

(No Model.)

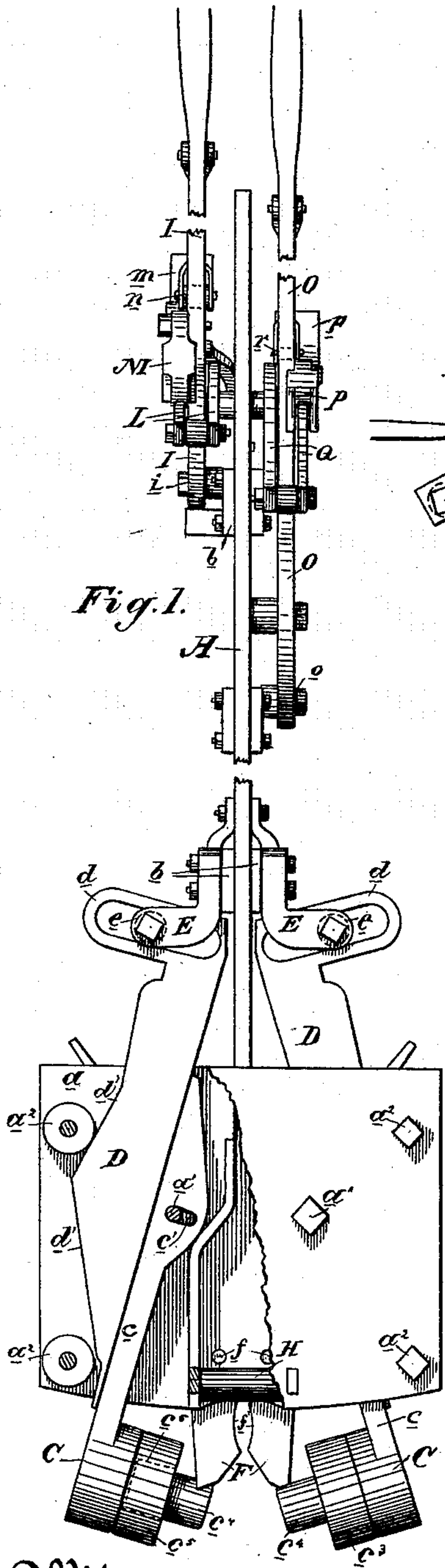
2 Sheets—Sheet 1.

W. DUNHAM.

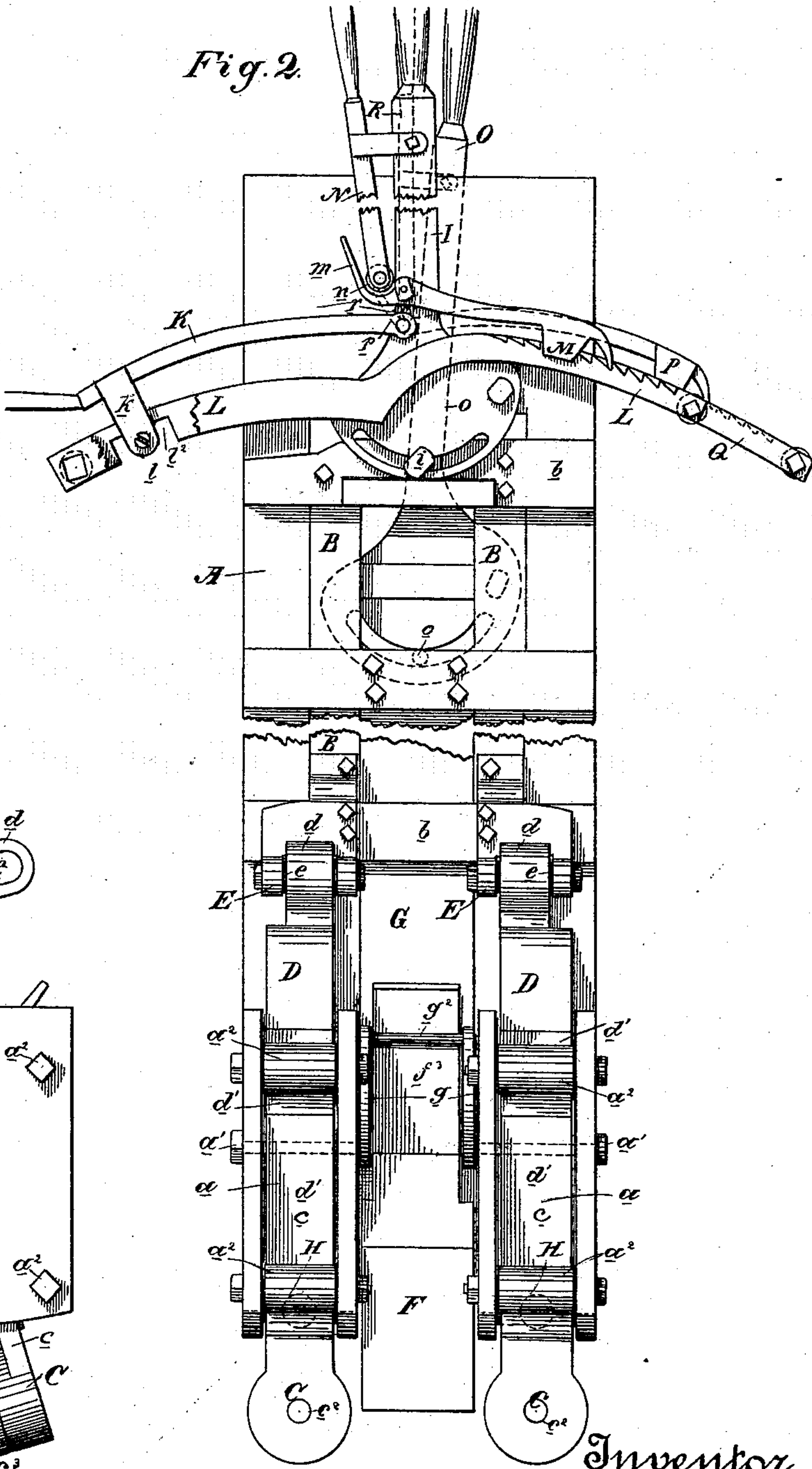
CABLE GRIP.

No. 364,709.

Patented June 14, 1887.



Witnesses,
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J. House



Inventor,
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(No Model.)

2 Sheets—Sheet 2.

W. DUNHAM.

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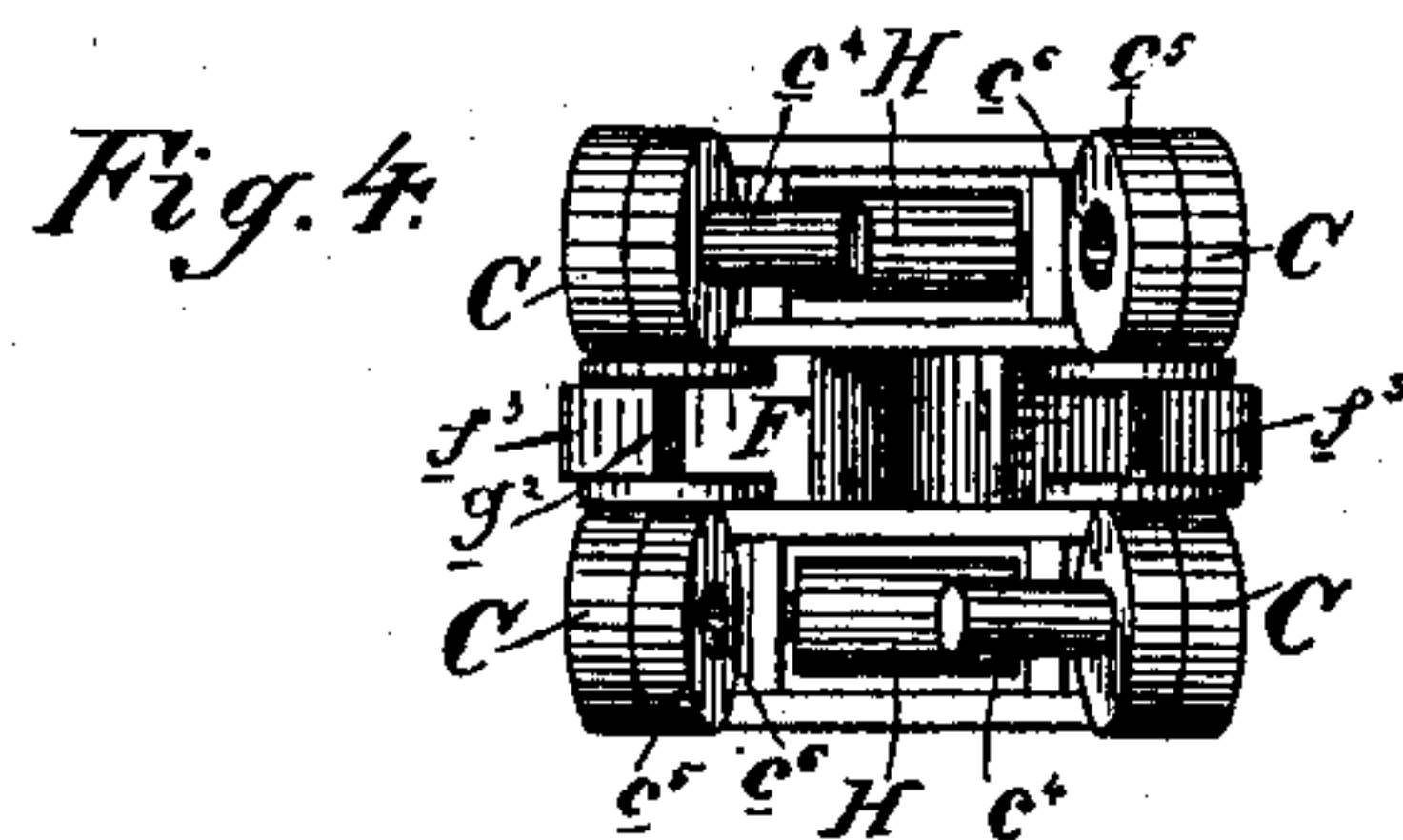


Fig. 5.

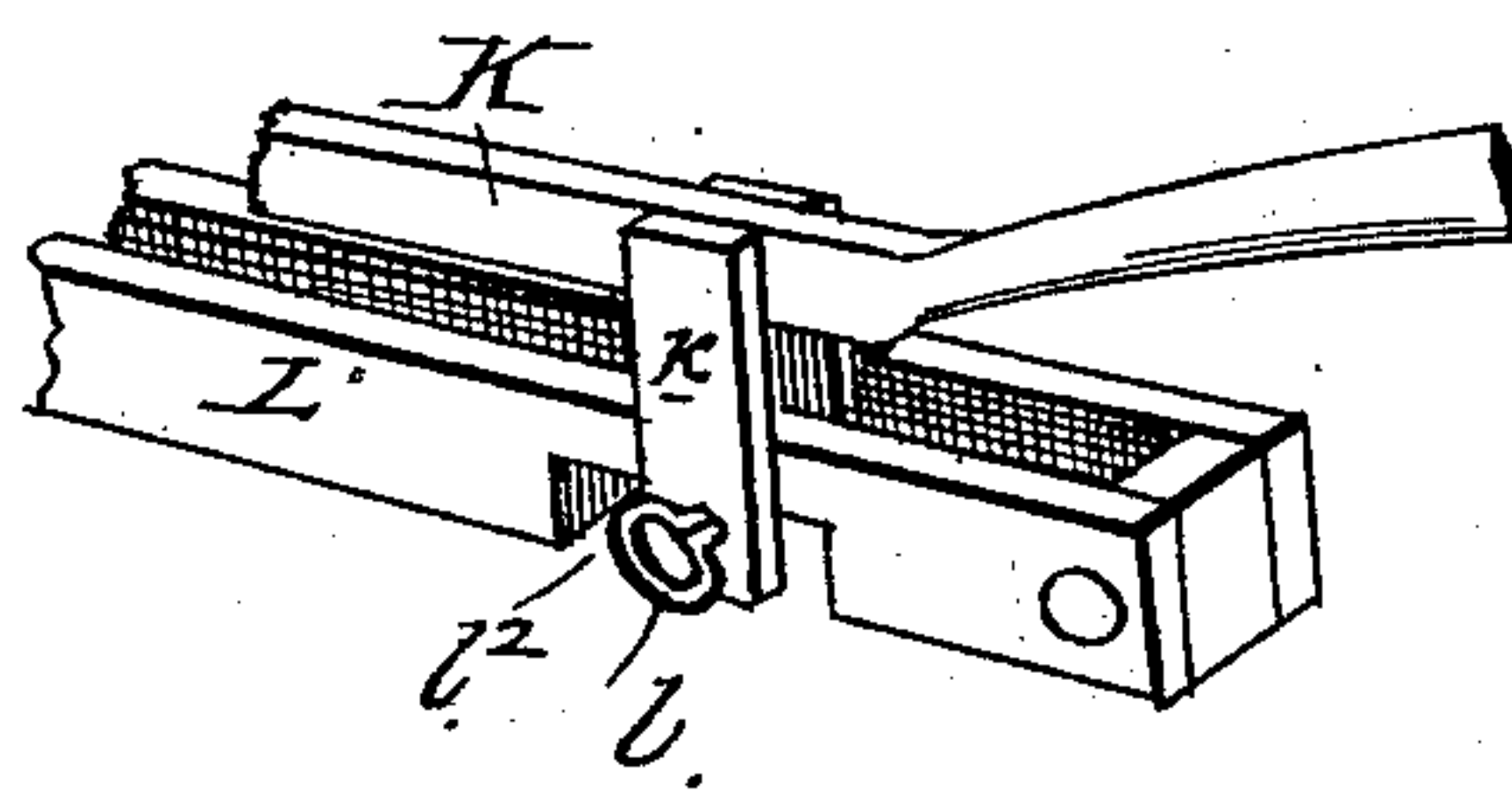
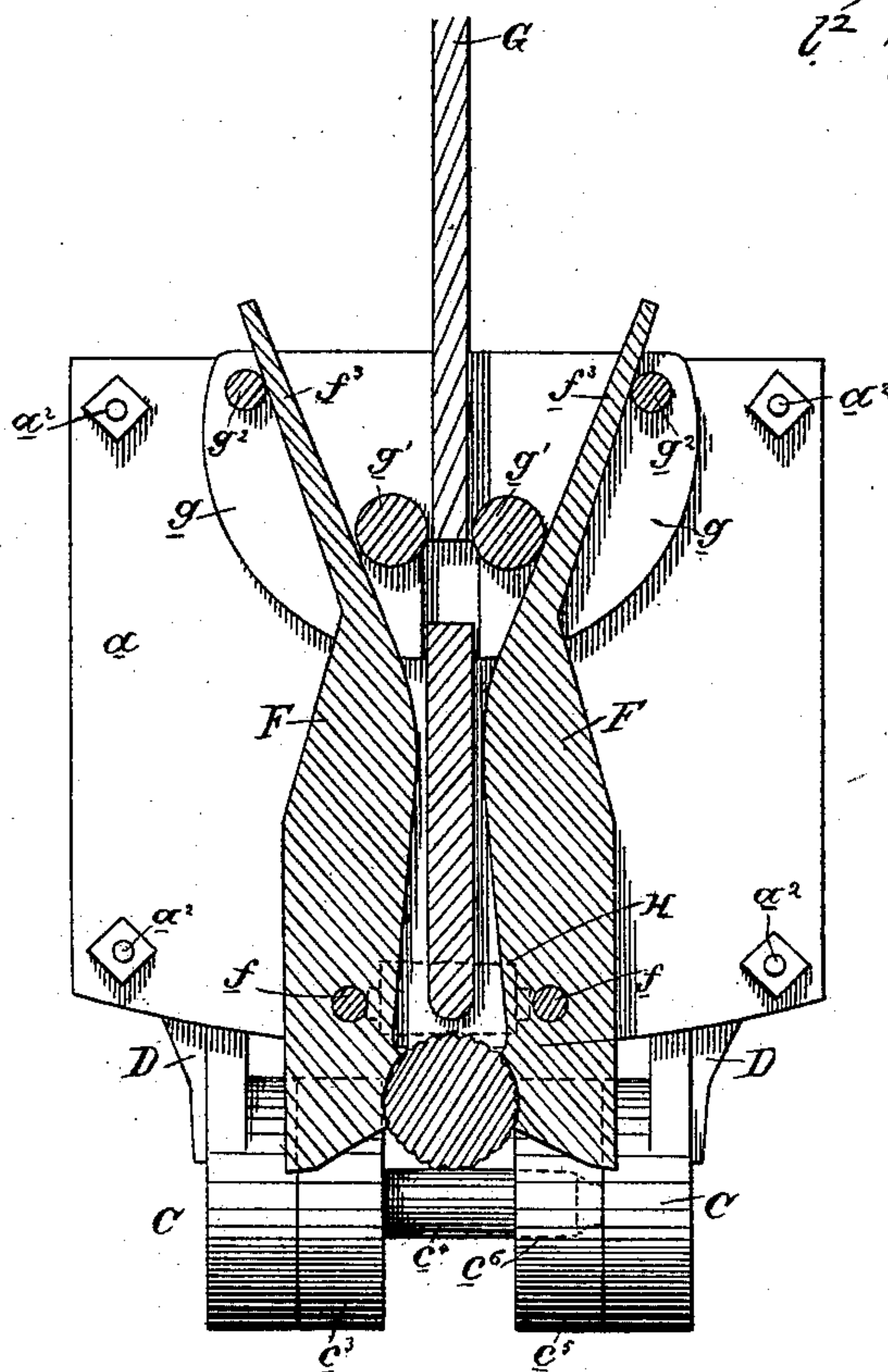


Fig. 3.



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UNITED STATES PATENT OFFICE.

WARREN DUNHAM, OF IGO, CALIFORNIA.

CABLE-GRIP.

SPECIFICATION forming part of Letters Patent No. 364,709, dated June 14, 1887.

Application filed August 2, 1886. Serial No. 209,803. (No model.)

To all whom it may concern:

Be it known that I, WARREN DUNHAM, of Igo, county of Shasta, and State of California, have invented an Improvement in Cable-Grips; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to the class of grips which are used in connection with cable railways for the purpose of connecting and disconnecting the car with the traveling cable within the tube or tunnel under the road-bed; and my invention consists in the novel roller-jaws by which the cable is gripped and released, a center or supplementary pair of jaws for gripping the cable in case of necessity, the mechanism for operating the jaws, and the details of construction, all of which I shall hereinafter fully describe.

The object of my invention is to provide a practical and effective cable-grip.

Referring to the accompanying drawings, Figure 1 is a front elevation of my grip, a portion of the lower part being broken away. Fig. 2 is a side elevation of same. Fig. 3 is a section through the jaws F. Fig. 4 is a bottom view. Fig. 5 is a detail, to be referred to.

A is the frame of the grip, made narrow, so that it may pass through the usual grip-slot of the road-bed, and provided on its lower end with the grooved or chambered seats a for the jaws of the grip. The body of the frame or plate A is slotted, and has fitted and adapted to slide within it the bars B, which are united by cross-pieces b , serving to guide them in their movement.

C are the main jaws, each provided with shanks c , pivoted adjustably within the grooved seats a of the main frame by means of bolts a' , playing in elongated slots c' in the shanks. Against these shanks c bear levers D, the upper ends of which are provided with slotted links d at right angles, into which are fitted the roller-bearings e of the arms E, secured to the lower cross-pieces of the sliding bars B. The outer surfaces or backs of the levers D are formed with inclined planes or cams d' , which operate against rollers a^2 , mounted in the grooved seats a of the main frame.

The operation as far as described is as follows: If the bars B be raised, the levers D will be drawn up until their cam-surfaces come in

contact with the upper rollers a^2 , causing said levers to rock, so as to throw their upper ends inwardly—that is, toward the frame of the grip—said ends traveling on their slotted links d , fitted on the roller-bearings e . This movement of the upper ends of the levers D, which bear upon the shanks of the jaws above their pivot-points, causes said jaws to rock and move outwardly upon their sliding or adjustable pivots, thereby opening or separating them. If the bars B are forced down, the levers D, in moving down, come in contact with the lower rollers a^2 , and their lower ends are thereby forced inwardly upon the jaws, whereby said jaws are closed together, the sliding or adjustable pivots on which they are mounted enabling them to come together squarely, so as to fully grip the cable.

The jaws consist of rollers arranged as follows: Pivoted upon pins or journals c^2 in the heads of the jaws are rollers c^3 , having reduced inner ends or stems, c^4 . Opposing the rollers and upon the opposite heads of the jaws are guard-rollers c^5 , which are journaled so as to rotate, and have a socket, c^6 , for receiving the reduced portion or stem of the opposite rollers. When the jaws are separated, the cable passes between the end of the reduced portion or stem of the rollers and the opposing guard-rollers, and when these are brought together so that the stems fit in the seats of the guard-rollers the cable lies upon the stems of both jaws and is grasped between the opposing rollers.

It will be seen that the grip of the jaws is not a peripheral one, as is usually the case in roller-grips, but the cable is gripped by the side faces of the rollers, so that, while affording play enough to avoid the sudden start which is the result of a too sudden grip, the jaws clamp the cable tightly enough to prevent its slipping through, and thus causing abrasion or stranding.

In case of necessity I have a supplementary pair of jaws, F, which are centrally located and are pivoted in the center of the frame at f . The heads of these jaws have beveled faces, so that they may readily pass over the cable in picking it up, and they also have grooved portions f' above, in which the cable is gripped. The shanks of these jaws are

bent to form cams at f^3 . The jaws F are operated by means of a central sliding bar, G, which is fitted between the bars B and has its lower end formed into a bracket, g , which
5 plays between the grooved seats a of the main frame. In the brackets g are mounted anti-friction rollers g' and fixed pins g^2 , between which and the rollers the inclined or cam ends f^3 of the stems of the jaws F pass.

10 When the bar G is elevated, the fixed cross-pins g^2 come in contact with the cam ends of the jaw-shanks, causing said jaws to open, and when the bar is depressed the rollers g' , bearing upon the opposite faces of said cam
15 ends, close said jaws. These center or supplementary jaws are to be used only in case of necessity and for additional security, as when on a steep grade. Ordinarily they remain open, and the cable, which is gripped by the
20 main jaws, simply passes between them, but not in contact. In the lower portion of the main frame, directly above the stems c^4 of the roller-jaws, are mounted the anti-friction rollers H, which bear down upon the cable. The
25 main jaws C are operated by means of the eccentrically-pivoted lever I, which is slotted upon a pin or stud, i , on the top cross-bar of the bars B.

In order to drop the cable completely by
30 opening the main jaws to their fullest extent, the lever I is permitted to have its full range of movement; but when operated ordinarily for the mere gripping and releasing of the cable its motion is limited and defined by means of
35 a link or rod, K, which is pivoted to the lever and has two small arms or lugs, k , passing down on each side of the fixed rack L and adapted to receive a spring-pin, l , which operates in a groove, slot, or notch, l^2 , in the un-
40 der side of the rack, and has a play therein equal to the distance which it is found the lever is required to move. (See Fig. 5.) By removing this pin the gripman can move the lever far enough to completely open the main
45 jaws, so as to drop the cable when necessary.

The lever I is controlled by a gravity-pawl, M, which is pivoted to it and has its rear end formed into a cam, m , against which a roller, n , in the lower end of a pivoted lever, N, im-
50 pinges. By moving this lever, its roller forces the cam end of the pawl down, thereby raising its other end out of engagement with the rack L. The center or supplementary jaws are operated by means of a lever, O, on the other
55 side of the frame, which is eccentrically pivoted, and is slotted upon a stud, o , secured to the cross-piece of the bar G. The lever is controlled by a gravity-pawl, P, engaging a rack, Q, and provided with a cam end, p , operated
60 by a roller, r , on a pivoted lever, R, all being arranged in a manner similar to the devices on the other side, and which operate the main jaws. The roller-bearings throughout the grip reduce the friction to a minimum, so that it
65 can be readily and rapidly operated.

I am aware independently-operated grip-jaws so arranged that each jaw is supplemental

to the others is not broadly new, and such I therefore do not broadly claim as my invention.

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

1. In a cable-grip, oppositely-moving jaws consisting of rollers mounted and having their direction of rotation in planes parallel to the
75 course of travel of the cable, and on each side of said cable, whereby they grip it with their sides, substantially as described.

2. In a cable-grip, oppositely-moving jaws, consisting of horizontal rollers upon which the
80 cable rests, and side rollers mounted and having their direction of rotation in planes parallel to the course of travel of the cable, and on each side of said cable, whereby they grip it with their sides, substantially as described. 85

3. In a cable-grip, and in combination with rollers above and resting on the cable, oppositely-moving jaws consisting of horizontal
85 rollers upon which the cable rests, and side rollers mounted and having their direction of
90 rotation in planes parallel to the course of travel of the cable, and on each side of said cable, whereby they grip it with their sides, substantially as described.

4. In a cable-grip, the oppositely-moving
95 jaws C, consisting of the rollers c^3 on one side, having stems c^4 , and the guard-rollers c^5 on the other side, provided with sockets for seating the stems c^4 when the jaws are closed, substan-
100 tially as described.

5. In a cable-grip, the frame A, having the horizontal rollers H in its base, in combina-
105 tion with the oppositely-moving jaws C, consisting on the one side of rollers c^3 , having stems c^4 , and the guard-rollers c^5 on the other side, provided with sockets for seating the stems c^4 when the jaws are closed, substantially as described.

6. In a cable-grip, the frame or plate A and the jaws C, consisting of the separable rollers
110 c^3 c^5 and intervening stems, c^4 , said jaws having shanks c , adjustably pivoted in the frame or plate A, in combination with mechanism for rocking said shanks on their adjustable
115 pivots, whereby the jaws are opened and closed, substantially as described.

7. In a cable-grip, the frame or plate A and the separable roller-jaws C, having shanks c ,
120 adjustably pivoted in the frame or plate A, in combination with the mechanism for operating the jaws, consisting of the sliding cam-levers D and the rollers a^2 in the frame, substantially as described.

8. In a cable-grip, the frame or plate A and the separable roller-jaws C, having shanks c ,
125 adjustably pivoted in the frame or plate, in combination with the mechanism for operating the jaws, consisting of the cam-levers D, working against the shanks c , the rollers a^2 , operating on the cam-levers, the sliding bars
130 B, and the roller-link connection c d between the bars and levers, substantially as described.

9. In a cable-grip, the frame or plate A and the separable roller-jaws C, having shanks c ,

adjustably pivoted in the frame or plate, in combination with the mechanism for operating the jaws, consisting of the cam-levers D, working against the shanks c , the rollers α^2 , operating on the levers, the sliding bars B, the roller-link connection $e d$ between the bars and cam-levers, and the eccentrically-pivoted main lever I, slotted on a stud or pin connected with the sliding bars, all arranged and adapted to operate substantially as described.

10. In a cable-grip, the combination of a main set of jaws with supplementary jaws operating independently of the main jaws, substantially as described.

11. In a cable-grip, a main set of jaws operated by a lever and connecting devices, in combination with supplementary jaws independent of the main jaws and operated by a separate lever and connecting devices, substantially as described.

12. In a cable-grip, the oppositely-moving and separable roller-jaws C at the front and back of the grip, in combination with the pivoted supplementary jaws F, located between the jaws C and adapted to grip the cable in conjunction with or independent of said jaws, substantially as described.

13. In a cable-grip, the main frame or plate A and the jaws F, pivoted in its base and having shanks with cam ends f^3 , in combination with the means for operating said jaws, consisting of the sliding bar G and the rollers g' , and cross-pins g^2 on its lower end, between which the cam ends of the jaw-shanks pass, substantially as described.

14. In a cable-grip, the main frame or plate A and the jaws F, pivoted in its base and having shanks with cam ends f^3 , in combination with the means for operating the jaws, consisting of the sliding bar G, having the rollers g' , and cross-pins g^2 in its lower end embracing the cam ends of the jaw-shanks, and the eccentrically-pivoted lever O, slotted upon a stud or pin connected with the bar G, all arranged and adapted to operate substantially as described.

15. In a cable-grip, the main lever by which the jaws are operated, in combination with the

controlling mechanism for said lever, consisting of the rack, the gravity-pawl pivoted to the lever and having a cam end, and the short lever pivoted to the main lever and having an anti-friction roller operating on the cam end of the gravity-pawl, substantially as described.

16. In a cable-grip, the lever I, for operating the jaws, in combination with the mechanism for defining its movement, consisting of the link or rod K, pivoted to the lever, and the removable pin l' in said link or rod, playing in a slot, groove, or notch in a fixed portion of the grip, substantially as described.

17. In a cable-grip, the lever I, for operating the jaws, in combination with the mechanism for controlling and defining its movement, consisting of the rack L, having the notch l^2 , the pawl M, engaging the rack, the link or rod K, pivoted to the lever, and the removable pin l' , connecting the link or rod with the rack and playing in the notch l^2 , substantially as described.

18. A cable-grip comprising the slotted frame or plate A, having the seats a for the jaws in its base, the roller-jaws C, having shanks c adjustably pivoted in the seats of the frame, and the supplementary jaws F, pivoted in said frame and lying between the roller-jaws, said jaws F having cam-shanks, the means for operating the roller-jaws, consisting of the cam-levers D, rollers α^2 , sliding bars B, connected with the cam-levers, and the eccentrically-pivoted lever I, connected with said bars, and the means for operating the supplementary jaws, consisting of the sliding bar G, having the rollers g' , and cross-pins g^2 , operating on the cam-shanks of the jaws, and the eccentrically-pivoted lever O, connected with the sliding bar, all arranged and adapted to operate substantially as herein described.

In witness whereof I have hereunto set my hand.

WARREN DUNHAM.

Witnesses:

C. D. COLE,
J. H. BLOOD.