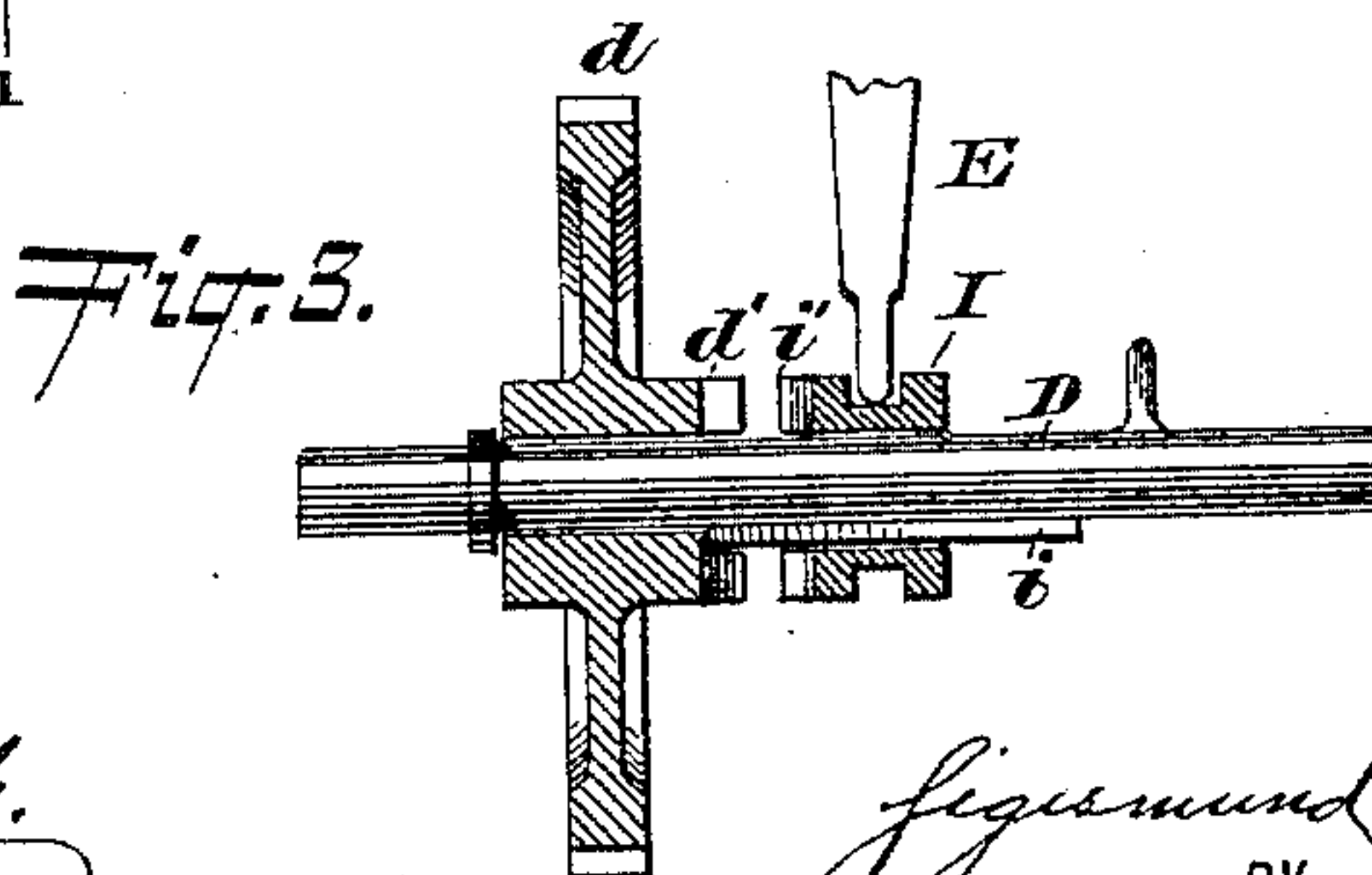
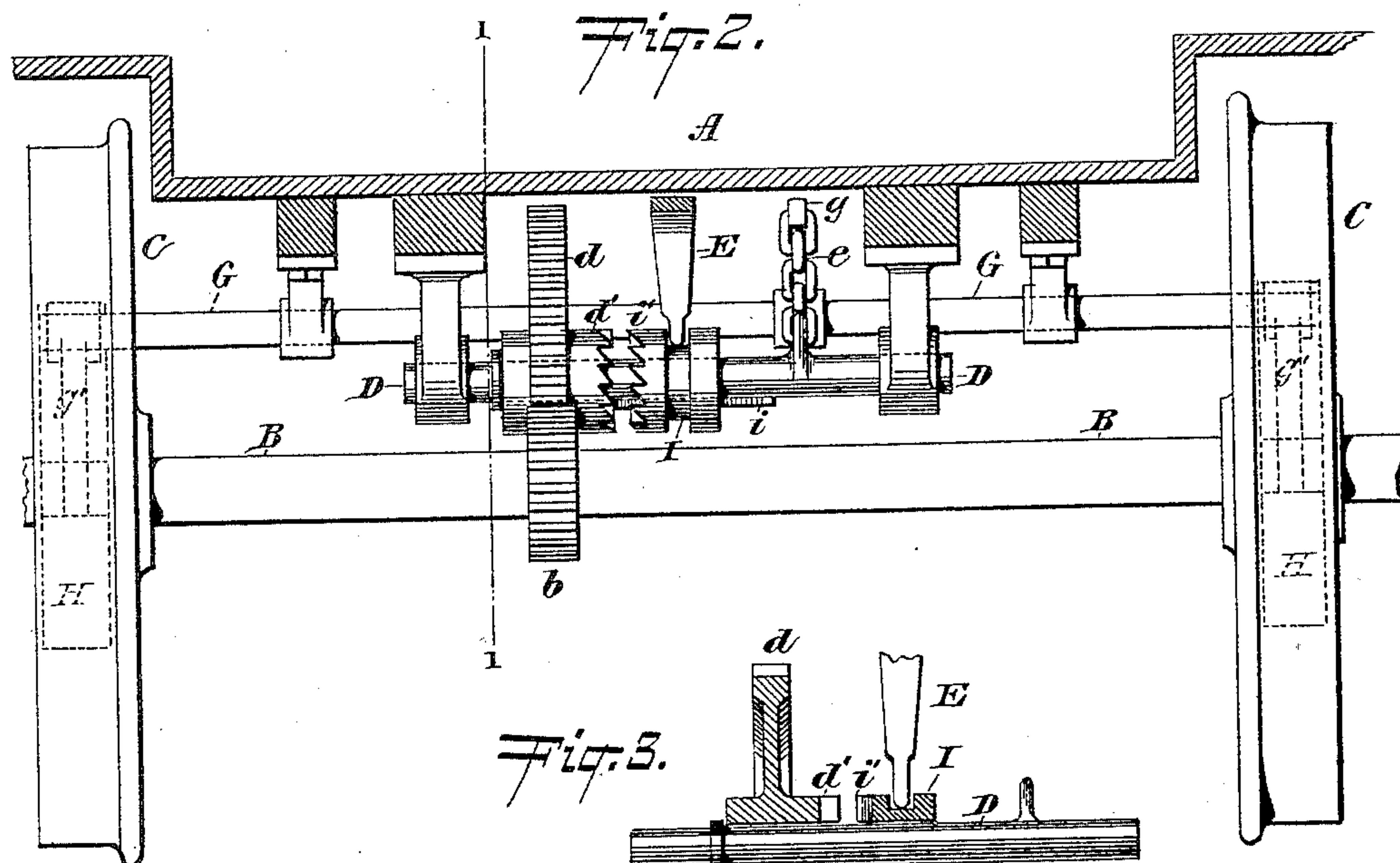
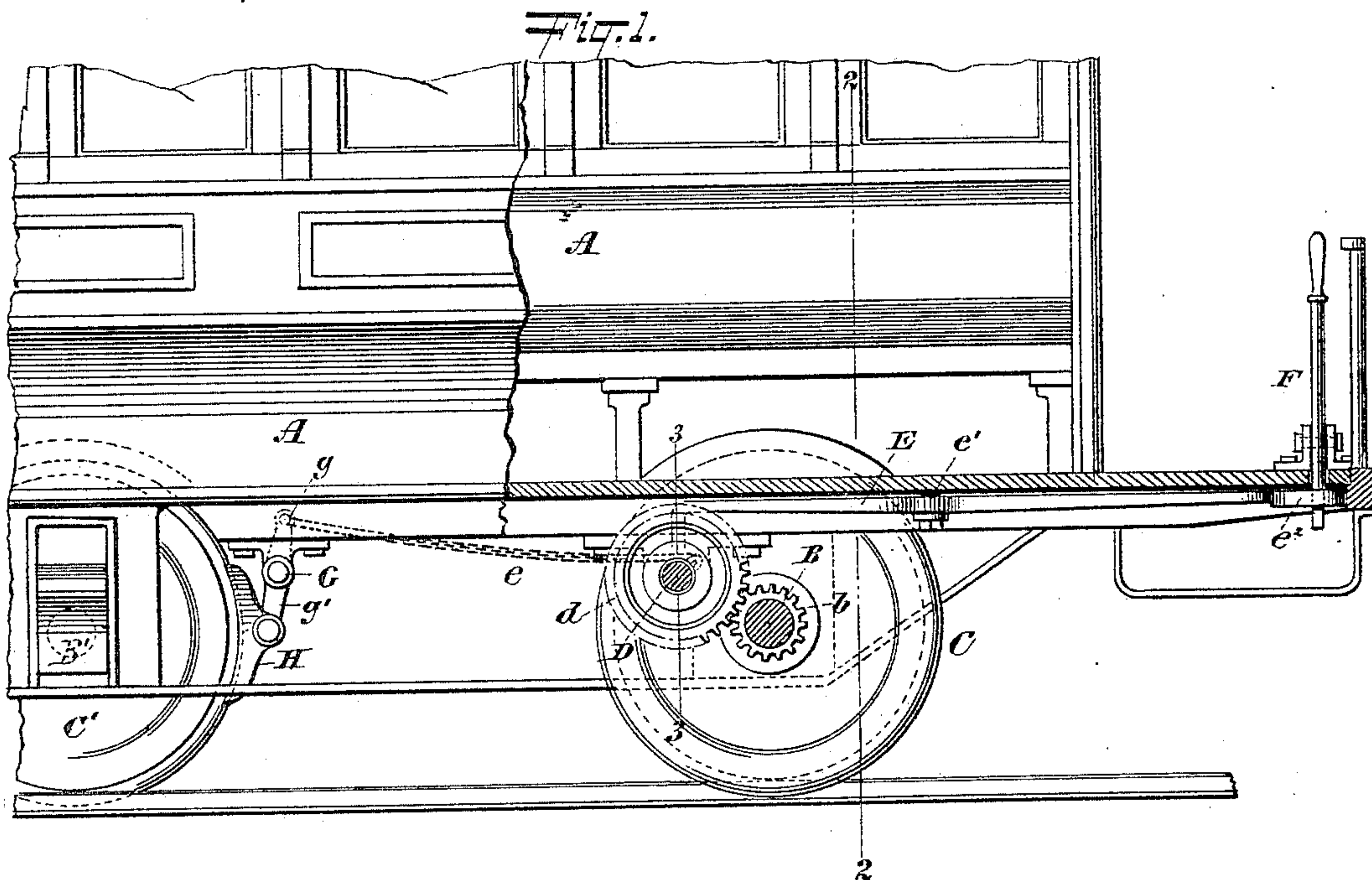


(No Model.)

S. B. WORTMANN.  
CAR BRAKE.

No. 453,790.

Patented June 9, 1891.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

SIGISMUND B. WORTMANN, OF NEW YORK, N. Y.

## CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 453,790, dated June 9, 1891.

Application filed April 14, 1891. Serial No. 388,933. (No model.)

*To all whom it may concern:*

Be it known that I, SIGISMUND B. WORTMANN, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Car-Brakes; 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.

The present invention relates to improvements in car-brakes; and the object is to provide a simple and easily-operated device adapted to utilize the power or motion of one of the car-axles to forcibly apply the brake-shoes to the wheels, and thereby retard and arrest the motion of the car by a slight exertion on the part of the brakeman or driver.

With these and other ends in view my invention consists in the combination, with a car-axle and a brake-bar carrying the friction-shoes, of a power-shaft journaled in suitable hangers or bearings on the under side of the car-body, a master gear or pinion rigid with the car-axle, another gear or wheel loosely fitted on the power-shaft and provided on one side with a serrated hub or shoulder, a movable clutch keyed to the power-shaft and adapted to be shifted to engage the serrated hub of the loose gear on the power-shaft, a horizontal lever fulcrumed on the bottom of the car and having a bent arm at one end which engages with the sliding or movable clutch and its other end connected to an upright hand-lever, and a flexible connection, such as a chain, having one end attached to the brake-shoe and its other end fastened to the power-shaft, so as to be wound or coiled thereon as said power-shaft is rotated.

My invention further consists in the novel combination of devices and peculiar construction and arrangement of parts, as will be hereinafter more fully described and claimed.

To enable others to more readily understand my invention, I have illustrated the same in the accompanying drawings, in which—

Figure 1 is a side view of a street or other car, partly broken away to more clearly show the operating parts, the section being taken on the vertical plane indicated by the dotted line 1 1 of Fig. 2. Fig. 2 is a vertical trans-

verse section through the car-body with the operating parts in front elevation, the section being taken on the plane indicated by the dotted line 2 2 of Fig. 1. Fig. 3 is a detached detail view of the clutch mechanism, this section being taken on the plane indicated by the dotted line 3 3 of Fig. 1.

Like letters of reference denote corresponding parts in the several figures of the drawings.

In the drawings, A designates the body of a car. B B' are the front and rear axles, respectively, and C C', respectively, the wheels on the front and rear axles B B'. (See Fig. 1.) All of these parts are of the common or any preferred construction, as my improvements are applicable to any kind of street-cars propelled by traction or other power.

In carrying my invention into practice I provide one of the axles of the car with a master gear or pinion *b*, and employ a horizontal power-shaft D, situated between the front and rear axles B B' of the car, although the particular location of the shaft D is immaterial; but I prefer to arrange the shaft close to the front axle B, with which the power-shaft is designed to be geared, so that the shaft is rotated by the axle when it is desired to apply the brake. This shaft is loosely journaled in suitable hangers or bearings D', fixed to the bottom of the car-body A, and it is thus free to revolve or turn in its bearings.

The power-shaft D carries a loose gear-wheel or pinion *d* and a sliding clutch I. The loose gear-wheel is free to revolve or turn on the shaft, except when it is engaged with the clutch I, to accomplish which purpose I provide a serrated or toothed hub *d'*, which is rigid with the gear *d* and which projects from the side thereof adjacent to the clutch I, as shown in Fig. 2 of the drawings. The clutch is fastened or made rigid with the power-shaft D by means of a key, spline, or feather *i*, which preferably is rigid with the shaft and fits in a groove or keyway formed in the inner surface of the clutch, and in the face of the clutch adjacent to the loose gear-wheel *d* is provided a series of teeth or serrations *i'*, adapted to engage the serrations or teeth *d* of the loose gear-wheel. In the periphery of the clutch I is formed an annular groove, and



in this groove loosely fits the bifurcated or forked arm *f* on the rear end of the horizontal lever E.

The horizontal lever E is arranged close to the bottom of the car-body, and it extends from the front axle B to the front car-platform. Said lever is fulcrumed at an intermediate point of its length, at *e'*, to the bottom of the car-body, and at its front end the lever is connected to an upright hand-lever F, fulcrumed on the front platform. The lower end of the upright hand-lever extends through the platform and has an arm or disk *e<sup>2</sup>*, to which the horizontal lever E is connected, so that the back-and-forth movement of the lever F will operate the horizontal lever E to shift the movable clutch, and thereby engage or disengage the said clutch with the loose gear-wheel *d* on the power-shaft D. The arm *f* on the rear end of the lever E may be made by bending the rear end of said lever at right angles, or said arm may be separate from the lever E and rigidly fastened thereto in any suitable manner.

H designates the friction or brake shoes, and G is the brake bar or shaft, which are, as usual, situated at one side of the rear wheels and axle. This brake shaft or bar G is journaled in fixed bearings on the bottom of the car-body, and the shoes or blocks H are connected to the shaft or bar by links or arms *g'*. (See Fig. 1.) The manner of supporting the brake bar or shaft and the construction of the brake is, however, immaterial and may be changed at pleasure.

The shaft G is provided with a rigid arm *g*, and the power-shaft D is provided with an eye, which may be welded or otherwise rigidly fastened to the shaft D, and from the eye on the power-shaft to the arm *g* leads a chain *e*, or other flexible or rigid connection, thus connecting the brake-shaft to the power-shaft.

This being the construction of my improved brake, the operation may be briefly described as follows: Normally the clutch I is free from engagement with the loose gear-wheel *d*, and the latter wheel *d* is rotated on the power-shaft D by meshing with the fixed master gear or pinion *b* on the front axle. The shaft D thus remains at rest and the friction-shoes are free from engagement with the rear wheels. To apply the friction-shoes it is only necessary for the brakeman or driver to move the upright hand-lever, when the parts are operated as follows: The horizontal lever E is moved by the lever F to throw the clutch I into engagement with the serrated hub *d'* on the loose gear-wheel *d*, and the gear-wheel *d* is thus made rigid with the power-shaft D. The shaft D is thus geared directly to the front axle through the wheels *b* *d*, and the shaft thus rotated thereby; and as the shaft D is turned it winds or coils the chain or connection thereon, which in turn draws the arm *g* forward and rocks the brake-shaft to apply the friction-shoes H to the rear wheels to arrest

or retard the motion of the car. It will thus be seen that it is only necessary for the driver or brakeman to operate the lever F to throw the clutch into or out of engagement with the serrated hub on the loose gear, and that the motion or power of the car-axle operates to forcibly apply the friction-shoes against the rear wheels C'.

I am aware that changes can be made in the form and proportion of parts and details of construction of the mechanism herein shown and described as an embodiment of my invention, and I therefore reserve the right to make such changes and modifications as fairly fall within the scope of my invention.

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

1. In a car-brake, the combination, with an axle and a brake-bar, of a single power-shaft connected through intermediate devices with the brake-bar, a loose gear-wheel fitted on said power-shaft and meshing with a fast gear on said axle, a clutch rigid with the power-shaft and adapted to slide thereon into and out of engagement with the loose wheel on said power-shaft, and a horizontal lever loosely connected to said clutch, as and for the purpose described.

2. In a car-brake, the combination, with an axle and a brake-bar, of a single horizontal power-shaft loosely geared at all times to said axle and remaining normally at rest, a clutch rigid with said power-shaft and arranged to slide thereon to fasten the gearing rigidly to said power-shaft and rotate the latter, and a horizontal lever fulcrumed on the bottom of a car and engaging with said clutch to shift the latter, substantially as described.

3. In a car-brake, the combination, with an axle and a brake-bar, of a power-shaft carrying a loose gear which meshes with a fixed gear on said axle, a sliding clutch keyed to the power-shaft and adapted to engage the loose gear, a horizontal lever engaging with the clutch, an upright lever connected to said horizontal lever, and connections intermediate of the power-shaft and the brake-bar, substantially as described.

4. In a car-brake, the combination, with an axle and a brake bar or shaft, of the power-shaft, the loose gear fitted on said shaft and engaging a fixed gear on the axle, the sliding clutch keyed to the power-shaft, the horizontal lever fulcrumed to the car-body and having its forked arm engaging the clutch, the hand-lever connected to the horizontal lever, and the chain or other connection intermediate of the power-shaft and the brake bar or shaft, substantially as described.

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

SIGISMUND B. WORTMANN.

Witnesses:

HENRY E. COOPER,

H. F. BERNHARD.