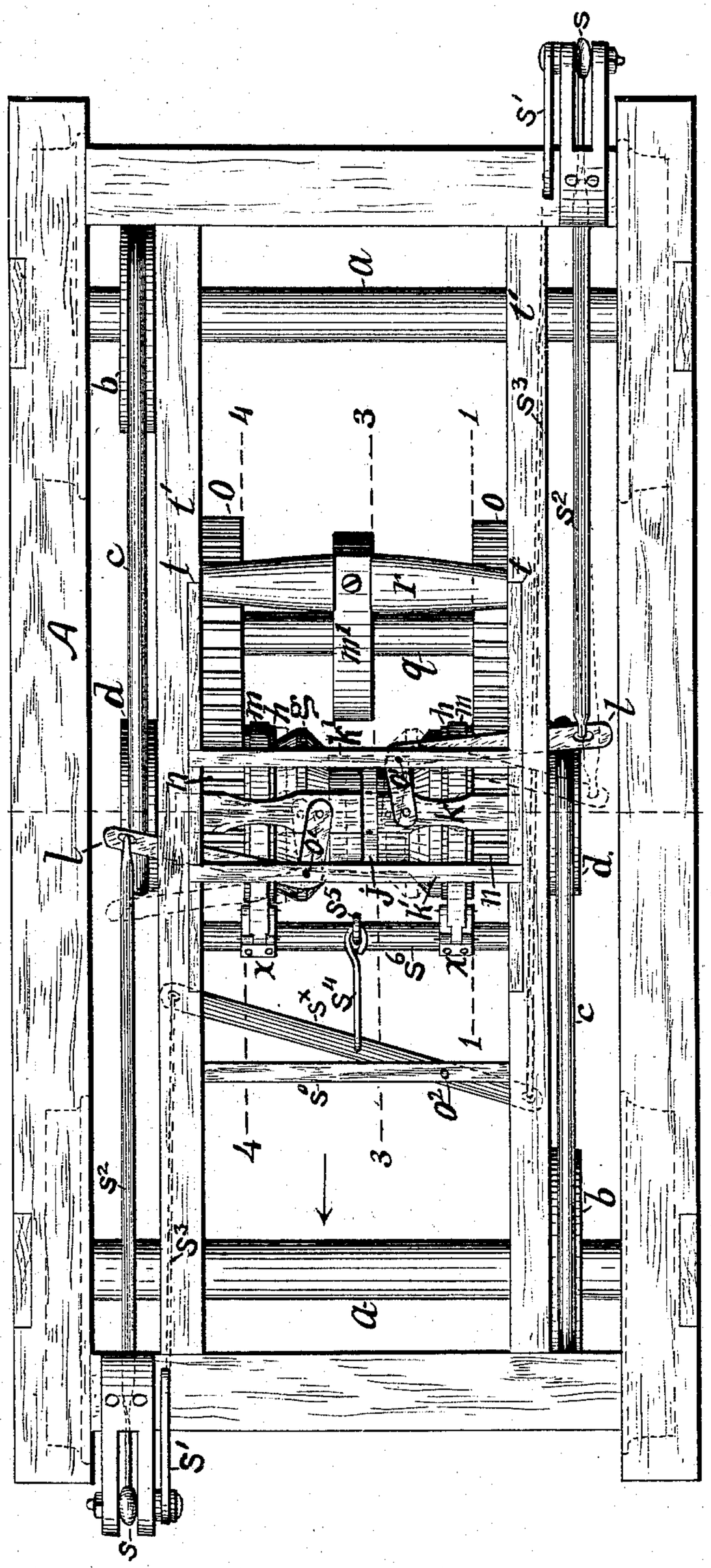
(No Model.) 3 Sheets—Sheet 1

C. P. WARNICK.

CAR STARTER.

No. 278,378. Patented May 29, 1883.

Fig. 1.



Witnesses:
C. E. Gaylord.
Charles Jahnke

Inventor:
Charles P. Warnick
By Wm. Zimmerman
Atty

(No Model.)

3 Sheets—Sheet 2.

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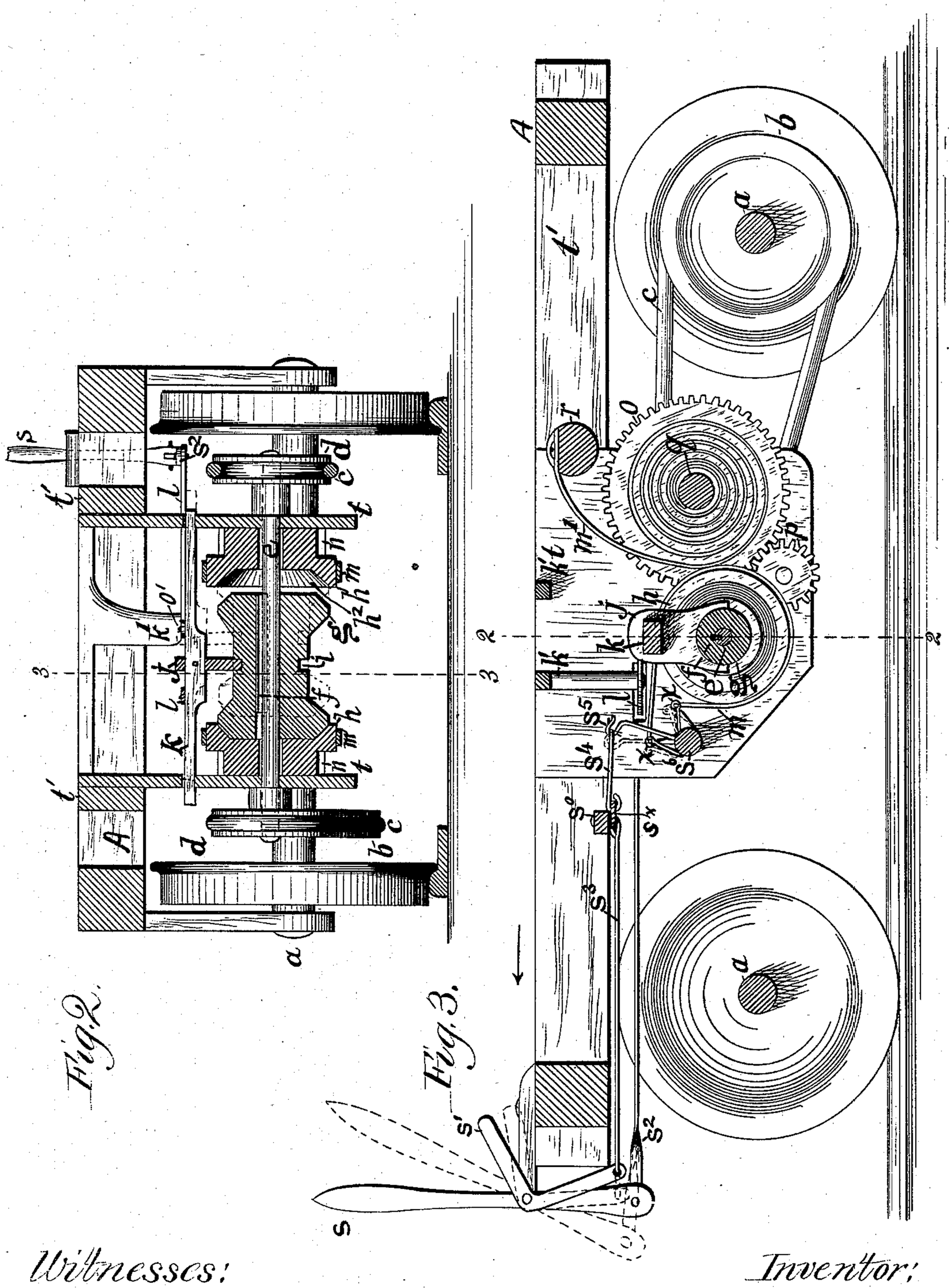

Witnesses:

C. E. Gaylord.

Charles Jahnke

Inventor:

Charles P. Warnick

By Wm Zimmerman

Atty

(No Model.) 3 Sheets—Sheet 3.

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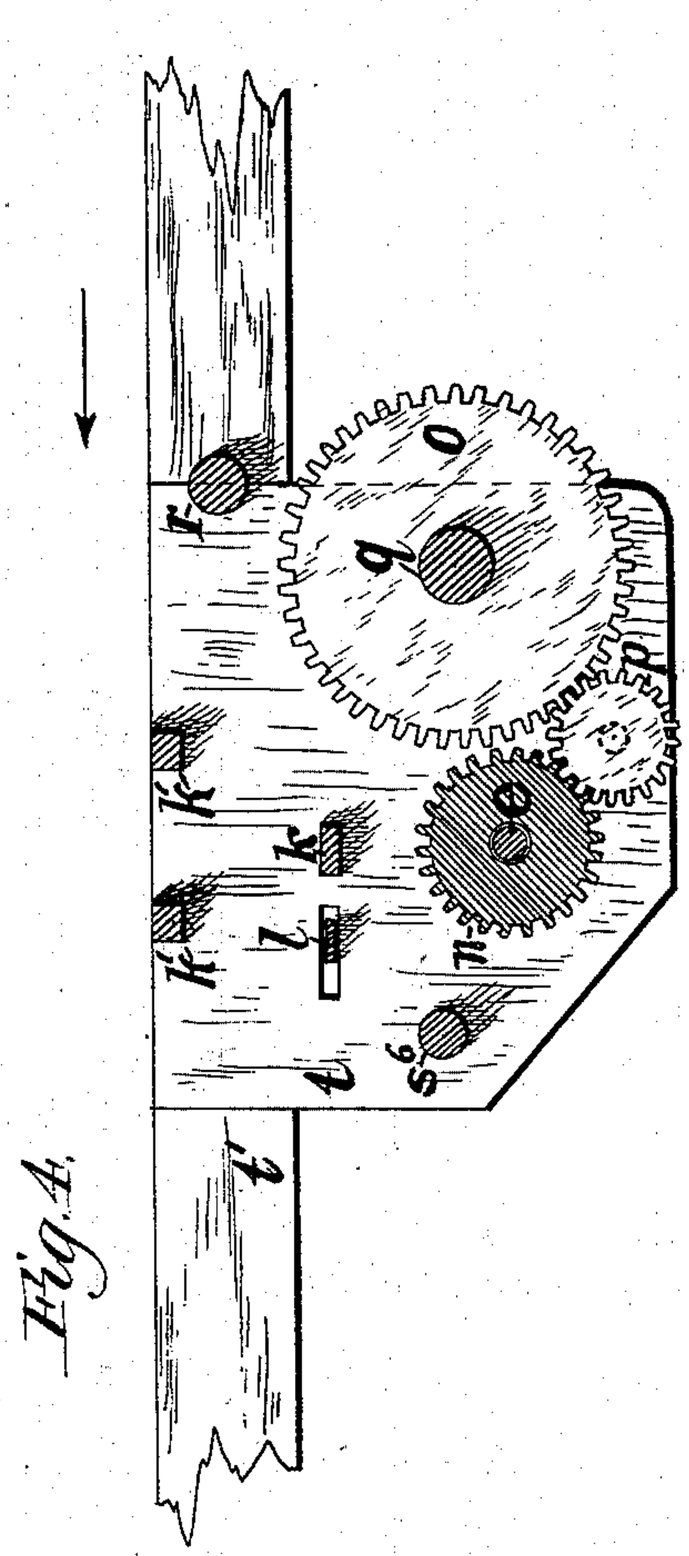

Fig. 4.

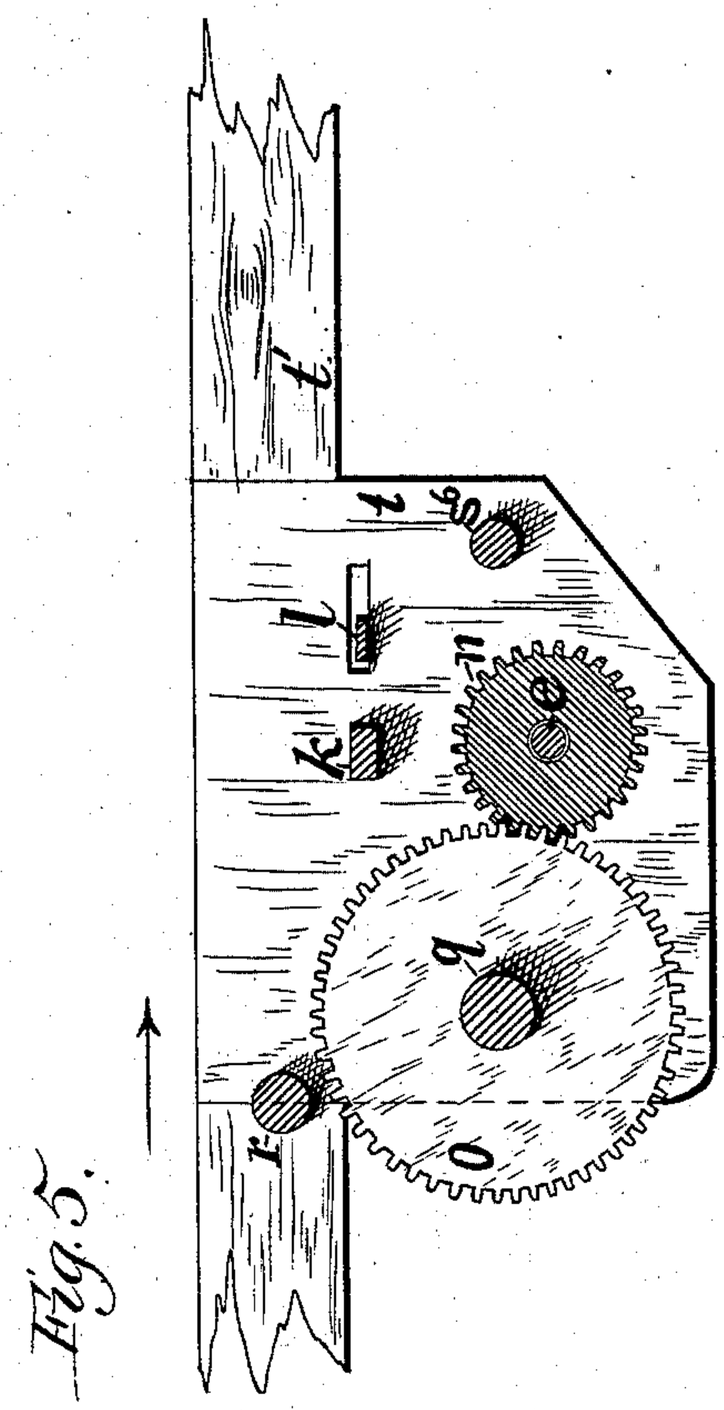

Fig. 5.

Witnesses:
C. E. Gaylord.
Charles Jahnke

Inventor:
Charles P. Warnick
By Wm. Zimerman.
Atty

UNITED STATES PATENT OFFICE.

CHARLES P. WARNICK, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO CHARLES JAHNKE, OF SAME PLACE.

CAR-STARTER.

SPECIFICATION forming part of Letters Patent No. 278,378, dated May 29, 1883.

Application filed February 24, 1883. (No model.)

To all whom it may concern:

Be it known that I, CHARLES P. WARNICK, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Car-Starters; and I hereby declare the following to be a full, clear, and exact description thereof, which will enable others skilled in the art to which my invention relates to make and use the same, reference being had to the accompanying drawings, forming a part hereof, and in which—

Figure 1 represents a plan view of the mechanism attached to the frame of a car. Fig. 2 represents a sectional view taken on the line 2 2 of Fig. 1, looking forward or toward the lever $s^{\times}$. Fig. 3 is a sectional elevation taken on the line 3 3 of Fig. 1, including the parts above or on the side with the spring m'. Fig. 4 represents a side elevation of the gearing lying beyond or on the outside of the line 4 4. Fig. 5 represents a side elevation of the gearing lying beyond or on the outside of the line 1 1.

Like letters of reference indicate like parts.

In the drawings, A represents the car-frame, and a the two axles of the car, to each of which is attached a pulley, b, connected by a drive chain or belt, c, to the pulleys d, one on each end of the shaft e. All of said pulleys are firmly attached to their axles. The shaft e is carried and turns freely in hangers t, attached to stringers t', which are attached to the car-frame. Upon the axle e, just inside the hangers t, are pinions n, loose upon the shaft, and to said pinions are attached or cast with them smooth-faced pulleys h, one side of which is formed into a conically-shaped recess, h^2, into which fits a corresponding-shaped conical end of a drum, g. Said drum is also loose upon the shaft e; but its bearing is grooved and fits and works longitudinally on a feather, f, attached to the axle e. In the center of said drum g is a groove, i, around its exterior. Into said groove fits a rider, j, attached to and carried by the bar k, the ends of which rest in holes cut through the hangers t, and to the bar k are attached bell-crank levers l, turning on pins o', which are fastened to the bars k'. The long ends of said levers play in slots of the supports t and pass outside of them, and to said ends are then attached rods s^2, one passing to the forward and one to the rear end of the car and attached to levers s. Around the pulleys h pass iron straps m, which have spring enough, when released, to stand away free from said pulley. The ends of said straps are attached at $x\ x$ to a rocking shaft, s^6. From said shaft rises a lever, s^5, to which is attached a link, s^4, connecting lever s^5 with lever $s^{\times}$. Lever $s^{\times}$ is pivoted at o, and its ends extend out so as to connect with rods s^3, uniting each of its ends with a bell-crank lever, s', at each end of the car. On each end of a shaft, q, are wheels o, carried on the hangers t. Said wheels are in line with the pinions n. The one on the right-hand side looking forward or toward the lever s in Fig. 3 does not mesh directly with the pinion n, but has an intermediate, p, as shown in Fig. 4, while in Fig. 5 the wheel o meshes directly with the pinion n. The shaft r turns in its bearings and has attached to it a spring, m', of which its other end is attached to and is arranged to wind around the shaft q.

The operation of my improved car-starter is as follows, viz: When the car is running, as indicated by the arrows, the drum g revolves between and free from both pulleys h, the drive-chains c causing it to revolve in the same direction as the wheels, the pinions n and pulleys h being at rest on the shaft e. When it is desired to stop the car, the lever s is pulled back into the position shown dotted, when the drum g will enter the recess h^2, and by its friction cause the wheels $n\ o\ p$, as shown in this case, to revolve, the wheel o revolving in the opposite direction to the wheels $d\ b$ by means of the intermediate p, and thereby wind the spring m' on the shaft q, and which, by the resistance of the spring, causes the car to retard and finally stop its motion. When the car is at rest or the spring wound up, the brakeman puts his foot upon the bell-crank lever s' and presses it down. This operation turns the shaft s^6, and thereby draws the brake-straps m upon the pulleys h, and thus holds them securely from turning. After the said pulleys are so held the lever s is released or pushed outward with force whenever it is desired to start the car, and thereby the drum g is thrown into the opposite pulley h, in this case on the left-hand side, looking forward, or on the same side as is shown in Fig. 5, which has but two gears, $n\ o$, and the lever s' is then released, which releases the brakes m. The

full force of the wound-up spring is now free to act, and which then turns the gears *n o*, and through them the drum *g*, and thereby pulleys *d b*, and thus starts the car forward. It is evident that if the car is drawn in the opposite direction the motion of the mechanism would be reversed, the drum *g* would by the lever *s* be drawn into the opposite socket, h^2, and thereby wind up the spring, and the car would be started by the opposite gear, provided with its intermediate *p*. The drum *g* is now shown in Fig. 2 in its socket ready to start a car. The spring is supposed to be wound up.

Some of the elements in which my device is more desirable are—

First. That the lever *s* is always pulled in the same direction with the reins of the horses, and consequently, in cases of danger, the driver would never be liable to get confused, but would at once, and almost unconsciously, perform his duty correctly. It is well known that two different or discordant acts required to be done at the same time are very difficult to do, and in case of a horse-car suddenly coming in danger and requiring the prompt action of the driver, to pull the reins backward with one hand and with the other to turn a crank or pull a lever forward or sidewise are very apt to produce confusion and result in danger, which my contrivance is sure to prevent.

Second. The gearing which is operated through the spring to start the car is not in motion except at the moment of stopping and starting the car. At all other times it is at rest.

Third. The power of the spring is under the complete control of the driver. He may release only a part of its force, as it might be required at one place and the remainder at another, or all at once, and without any danger whatever to the machinery.

What I claim is—

1. The pulleys *b* upon the front and rear axles, driving-pulleys *d*, fixed to feathered shaft *e*, drum *g*, gears *n o* and *n o p*, spring *m'*, drum or shaft *q*, and mechanism to hold and release said gears and shift said drum, said gears actuated by the drive-chain *c* and spring *m'*, substantially as specified.

2. The levers *s*, *s'*, and *l*, drum *g*, and straps *m*, with the pulleys *h*, gears *n o* and *n o p*, spring *m'*, feathered shaft *e*, and pulleys *d d b b*, substantially as specified.

3. The levers *s s' l*, rider *j*, shifting drum *g* on feathered shaft *e*, straps *m*, pulleys *h*, gears *n o* and *n o p*, pulleys *d d b b*, and drive-chain *c*, substantially as specified.

4. The feathered shaft *e*, drum *g*, rider *j*, bar *k*, levers $l\ s^{\times}$, rods $s^2\ s^3$, parts $s^4\ s^5\ s^6$, straps *m*, pulleys *h*, gears *n o* and *n o p*, spring *m'*, and pulleys *d d b b* and drive-chain *c*, substantially as specified.

5. The levers *s*, with mechanism to shift the drum *g* upon its feathered axis, chain *c*, and pulleys *b d*, in combination with friction-pulleys *h*, brake-straps *m*, and gears *n o* and *n o p*, arranged to wind a spring, *m'*, which when wound and the drum shifted into an opposite pulley *h*, it shall receive the force of the spring *m'*, and through said gearing actuate the car in the direction it first moved, substantially as specified.

CHARLES P. WARNICK.

Witnesses:
WM. ZIMMERMAN,
CHARLES JAHNKE.