

(No Model.)

C. SMITH.

ICE BREAKER AND ELECTRIC CURRENT TRANSMITTER.

No. 463,257.

Patented Nov. 17, 1891.

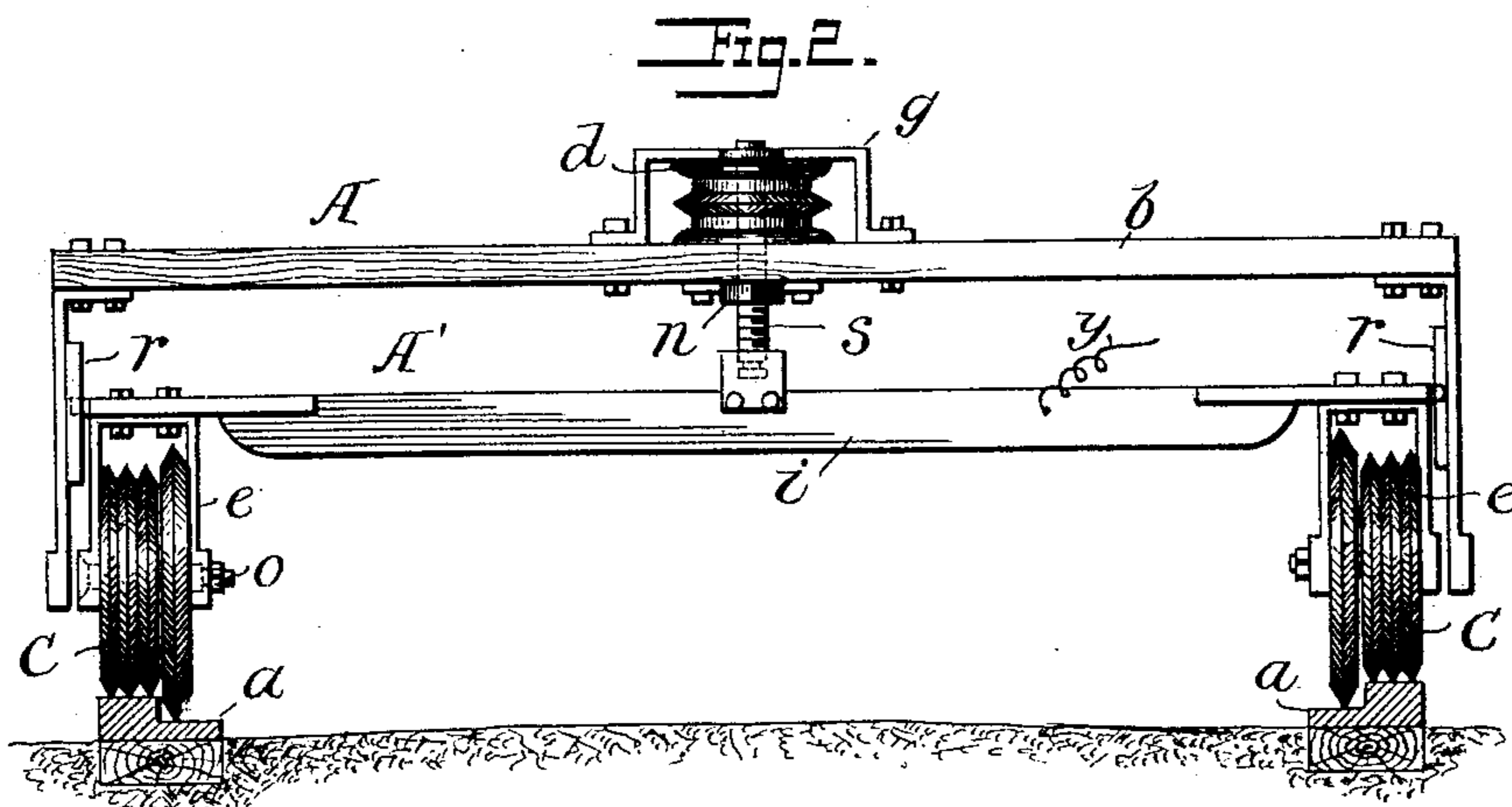
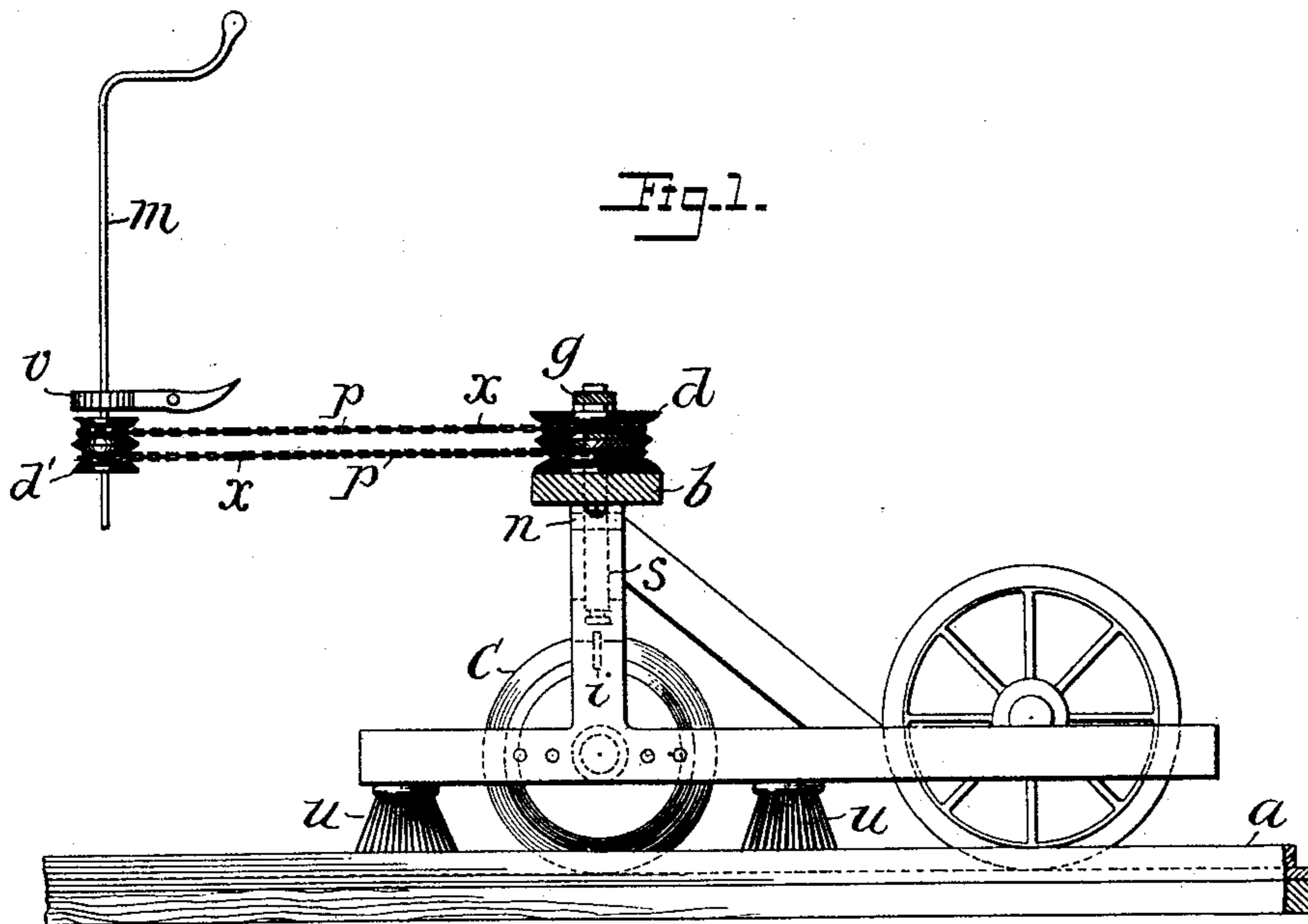
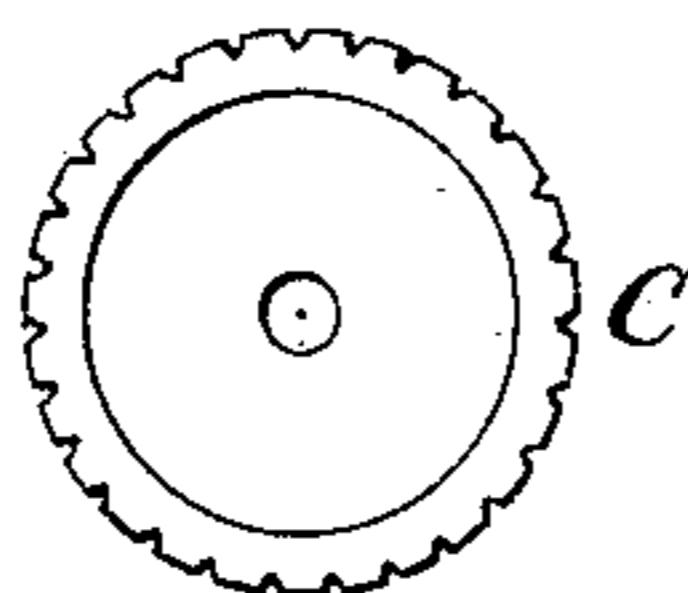


Fig. 3.



WITNESSES

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CHARLES SMITH, OF WILKES-BARRÉ, PENNSYLVANIA.

ICE-BREAKER AND ELECTRIC-CURRENT TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 463,257, dated November 17, 1891.

Application filed January 31, 1891. Serial No. 379,849. (No model.)

To all whom it may concern:

Be it known that I, CHARLES SMITH, a citizen of the United States, residing at Wilkes-Barré, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Ice-Breakers and Electric-Current Transmitters, of which the following is a specification.

My invention relates to an ice-breaker and electric-current transmitter; and it consists in improved devices for cutting and clearing ice, snow, and dirt from railway and tramway tracks and for making electrical contact with the rails when the car-wheels or other usual transmitters are prevented from acting by reason of ice or snow.

In the accompanying drawings, in which like reference-letters indicate like parts throughout, Figure 1 is a side view of a portion of a car-frame having my improvements embodied therewith. Fig. 2 is a front view of the same, the brushes being removed to show the cutters, and Fig. 3 is a view of a modified form of cutter.

In the operation of that class of electric railways in which the current passes from the motors upon the cars through the running-gear and rails back to its source electrical contact between the wheels and rails is often rendered imperfect or entirely broken by reason of the rails being coated with ice, snow, or dirt, thus interfering with the running of the cars. My present invention is in part intended to overcome these obstructions by providing a contact device which is always available, and which, moreover, is adapted to break up and remove foreign substances from the rails.

To the car-frame A, which may be of ordinary construction, is connected a supplemental frame A', carrying the cutting and contact devices. The frame A' is connected to the main frame A adjustably, so as to permit of its being raised and lowered, and the adjusting means is preferably connected to a hand shaft or lever upon the platform within reach of the car-driver or motor-man.

The cutting and contact device proper consists of one or more disks c, having reduced edges adapted to cut through ice or other foreign substances when pressed down upon the rails. The edges of these disks, which I

will hereinafter denominate "cutting-edges," should be more or less sharp and may be either plain or serrated, as shown in Fig. 3. One or more of the disks may be used; but I preferably use a group of several disks for each rail and make them of different diameters to suit the configuration of the upper face of the rail. These disks, which are preferably made of steel, are revolvably mounted upon the supplemental frame, so that when lowered they revolve or run upon the rails, thus bringing their entire circumferences into action. In combination with these disks I prefer to use brushes u, one in front of the cutting device to clear away loose material and another in the rear of it to clear from the rail the material which is broken up by the cutters. These brushes may be connected to the main frame of the car or to the supplemental frame carrying the cutters, as desired.

In the drawings I have illustrated one form of construction which embodies my invention and which I will now describe in detail. The disks c are mounted and free to revolve upon a bolt or axle o, which connects the lower ends of the arms of a saddle-piece e. The axle o is made readily detachable, so that the cutters may be taken out to be sharpened or replaced by new ones. The saddles e are bolted to a beam i and this beam at its middle point is swiveled to a spindle s, which is threaded into a fixed nut n upon the transverse piece b of the main frame of the car. The upper end of the spindle, which is plain, is guided by a saddle-piece g, through which it passes, and a drum v, which is confined within the saddle, is mounted upon the spindle. The spindle is free to slide longitudinally within the drum, but turns with it by means of a feather-and-groove connection. The drum d is connected to a drum d' upon an upright hand-shaft m on the car-platform by means of chains or ropes p. The shaft m is provided with the usual hand-crank at its upper end and has a locking device v, composed of a toothed wheel and latch, for locking it in any desired position.

The frame A' is made of metal and electrically connected with the car-motor through any suitable medium—as, for instance, through the wire y. Between the frame A' and the hand-shaft m is interposed a non-conductor to prevent the current from being com-

communicated to the platform. This may be accomplished by inserting links x of non-conducting material in the chain p or otherwise. To prevent the supplemental frame from turning upon the spindle s , thereby throwing the cutters off the rails, I connect it in any suitable manner to the main frame. As shown, the beam i is extended beyond the saddles e and guided vertically by ribs r , attached to upright portions of the main frame.

In operation the cutters are usually elevated above the rails. When, however, the current fails to pass through the wheels to the rails in the ordinary manner, the cutters are lowered by means of a hand-shaft and spindle s , being pressed down with more or less force, as the occasion requires. When the tracks are covered with ice, the cutters must be screwed down, so as to support a considerable portion of the weight of the car, while with snow, sand, or other light material a moderate pressure will suffice to make a good contact with the rails.

It will be obvious that the construction of the supplemental frame, the manner of connecting it to the main frame, and the means for raising and lowering it, may be varied to a considerable extent without departing from the spirit of my invention.

Various means for communicating motion from the hand-shaft to the drum d might be substituted for the devices shown; or the hand-shaft and drum might be omitted and the supplemental frame adjusted by a simple lever extending to the platform. I prefer, however, to use adjusting devices, substantially as shown.

Without limiting myself to the precise construction and arrangement of parts shown and described, I claim—

1. The combination, with a car and its running-gear, of a current-transmitter and ice-breaker consisting of a revoluble disk having a cutting-edge connected to the frame of the car and means for adjusting said disk vertically, substantially as described.

2. The combination, with a car and its run-

ning-gear, of a current-transmitter and ice-breaker consisting of a group of revoluble disks having cutting-edges and mounted upon a common axis and means for adjusting said disks vertically, substantially as described.

3. The combination, with the car and its running-gear, of a current-transmitter and ice-breaker consisting of a group of revoluble disks mounted upon a common axis and means for adjusting said disks vertically, said disks varying in diameter to correspond with the configuration of the rail, substantially as described.

4. The combination, with the car-frame and its running-gear, of a current-transmitter and ice-breaker consisting of a supplemental frame carrying revoluble ice-cutting disks and means for adjusting said supplemental frame vertically, substantially as described.

5. The combination, with the car and its running-gear, of a current-transmitter and ice-breaker consisting of the vertically adjustable cutting-disks and the brushes arranged in front of and behind said disks, substantially as described.

6. In a car, in combination with the main frame thereof, the supplemental frame comprising the beam i , and the saddles connected to the beam, the cutting-disks revolubly mounted in the saddles, and means for raising and lowering the supplemental frame, substantially as described.

7. In a car, in combination with the main frame thereof, the supplemental frame carrying the cutting-disks, the spindle swiveled to said frame and provided with threads engaging a nut upon the main frame, the hand-shaft upon the platform, and connections between the hand-shaft and the spindle, substantially as described.

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

CHARLES SMITH.

Witnesses:

E. D. NICHOLS,
H. D. PATTON.