

(No Model.)

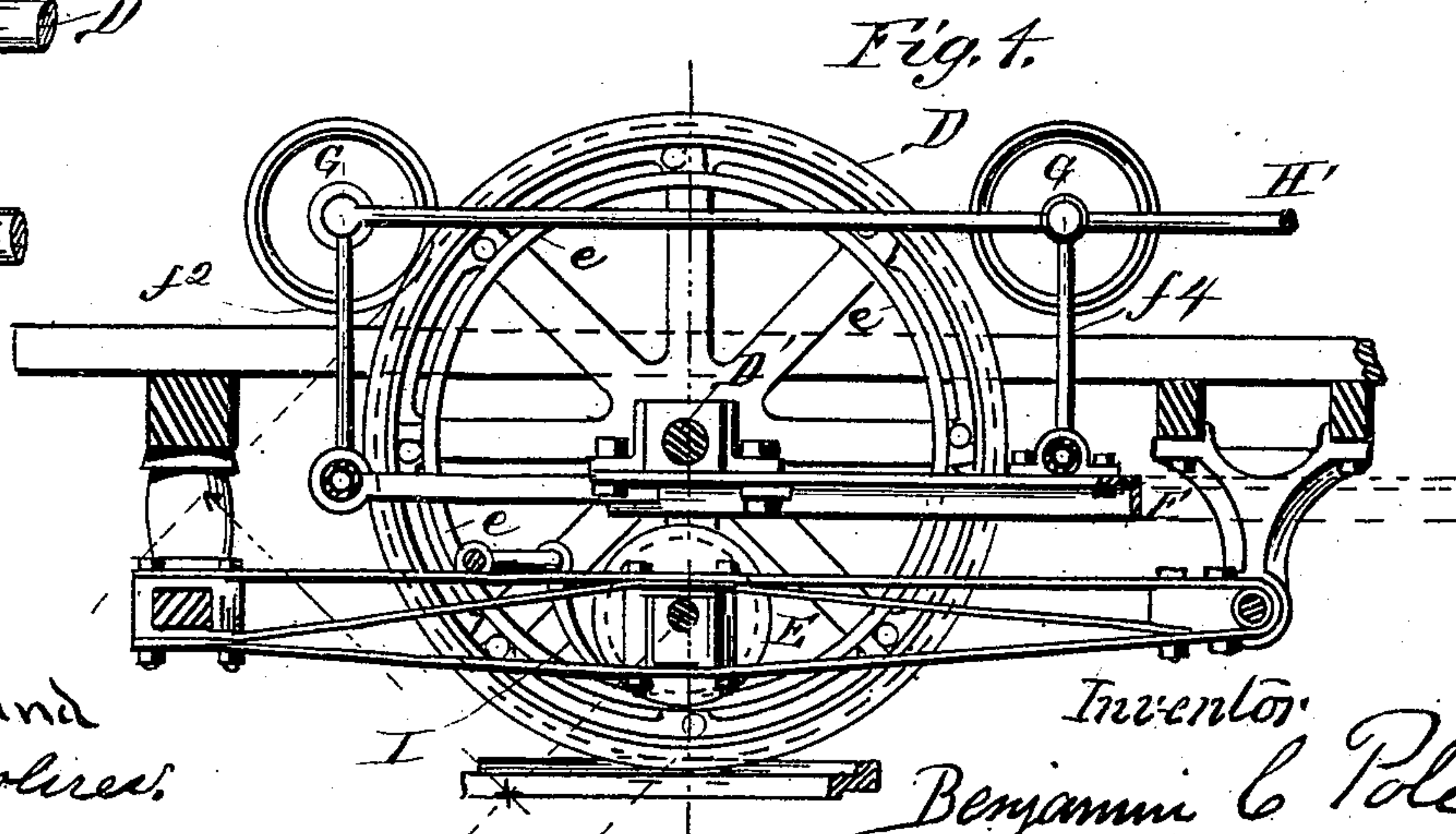
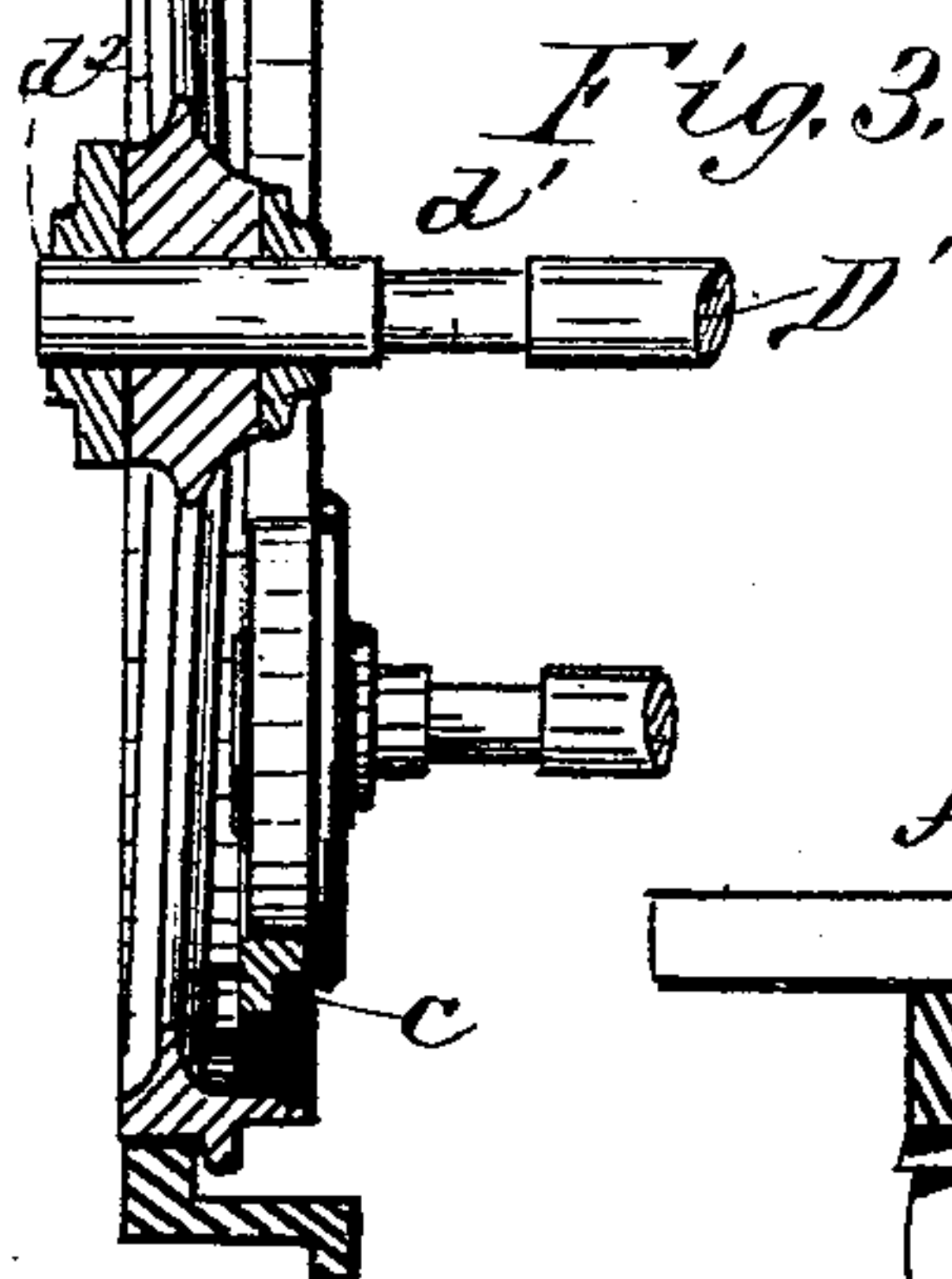
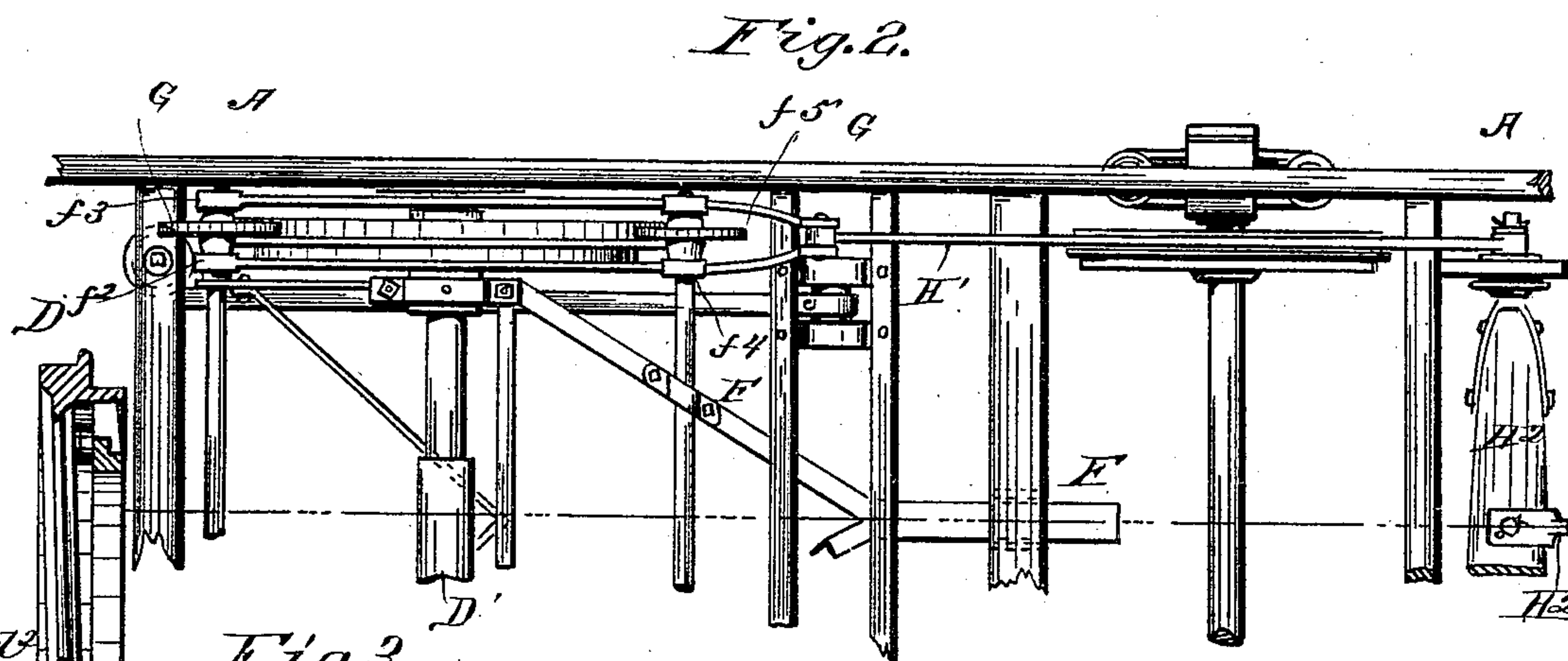
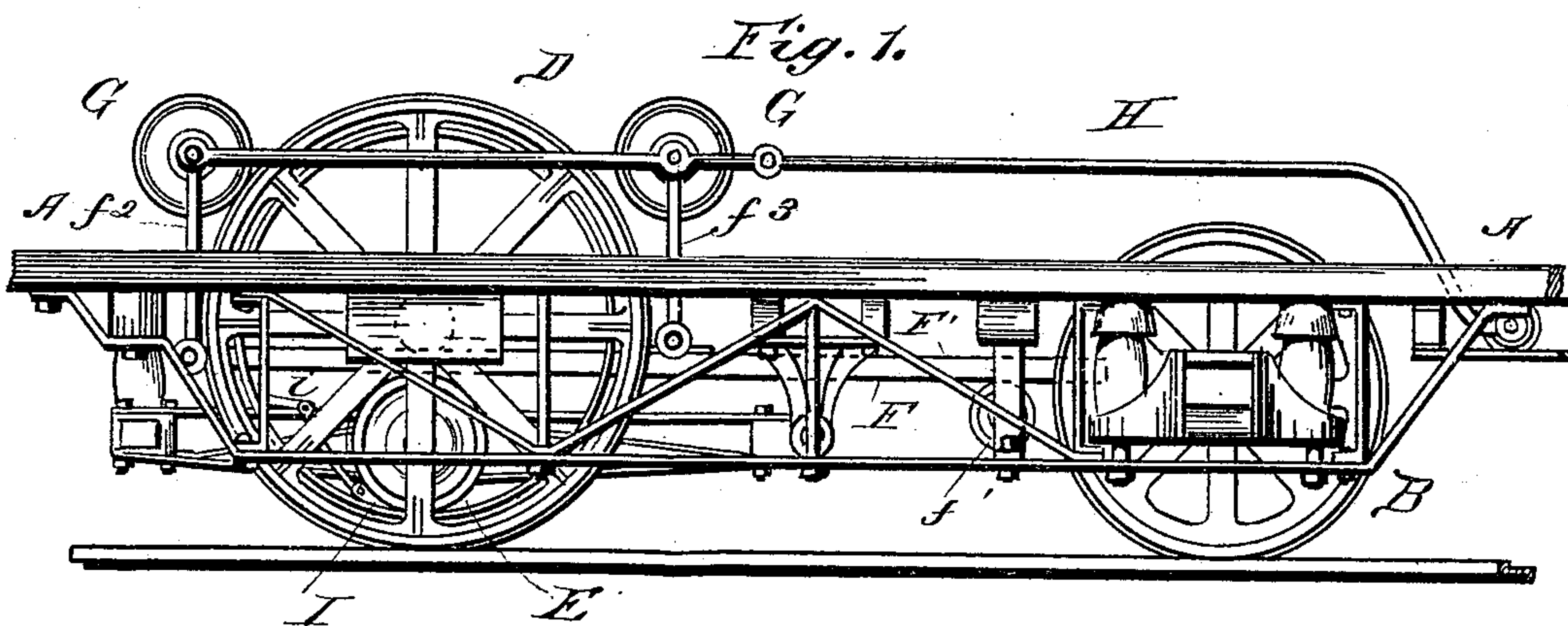
4 Sheets—Sheet 1.

B. C. POLE.

CAR STARTER.

No. 353,759.

Patented Dec. 7, 1886.



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(No Model.)

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Fig. 5.

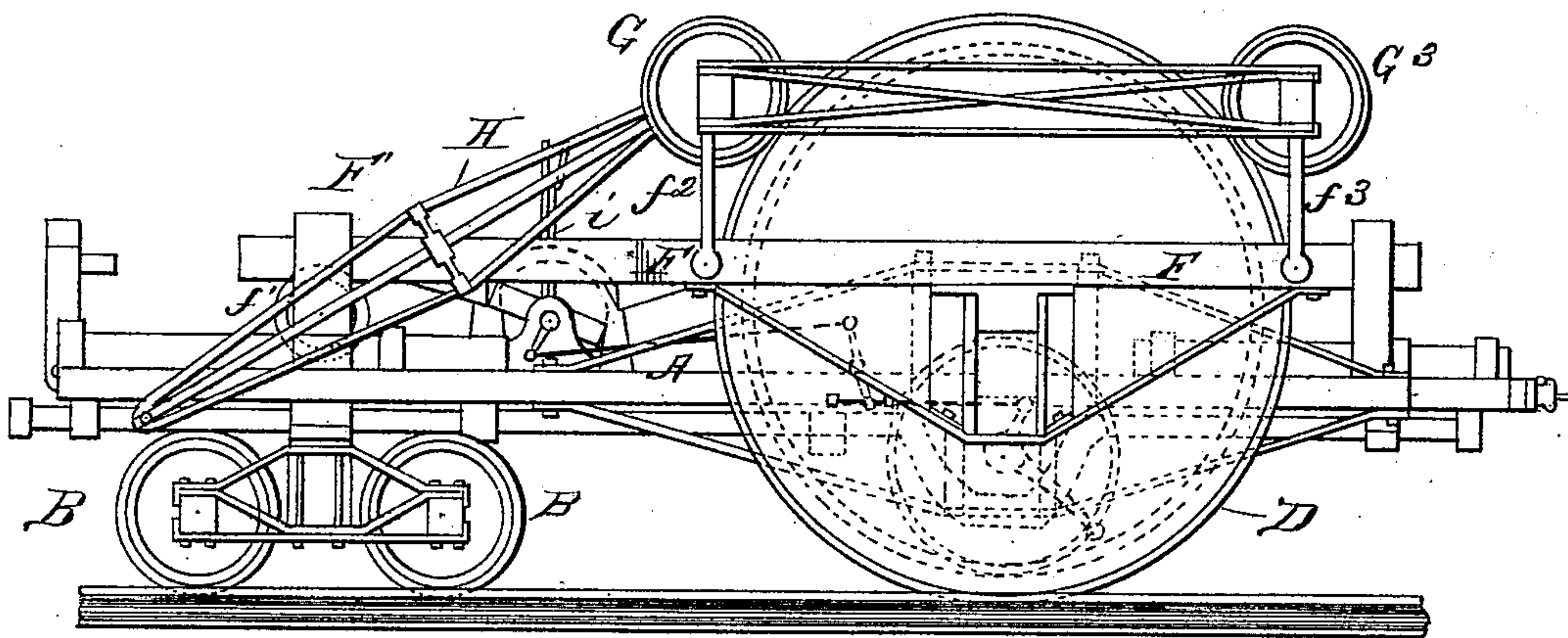


Fig. 6.

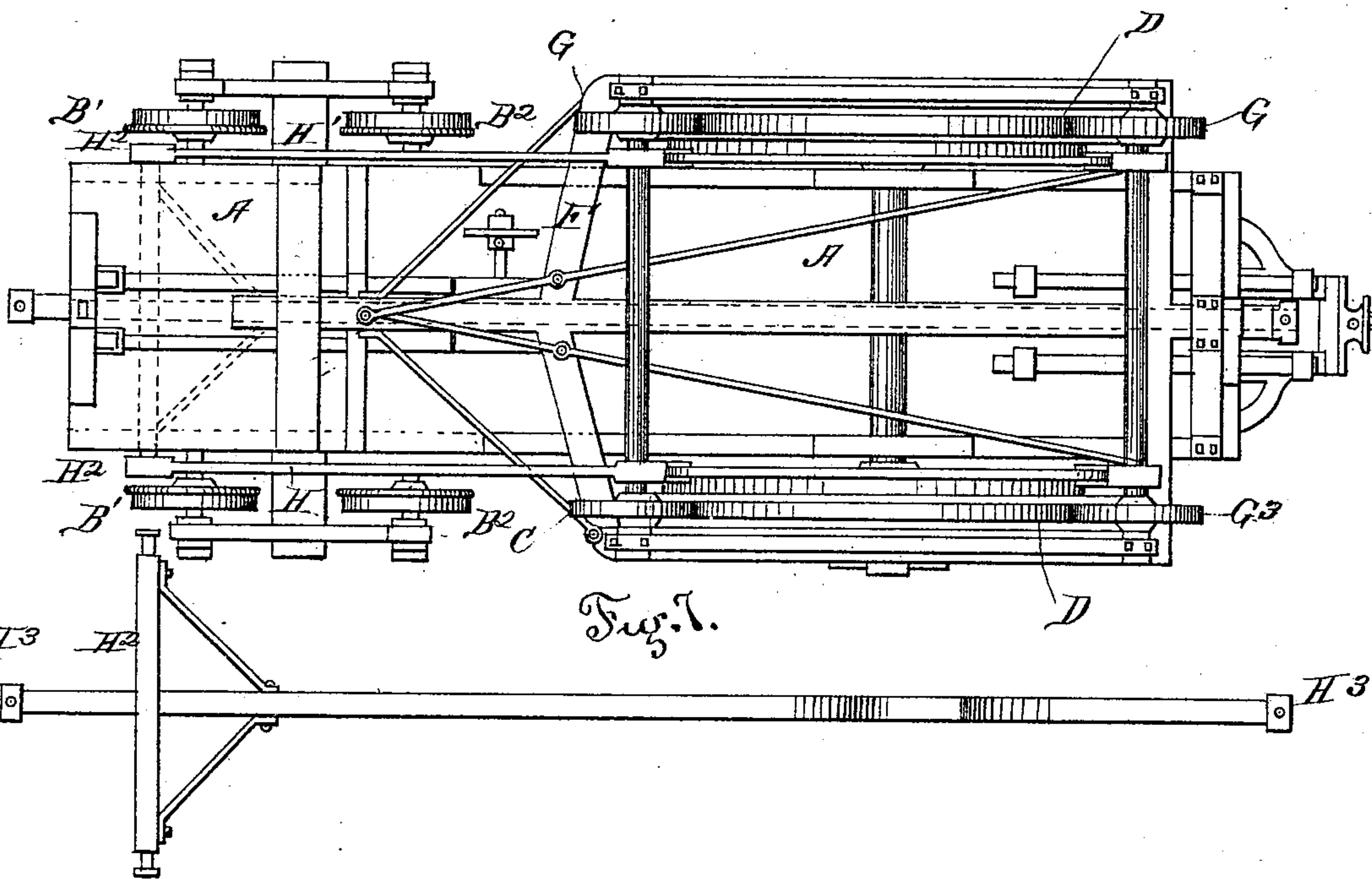


Fig. 7.

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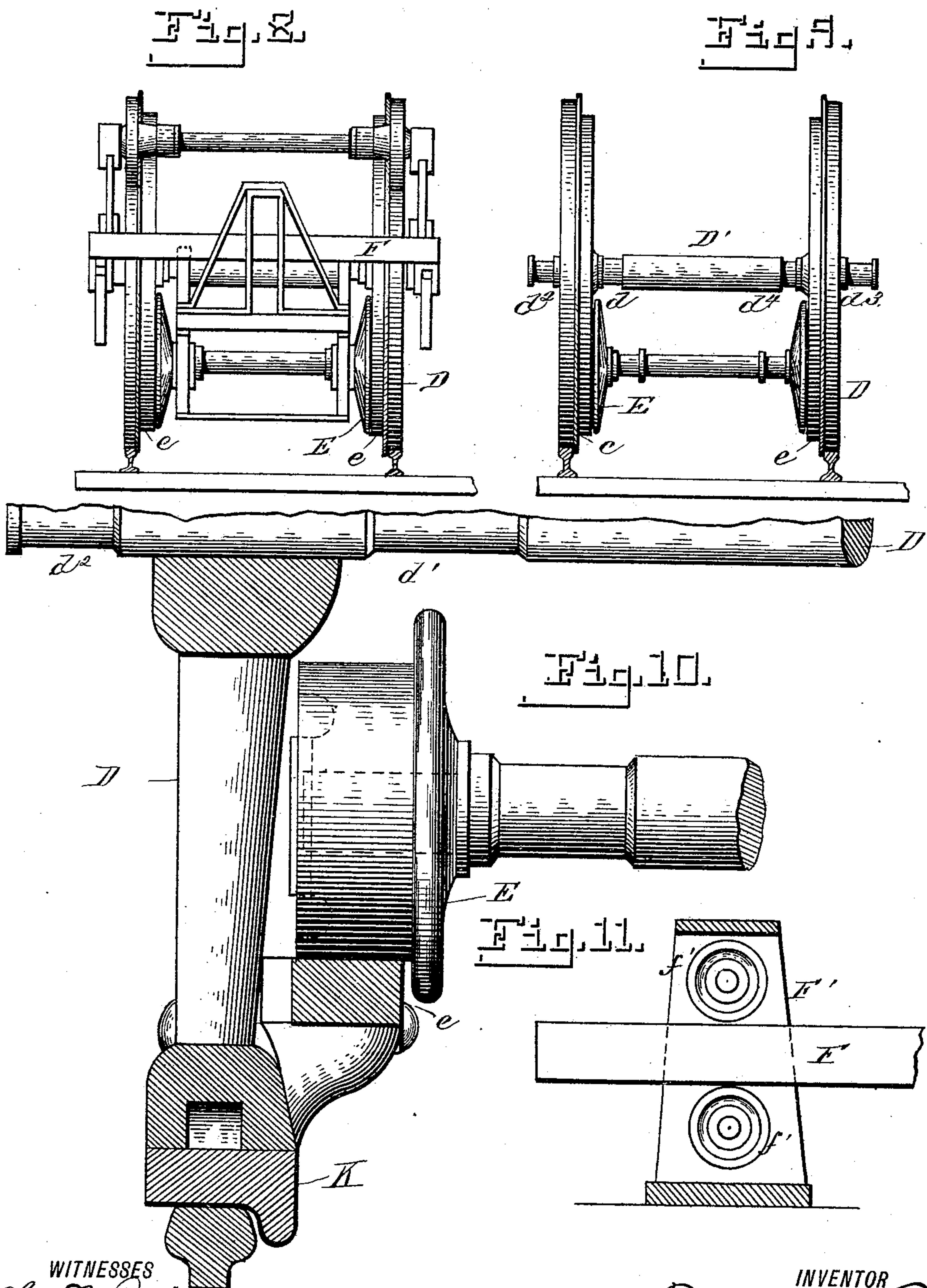
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CAR STARTER.

No. 353,759.

Patented Dec. 7, 1886.



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4 Sheets—Sheet 4.

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Fig. 12.

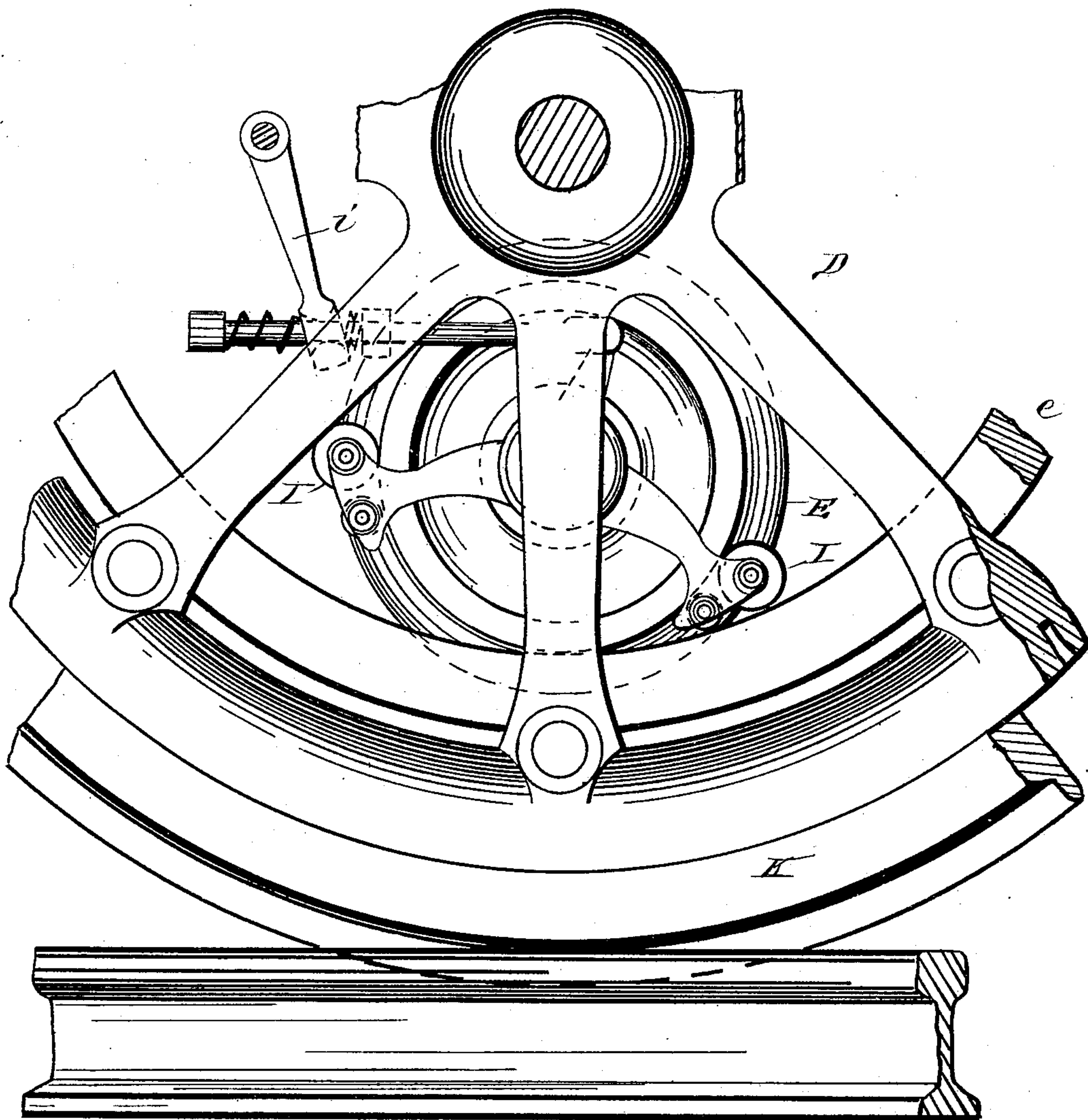


Fig. 13.

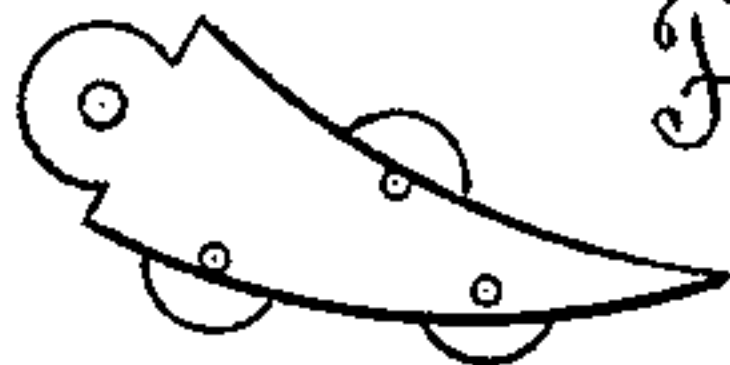
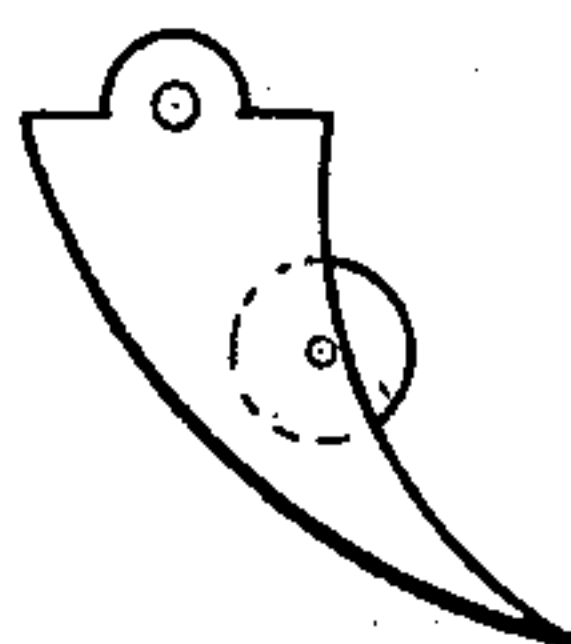


Fig. 14.



Fig. 15.



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UNITED STATES PATENT OFFICE.

BENJAMIN C. POLE, OF CAMDEN, NEW JERSEY.

CAR-STARTER.

SPECIFICATION forming part of Letters Patent No. 353,759, dated December 7, 1886.

Application filed May 20, 1886. Serial No. 202,770. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN C. POLE, an engineer, and a citizen of the United States, residing at Camden, in the county of Camden, State of New Jersey, have invented certain new and useful Improvements in Car-Starters, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to car-starter, runner, and brake devices which are used for the purpose of starting a car and easing the strain upon the moving power, whether it be horses or other motor; and the invention consists in certain construction and combinations, whereby a leverage is gained, allowing independent action of wheels upon the tracks of a railway, which in turn operate certain wheels which are upon an independent track within the first-mentioned wheels; and, furthermore, the invention consists in a certain prompting device to more effectually bring into immediate action the operative effect of gravitation.

The invention consists, also, in certain construction for the use of the invention to start trains upon the steam-railways, and at the same time give the leverage, as in similar instances where they have heretofore been used only for the purpose upon street or tramway vehicles.

The invention consists, also, in providing construction for the wearing parts liable to be rapidly worn out.

The invention further consists in providing a certain prompting device or wedge between the wheels which carry the vehicle, and construction to enable the same to be withdrawn or inserted in place between the wheels.

The invention relates particularly to Letters Patent of the United States granted to me of date February 15, 1881.

Referring to the four sheets of drawings and letters of reference marked thereon, Figure 1 is a side elevation of my car-starter adjusted for street-railway service, being a truck to place under the car. Fig. 2 is a part plan of Fig. 1. Fig. 3 is a part sectional elevation of the operating-wheels known as the "differential lever-starter." Fig. 4 is a section of side elevation of the differential operating-wheels of the invention. Fig. 5 is a side elevation of my car-starter constructed on an enlarged plan

as a car-starter to be used for starting the cars of a steam-railway. Fig. 6 is a plan of Fig. 5. Fig. 7 is the draw-bar for the construction shown in Fig. 5, whereby it is susceptible of being operated from either end of the vehicle. Fig. 8 is a rear elevation of Fig. 5. Fig. 9 is an elevation of the larger and smaller wheels, showing the relative position of each. Fig. 10 is a sectional elevation of the enlarged construction, and a modification of Fig. 3. Fig. 11 is a sectional elevation of the rollers and guide for the trail-bar construction of the invention, for the purpose of keeping all the axles in a parallel position to each other and relatively central with the trucks. Fig. 12 is a broken side elevation. Figs. 13, 14, and 15 are views of constructions for prompting devices or wedge.

In all the figures the same letters refer to the same parts.

The frame or truck A of the starter is sustained by the front wheels, B, or pivoted wheels B' B², to which may be applied brake-shoes and gear, as is desirable. The back end of the frame or truck A is supported by the wheels D and smaller wheels, E, the larger wheels, D, standing upon the tracks and the smaller wheels, E, resting upon a ring, e, formed on the inside of the larger wheels, D, as indicated by Figs. 1, 2, 3, 4, 5, 8, 9, 10, and 12, and shown in dotted lines in Fig. 5. This ring e is made of steel and riveted or bolted in and upon the wheel D. The axle D' sustains the wheels D, and one or both of wheels D may be loose or sleeved thereon, allowing independent action, and said axle D' is provided with journals d', d², d³, and d⁴, to which can be attached the trail-bar F, as in Figs. 1, 2, 3, and 4. The trail-bar F is on journal d' and d⁴ of axle D'. In the construction of Fig. 5 the trail-bar F is on journals d² and d³, which are outside of the wheels D and above the frame A. This trail-bar F is conducted through a central guide, F'. Said guide F' is provided with the rollers f', which construction permits a free, unrestrained, horizontal roll forward of the wheels D, and the wheels E, if they do not at once receive the forward impetus, will rise up upon the inside steel carrying-rings e, and will fall or roll down the incline thus formed by the well-known law of gravitation.

Upon the trail-bar F are the links f^2, f^3, f^4 , and f^5 , and these are connected at the axle of the friction operating-wheels G. These are held in position by the draw-rods H H', which
 5 are connected to the cross-bar H², and this bar H² is the draw-bar through which the operating force is applied, so that upon the application of power, through the connection H³ to the cross-bar H², to the draw-rods H and H', which
 10 draw the friction-wheels G against the top periphery of the wheels D, these in turn receive the forward, and in turn raise the interior, wheels E. These in turn gravitate down the incline formed, and going forward give
 15 motion to the vehicle, thereby giving forward motion or traction.

To facilitate the prompt response of the movement forward of the wheels D, there is provided the prompter device or wedge I.
 20 This device can be withdrawn by the lever i, or can be in service for the forward action of the vehicle, or backward, when so desired. It is understood that the operation of the wheel D in the contrary direction by the moving
 25 power acts as a starter backward, or, should the vehicle be in motion, acts as a brake.

The draw-rod H³ can be made operative from either end of the vehicle. The prompter device or wedge I can be a roller or system of
 30 rollers, a wedge of rubber or metal—at best, of soft metal or rubber. Suitable tires, K, will be upon the wheels D, and, as heretofore stated, the rings e should be steel. In the instance of the starter for street-railways, the
 35 weight of the passengers causes the quick action of the wheel E, due to gravitation, when the same shall have the center of gravity changed by the action of the larger wheel, D, through having the draft power applied there-
 40 to. In the larger starter for starting steam-cars a weight will be carried, or equivalent compounding levers provided, so as to make the wheel E respond to the movements of the wheel D. The wheels D and E are not at-

tached at all, further than that the wheel E rests 45 and rolls inside of the steel ring e of the wheel D, gravitation operating the wheel E. When the prompter device or wedge I is used, the incline made by the forward roll of the wheel D is increased—that is, the prompter I is at once 50 brought in contact with wheel E, causing a quicker response, due to gravitation.

The several parts are provided with oiling devices, and in the matter of the construction of Fig. 5 there will be a covering or box-car 55 construction thrown over the same, as indicated by dotted lines. In the construction, Fig. 1, the car is placed upon the truck and the larger wheels come up under the car-seats.

Having thus described the construction and 60 operation of my invention, what I desire to secure by Letters Patent of the United States is as follows:

1. The combination, with a car or other vehicle, of a starter, runner, and brake, consisting of the wheels D and E, operated by the wheel G, and a prompting device or wedge, substantially as and for the purpose set forth. 65

2. In a car-starter, the trail-bar links, the operating-wheels G, and suitable friction-rollers, all adapted to a trail-bar which is above or below the frame of the vehicle, substantially as and for the purpose set forth. 70

3. In a car-starter, a trail-bar allowing independent horizontal action of the wheel D, in combination with the wheel E and vehicle, substantially as set forth. 75

4. The trail-bar, the links, the operating-wheels G, and suitable friction-rollers adapted to a trail-bar above or below the frame of the vehicle, and a prompter device or wedge, substantially as and for the purposes set forth. 80

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

BENJAMIN C. POLE.

Witnesses:

ROBERT E. MORRIS,
 CHARLES E. BANES.