

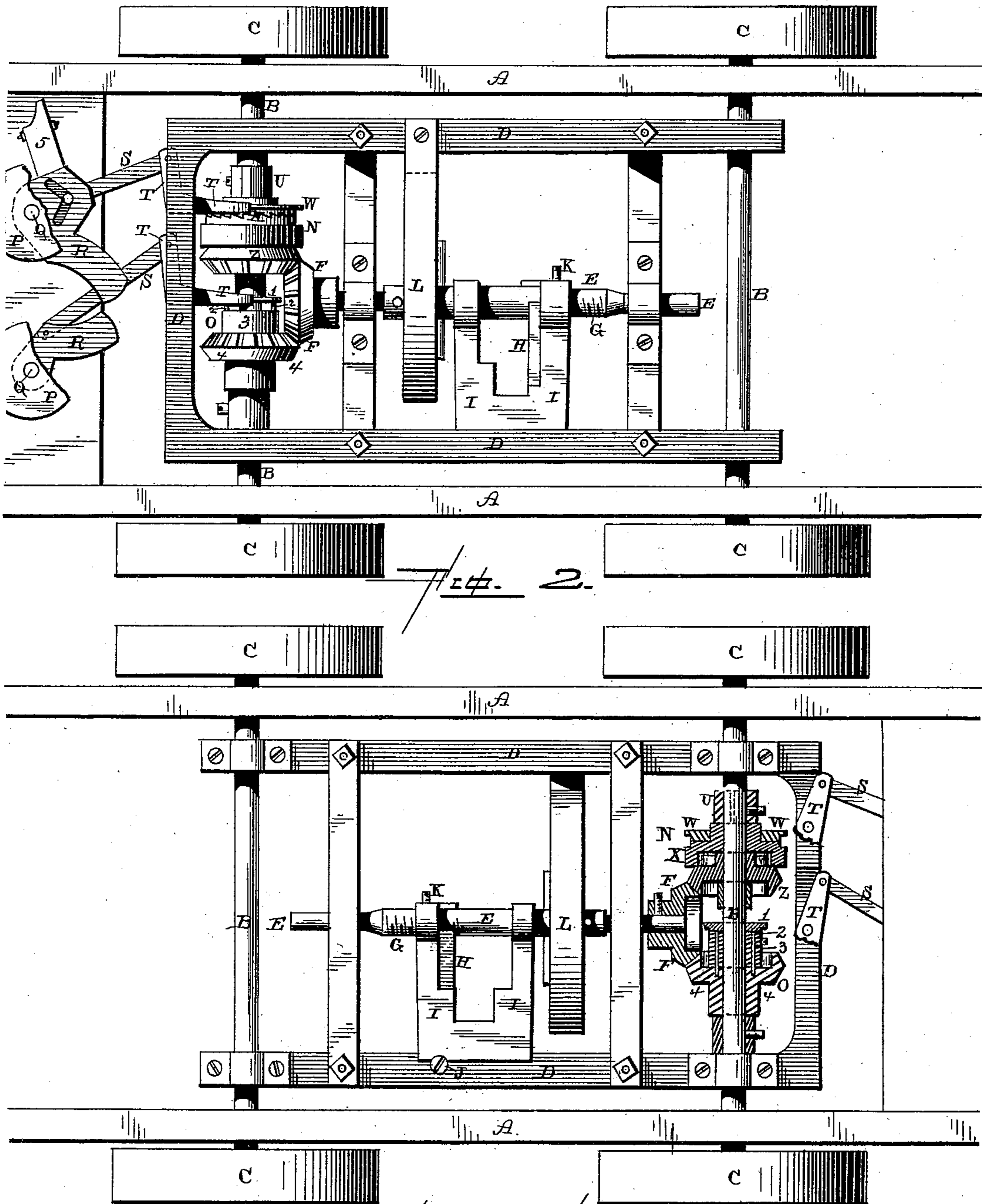
(No Model.)

W. H. JOHNSON.

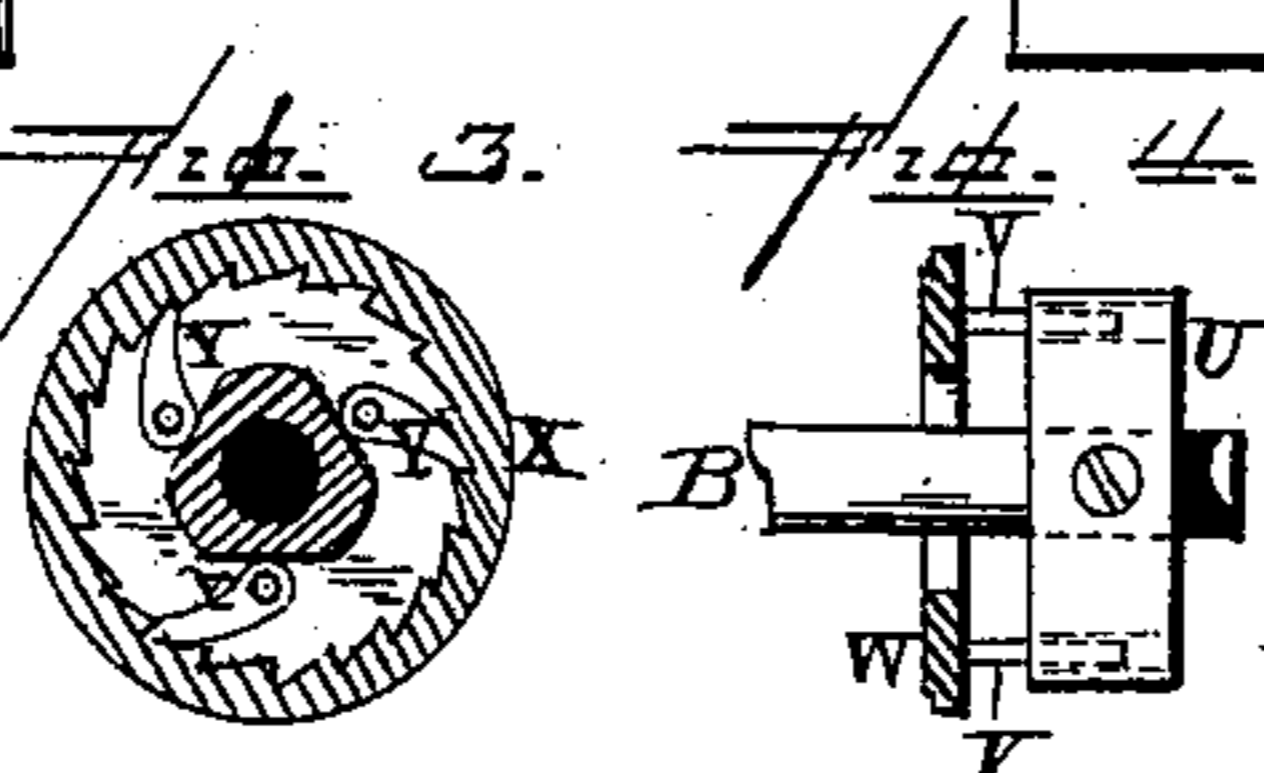
CAR STARTER.

No. 336,922.

Patented Mar. 2, 1886.



Witnesses.
X. J. Gardner
S. L. Burket.



Inventor.
Willis H. Johnson,
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UNITED STATES PATENT OFFICE.

WILLIS H. JOHNSON, OF SPRINGFIELD, ILLINOIS.

CAR-STARTER.

SPECIFICATION forming part of Letters Patent No. 336,922, dated March 2, 1886.

Application filed July 15, 1885. Serial No. 171,717. (No model.)

To all whom it may concern:

Be it known that I, WILLIS H. JOHNSON, of Springfield, in the county of Sangamon and State of Illinois, have invented certain new and useful Improvements in Car-Starters or Power-Conservers; 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in car-starters or power-conservers; and it consists in the arrangement and combination of parts which will be more fully described hereinafter.

The object of my invention is to provide a mechanism which can be used for storing up power while a car or other machine to which it is applied is being stopped, and then to exert the power which has been stored up in a spring in the act of stopping the car or other machine in starting the car or other machine into motion, and thus avoid the great strain which is brought to bear upon animals in starting the car.

Figure 1 is a plan view of a machine embodying my invention. Fig. 2 is an inverted view of the same, the clutches being shown in sections. Figs. 3 and 4 are details.

A represents the frame of a car or other similar object; B, the axles, and C the wheels. Placed upon the tops of the axles B is a frame, D, which extends parallel with the frame of the car, but which is made separate therefrom. Suitable boxes are formed on the under side of this frame, through which the axles pass, the boxes being made removable, so that the frame can be detached at any time. Journaled in this frame, and extending parallel with the car, is the shaft E, which has a beveled gear, F, secured to the front end, and a screw-thread, G, formed near its rear end, and which is provided with an arm, H, which projects from the shaft at any suitable point between its two ends. This shaft is journaled in cross-pieces, which extend across the frame D, as shown. Loosely placed upon this shaft at its inner end is a sliding frame, I, which frame is supported at its outer end in a horizontal position by having

its outer edge catch under a suitable stud, projection, or support, J, of any kind. Passing through this frame is a set-screw, stud, or projection, K, which catches in the screw-thread G, for the purpose of causing the frame to be moved endwise when the shaft is caused to revolve either in the stopping or starting of the car. This frame is cut away at its center, as shown, and in this cut-away part is placed the arm H, which is secured rigidly to the shaft. This sliding frame is caused to move back and forth upon the shaft and in relation to this arm for the purpose of acting as a stop to the shaft when it has made the required number of revolutions in either direction, and for the purpose of forming a lock, which is to protect the spring from any injury and to hold it at a proper tension. The spring L, which will be of any desired length and size, is secured to the shaft at one end and to the frame D at the other. This spring is always in a coiled condition, so as to exert its power in starting the car, and when the car is being stopped the whole power exerted in stopping the car is being used in coiling the spring to a still greater extent, so that all the power which is stored in the spring will be used in starting the car when the tension of the spring through suitable clutches is thrown upon the axle of the car. The shaft, in revolving either to wind the spring up or in unwinding to allow the power of the spring to be exerted in starting the car, moves the sliding frame, by means of the thread on its rear end, just far enough to have the pressure of the arm H transferred from one end of the opening in the frame to the other. Each end of the opening in the frame acts as a stop to the rotation of the shaft by catching against the arm which is secured to it. By this construction it will be seen that the spring can be wound and unwound only to a certain extent, which is regulated by the amount of movement that is allowed to the sliding frame.

The beveled wheel upon the front end of the shaft meshes with the two bevel-wheels Z of the clutches N O, which are loosely placed upon the axle, and which clutches are operated by the usual hand-wheels, P, which are secured to the upper ends of the shafts Q on the front end of the car, and to the lower end of each shaft is secured an arm or lever, R,

and to each arm or lever is fastened in any suitable manner a connecting-rod, S. The rear end of each connecting-rod is fastened to a bell-crank lever, T, which is connected to and operates one of the clutches. The clutch N consists of a block or arm, U, which is secured rigidly to the axle, and which has suitable projections, V, extending from its inner side, and which projections pass through the clutch-plate W. The clutch-plate slides freely back and forth upon these projections when moved by its bell-crank lever, and is by the projections compelled to revolve with the axle. Placed loosely upon the axle next to the clutch-plate is the wheel X, which has ratchet-teeth on that end which is next to the clutch-plate, and which is hollowed out in its other end and provided with internal ratchet-teeth for the dogs Y upon the hub of the beveled wheel Z to catch in. This wheel X, when the clutch-plate is in contact therewith, will turn freely upon the axle in one direction, but is prevented from turning in the other direction by the dogs Y on the hub of the wheel Z. When the clutch-plate is thrown into gear with this wheel X, the wheel and the beveled gear Z are both compelled to revolve with the axle when it is being turned backward; but when the axle is turning forward neither the wheel X nor the beveled gear is affected. The dogs Y are simply pivoted upon the hub of the wheel Z, and drop outward from their own gravity, so as to engage with the internal ratchet-teeth, and thus lock the wheel X and gear Z together. The other clutch consists of a clutch-plate, 1, which is provided with suitable projections, 2, which pass through the collar 3 into the beveled gear 4 when the clutch-plate is moved by its lever. When the projections 2 are made to pass through the openings in the wheel 4, the wheel is locked to the axle, so as to be compelled to revolve with it in the other direction. When the clutch-plate 1 is made to lock the gear 4 to the axle, as the axle revolves forward the shaft is made to wind up the spring and to cause the sliding frame to move endwise. If both of the clutch-plates are thrown into gear at the same time, then the direction in which the axle will turn is determined by which clutch is thrown out.

Pivoted upon the end of the car just to one side of the right-hand shaft, which operates the right-hand clutch, is pivoted a locking-plate, 5, which has its inner end to drop down behind the edge of the arm or lever by which the connecting-rod of the right-hand clutch is

moved, and thus lock this clutch in gear with the axle when it is revolving backward. Before the driver can throw this clutch out of gear so that the axle will revolve freely in either direction without affecting the clutch, he must raise this locking-plate 5, so that it will not interfere with the movement of the arm or lever. The clutch on the right hand is seldom used, as the one on the left is used almost exclusively.

Having thus described my invention, I claim—

1. A safety-lock for a car-starter, composed of an endwise-moving frame, a spring, a shaft which is provided with a worm-gear, and an arm on the shaft, a suitable means for supporting the outer end of the sliding frame in position, the sliding frame being cut away at its center, substantially as set forth.

2. The combination of the shaft provided with a beveled gear upon one of its ends, a suitable safety-lock connected to the shaft, a spring which is wrapped upon the shaft, the two clutches placed upon the axle, and the levers for operating them, substantially as specified.

3. The combination of the shaft having a bevel-wheel upon its front end with the two bevel-wheels on the axle, a clutch connected to each wheel, and an operating-lever for each clutch, substantially as shown.

4. The combination of the shaft provided with a bevel-wheel on one end, the two bevel-wheels on the axle, a clutch connected to each wheel, the crank-levers, connecting-rods, the levers for moving the crank-levers and clutches, and a device for locking one of the operating-levers in position.

5. In a car-starter, the combination of the axle, the bevel-wheel Z, carrying the dogs Y, the wheel X, recessed at one end and provided with teeth for the dogs to engage with, the clutch-plate W, an operating-lever, and a device, 5, for locking the operating-lever, substantially as set forth.

6. The combination of the shaft E, the bevel-wheel F, the bevel-wheel 4 on the axle, the clutch-plate 1, carrying projections 2, the sleeves 3, and the operating-lever, substantially as specified.

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

WILLIS H. JOHNSON.

Witnesses:

THOMAS S. MATHER,
JOSEPH VAN NATTAN.