

(No Model.)

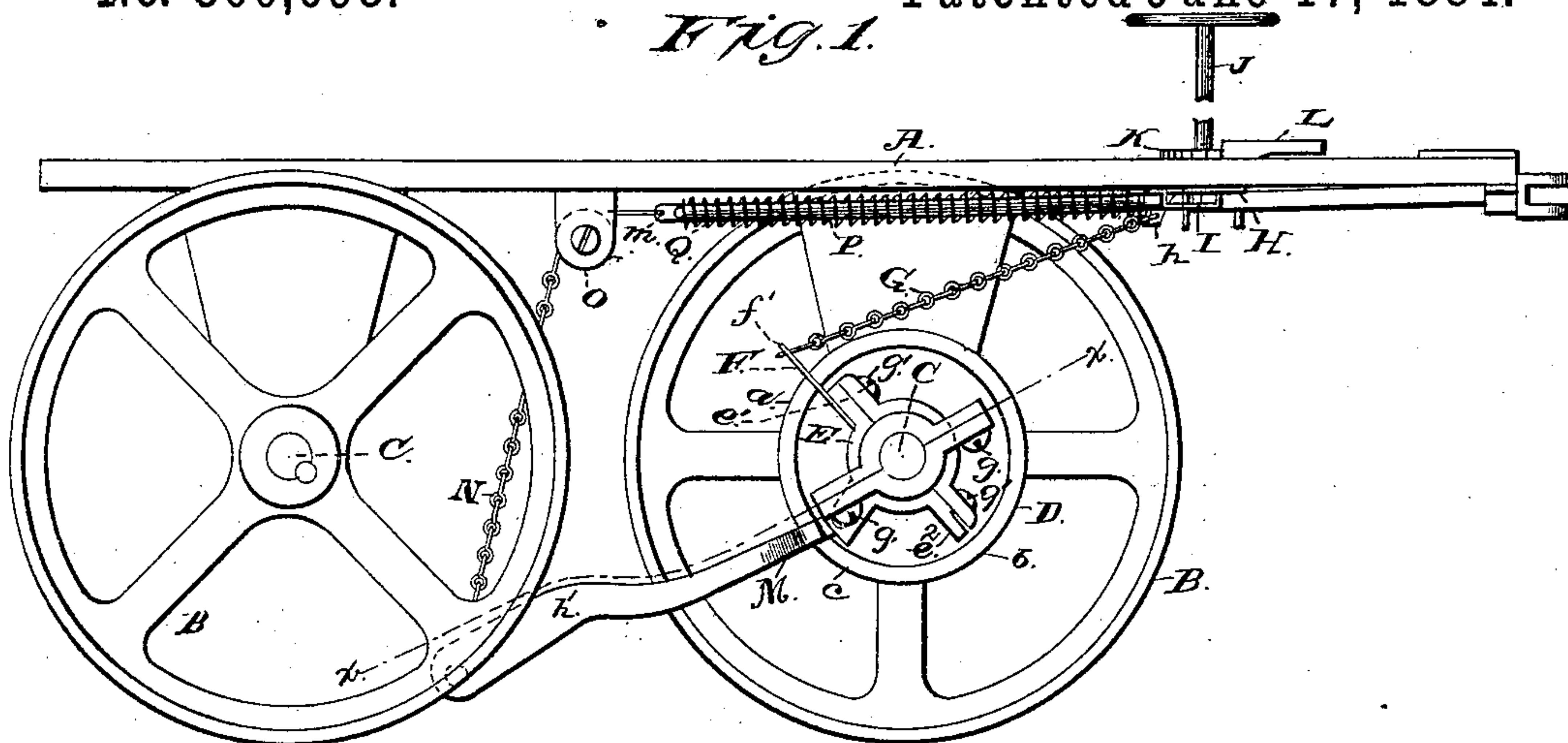
F. DAWSON & J. HOLLEYHEAD.

CAR STARTER.

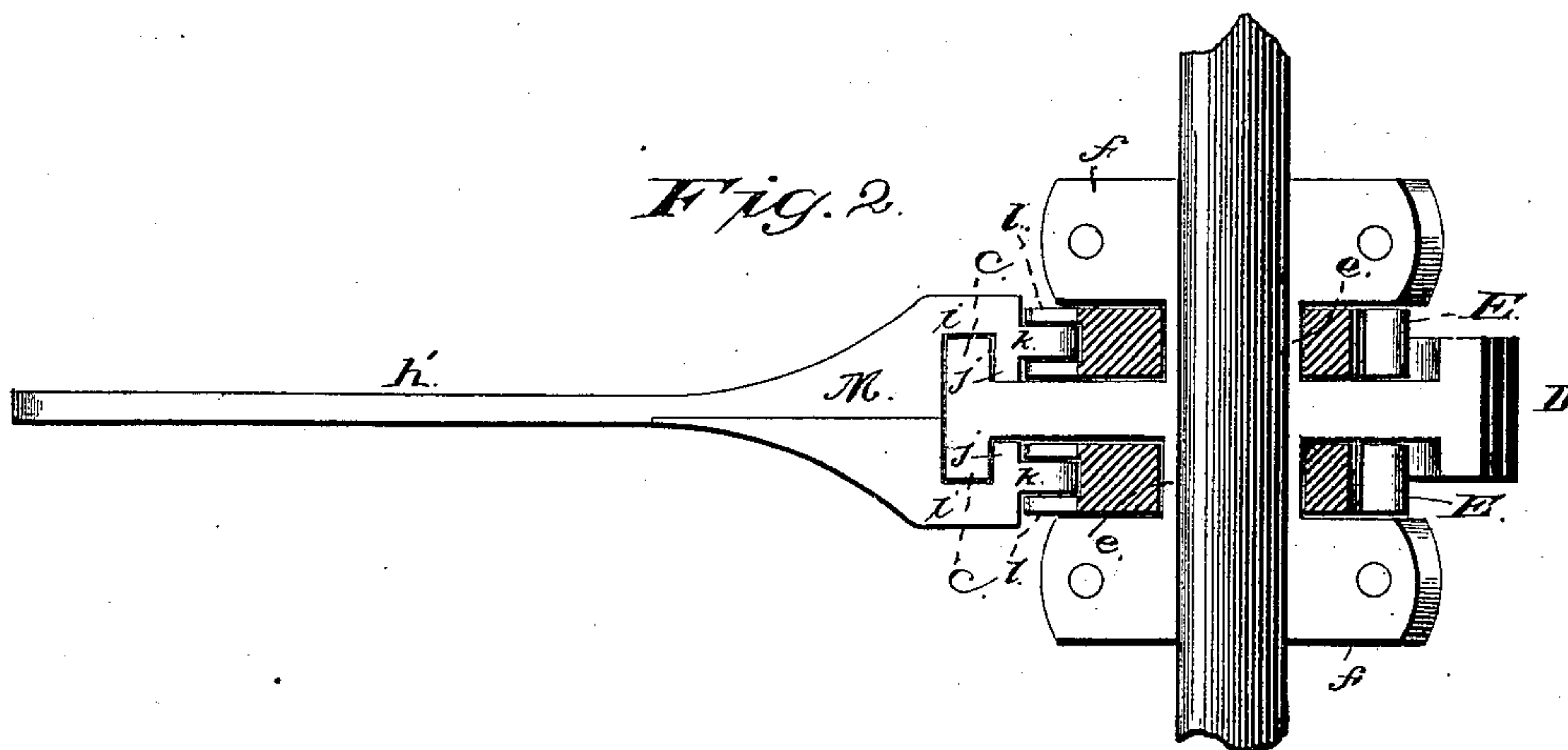
No. 300,698.

Patented June 17, 1884.

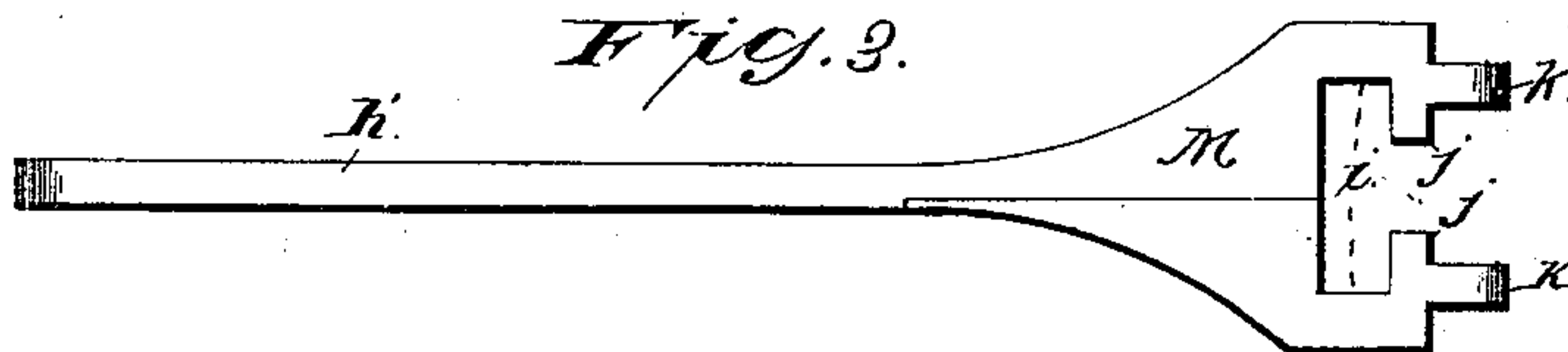
Fig. 1.



*Fig. 2.*



*Fig. 3.*



WITNESSES

n. a. bark.  
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# INVENTORS

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# UNITED STATES PATENT OFFICE.

FRANK DAWSON AND JOHN HOLLEYHEAD, OF WILLIAMSPORT, PA.

## CAR-STARTER.

SPECIFICATION forming part of Letters Patent No. 300,698, dated June 17, 1884.

Application filed April 4, 1884. (No model.)

*To all whom it may concern:*

Be it known that we, FRANK DAWSON and JOHN HOLLEYHEAD, both of Williamsport, in the county of Lycoming and State of Pennsylvania, have invented a new and useful Improvement in Car-Starters; and we do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Our principal object in the improvements we have devised in car-starters for street-rail-road and other cars is a greater simplicity in construction, and consequently a greater economy of first cost and in the expense of repairs, and at the same time to have a quick, direct, and effective application of the power for starting the car.

The novelty in our invention consists, mainly, in the peculiar construction of the lever-clutch, in combining it directly with the flanges of the driving-wheel, in pivoting the same clutch to a loose collar on the axle, and in other operative combinations of the principal parts, all as more particularly hereinafter described and claimed.

For the better comprehension of our improvements, reference should be had to the accompanying drawings, in which—

Figure 1 is a side elevation of our improvement as attached to and beneath the bottom of a car, one of the wheels of which is removed for a better display of the car-starter and its attachments; Fig. 2, a section on the line *xx* of Fig. 1, and Fig. 3 a separate view of the lever-clutch.

In the drawings, A represents the bottom of a car; B, one of the wheels of the same; and C its axle, which is secured firmly to its traction-wheels. Upon this axle there is placed a driving-wheel, D, made in two equal parts, *a* and *b*, so as to be conveniently attached to or detached from the axle, and the same is recessed on both sides, so as to leave a rectangular flange or rim, *c*, around its periphery. This wheel D has hubs *e e*, extending on each side a little distance, and at the ends of the hub clamping-arms *ff*, the hub and the clamping-arms being each made in two equal parts, like the wheel, and each group of parts of single pieces of metal, each half-wheel, two hubs,

and two clamping-pieces being made in one piece. By means of screws *g g* through the ends of the clamps, the same closely embrace the axle, and are secured more firmly to the same by means of other screws directly through the sides of the clamps into the axle. Collars E E also are made in two parts, having ears *e' e'*, secured together by other screws, *g' g'*, passing through these ears. One collar is placed loosely over each hub *e e*, so as to have rotation thereon, and its thickness is preferably about the width of said hubs, so that the collars are restrained from lateral movement by the sides of the wheel D and by its clamping-arms *ff*.

To the ears *e' e'* is securely fastened a yoke, F, from whose body *f'* a chain, G, leads to the projecting arm *h* of a disk, H, the arm *h* of this disk being limited in its movements by a keeper, I, upon the under side of the car-bottom. This disk H is attached to a shaft, J, passing through the platform of the car, and provided with a ratchet-wheel, K, and pawl L, and proper hand-wheel or handle. When the ratchet-wheel is turned in one direction, the chain G pulls upon the collar E and partially turns it upon the axle, and when the ratchet is released the collar partially rotates in the opposite direction, by reason of the weight of the lever to the lever-clutch M. This lever-clutch has a lever-arm, *h'*, a jaw, *i*, rectangular inside, and hooks *j j* of rectangular shape, conforming in size to the flange or rim *c* of the driving-wheel D. Extensions or lugs *k* of these hooks *j j* are pivoted on each side of the wheel to lugs *ll* upon the collar E. The outer end of the lever-arm *h'* has attached to it a chain, N, which passes over a pulley, O, secured to the car-bottom, and is fastened to the end of the extension *m* of the draw-bar P, which is properly supported under the car in such a way that it may have a longitudinal movement within certain limits. When the draw-bar is drawn out, it compresses a spring, Q, upon the extension *m*, and when strain on the draw-bar ceases the spring retracts it to its proper position.

In operation, when it is desired to start a car, the draft upon the draw-bar, by means of the chain N, raises the end of the lever from its normal position, sloping a little downward



from a horizontal plane, and the angle of the jaw and hooks is changed relatively to the flange or rim *c*, and the jaw and hooks grip firmly upon said flange or rim, and the wheel *D* and the axle and traction-wheels are partially turned. By the further outward movement of the draw-bar and lifting of the lever end of the clutch, the angle of the jaw and hooks is changed again in relation to the flange or rim of the wheel *D*, and the clutch ceases to grip the same, which turns freely in accord with the axle and traction-wheels. A further raising of the lever-arm will serve to lock the driving-wheel *D* and the traction-wheels from backward rotation, while leaving them free for forward rotation. This locking of the wheels to prevent backward rotation, however, is conveniently effected by the yoke *F*, chain *G*, disk *H*, and shaft *J*, when it is not advisable to have a very great pulling out of the draw-bar, and consequently the raising of the lever-clutch only to the gripping-point and the point of release, as before explained. By the construction thus described we avoid the use of rollers or balls or other devices between the gripping parts, to which the objections are numerous, and the grip is direct and immediate, and a wear of the gripping parts does not affect their efficiency in use for a long time, as it necessitates only increasing the length of movement of the lever end of the lever-clutch. It will be observed, also, that the driving wheel and collar being made in two equal parts, the matter of removal or replacement is very sim-

ple, and may be made wherever the car happens to stand without disturbing any other part of it. 35

Having thus described our invention, what we claim as new therein, and desire to protect by Letters Patent, is— 40

1. A lever-clutch, *h' M*, for a car-starter, having a rectangular jaw, *i*, rectangular hooks *j j*, and lugs *k k*, constructed and arranged substantially as described.

2. The combination, in a car-starter, of the lever-clutch *h' M*, having a jaw, *i*, hooks *j j*, and lugs *k k*, and a driving-wheel having lateral rim-flanges, arranged substantially as and for the purposes described. 45

3. The combination, in a car-starter, of a lever-clutch with a rectangular jaw-opening, rectangular and inwardly bent hooks, a driving-wheel having lateral rim-flanges, and a loose collar to which the hooks of the lever-clutch are pivoted, substantially as described. 50 55

4. In a car-starter, the combination of the loose collar and its yoke with the lever-clutch for the purpose of preventing backward rotation of the traction-wheels of the car, substantially as described. 60

In testimony whereof we affix our signatures in presence of two witnesses.

FRANK DAWSON.  
JOHN HOLLEYHEAD.

Witnesses:

JNO. F. LAEDLEIU,  
J. T. FREDERICKS.