

(No Model.)

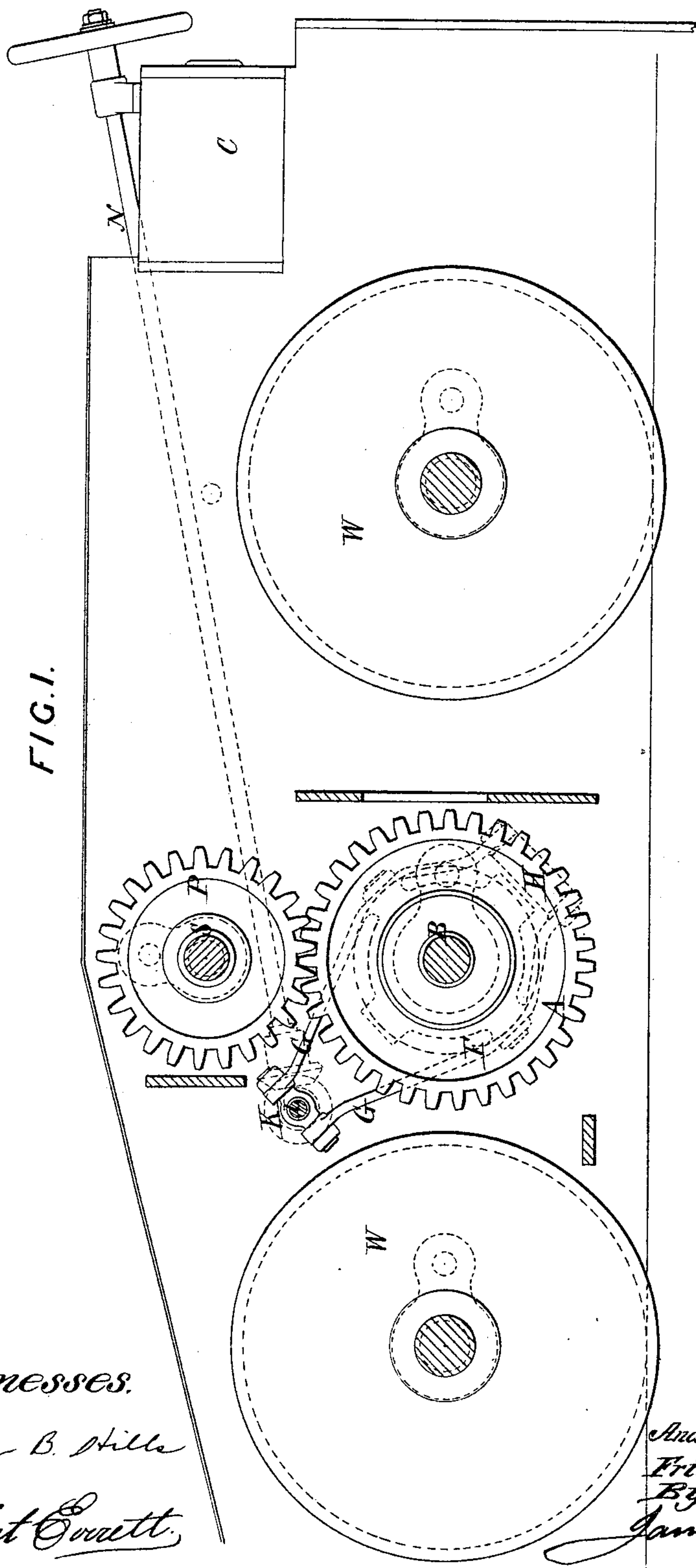
4 Sheets—Sheet 1.

A. MALLET & F. B. BEHR.

LOCOMOTIVE TENDER.

No. 389,232.

Patented Sept. 11, 1888.



Witnesses.

Ray B. Hills

Robert Corbett.

Inventors.

Anatole Mallet,

Fritz B. Behr,

By James L. Norris.

(No Model.)

4 Sheets—Sheet 2.

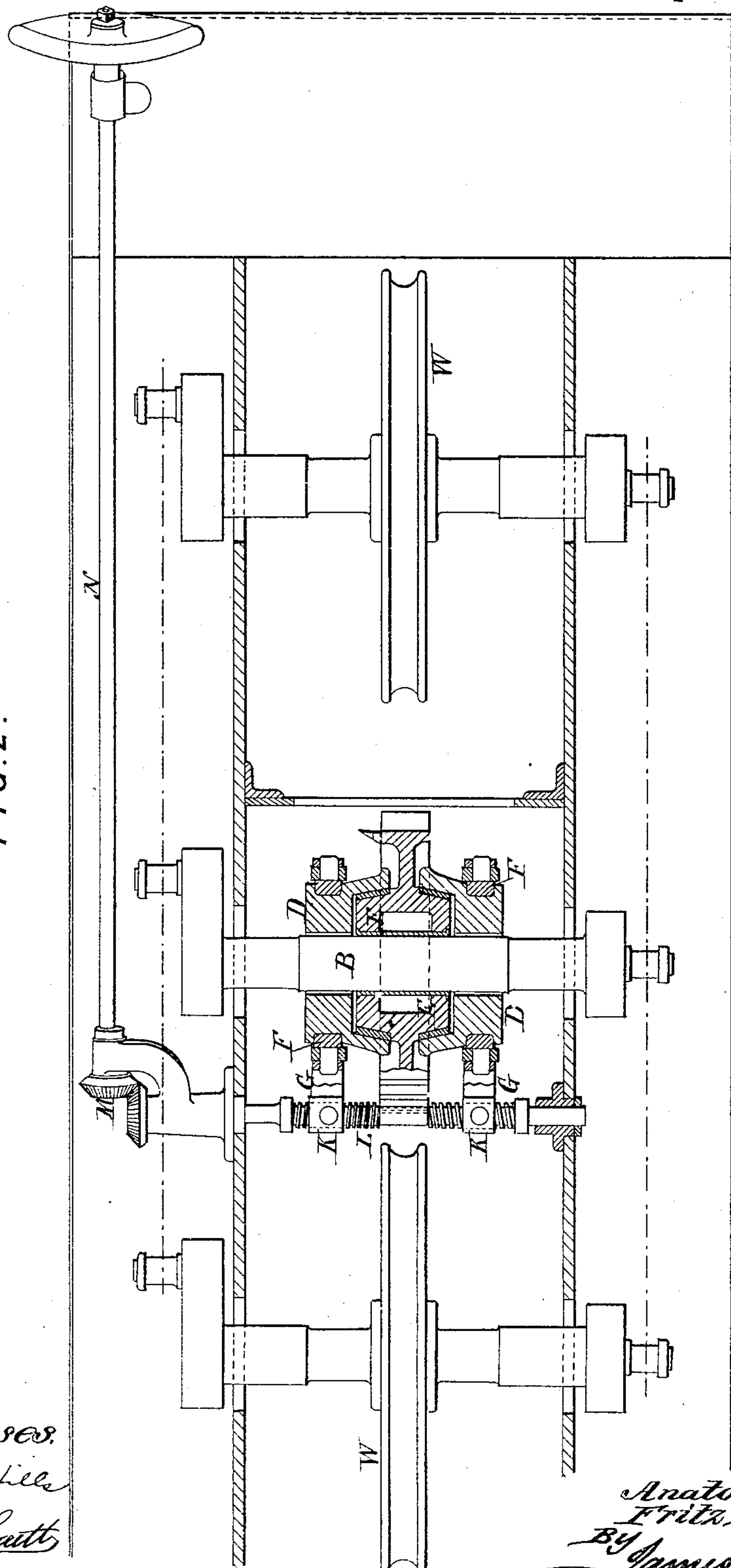
A. MALLET & F. B. BEHR.

LOCOMOTIVE TENDER.

No. 389,232.

Patented Sept. 11, 1888.

FIG. 2.



Witnesses:

Benj. B. Hills

Robert G. Smith

Inventors,

Anatole Mallet.

Fritz B. Behr.

By James C. Norris,

(No Model.)

4 Sheets—Sheet 3.

A. MALLET & F. B. BEHR.

LOCOMOTIVE TENDER.

No. 389,232.

Patented Sept. 11, 1888.

FIG. 6.

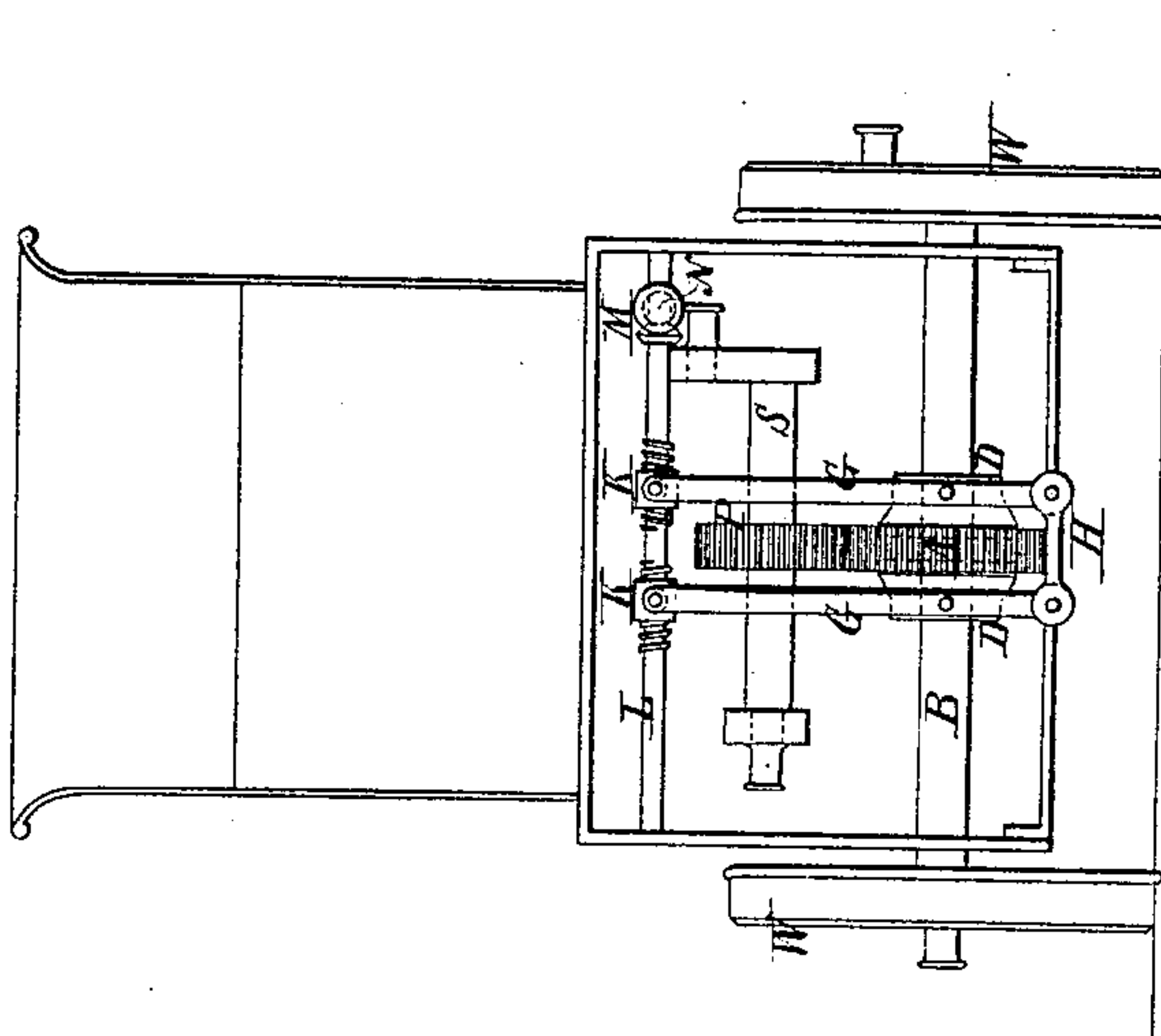
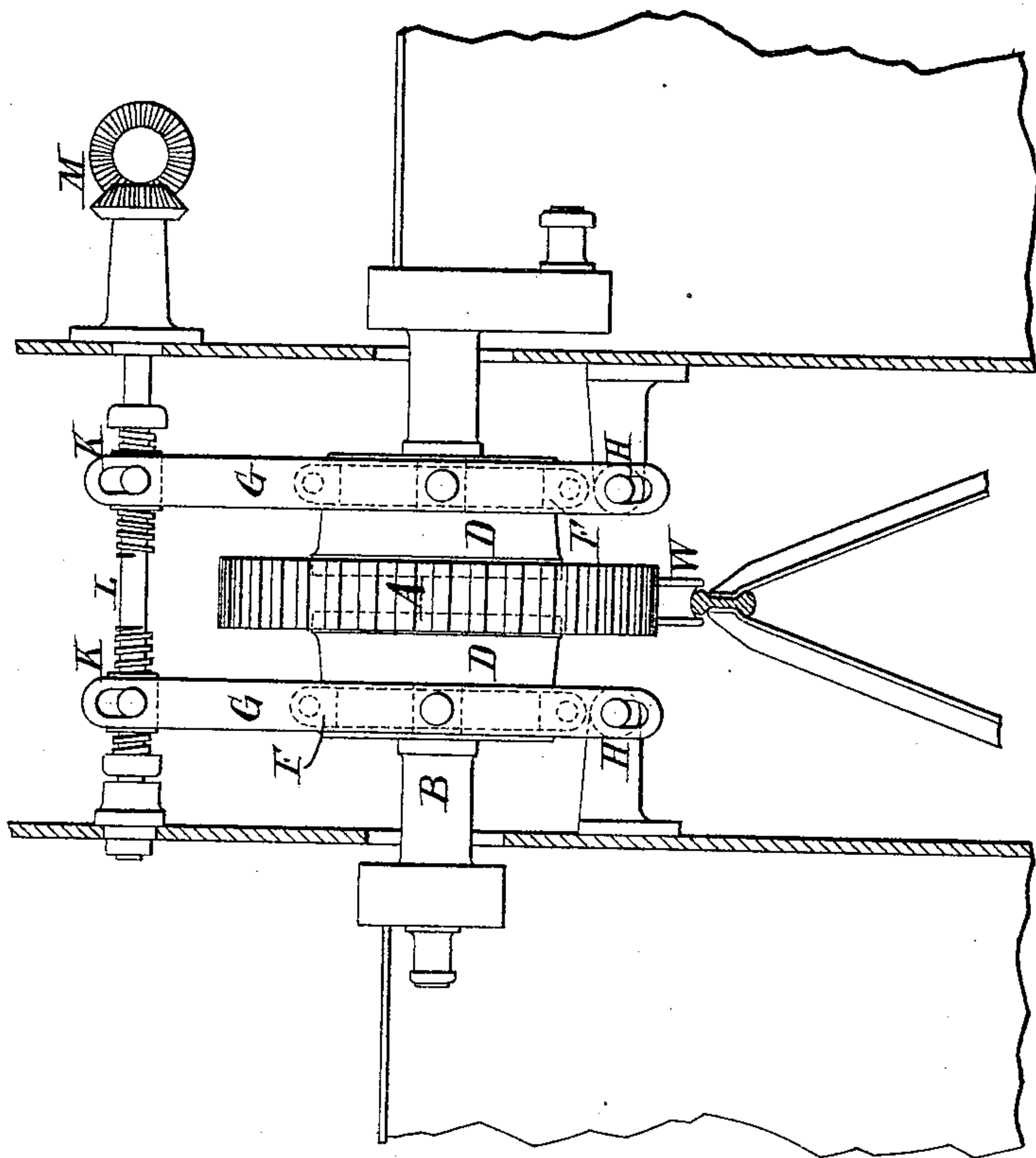


FIG. 3.



Witnesses,

Lucy B. Hills,

Albert Everett,

Inventors,

Anatole Mallet,

Fritz B. Behr,

By

James L. Norris,

Atty.

(No Model.)

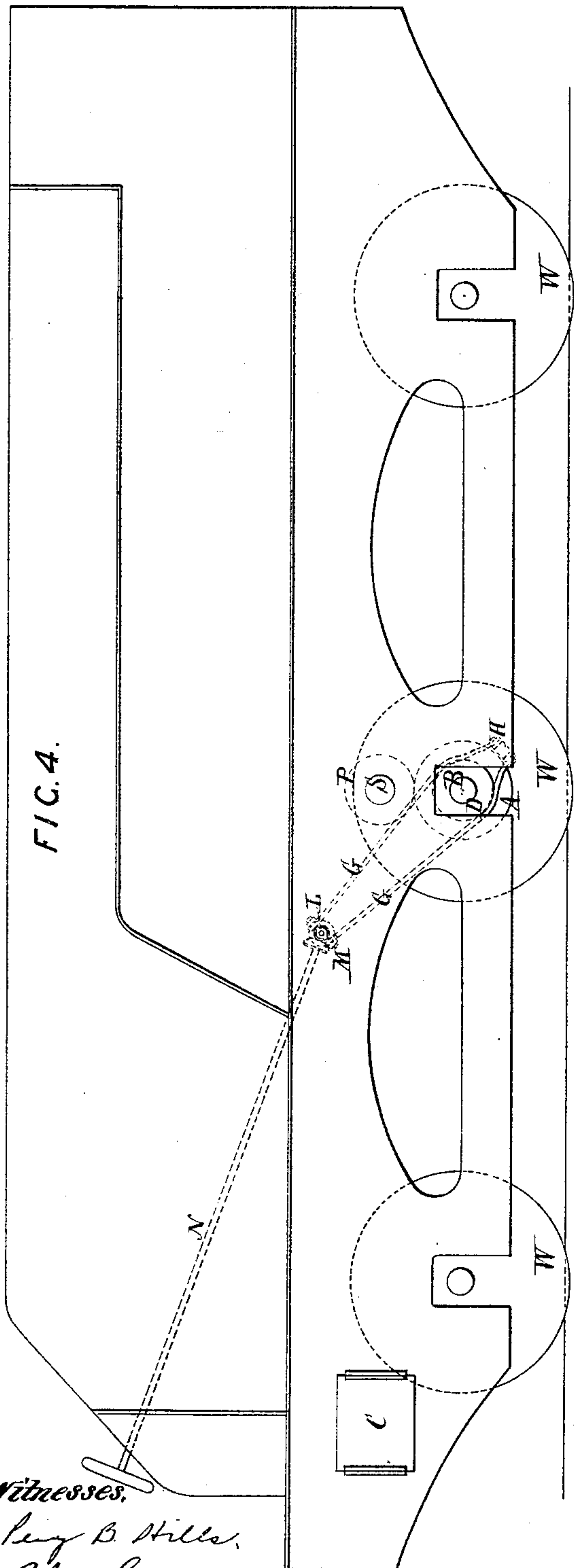
4 Sheets—Sheet 4.

A. MALLET & F. B. BEHR.

LOCOMOTIVE TENDER.

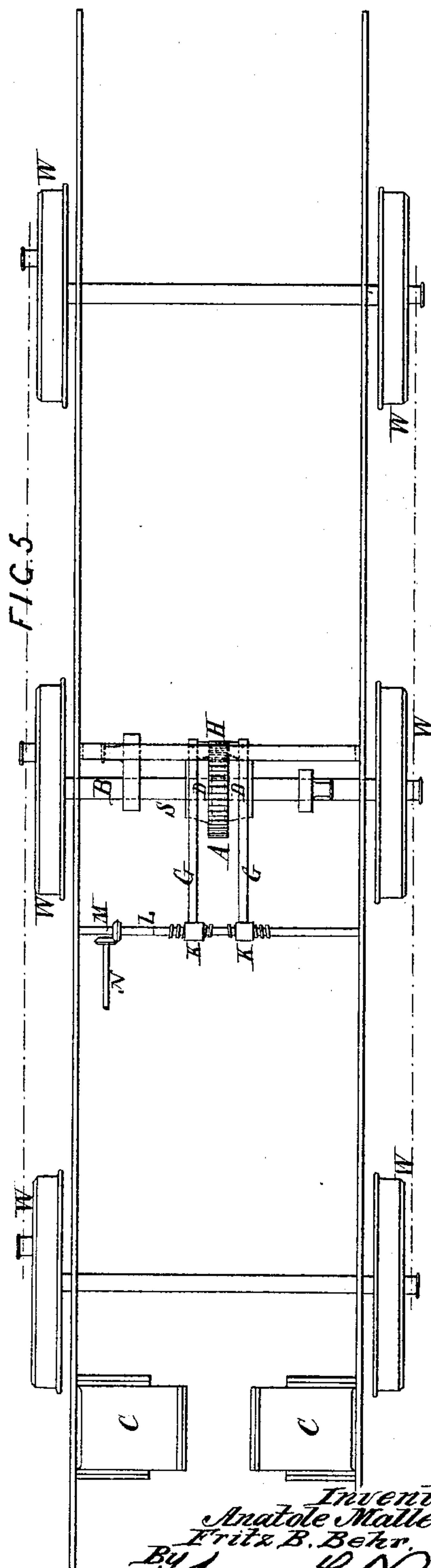
No. 389,232.

Patented Sept. 11, 1888.



Witnesses,

Ray B. Hills,
Robert Pratt.



Inventors,
Anatole Mallet,
Fritz B. Behr.
By James C. Norris,
Atty.

UNITED STATES PATENT OFFICE.

ANATOLE MALLET, OF PARIS, FRANCE, AND FRITZ B. BEHR, OF LONDON, ENGLAND, ASSIGNORS TO THE LARTIGUE RAILWAY CONSTRUCTION COMPANY, (LIMITED,) OF LONDON, ENGLAND.

LOCOMOTIVE-TENDER.

SPECIFICATION forming part of Letters Patent No. 389,232, dated September 11, 1888.

Application filed December 15, 1887. Serial No 257,997. (No model.) Patented in England September 12, 1887. No. 12,356.

To all whom it may concern:

Be it known that we, ANATOLE MALLET, a citizen of Switzerland, and FRITZ BERNHARD BEHR, a citizen of London, residing, respectively, at 128 bis Boulevard de Clichy, Paris, in the Republic of France, and at 10 Draper's Gardens, in the city of London, England, have invented a new and useful Improvement in Locomotive-Tenders, of which the following is a specification.

This invention relates to means of readily and rapidly bringing the wheels of a tender into use as driving-wheels, in addition to those of the locomotive to which the tender is connected, and of readily and rapidly disengaging them when their driving-power is not required, the tender for this purpose being provided with an engine that can be worked with steam from the locomotive-boiler. The chief object of the arrangement is at once to obtain increased traction-power for a train when it has to ascend a gradient and to dispense at once with this additional power when it is not required. For this purpose a pair of cylinders on the tender, supplied, when required, with steam by a pipe connecting them with the locomotive-boiler, are applied to work a crank-shaft, which, by means of a friction-clutch, can, when desired, be made to drive the axles of the tender, thus rendering the tender-wheels driving-wheels, or, when the clutch is disengaged, these are simply running wheels.

Our invention can be applied to tenders either for single-rail or for ordinary double-rail railways, as we shall describe, referring to the accompanying drawings.

Figures 1, 2, and 3 illustrate its application to a tender suited for a single rail, and Figs. 4, 5, and 6 illustrate its application to an ordinary double-rail tender. Fig. 1 is a part longitudinal section, Fig. 2 is a sectional plan, and Fig. 3 is a part end view, of a single-rail tender. Fig. 4 is a longitudinal section of a double-rail tender. Fig. 5 is a plan taken under the tank, and Fig. 6 is an end view of the same.

Referring, first, to Figs. 1, 2, and 3, two cyl-

inders, one of which is shown at C, Fig. 1, are fixed on the upper part of the tender, one on each side at the end next the foot-plate, and are supplied with steam from the locomotive-boiler when the driver opens a valve for that purpose. The pistons of those cylinders drive a crank-shaft, S, which revolves in suitable bearings in the upper part of the tender-frame. On the shaft S is fixed a pinion, P, which gears with a wheel, A, below it, this wheel being free to revolve on a second crank-shaft, B. To this wheel is applied the friction-clutch, which will be presently described, so that when the clutch is engaged the shaft B is caused to revolve. Cranks at the ends of the shaft B are coupled by rods in the usual way to cranks on the axles of the central running wheels, W W, and thus when the shaft S is worked from the cylinders C and the wheel A is clutched to the shaft B the wheels W W are made to act as driving-wheels. When, on the other hand, the clutch is disengaged, the shaft B is free to revolve along with the axles of W W, which then act as running wheels.

We have not shown in detail the bearings of the shafts or axles, nor the side rods connecting their cranks, as these are matters of ordinary construction, forming no part of our invention.

The friction-clutch is constructed and operated in the following manner: On each side of the wheel A there is fitted on the shaft B, free to slide along it on a feather or key, a disk, D, presenting a conical recess to receive a conical boss, E, of the wheel A. In each of the disks D is formed a groove, which is occupied by a ring, F, each ring having projecting pins engaged in holes of a pair of levers, one on each side of the ring. The levers G have their lower ends pivoted to brackets at H, and their upper ends are pivoted to nuts K, which fit on right and left threaded parts of a transverse spindle, L. The holes of the levers G at H and K are slotted to allow for the oscillation of the levers. The spindle L is connected by bevel-gear M to a spindle, N, which terminates in a hand-wheel or handle within reach of the driver on the foot-plate. When he turns this

in the one direction, he causes the spindle L to revolve, and its right and left threads cause the nuts K to move toward each other, deflecting the levers G inward. These levers, acting 5 on the ring F, force the disks D toward the wheel A, so that their conical recesses grip the bosses of the wheel, causing such frictional hold that the wheel A in revolving causes the disks D to revolve with it. As these disks are 10 feathered on the shaft B, that shaft is thus driven, and from it the wheels W W are driven. When the driver turns the spindle N in the opposite direction, the disks D are withdrawn from the wheel A, which then revolves freely 15 without driving the shaft B.

In Figs. 4, 5, and 6 the arrangement is substantially the same, parts corresponding with those in Figs. 1, 2, and 3 being marked with similar letters of reference. The tender in this 20 case, however, being assumed to be one having six wheels, the axle of the middle pair is utilized as the shaft B, carrying the wheel A and the friction-clutch.

Having thus described the nature of our invention and the best means we know of carrying it out in practice, we claim—

1. In a locomotive tender, an engine thereon

worked by steam from the locomotive-boiler, in combination with gearing driven by the engine, and a friction-clutch arranged to engage 30 the gearing with the axles of the tender-wheels, substantially as and for the purpose set forth.

2. As a friction-clutch for engaging gearing worked by an engine on a locomotive-tender with the tender-axles, the combination of a 35 conically-bossed gear-wheel loose on its shaft with two conically-recessed disks and with a pair of levers and screwed spindle, substantially as described.

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses, the 12th day of October and 22d day of November, A. D. 1887.

ANATOLE MALLET.

F. B. BEHR.

Witnesses to the signature of A. Mallet:

J. L. RATHBONE,

J. B. BOURNE.

Witnesses to the signature of F. B. Behr:

OLIVER IMRAE,

Patent Agent, 28 Southampton Buildings, London, W. C.

CHAS. BERKLEY HARRIS,

Notary Public, London.