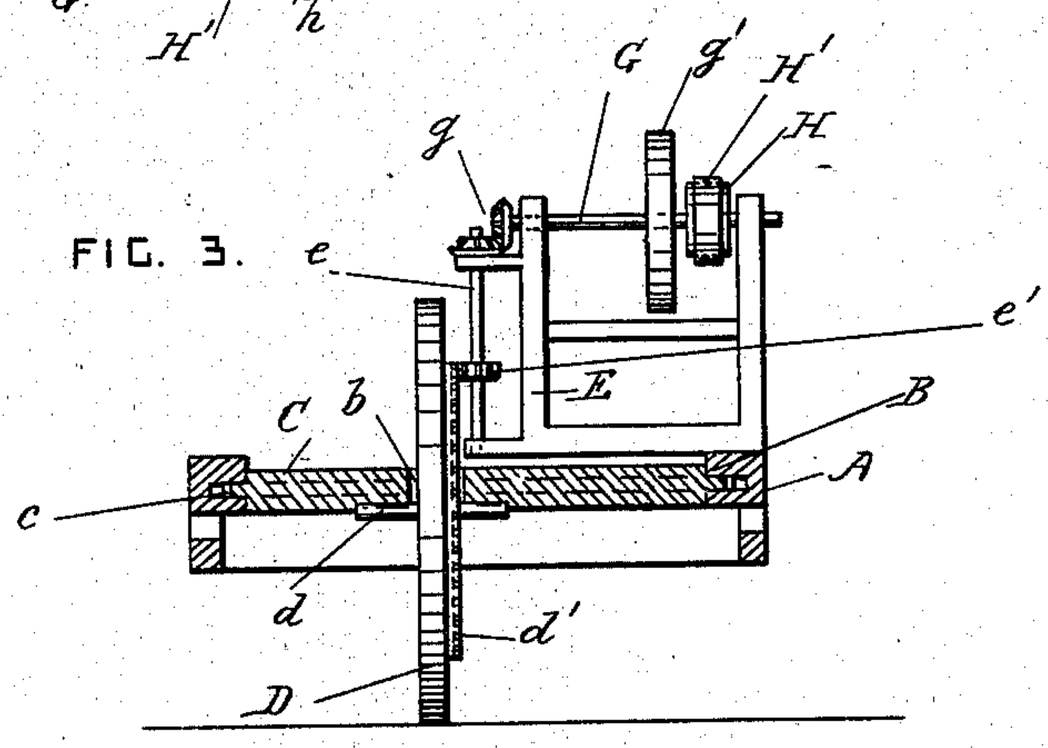


FIG. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

HERMAN GRAMS, OF DEXTER, MINNESOTA.

TRACTION-ENGINE.

SPECIFICATION forming part of Letters Patent No. 654,728, dated July 31, 1900.

Application filed May 5, 1900. Serial No. 15,662. (No model.)

To all whom it may concern:

Be it known that I, HERMAN GRAMS, a citizen of the United States, residing at Dexter, in the county of Mower and State of Minnesota, have invented certain new and useful Improvements in Traction-Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to traction-engines; and it consists in the novel construction and combination of the parts hereinafter fully described and claimed.

In the drawings, Figure 1 is a side view of the engine partly in section. Fig. 2 is a plan view of the engine from above. Fig. 3 is a cross-section taken on the line *x x* in Fig. 1.

A is the frame of the engine, and B is a circular guide at its front end.

C is a turn-table which is journaled in the guide B and provided with teeth *c* around its edge. The turn-table is provided with a slot *b*, and D is a main ground-wheel which is arranged in the said slot. This wheel is journaled in any approved manner, as upon a shaft *d*, which is carried by the said turn-table.

E is an upright carried by the frame A, and *e* is a vertical driving-shaft arranged over the axis of the turn-table and having a toothed pinion *e'* secured on it. The ground-wheel is arranged a little to one side of the axis of the turn-table and is provided with a toothed wheel *d'*, which gears into the pinion *e'*, so that the ground-wheel is driven from the shaft *e*.

F is the motor, which is mounted on the frame A. Any approved motor may be used, but a motor of the kind commonly known as a "gasolene-engine" is preferably used, and its cooling water-tank, gasolene-reservoir, and all other necessary additional parts are carried by the frame A. The gasolene engine or motor is connected to the shaft *e* by intermediate driving mechanism of any approved construction.

G is a horizontal shaft journaled in the upright E, and *g* are beveled toothed wheels which connects the two shafts G and *e*. An auxiliary fly-wheel *g'* is secured on the shaft G and may also carry the customary friction-clutch.

H is a pulley mounted on the shaft G, and *h* is a pulley on the crank-shaft of the engine.

H' is a belt passing over the pulleys H and *h*. The engine may, however, be connected with the shaft *e* in any other approved manner.

I is a tongue secured to the turn-table and projecting through a slot *i* in the front end of the frame A. When the engine is steered by a horse, the horse is hitched to the tongue I, which is arranged radially of the center of the turn-table and parallel with the ground-wheel D. When the engine is steered by hand, a toothed pinion *j* is arranged in gear with the teeth *c* on the periphery of the turn-table. The pinion *j* is secured on a steering-shaft J, which is journaled in the frame A. The shaft J may be revolved by any approved intermediate mechanism from any part of the frame.

K is a hand steering-wheel which is secured on a shaft *k* at the rear part of the frame.

L is a driving connection, such as a belt or chain, which passes over wheels or pulleys *n* and *m*, secured on the shafts *k* and J, respectively.

The rear part of the frame is supported on two casters M, which permit the engine to be steered in any direction and to turn very sharp corners.

What I claim is—

1. In a traction-engine, the combination, with a frame provided with a circular guide, of a turn-table journaled in the said guide and provided with a slot, a single ground-wheel supported by the said turn-table and arranged in the said slot to one side of the axis of the turn-table, a driving-shaft journaled concentric with the turn-table and above it, and toothed driving-wheels constantly connecting the said shaft and ground-wheel, substantially as set forth.

2. In a traction-engine, the combination, with a frame provided with a circular guide, of a turn-table journaled in the said guide, a single ground-wheel supported by the said turn-table on one side of its axis, a steering-tongue arranged radially of the axis of the turn-table and parallel with the said ground-wheel, a driving-shaft arranged on the axis of the turn-table, and driving devices constantly connecting the said shaft with the ground-wheel, substantially as set forth.

3. In a traction-engine, the combination, with a frame provided with a circular guide, of a turn-table journaled in the said guide and provided with teeth around its periphery and having a slot through it, a single ground-wheel supported by the said turn-table and arranged in the said slot to one side of the axis of the turn-table, steering mechanism provided with a toothed pinion which gears into the said teeth on the turn-table, a driving-shaft journaled concentric with the turn-table and above it, and toothed driving-wheels constantly connecting the said shaft and ground-wheel, substantially as set forth.

4. In a traction-engine, the combination, with a frame provided with a circular guide at one end, of a turn-table journaled in the said guide, a single ground-wheel supported by the said turn-table on one side of its axis, driving devices for revolving the said wheel irrespective of the position of the turn-table, and two casters supporting the other end of the said frame, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

HERMAN GRAMS.

Witnesses:
HERBERT ROBBINS,
FRED ROBBINS.