

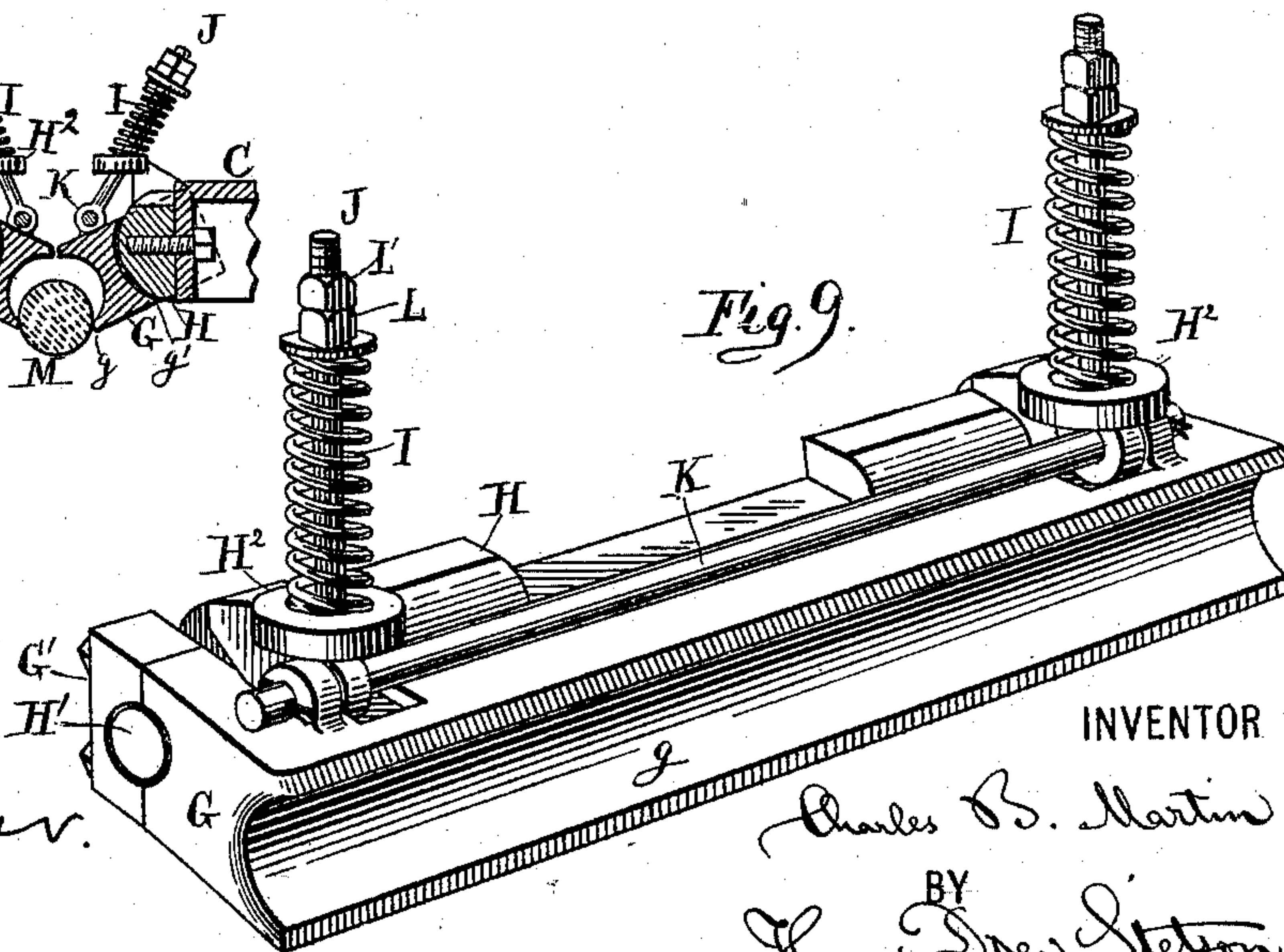
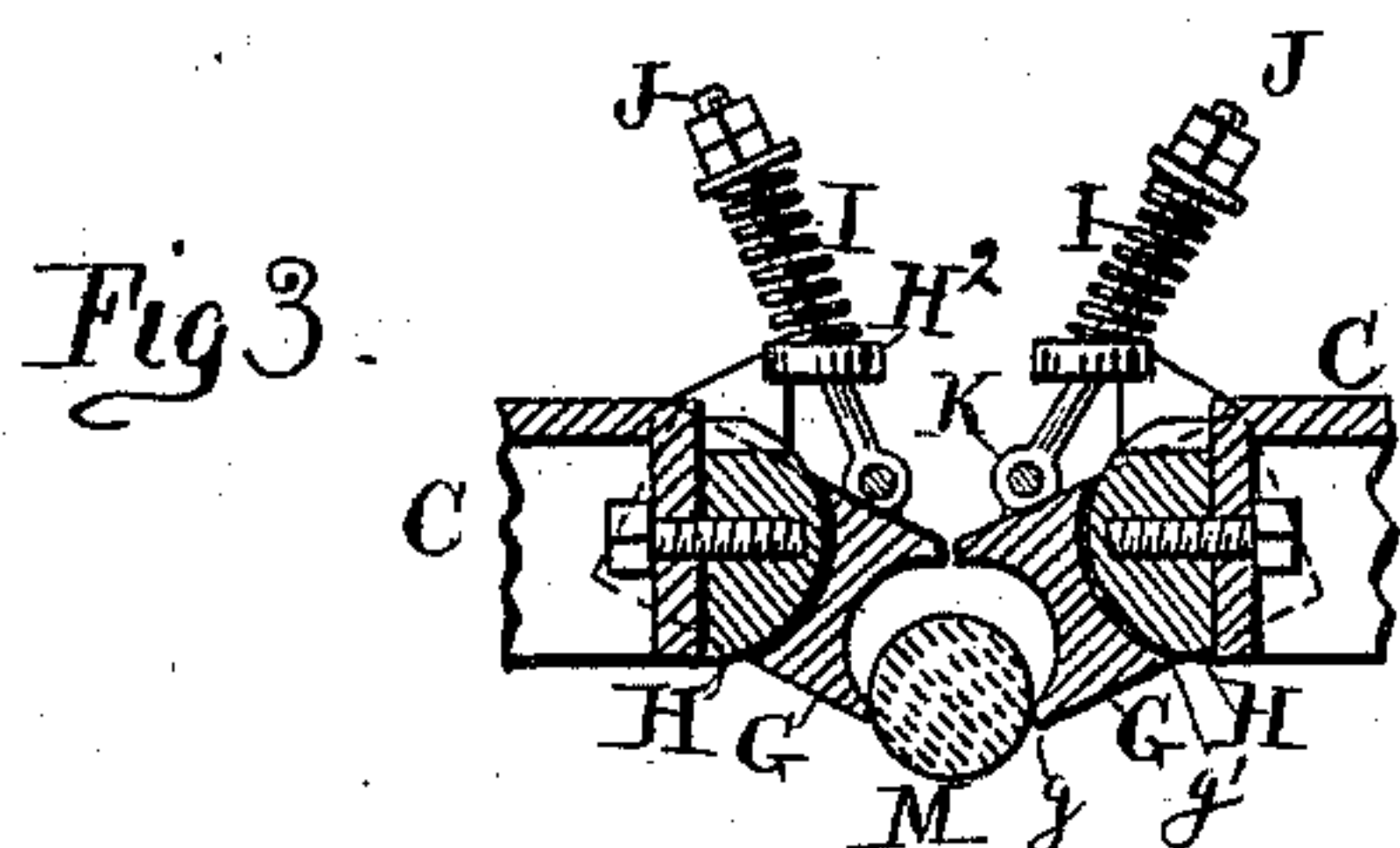
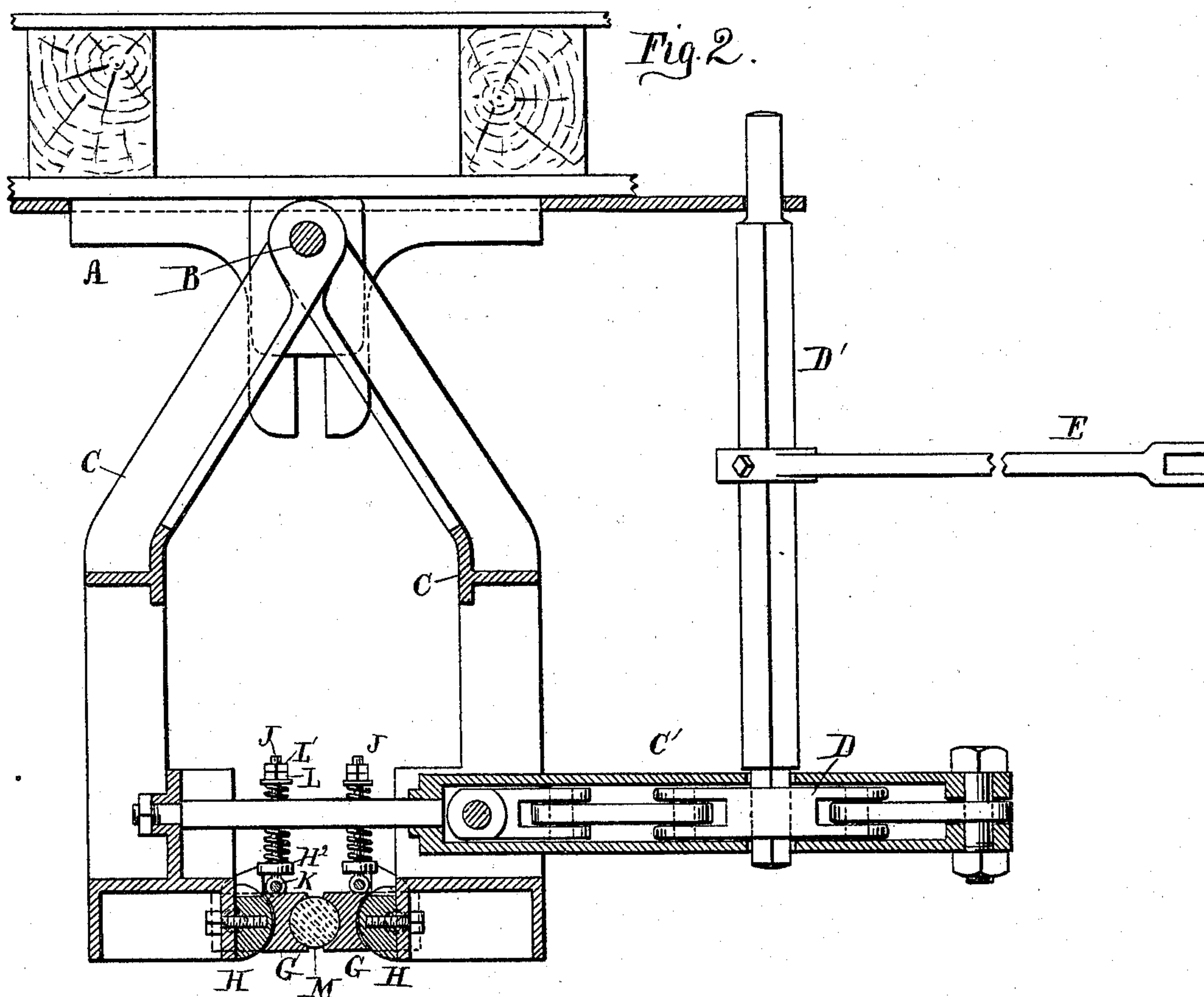
(No Model.)

2 Sheets—Sheet 2.

C. B. MARTIN.
GRIP FOR CABLE RAILWAYS.

No. 585,873.

Patented July 6, 1897.



WITNESSES:

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GRIP FOR CABLE-RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 585,873, dated July 6, 1897.

Application filed February 10, 1897. Serial No. 622,753. (No model.)

To all whom it may concern:

Be it known that I, CHARLES B. MARTIN, a citizen of the United States, residing in Brooklyn, Kings county, in the State of New York, have invented a certain new and useful Improvement Relating to Grips for Cable-Railways, of which the following is a specification.

The invention is intended more particularly for use in situations, as on the Brooklyn bridge, where the track is set apart exclusively for railway use and the cable runs on sheaves at or above the surface and may be lifted or lowered, as required. The means for raising the cable into position to be engaged by the grip may be of the ordinary long-approved style. I employ mechanism for gripping it with the required firmness between gripping portions or blocks properly shaped to match and can take hold and let go at will, and in addition I provide for automatically liberating the cable and allowing it to sink when any exigency shall require it.

The cable is led downward, as usual, at the end of the road. The grip should be opened by the attendant before reaching that point. Whenever through inadvertence of the attendant or a derangement of the grip this is not done, so soon as the cable is drawn strongly downward at the end of the road my grip automatically opens and releases it. The force with which the mechanism resists such automatic releasing of the cable may be adjusted between wide limits. After such automatic release of the cable the grip automatically resumes its proper closed position ready to be opened and closed again by the operator, as required.

The accompanying drawings form a part of this specification and represent what I consider the best means of carrying out the invention.

Figure 1 is a plan view. Fig. 2 is a corresponding vertical cross-section through the center. These figures show the grip in use taking firm hold of the cable. Fig. 3 is a section of a portion corresponding to Fig. 2, but showing the condition of the parts adjacent to the cable in the act of automatically liberating the cable when an exigency shall require it. The remaining figures show details detached. Fig. 4 is a cross-section, on a larger scale, of one of the gripping portions

or blocks which apply directly against the cable. Fig. 5 is a plan view of the same block. Fig. 6 is a corresponding section, partly in elevation, showing one of the backing-pieces lying immediately behind each gripping portion or block and communicating the pressure of the gripping mechanism thereto. Fig. 7 is a corresponding plan view of this backing-piece. Fig. 8 is an elevation showing these parts properly assembled and with one of the springs holding the gripping portion or block firmly up in the horizontal position, but with liberty to yield downward. Fig. 9 is a corresponding perspective view of the same parts.

Similar letters of reference indicate like parts in all the figures where they appear.

A is a framing of cast-iron or other suitable material to be bolted firmly on the under side of a car-body. (Not shown.) B is a shaft held longitudinally therein and which forms the axis of motion for two capacious gripping-jaws C C, which are opened and closed by double toggle mechanism D' D², inclosed in a casing C' and operated by an upright shaft D', which is partially rotated in one direction and the other by the gripman actuating a rod E. So far as yet described this mechanism is of an ordinary and long-approved character and is operated in the ordinary manner, the gripman turning the shaft D' in the direction to separate the jaws C C to receive the cable and turning it in the reverse direction to grip the cable with the required degree of force to enable it to reliably move the car.

M is the cable.

It is one of the duties of the gripman to open the grip by these means before the end of the line is reached, and the cable thus liberated will drop out of engagement and the car is stopped by the brake. (Not shown.) So long as this duty is successfully performed as the car approaches each end of the line my improvement will be of no effect. The strong and swiftly-running cable continues its motion irrespective of any trouble or derangement on one or more cars. It cannot be stopped in time to relieve itself or any attached cars. The cable is usually of such strength that there is little chance of its being broken, but a severe abrasion at any point

may rupture some of the surface-wires and induce very serious injury to this important and costly member of the system. When from any cause the grip retains its hold on the cable as the car reaches the end of the line, there will be a fracture of something. This improvement provides against such mischief.

G G are the gripping portions or blocks, each having a properly-hollowed face g , slightly flared at each end and adapted to receive the cable and exert the required strong pressure thereon. These gripping-blocks have each a hollowed back g' , which matches fairly against a corresponding cylindrical surface on the backing-piece H, which latter is firmly carried on the corresponding jaw C and is provided with a trunnion H' at each end, which receives an arm G' from the gripping-piece G and is reliably but loosely held by a binder and bolts. Each backing-piece carries two supports H^2 , which receive helical spring I, inclosing eyebolts J, which are hinged to the gripping-block by means of a through-bolt K, which traverses eyes on the bolts and lugs on the gripping-block. The upper end of each bolt J is screw-threaded and receives a sufficiently-extended washer and a nut L and jam-nut L' . By turning these nuts up or down the tension of each spring I may be increased or reduced. It is important that the gripping portions or blocks be held firmly up in the horizontal position under ordinary conditions and yet that they be at liberty to sink into the inclined position shown in Fig. 3 whenever the cable is pulled down with a force sufficient to overcome the friction and the springs. When such emergency occurs, the cable is drawn downward without serious danger of injury to itself or any other portion of the mechanism, and so soon as liberated the gripping portions or blocks G G are drawn upward by the tension of the springs I, exerted through the eyebolts J, to their proper horizontal positions. The construction offers a large amount of friction to resist the downward motion by the extended bearing between the hollowed surface g' and the corresponding swelled surface of the backing-piece subjected to the strong pressure of the grip on the cable. This friction aids the springs I in holding up the gripping-pieces and enabling them to resist all the ordinary and extraordinary forces due to the slight inclination of the cable and to any vibrations or other agitation thereof in traversing along the road; but when through accidental holding of the cable too long at the end of the road the gripping-pieces have been subjected to such intense force that they yield downward and discharge the cable the entire friction on the surfaces g' is relieved, and the friction of the arms G' on the trunnions H' being insignificant there is little more than the weight and inertia of the gripping-pieces to resist their prompt movement up again into the proper horizontal position for fur-

ther use. The parts are in the same condition after such discharge as before, except that the grip is closed. It requires simply to be opened by the attendant to restore the entire apparatus to its original condition.

Modifications may be made without departing from the principle or sacrificing the advantages of the invention.

The supports H^2 for the feet of the springs I may be hollowed or made into universal joints to allow the changes of inclination required, but my experiments indicate that no such complication is necessary.

The head of each eyebolt J may be formed with a bearing applying fairly against the under face of the support H^2 and forming a definite stop to determine the height of each portion or block when held up in position for use. Each portion or block G may extend downward farther than shown, so as to give wider bearings against the cable when the latter is in the act of escaping by being drawn violently downward.

I claim as my invention—

1. In a grip for cable-railways, the combination with the gripping-jaws and mechanism for manually adjusting them in one of two or more positions, of gripping portions carried by said jaws and capable of an outward yielding movement independently of the jaws, adapted to release the cable when the downward pull becomes excessive without changing the position of the jaws, all substantially as herein specified.

2. In a grip for cable-railways, the combination with the gripping-jaws and mechanism for manually operating the same, of gripping portions carried by said jaws and springs I connected to the gripping parts and standing on abutments H^2 , arranged to permit their automatic opening and to effect the return of the same, independently of the adjusting means, substantially as herein specified.

3. In a grip for cable-railways, the combination with the gripping-jaws and mechanism for manually operating the same, of gripping-blocks pivoted to said jaws to swing independently thereof, and connected springs arranged to automatically yield and again automatically restore the blocks to an operative position, substantially as herein specified.

4. In a grip for cable-railways, the combination with the gripping-jaws having convex bearing-faces, and mechanism for operating said jaws, of gripping-blocks pivoted to the jaws to swing vertically, and having concave rear faces to move on said bearings, and spring-yielding connections for normally holding the blocks in an operative position, substantially as herein specified.

5. In a grip for cable-railways, the combination with the gripping-jaws and mechanism for operating the same, of gripping-blocks pivoted to said jaws to swing vertically, and adjustable spring-yielding connections for normally holding the blocks in an

operative position, substantially as herein specified.

6. In a grip for cable-railways, the combination with the manually-operated gripping-jaws, carrying the backing-pieces having the end trunnions and upper supports H^2 , of gripping-blocks held up by spring-yielding and suspended eyebolts J, guided in said supports, and a through-rod K passing through the eyebolts, and also through lugs on the gripping-blocks, substantially as herein specified.

7. In a cable-grip, in combination with the gripping-jaws C, and operating mechanism therefor, the gripping-blocks G arranged to liberate the cable not only by the opening of the jaws, but also by yielding to a sufficient downward pull of the cable, said blocks hav-

ing bearings g of large diameter along the mid-length, arranged to receive the pressure when the grip is engaged and offer such friction to aid in holding the blocks firmly against ordinary disturbing forces, and having also arms C' taking hold of the jaws C by relatively frictionless bearings g' to insure that the blocks are properly guided and to allow them to be easily returned to position after thus yielding, all substantially as herein specified.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

CHARLES B. MARTIN.

Witnesses:

J. B. CLAUTICE,
M. F. BOYLE.