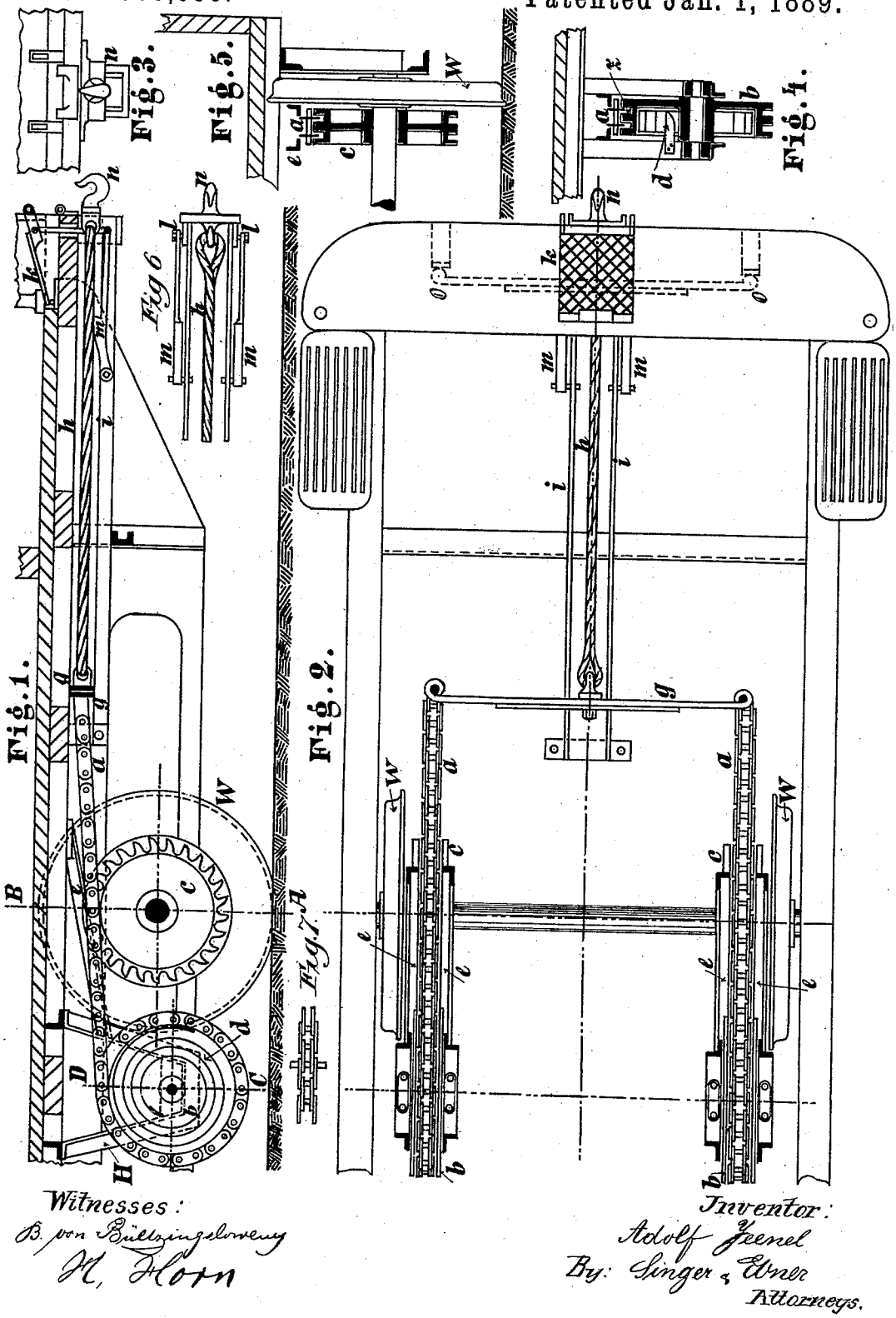
(No Model.)

A. JEENEL.

CAR STARTER.

No. 395,656. Patented Jan. 1, 1889.



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UNITED STATES PATENT OFFICE.

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CAR-STARTER.

SPECIFICATION forming part of Letters Patent No. 395,656, dated January 1, 1889.

Application filed November 23, 1887. Serial No. 256,027. (No model.) Patented in Germany September 14, 1887, No. 42,565; in Belgium November 10, 1887, No. 79,486; in England November 11, 1887, No. 15,396, and in Austria-Hungary March 26, 1888, No. 44,414 and No. 7,202.

To all whom it may concern:

Be it known that I, ADOLF JEENEL, super-reviser, a subject of the King of Prussia, residing at Breslau, in the Province of Silesia, of the Kingdom of Prussia, German Empire, have invented certain new and useful Improvements in Mechanism for Starting Tramway-Cars, (for which I have obtained the following patents: of Germany, No. 42,565, dated September 14, 1887; of Belgium, No. 79,486, dated November 10, 1887; of England, No. 15,396, dated November 11, 1887; of Austria-Hungary, Nos. 44,414 and 7,202, dated March 26, 1888,) of which the following is a specification.

My invention relates to improved means for starting tramway-cars, by which means the initial pull necessary to start the car is made much lighter and the vehicle moves much more easily without any jerk or shock.

The nature of the invention consists in the combination, with the bottom of a tramway-car and the wheel and axle thereof, of a hollow revoluble drum or barrel mounted in bearings upon suitable brackets fastened to the bottom of said car, a spiral spring placed within said drum or barrel and having one end attached to one of said brackets and the other end attached to the interior of said drum or barrel, a sprocket-wheel mounted upon the axle of said vehicle, a chain attached by one end to said drum, wound around said drum or barrel, passing over said sprocket-wheel, and extending under the bottom of said car far enough forward to be attached to a rope or chain, and a rope or chain one end of which is attached, as hereinbefore specified, to the end of said chain, extending forward over said sprocket-wheel from said drum or barrel and reaching far enough forward to be attached to the draft apparatus of the car, all for the purpose and in the way substantially as hereinafter specified.

The nature of the invention also consists in the details of combination and construction, substantially as illustrated in the drawings, hereinafter described, and subsequently pointed out in the claims.

Figure 1 is a longitudinal sectional view illustrating a part of the lower part of a car with my invention applied. Fig. 2 is a plan view of the same. Figs. 3, 4, 5, 6, and 7 are detail views illustrating various parts of my invention and parts of the accompanying mechanism.

In the drawings, *b* indicates a drum or barrel mounted upon bearings in the bracket H. This bracket is firmly attached to the bottom of the car by bolts or in any other convenient way. The drum or barrel *b* is hollow, and within it is coiled the spiral spring *d*, one end of which is attached to the bracket H and the other end to the interior of the drum or barrel *b*. The periphery of this drum or barrel *b* is formed with two flanges, between which are a series of sprocket-teeth running almost around the periphery of said wheel. *e* designates a chain, one end of which is attached to the periphery of the said drum or barrel *b*. This chain is wound, as illustrated, around the said drum or barrel, with its links engaging the sprocket-teeth.

c designates a sprocket-wheel mounted on the axle of the car and rigidly attached thereto. The teeth of this wheel are inclined a little, so that it has very much the appearance of a ratchet. The chain *e* is so long that it passes forward beyond this sprocket-wheel *c*, engaging the teeth thereof with its links in the usual and well-known way. There are two of these chains *e*, each provided with the accompanying mechanism just described, which chains and accompanying mechanism are placed one under each side of the car just within the wheels, as illustrated in Fig. 2. The front ends of these chains are fastened together by the draw-bar *g*, which is adapted to slide on the guides *i*. To the middle of this draw-bar *g* is attached one end of the rope or chain *h*, which, extending forward, is attached by its other end to the draft-hook *n*. Upon the side of the chain *e* is a projection, (designated by *f* of Fig. 7,) which may be a continuation of one of the connecting-rivets of the chain. This running upon the inclined bar or guide *e'* lifts the links from out of engagement with the teeth of the sprocket-wheel *c*. When the car is standing still, the chain *e* is wound upon the drum or barrel, and the whole device is in the position illus-

trated in full lines in Fig. 2; but as soon as the horse begins to pull the draw-bar *g* slides forward on the guides *i*, being drawn by the rope or chain *h*. This causes the chain *e* to unwind from the drum or barrel *b* and run over the sprocket-wheel *c*. This motion turns the sprocket-wheel *c*, and with it the axle and wheel of the vehicle, thereby giving the wheel a start. As soon as the projection *f*, running upon the inclined guide *e'*, has lifted the links of the chain *e* from out of engagement with the teeth of the sprocket-wheel *c* the wheel of the vehicle will be free to roll forward. This will occur at or before the time the draw-bar *g*, sliding forward, encounters the buffers *o*, which limit its forward action, as illustrated in Fig. 2 in dotted lines. This motion of the bar *g* may, however, be limited by the stop *m* or the stop *k*, if it be desirable, and the operation of the projection *f* arranged accordingly. As the spring *d* is wound one way in the drum or barrel *b* and the chain *e* is wound another way upon it, this unwinding of the chain to start will wind up the spring, and when the vehicle stops the spring will by its resilience return all the various parts of the mechanism to their original positions ready for another start. If, however, it be desirable, a light car may be worked with only one barrel or drum, one spiral spring, one sprocket-wheel, and one chain *e*, in which case the rope or chain *h* is attached directly to the forward end of the one chain *e*.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with the bottom of a tramway-car and the wheel and axle thereof, of a hollow revoluble drum or barrel mounted in bearings upon suitable brackets fastened to the bottom of said car, a spiral spring placed within said drum or barrel, having one end attached to one of said brackets and the other end attached to the interior of said drum or barrel, a sprocket-wheel mounted upon the axle of said vehicle, a chain attached by one end to said drum or barrel, wound around said drum or barrel, passing over said sprocket-wheel, and extending under the bottom of said car far enough forward to be attached to a rope or chain, and a rope or chain one end of which is attached, as hereinbefore specified, to the end of said chain, extending forward over said sprocket-wheel from said drum or barrel, and, reaching far enough forward, is attached by its other end to the draft apparatus of the car, substantially as and for the purpose set forth.

2. The combination, with the bottom of a tramway-car and the wheel and axle thereof, of the drum or barrel *b*, mounted in bearings upon the brackets H, said brackets fastened to the bottom of said car, a spiral spring, *d*, wound within said barrel or drum *b*, having one end attached to the said bracket H, and the other end attached to the interior of said drum or barrel *b*, a sprocket-wheel, *c*, mounted upon the axle of said vehicle, a chain, *e*, attached by one end to the periphery of said drum or barrel *b*, wound around said drum or barrel *b*, extending over and engaging the teeth of said sprocket-wheel with its links, and reaching far enough forward to be attached to one end of the draw-bar *g*, and a like chain accompanied by a like sprocket-wheel and a like drum or barrel, both mounted like the said drum or barrel and sprocket-wheel, and the drum or barrel being provided with a like spiral spring, the said chain being in like manner attached to the other end of the draw-bar *g*, the chain or rope *h*, attached by one end to the middle of said draw-bar *g*, reaching forward and attached to the draft-hook *n*, the guides *i* and *i*, attached to the bottom of said car, the stops *m*, *k*, and *o*, attached to the bottom of said car, the projection *f* of the said chain *e*, and the guide *e'*, attached to the bottom of said car, all substantially as and for the purpose set forth.

In testimony whereof I hereunto sign my name, in the presence of two subscribing witnesses, this 30th day of October, 1887.

ADOLF JEENEL.

Witnesses:
CARL VOGT,
HERMANN MISOHKE.