

No. 668,931.

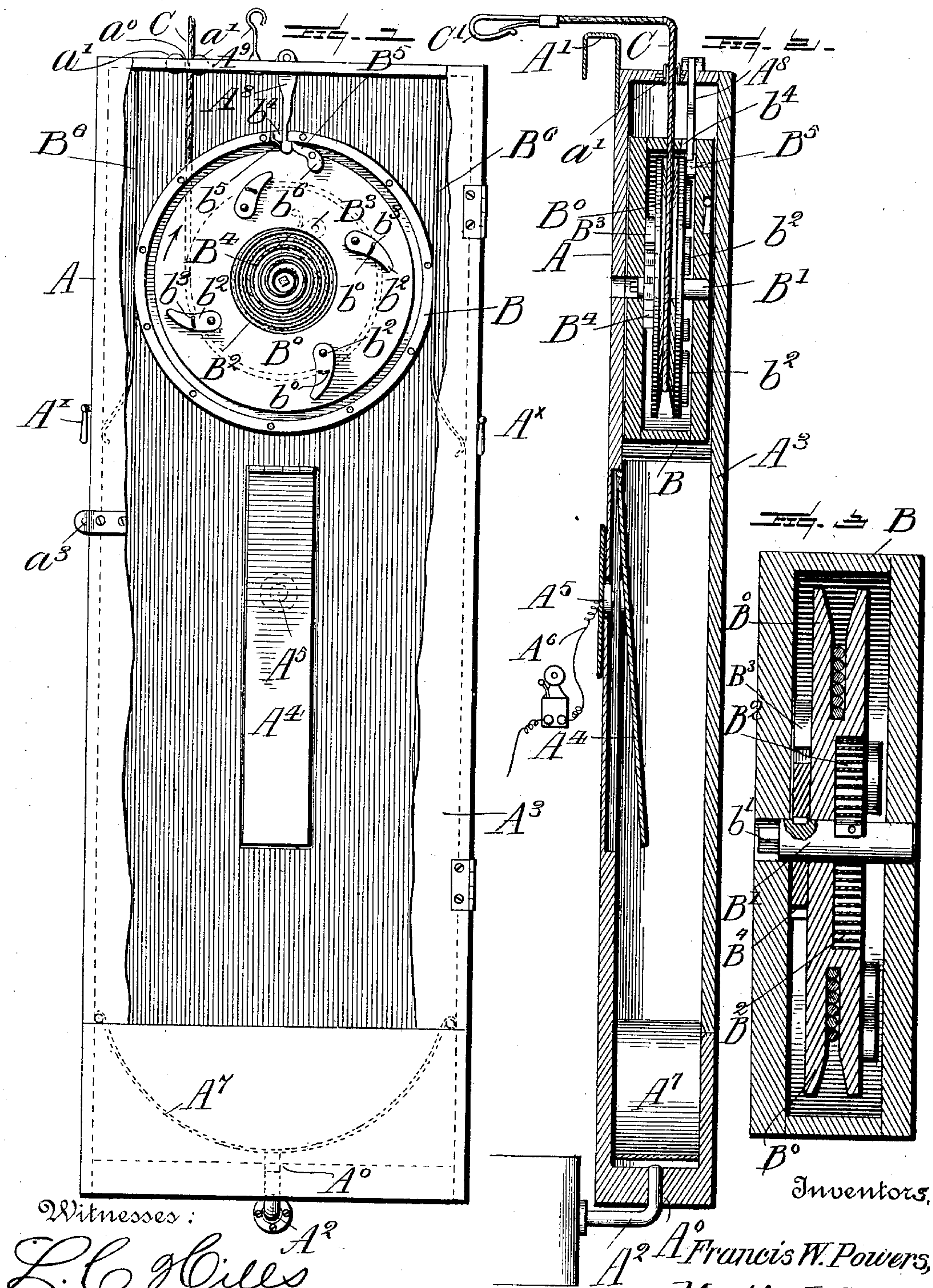
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F. W. POWERS & M. L. SNYDER.

TROLLEY CATCHER.

(No Model.)

(Application filed Jan. 8, 1900.)



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UNITED STATES PATENT OFFICE.

FRANCIS W. POWERS AND MARTIN L. SNYDER, OF WEST LAFAYETTE,
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TROLLEY-CATCHER.

SPECIFICATION forming part of Letters Patent No. 668,931, dated February 26, 1901.

Application filed January 8, 1900. Serial No. 752. (No model.)

To all whom it may concern:

Be it known that we, FRANCIS W. POWERS and MARTIN L. SNYDER, citizens of the United States, residing at West Lafayette, in the
5 county of Tippecanoe and State of Indiana, have invented certain new and useful Improvements in Trolley-Catchers; and we do hereby declare the following to be a full, clear, and exact description of the invention, such
10 as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to improvements in devices for catching and holding the rope of a trolley upon an electric car or similar vehicle; and it has for its object to provide an
15 apparatus which will take up all the slack in a trolley-rope and will arrest the upward movement of the trolley-pole and draw the same down to a place of safety should the
20 roller thereon fly off of the wire, at the same time giving an alarm to the conductor or motorman.

Our invention consists in the novel devices hereinafter described and claimed.

25 Reference is to be had to the accompanying drawings, wherein the same parts are indicated by the same letters throughout the several views.

Figure 1 represents an elevation of our apparatus, one wall thereof, shown as being in the nature of a door, being broken away to show the interior arrangement. Fig. 2 is a
30 central vertical section taken on the line through the box or case containing the operating mechanism, showing parts in edge elevation and looking to the right in Fig. 1; and Fig. 3 is an enlarged central vertical section
35 through the case and the spring-controlled pulley mounted therein.

40 A represents a box or case provided with hooks A', only one of which is shown in Fig. 2, by means of which the said case may be suspended from the dashboard of a car and provided with an opening A⁰ in its bottom for the reception of a stud or projection A², which
45 is attached to the bumper or other suitable portion of the car. The box or case A is provided with a door or lid A³, hinged at one vertical side thereof and provided with a suitable catch a³ at the other vertical side thereof, as shown in Fig. 1. This door allows ac-

cess to the interior of the box for adjusting the weighted reel therein. At the rear wall of the box a plate or strip A⁴ is hinged at its upper end in a suspended position and capable of a swinging movement to or from the inner side of the rear wall of the box. A push-button A⁵ in an electric circuit is fixed to the dashboard of the car and projects through an opening in the rear wall of the box in such position that as the hinged plate A⁴ is forced against the rear wall the box or electric button is caused to close an electric current through a wire, one end of which is indicated at A⁶ in Fig. 2. It is intended that
55 a bell, suitably arranged upon the car in such position as to be conveniently heard by the motorman, shall also be placed in the same circuit as the push-button A⁵ to give an alarm when the said push-button closes the circuit, under conditions hereinafter to be explained.
60 65 70

In the lower portion of the box is a yielding cushion or cradle A⁷, (indicated by dotted lines in Fig. 1,) the purpose of this being to break the fall of the weighted reel, as hereinafter described. Within the upper portion of the box is suspended a pivoted hook or detent A⁸, and upon the upper end of the box A is fixed a rigid hook A⁹, to which the trolley-rope may be attached when desired under
75 80 some conditions. The box A may also be provided with handles A^x, by means of which it may be carried from place to place or from one end of the car to the other. The upper wall of the case is provided with an opening
85 at a⁰, which is preferably fitted with bearing-rollers a' for the cord, chain, or band C, which passes therethrough, as hereinafter described. This cord is preferably provided with a hook C' or other suitable device, by means of which
90 the cord C may be readily connected to the trolley-rope.

B represents a cylindrical case, preferably of metal or other heavy material, so as to give the same sufficient weight for the purposes
95 required, and within this case is mounted a grooved pulley B⁰ upon a shaft or spindle B', journaled centrally of the said case. One end of the said shaft or spindle B' is preferably squared, as at b', for the engagement of a wrench for turning the same when desired,
100 as hereinafter described. A coiled spring B²,

mounted concentrically of said shaft and said pulley, has one end attached to the said shaft and the other end attached to the said pulley, the pulley being rotatable about the said shaft. Upon one face of the said pulley are mounted a series of pivoted pawls b^2 , the said pawls having a limited throw by reason of pins b^3 , fixed upon the face of the pulley and engaging in slots b^0 in the said pawls, as seen most clearly in Fig. 1. These pawls are pivoted loosely to the pulley and will as the pulley rotates at a moderate speed fall back and forth to the limit allowed by the pins b^3 or should the pulley be rotated rapidly will by reason of centrifugal force have their points thrown outwardly toward the periphery of the pulley, as will be readily understood.

A spring-pressed pawl B^3 , fixed to the case B, engages a ratchet-wheel B^4 on the shaft B' , as indicated by dotted lines in Fig. 1, the object of this ratchet-and-pawl arrangement being to prevent the rotation of the shaft B' under the tension of the spring B^2 and yet to allow the tension upon the said spring to be increased by rotation of the said shaft by means of a wrench, as hereinbefore described, when desired. The cord C, which passes through the opening a^0 in the box A, is secured at one end to the pulley and has several turns around the said pulley.

At a suitable point in the cylindrical wall of the circular case B is an opening b^4 , at one side of which is fixed a flat spring b^5 . This opening is arranged to receive the hooked end of the pivoted detent A^8 , suspended from the upper wall of the box A, as seen in Figs. 1 and 2, and the spring b^5 is arranged to bear upon the rear of the said hook and hold the same in engagement with the wall of the case at one edge of the opening, as seen in Fig. 1.

A pawl B^5 is pivoted to the inner wall of the case B in such position that its point will bear against the front side of the point of the hook A^8 when the latter is in engagement with the opening b^4 in the case B. This pawl B^5 has a weighted rear end b^6 , so balanced with respect to the point thereof that the latter will bear but slightly, if at all, upon the hook under normal conditions. This weighted end b^6 of the pawl B^5 is arranged in such position near the path of rotation of the pivoted pawls b^2 on the said pulley that as the said pawls b^2 pass the pawl B^5 , which is stationary when the pulley is rotated slowly, the pawls b^2 will not strike the pawl B^5 ; but when the pawls b^2 fly out by centrifugal force as the pulley is rapidly rotated the points of the said pawls will strike the weighted end of the pawl B^5 and will cause the point of the said pawl B^5 to bear upon the front side of the point of the detent A^8 and cause a disengagement of the detent from the opening b^4 in the case B. This disengagement of the detent A^8 removes the main support from the weighted case B, and the latter, with its connections, will fall to the bottom of the box A.

The tension upon the spring should be

strong enough to prevent slacking or sagging of the trolley-rope, and yet not so strong as to interfere with the proper working of the trolley. In the ordinary rising and falling of the trolley pole and rope the pawls b^2 will fall toward the center of the pulley as they approach the top thereof at each revolution, whether backward or forward, and will therefore pass under the weighted end of the fixed pivoted pawl B^5 ; but if the trolley flies off the wire or from any cause rises with unusual rapidity this will cause a rapid rotation of the pulley and will cause the points of the pawls b^2 to fly outward toward the periphery of the pulley to such an extent that their path of rotation will be intercepted by the weighted end b^6 of the pawl B^5 , which, acting upon the end of the detent, causes the disengagement thereof and the falling of the weighted case B. This falling of the weighted case B draws the cord C and the trolley-pole down sufficient to get the trolley-pole out of possible contact with the trolley-arms. At the time that the weighted case B falls the pivoted plate A^4 is forced against the rear wall of the box A and the push-button A^5 is operated, closing the circuit through the wires A^6 and ringing the bell (not shown) for giving the alarm to the motorman or conductor. The weight of the case B should be greater than the spring of the trolley-pole can support, so that it will draw down the swinging end of the trolley-pole to a point of safety and will retain it in this position until readjusted by the motorman or conductor. As the weighted case B falls the pulley therein is held against rotation by the engagement of the point of one of the pawls b^2 with the weighted end b^6 of the pawl B^5 , which is pivoted upon the inner side of the inclosing box A. Thus the same action of the same pawl b^2 which releases the weighted case from the detent A^8 also locks the pulley against rotation. The cushion A^7 in the bottom of the box A serves to break the fall of the weighted case B and prevent such a jarring as would be likely to break or injure any of the parts of the mechanism.

A pair of spring retaining devices B^6 are preferably fixed in the upper portion of the box A in position to bear against opposite points on the periphery of the case B to prevent rattling of the same and to retain said case in a normal position irrespective of the lateral inclination of the car when turning a curve. To readjust the weighted case in the upper portion of the box A, it is merely necessary to open the door A^3 and raise the said case B until the detent A^8 engages in the upper opening therein, when it will be suspended by the said detent and the parts will be in position for use again.

Having thus described our invention, what we claim, and desire to secure by Letters Patent of the United States, is—

1. In a trolley-catcher, the combination with an elongated vertical inclosing case and a swinging hook or detent suspended in the

upper portion thereof; of a hollow weighted case provided with means for engaging said hook or detent by means of which it may be suspended in said elongated case; a pulley
5 mounted in said weighted case; a spring, and means for holding the same under tension connected to said pulley; a cord passing over said pulley; and means operated by the rapid rotation of said pulley for causing the dis-
10 engagement of the hook from the inclosing weighted case, substantially as described.

2. In a trolley - catcher, the combination with a vertical elongated case, and a hook or detent suspended in its upper portion; of a
15 hollow weighted case provided with an opening through one side for the passage of the point of said hook or detent; a spring arranged to bear on the rear of said hook or detent when in engagement with said opening
20 in the weighted case; a spring-controlled pulley journaled in said case; pivoted dogs on one face of said pulley; and a dog pivoted to the interior wall of said weighted case, said dog having one point arranged to bear
25 upon the forward side of the said hook and arranged to be struck by one of the dogs on said pulley when the latter are caused to fly outwardly by the rapid rotation of the pulley, and to disengage the point of said hook
30 from the said weighted case, substantially as described.

3. In a trolley - catcher, the combination with an elongated vertical inclosing case and a swinging hook or detent suspended in the
35 upper portion thereof; of a hollow weighted case provided with means for engaging said hook or detent by means of which it may be suspended in said elongated case; a pulley mounted in said weighted case; a spring, and
40 means for holding the same under tension connected to said pulley; a cord passing over said pulley; a dog pivoted to the interior of the said weighted case and arranged to engage the end of the hook or detent; and a system
45 of pivoted dogs carried by the said pulley arranged to be thrown into position for engagement with said pivoted dog by centrifugal force due to rotation of the pulley beyond
50 ordinary speed in the operation of the device, and thereby causing a disengagement of the hook or detent, substantially as described.

4. In a trolley - catcher, the combination with an elongated vertical inclosing case and a swinging hook or detent suspended in the
55 upper portion thereof; of a hollow weighted case provided with means for engaging said hook or detent by means of which it may be suspended in said elongated case; a pulley mounted in said weighted case; a spring,
60 and means for holding the same under tension connected to said pulley; a contact device in an alarm-circuit, operated by the falling of said weighted case; and means operated by the rapid rotation of said pulley for

causing the disengagement of the hook from 65 the inclosing weighted case, substantially as described.

5. In a trolley - catcher, the combination with a vertical elongated case, and a hook or detent suspended in its upper portion; of a
70 hollow weighted case provided with an opening through one side for the passage of the point of said hook or detent; a spring arranged to bear on the rear of said hook or detent when in engagement with said opening
75 in the weighted case; a spring-controlled pulley journaled in said case; pivoted dogs on one face of said pulley; a dog pivoted to the interior wall of said weighted case, said dog having one point arranged to bear upon
80 the forward side of the said hook and arranged to be struck by one of the dogs on said pulley when the latter are caused to fly outwardly by the rapid rotation of the pulley, and to disengage the point of said hook from the
85 said weighted case, and a contact device in an alarm-circuit, operated by the falling of said weighted case, substantially as described.

6. In a trolley - catcher, the combination with an elongated vertical inclosing case and
90 a swinging hook or detent suspended in the upper portion thereof; of a hollow weighted case provided with means for engaging said hook or detent by means of which it may be suspended in said elongated case; a pulley
95 mounted in said weighted case; a spring, and means for holding the same under tension connected to said pulley; a cord passing over said pulley; a dog pivoted to the interior of the said weighted case and arranged to en-
100 gage the end of the hook or detent; a system of pivoted dogs carried by the said pulley arranged to be thrown into position for engagement with said pivoted dog by centrifugal force due to rotation of the pulley beyond
105 ordinary speed in the operation of the device, and thereby causing a disengagement of the hook or detent; and a contact device in an alarm-circuit, operated by the falling of said weighted case, substantially as described. 110

7. In a trolley-catcher of the character described, the combination with a weighted case, a spring-controlled pulley within said case to which the trolley-rope is connected; means for suspending said case and means
115 for releasing the same under the rapid rotation of said pulley, and means for sounding an alarm operated by the falling of said weighted case upon being released, substantially as described. 120

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

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Witnesses:

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