(No Model.)

F. G. STALLMAN.

MECHANISM FOR DEPRESSING CABLES AT CROSSINGS OF CABLE RAILROADS.

No. 420,550. Patented Feb. 4, 1890.

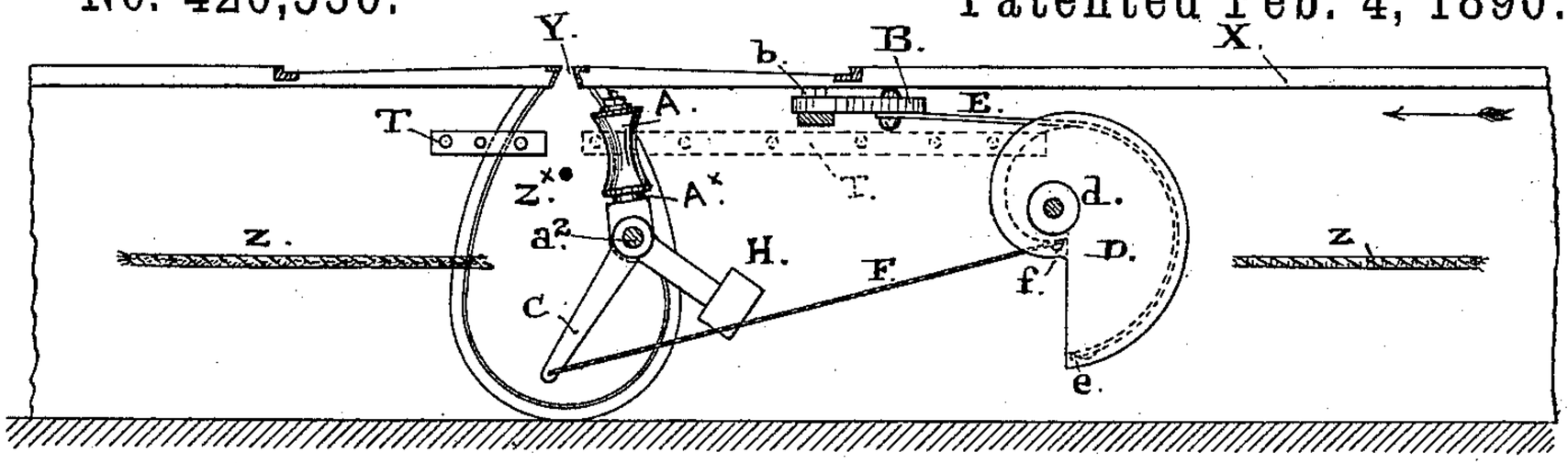

Fig. 1.

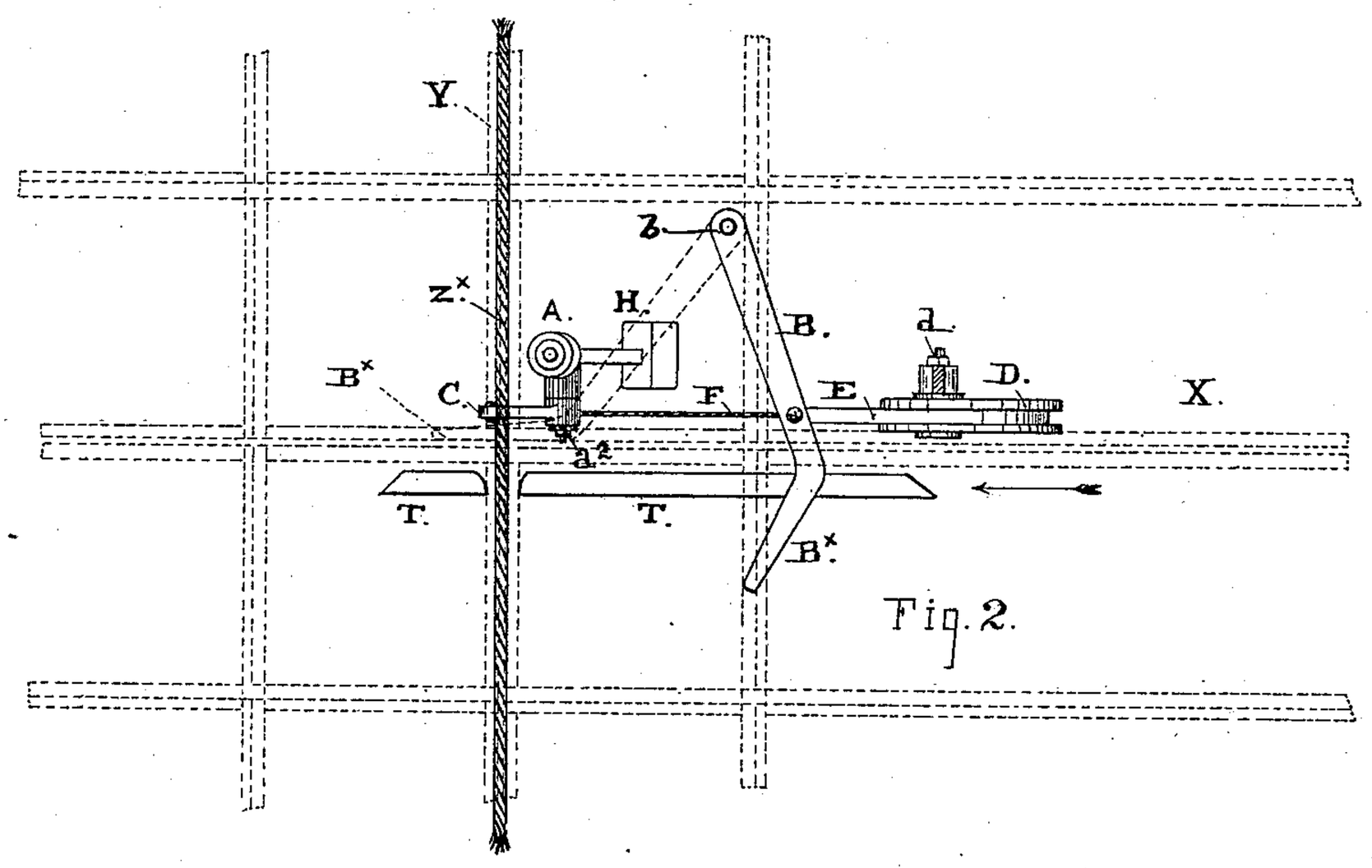

Fig. 2.

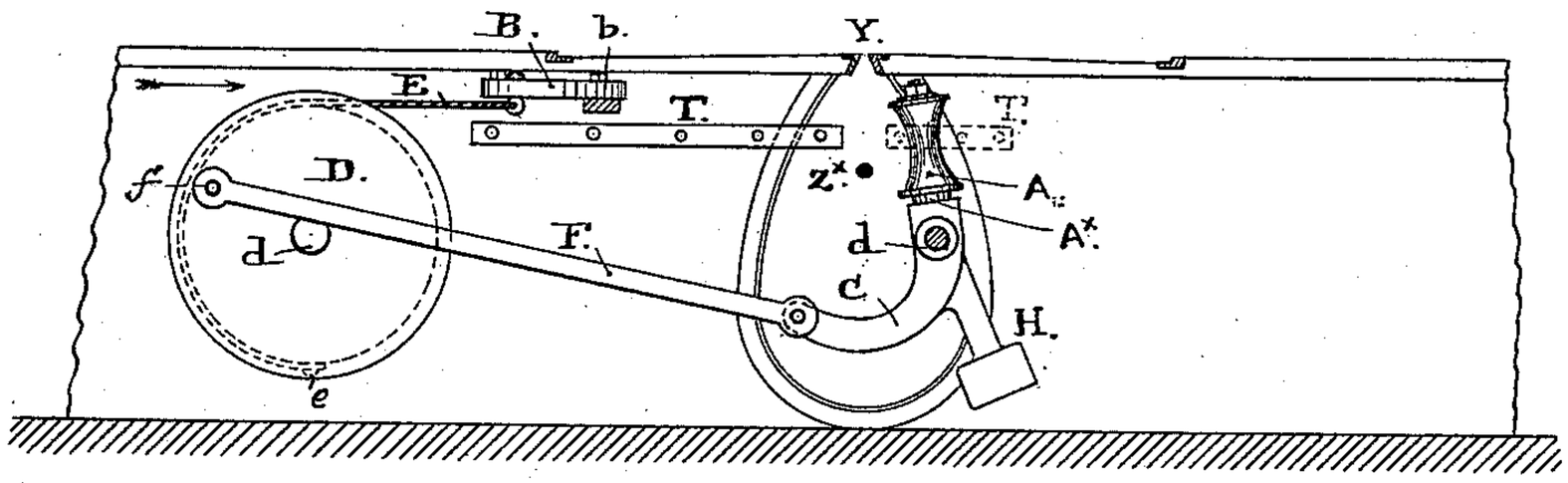

Fig. 3.

Witnesses:

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UNITED STATES PATENT OFFICE.

FERDINAND G. STALLMAN, OF SAN FRANCISCO, CALIFORNIA.

MECHANISM FOR DEPRESSING CABLES AT CROSSINGS OF CABLE RAILROADS.

SPECIFICATION forming part of Letters Patent No. 420,550, dated February 4, 1890.

Application filed June 6, 1889. Serial No. 313,373. (No model.)

To all whom it may concern:

Be it known that I, FERDINAND G. STALLMAN, a citizen of the United States, residing in the city and county of San Francisco and State of California, have invented certain new and useful Improvements in Mechanism for Depressing Cables at Crossings of Intersecting Roads, of which the following is a specification.

My invention relates to improvements in automatic mechanism for depressing and holding down a cable to be crossed by the gripping device of a car on an intersecting road in cable-railway systems; and it has for its object, first, to reduce the number of parts and simplify the construction of such mechanism, and particularly to employ the gripping device or a like part on the grip-car as an instrumentality in holding the cable-depressing roller in working position while the crossing is being made. In this part or feature of my invention special mechanism or parts for resetting the cable-depressing roller after the crossing has been made are entirely dispensed with, and the gripping device of each car operates directly to throw and to keep the depressing-roller in working position until the cable is cleared, and then, releasing the mechanism, allows it to reset itself, which it does automatically.

The second part or feature of my invention has for its object to obtain from the movement or travel of the gripping device in the grip-slot under the ordinary rate of speed and momentum of the car a gradually-accelerated movement of the cable-depressing roller, whereby I remove or overcome the objections and the defective operation incident to the sudden contact of the gripping device on the car with the operating lever or part of the mechanism which is interposed in the path of the grip and is acted on directly by it.

I attain these ends and objects by means of the construction and combination of parts illustrated in the accompanying drawings, in which—

Figure 1 represents in vertical section a portion of two cable-railway tubes and tracks at a crossing where one cable road intersects another, with my improved mechanism set in position for operation upon the uppermost cable. Fig. 2 is a plan of Fig. 1, with the tracks indicated by dotted lines. Fig. 3 shows a construction adapted for the return-track on the same road, or for use where the gripping device is required to approach and strike the actuating-lever from the opposite direction, the depressing-rollers of the two tracks being situated on the same side of the cable.

X Y are the two intersecting grip-slots at a crossing of two roads at a right angle.

Z indicates the cable of one road, and $Z^{\times}$ the cable of the other road that is to be held down for the gripping devices on the road X to cross it.

A is the cable-depressing roller, and $A^{\times}$ the arm or lever on which it is fixed. The center of movement of this arm is located at A^{2} below the line of the cable, and on this point as a center the arm is free to swing in a vertical arc over the cable from a vertical position of rest, in which it stands clear of the cable and out of the path of the grip. These movements into and out of working position are produced by the following parts and mechanism.

Across the grip-slot X and in the path of the grip is set a bar or lever B, pivoted at one end to a fixed point *b*, on which as a center is movable, in a horizontal arc just under, the slot-irons. The free or unattached end of this lever for a portion of its length, and that portion which lies on the side of the slot opposite to the pivot *b*, is bent at an angle, so that the lever is composed of the straight portion B and the angle portion $B^{\times}$. The inclination of this outer end portion should be such that when the lever is moved and has made its full stroke the bent portion will stand in line with the grip-slot, and its inner edge or face will coincide with the edge of the slot, in which position it sets in contact with the side of the grip. No movement of the lever can take place at such time when the grip is moving along the slot and in contact with the bent portion $B^{\times}$, and consequently the depressing mechanism is held at rest as long as the grip bears against the lever and until the end of the bent portion is closed. The two positions of the lever at the beginning and the end of the movement, respectively, are represented in full and in dotted lines in the plan Fig. 2.

It will be seen that the length of the part

B× determines the length of time during which the cable will be depressed, and thus by lengthening or shortening this part from the angle outward to the end the cable can be released at any required point in the progression of the grip along the slot.

On the hub of the depressing-roller arm or formed in one piece with it is a downwardly-extending lever C, with which the lever B is connected through intervening mechanism, consisting of the parts D E F. Of these the part D is a disk mounted on a horizontal axis *d* and formed with a rim of gradually-increased radius. The rim is therefore an involute in shape, with the axis *d* at the evolute, or the beginning of the curve, and it is grooved on the edge to take the connecting straps or cables E F, which are of suitably-flexible character to wind and lie smoothly in the groove. By these connections the bent lever B and the arm C are attached to the part D.

The strap E from the bent lever to the disk is attached to the rim at *c*, or the point of greatest radius, while the other connection *f*, from the depending arm C, is attached at *f*, or at the point of smallest radius. By virtue of this arrangement the movement of the lever B, when struck by the grip, is at first reduced and caused to move the cable-depressing arm slowly, but afterward by rapid acceleration the movement is sufficient to bring down the depressing-roller into position over the cable in advance of the grip. Such mechanism, therefore, acts without shock or sudden strain and entirely overcomes the objections attending the operation of all cable-depressing devices, wherein an arm or part interposed in the path of the grip is required to receive direct impact of the grip moving at usual rate of speed or without checking the momentum of the car.

Fig. 3 of the drawings is a modification of the mechanism above described, and is represented for the purpose of showing how the same character of reduced and accelerated movement of the depressing-roller from the rapid movement of a lever acted upon directly by the gripping device can be obtained in another way; but it is particularly shown for the purpose of explaining the arrangement of the lever and parts for the return-track of a double-track road where the actuating-lever is struck from the opposite direction. In this modification the disk D is a grooved pulley with the axis in the center, and the connecting-cable E from the bent lever is attached to it at *e* on the circumference, while the connection F is a rod or bar instead of a flexible connection, and is attached at *f* to the side of the disk by a wrist-pin. In this case the depending arm C is curved instead of straight. The connection is thus made at points of greatest and smaller radius, as in the other construction, and it will be noticed that the same movement and result are secured in both cases, the difference being only in the position and direction of movement of the bent lever B, which, in this modification, is on the opposite side of the slot, and moves in the direction contrary to the lever in the construction, Figs. 1 and 2.

A counter-weight H is applied to the arm A to assist in bringing the parts of the mechanism back into position as soon as the lever B is released by the grip. Instead of this weight, a spring could be applied for the same purpose to the cable-depressing arm or to its shaft.

The guide-rail shown at T, Figs. 2 and 3, more particularly is intended to counteract whatever lateral pressure the grip of the car may be called on to bear from the lever B during the time of contact with its bent member B×, for which purpose the rail is fixed to some stationary portion of the iron frame-work in the conduit opposite to the lever and parallel with the line of the grip-slot.

It should be mentioned that the length of contact between the grip and the actuating-lever B is regulated by the length given to the outer end portion of the lever; but it can also be controlled by fixing to the rear of the grip-bar or part of the shank running through the slot an extension shoe or bar to bear against the lever and hold it back the required length of time.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a cable-depressing mechanism, the combination of the cable-depressing arm or lever A, arm C, lever B, interposed in the path of the gripping device, and the disk or pulley D, connected by the strap or cable E with the lever B and with the arm C by the connection F, substantially as described, for operation as set forth.

2. In a cable-depressing mechanism, the combination of a disk or pulley D and connections E F, adapted to connect an operating-lever in the path of the gripping device on the car with the cable-depressing arm or lever, the connection E being attached to the disk at the point of greatest radius and the connection F to a point of smaller radius, substantially as described, for the purpose set forth.

3. In combination with a cable-depressing arm or lever A, a depending lever C, counter-weight H, disk D, connections E F, and lever B, located in the path of the gripping device on the car, all constructed and arranged for operation substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

FERDINAND G. STALLMAN. [L. S.]

Witnesses:

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