

(No Model.)

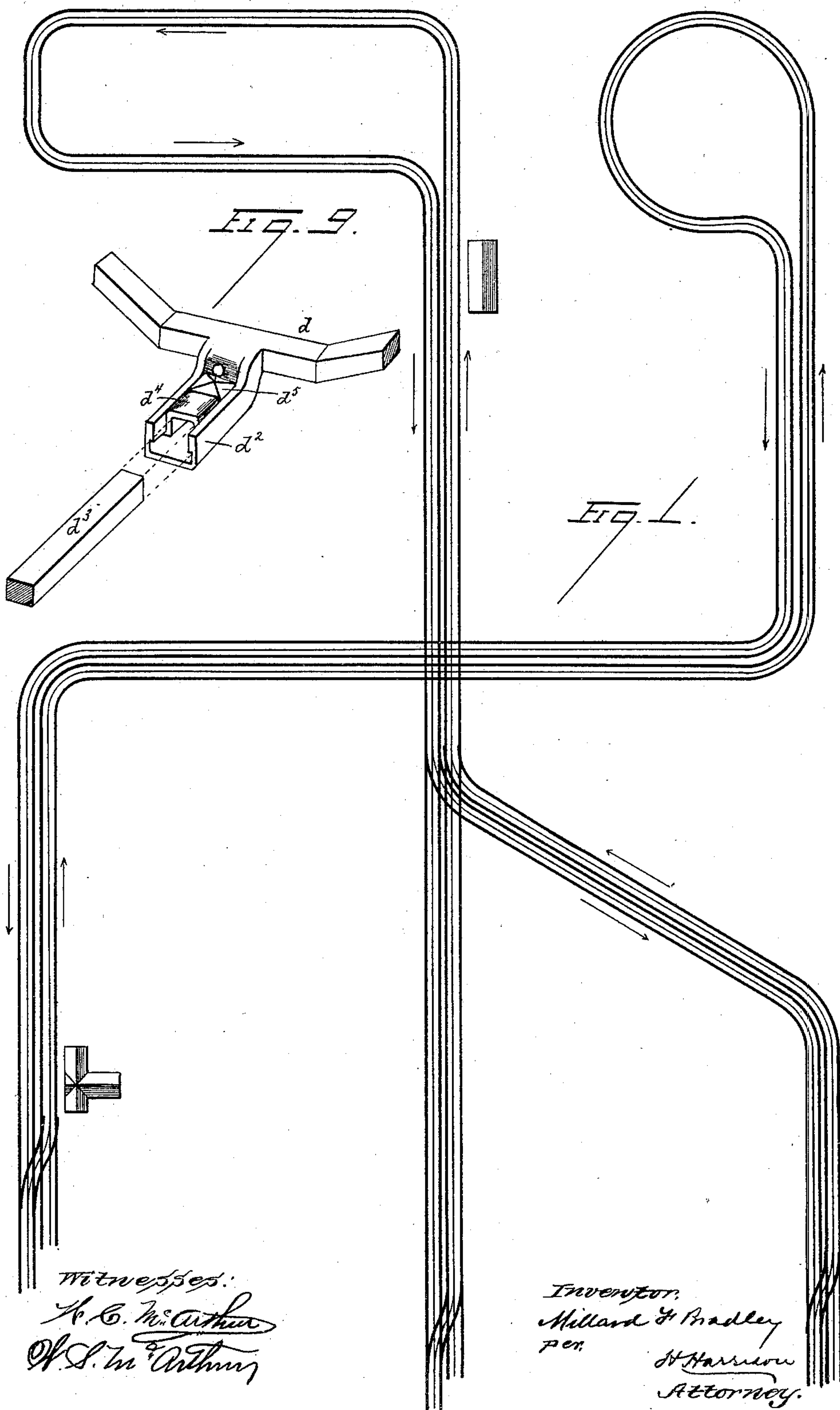
M. F. BRADLEY.

4 Sheets—Sheet 1.

TRACTION CABLE SYSTEM.

No. 395,809.

Patented Jan. 8, 1889.



Witnesses:
A. C. McArthur
J. S. McArthur

Inventor,
M. F. Bradley
per
H. Harrison
Attorney.

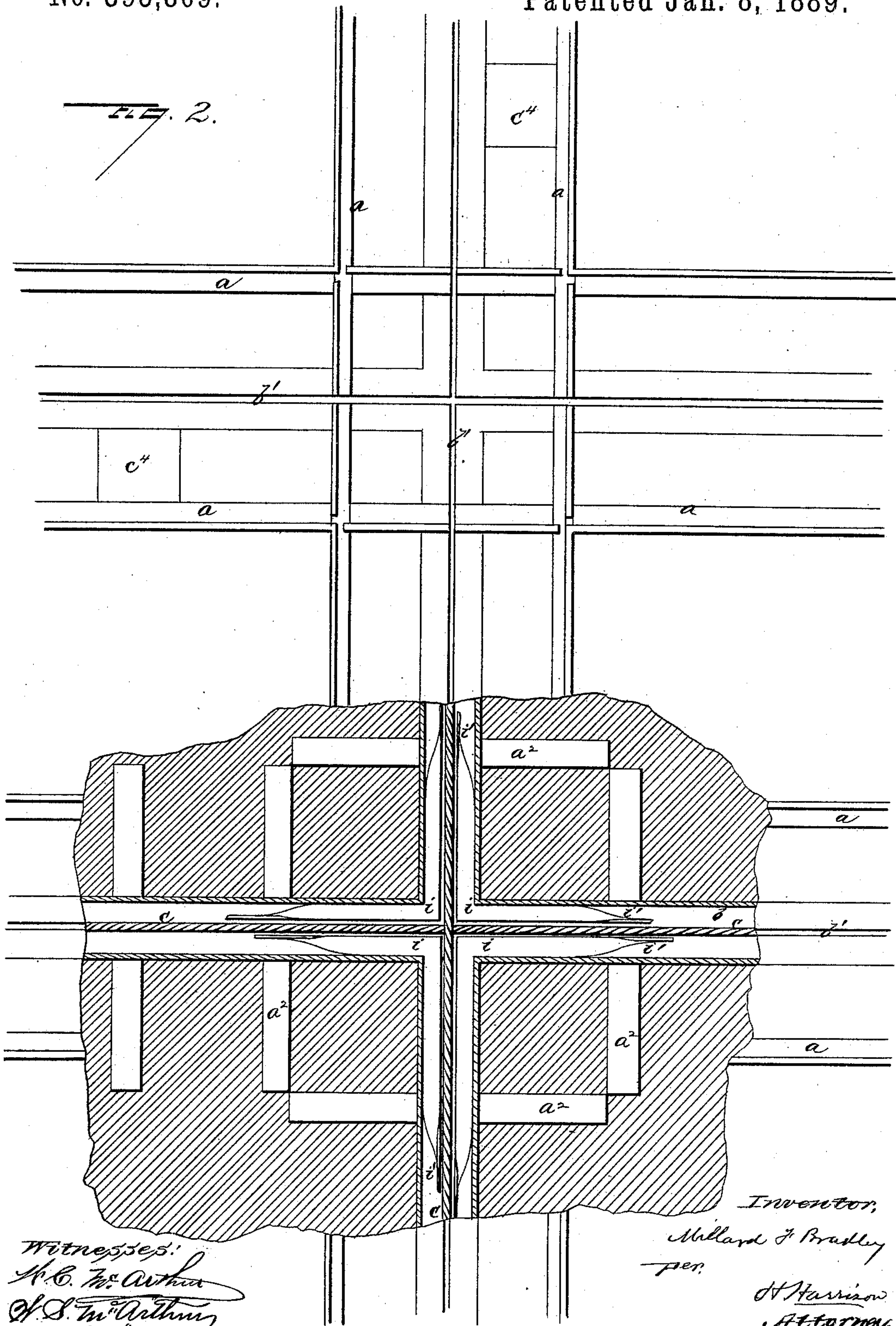
(No Model.)

4 Sheets—Sheet 2.

M. F. BRADLEY.
TRACTION CABLE SYSTEM.

No. 395,809.

Patented Jan. 8, 1889.



Witnesses:
H. C. M. Arthur
H. S. M. Arthur

Inventor,
Mallard F. Bradley
per
H. Harrison
Attorney.

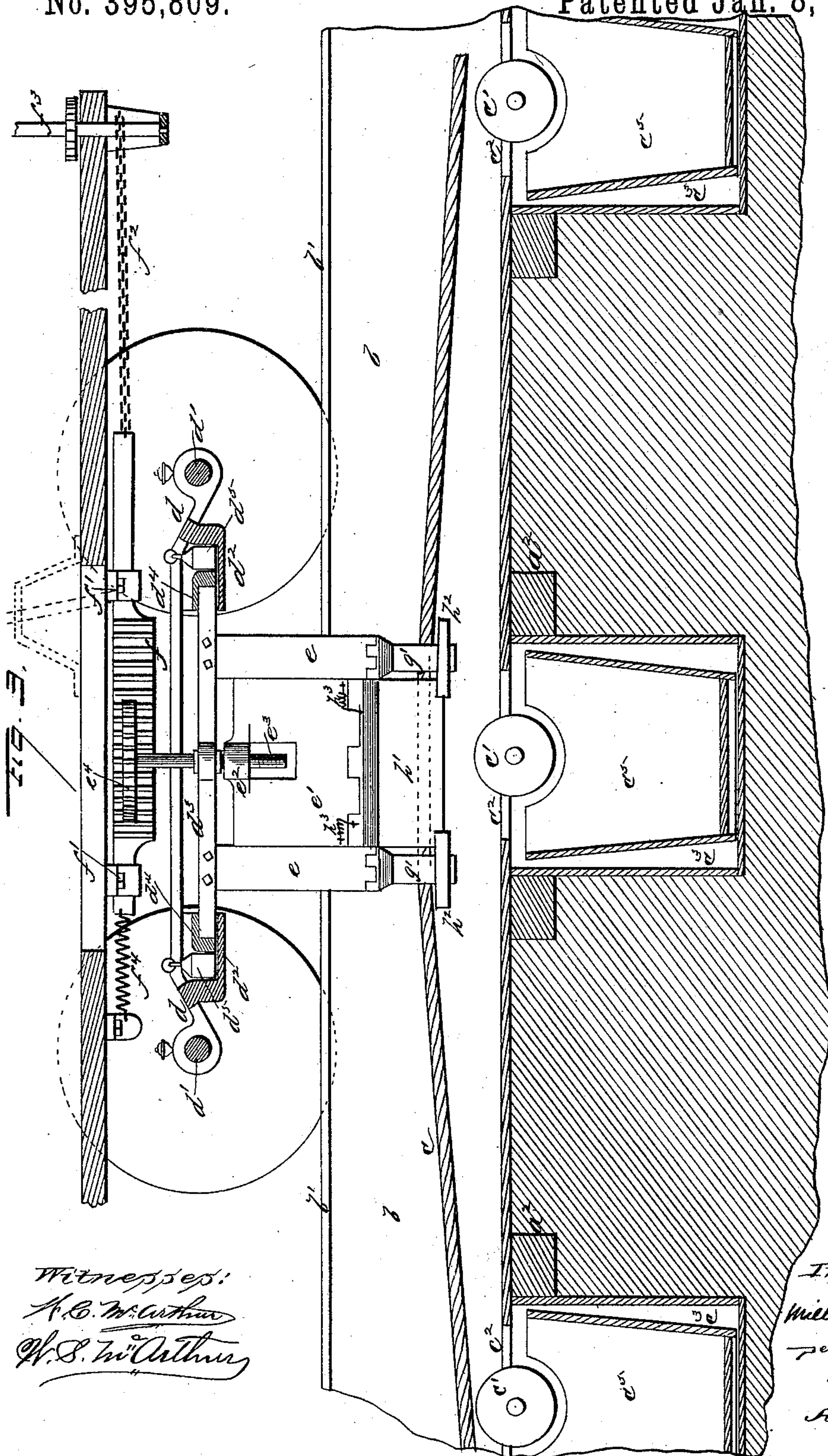
(No Model.)

4 Sheets—Sheet 3.

M. F. BRADLEY.
TRACTION CABLE SYSTEM.

No. 395,809.

Patented Jan. 8, 1889.



Witnesses:
H. C. McArthur
 H. S. McArthur

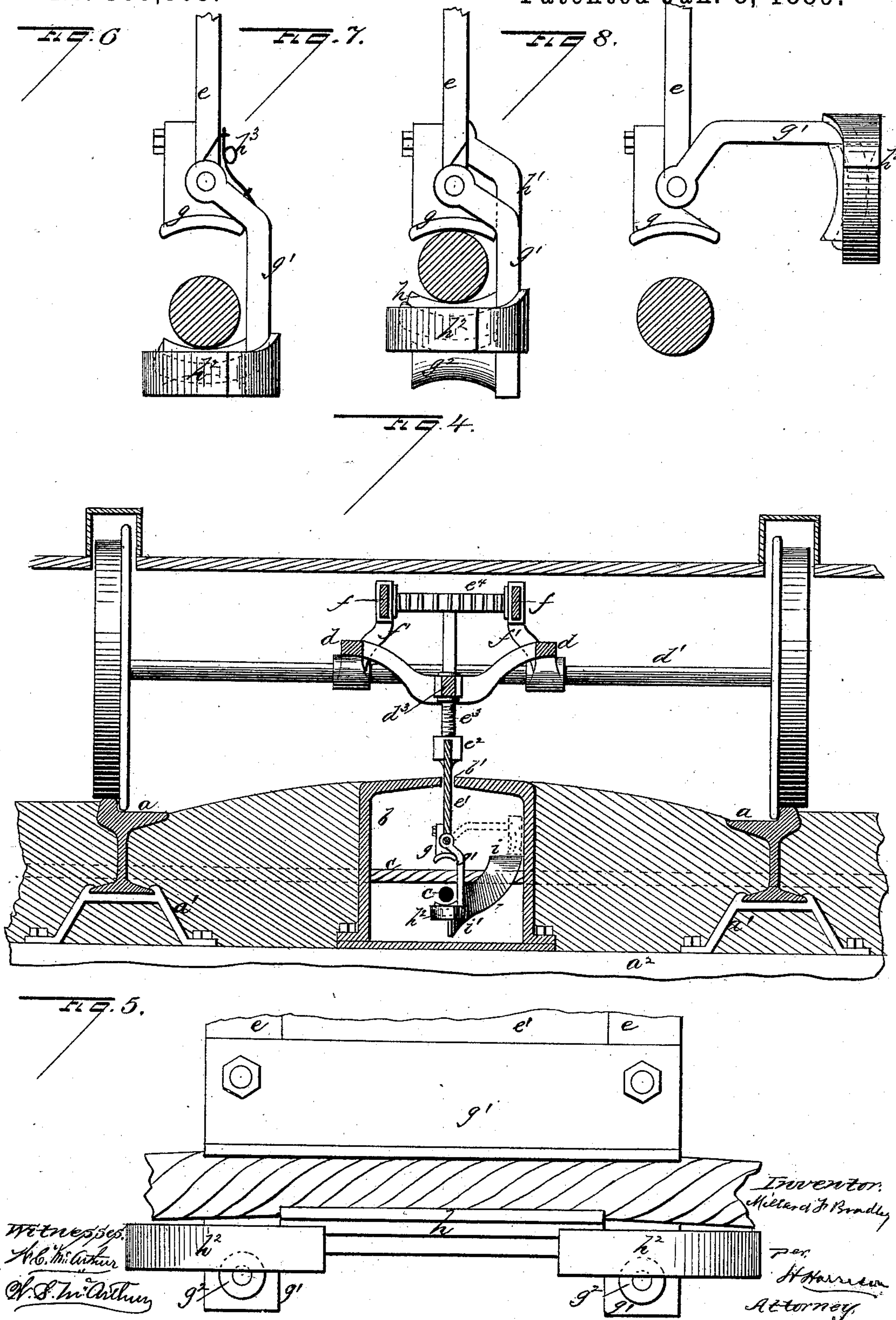
Inventor:
Willard G. Bradley
Per:
H. Harrison
Attorney.

M. F. BRADLEY.

TRACTION CABLE SYSTEM.

No. 395,809.

Patented Jan. 8, 1889.



UNITED STATES PATENT OFFICE.

MILLARD F. BRADLEY, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-THIRD TO
BRUCE B. BARNEY, OF SAME PLACE.

TRACTION-CABLE SYSTEM.

SPECIFICATION forming part of Letters Patent No. 395,809, dated January 8, 1889.

Application filed December 18, 1886. Serial No. 221,961. (No model.)

To all whom it may concern:

Be it known that I, MILLARD F. BRADLEY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Traction-Cable Systems, of which the following is a specification.

This invention relates to an improvement in traction-cable systems; and it consists in certain novel peculiarities of the construction and arrangement of the same, whereby the cable is more easily and firmly gripped and the gripping devices are automatically lifted and guided when two cable roads cross each other, substantially as will be hereinafter more fully set forth, and pointed out in the claims.

In order to enable others skilled in the art to which my invention pertains to make and use the same, I will now proceed to describe its construction and operation, referring to the accompanying drawings, in which—

Figure 1 is a diagram view of two systems such as I shall describe. Fig. 2 is a plan view, partly sectioned, of the crossing of two cables in the manner hereinafter described. Fig. 3 is a longitudinal section of the conduit and one of the cars, showing the grip apparatus. Fig. 4 is a transverse section of the same. Fig. 5 is a face view of a part of the grip, showing the opposite side to that shown in Fig. 3. Fig. 6 is an end view of the grip when not clutched. Fig. 7 is a similar view clutched, and Fig. 8 is a similar view showing the hinged part of the grip thrown up. Fig. 9 is a detail view of one end of the grip-supporting bar, showing the means of securing it removably in the frame.

The object I have in view is to so construct the cable system and the grips used therein as to render feasible the crossing of one cable system by another and the automatic lifting or carrying of the gripping devices of one system over the cable of the other, and to this end I prefer to construct the system and apparatus as presently described.

In Fig. 1 I have illustrated two independent systems crossing each other, showing by a diagram the main idea I have in view in this invention. The track used is of any of the usual and well-known forms in common use,

and will be fully comprehended without detailed description in this connection.

In the operation of my system I design to use either a special grip-car, to which one or more ordinary cars are coupled, or to apply the grip to any ordinary street-car, as may be desired, and it is the latter that I have herein illustrated.

To prevent the vertical motion of the grip due to the spring of the car-body in motion, I have preferred not to suspend the grip directly from the car-body, but from a frame, d , which rests upon the axles d' , and is not therefore in any way affected by the vibrations of the car-body upon its springs. This frame is provided with sockets d^2 , in which lies a bar, d^3 , held from jumping out of place by sliding caps d^4 , which are dropped over its ends as they rest in the sockets, and have keys d^5 dropped in behind them, as in Fig. 3. From this longitudinal bar d^3 depend a pair of rigid guide-bars, e , into the conduit-tube, and between them is held and slides vertically the plate e' , in the upper part of which is a bearing or sleeve, e^2 , in which is engaged the end of a screw-shaft, e^3 . This shaft is journaled vertically in the bar d^3 , so as to turn freely, but has no vertical movement, and upon its upper end is secured a gear-wheel, e^4 , as shown. To operate this gear and its shaft, I provide one or more cogged bars or rack-bars, f , sliding beneath the car-body in engagement with the gear, and supported in suitable guides, f' , either upon the car-body, as in Fig. 3, or upon the supporting-frame d , as in Fig. 4, as may be considered most suitable. In the former case the rack-bar is made broad, to admit of the spring of the car-body without disengagement of the rack and gear. Two of these rack-bars are shown in Fig. 4—one upon each side of the gear—and are intended to be connected to and operated from opposite ends of the car; but as both are operated alike the illustration of one in Fig. 3 will serve to indicate both. The rack-bars are drawn in one direction to cause the cable to be gripped by means of a chain or similar connection, f^2 , wound upon the operating-shaft f^3 at the end of the car, and are drawn back when released by a

spring, f^4 , at the other end of the bar. This causes the release of the cable to be automatic; but as this is simply a mechanical means for operating the screw-shaft and its gear other mechanical and well-known apparatus may be substituted therefor, and, if desirable, the motion of the rack-bar may be made positive in each direction, such changes being of well-known mechanical devices and not necessary to more fully illustrate herein.

To the guide-bars e , just within the conduit, is secured the upper grip-bar, g , as clearly seen in Fig. 4, and to each of these bars is also hinged an extension, g' , each of which is at its lower end provided with a roller, g^2 , on which the cable rests when it is released by the grip.

The lower grip-bar, h , is carried by a hinged extension, h' , of the sliding plate e' , and when the plate e' and its extension are lifted the cable is firmly grasped between the upper and lower grip-bars and its motion is thereby imparted to the car. When the sliding lower grip-bar, h , is dropped, it passes down till it is below the rollers upon the hinged ends of the main bars, and thus drops the cable upon these rollers and relieves it of all the wear which would be incident to being drawn directly across the bar when the car is stopped; but these rollers serve as supporting-guides to hold the cable in the exact position for the grip-bar to pick it up again as it is lifted. The ends of the hinged extension h' are each provided with an elongated curved nose or guard, h^2 , which passes around the extensions g' and serves a purpose presently explained. A spring, h^3 , serves to insure the hinged grip-extension h' remaining normally in its proper position and to return it to such position when deflected.

In the use of cable traction systems it has been difficult to carry one cable across another on account of the danger of one grip catching upon the cable of the other road in crossing it and the difficulty of regaining a connection with the cable after it is wholly dropped, as it must be in such cases.

In the present instance I have in Figs. 2 and 4 represented a crossing in which one cable is passed over the other, the supporting-pulleys of the conduits being slightly raised or lowered near such crossing, so that the two cables may be allowed to run freely and without contact, as will be at once understood. In the conduits are secured what I term a "glide-bar," i , which is simply a flat bar or shelf supported along the side of the conduit for a suitable distance from the crossing and at a slightly greater elevation than the highest of the two cables. At each end this glide-bar is bent down and twisted so that its end lies vertically near the center of the conduit and below the cable, or slightly upon one side of the same, as in Fig. 4 at i' . This glide-bar is preferably formed angular to fit around the corners of the connecting-conduits, as in Fig.

2, and the bars lying in the same conduit are separated at the crossing center by a small space to give the cable free play, as will be evident. When a car is approaching the crossing, the grip is lowered to release the cable, and the nose upon the forward end of the hinged grip-section rides upon the glide-bar. The car continues its forward motion by momentum and the grip is carried easily over the cables, falling again at the other end of the glide-bar to a position to grip the cable, as shown in the drawings. To better illustrate this, I have only shown in Fig. 4 a glide-bar upon one side of the conduit; but in practice they will be placed upon both sides, as in Fig. 2, so that the hinged grip-section may be readily carried over the crossing cable, no matter upon which side it may be. These glide-bars will be extended back from the crossing as far as may be found desirable, and the bars will of course be carried over both cables of a double track before being allowed to drop. This device, in connection with the hinged grip-section, makes it possible to cross the traction-cables as often as desirable and at any points.

The whole grip device is quite simple and durable, and is readily applied to any car, from which it may be lifted at any time through a suitable opening in the floor of the cars by slipping back the confining-caps and lifting the main supporting-bar from its sockets with all its depending mechanism, the top of the conduit being hinged at suitable points to admit of such action, as is the case in common use, and need not be here illustrated. The cable always pulling direct in the center of the conduit has of course no tendency to pull the hinged grip-section out of line, except in passing around curves, and in such cases fenders of any suitable form secured to the sides of the conduit to bear against the grip in its passage will be used to prevent any tendency to pull aside, as will be readily understood without further description.

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

1. In a grip for cable cars, the combination, with a pair of guide-bars carrying the upper grip-bar within the conduit and provided with the cable-supporting rollers on their lower ends, of the sliding grip-plate between the guide-bars provided with the lower grip-bar on its end and adapted, when lifted, to raise the cable and grasp it firmly, and when lowered to drop below the supporting-rollers to allow the cable to rest and move on the same, substantially as and for the purpose set forth.

2. The combination, with a gripping device having its whole lower body within the conduit hinged, of means, substantially as described, within the conduit for turning the hinged portion of the grip outward and up-

ward to an approximately horizontal position, substantially as and for the purpose set forth.

3. In a traction-cable system, the combination, with a gripping device having its whole lower end hinged to swing in one direction, of the crossing cables, and a glide-bar within the conduit to swing this hinged grip aside and upward and support it in sliding over the crossed cables, substantially as and for the purpose set forth.

4. In a traction-cable system, the combination, with the conduit provided with a glide-bar having its ends bent and twisted down and aside, of a hinged grip-section provided with a beveled nose or guard to engage and

ride up on the glide-bar, substantially as and for the purpose set forth.

5. In a grip for traction-cable systems, the combination, with a bar from which the whole gripping device is suspended, of a supporting-frame on the car provided with sockets to receive the ends of said bar, slides upon these sockets to confine the ends of the bar, and wedges or keys to lock the slides in place, substantially as shown and described.

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

MILLARD F. BRADLEY.

Witnesses:

W. C. MCARTHUR,

BRUCE B. BARNEY.