(No Model.) 3 Sheets—Sheet 1.

# E. SAMUEL & V. ANGERER.

## CABLE GRIP.

No. 344,598. Patented June 29, 1886.

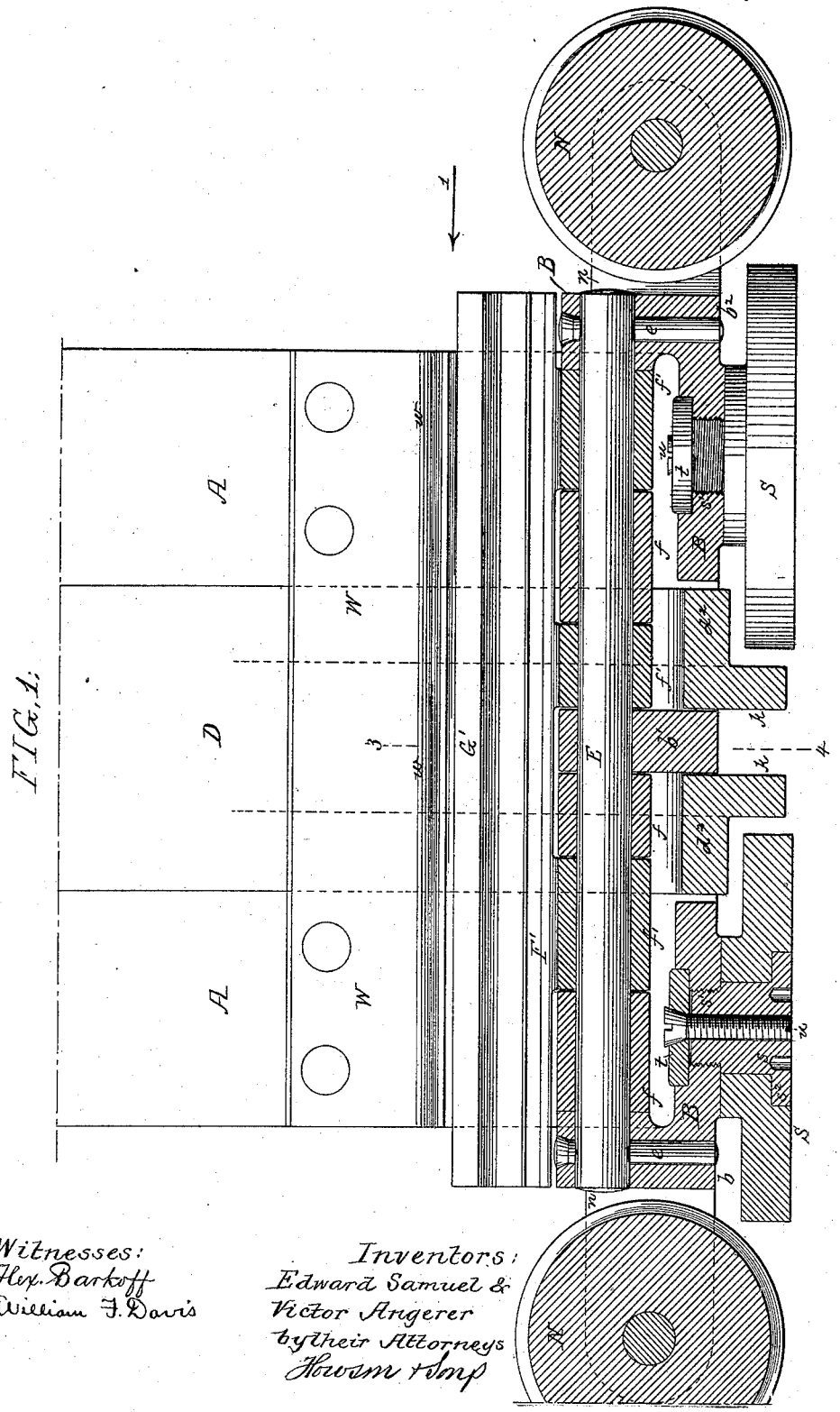



FIG. 1.

Witnesses:
Alex. Barkoff
William F. Davis

Inventors:
Edward Samuel &
Victor Angerer
by their Attorneys
Howson & Sons

(No Model.) 3 Sheets—Sheet 2.

# E. SAMUEL & V. ANGERER.

## CABLE GRIP.

No. 344,598. Patented June 29, 1886.

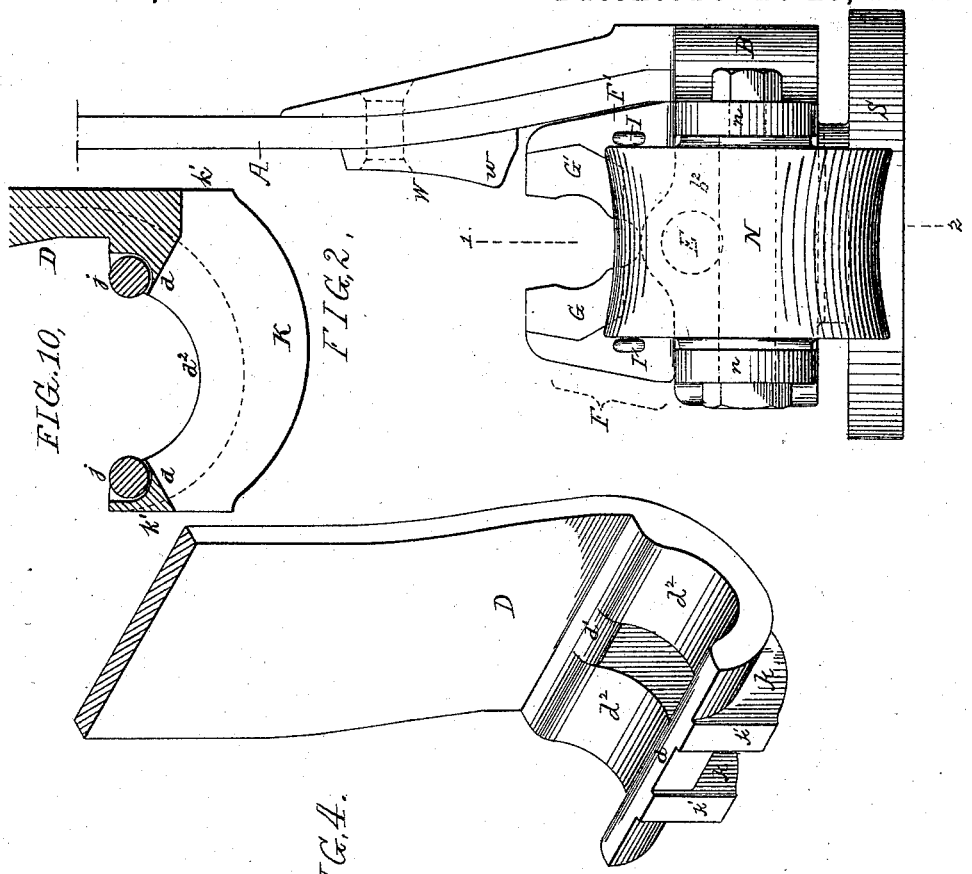


FIG. 10.

FIG. 2.

FIG. 4.

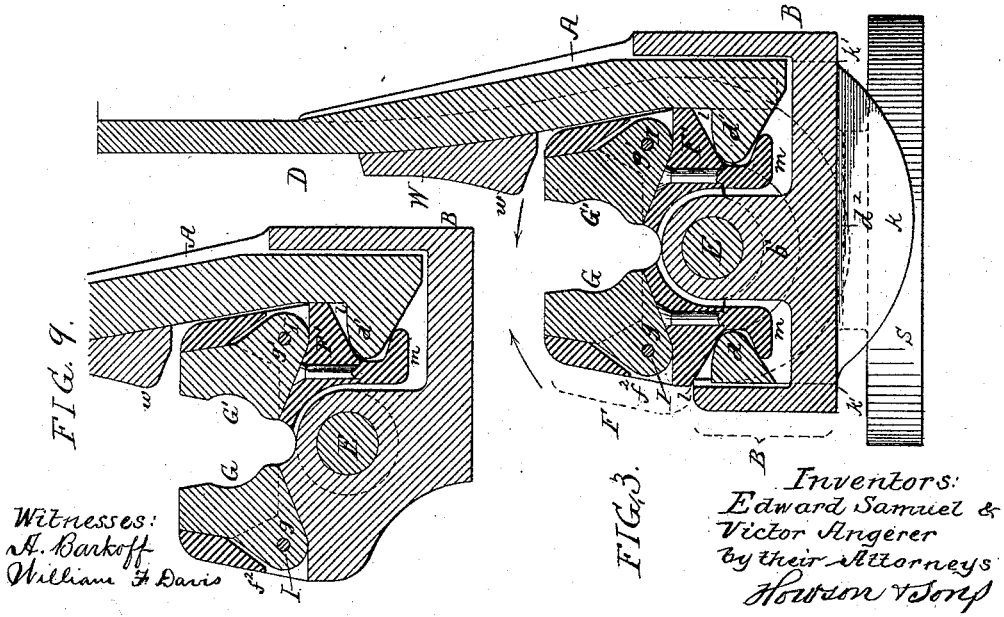


FIG. 9.

FIG. 3.

Witnesses:
A. Barkoff
William F. Davis

Inventors:
Edward Samuel &
Victor Angerer
by their Attorneys
Howson & Sons

(No Model.) 3 Sheets—Sheet 3.

# E. SAMUEL & V. ANGERER.

## CABLE GRIP.

No. 344,598. Patented June 29, 1886.

FIG. 8.

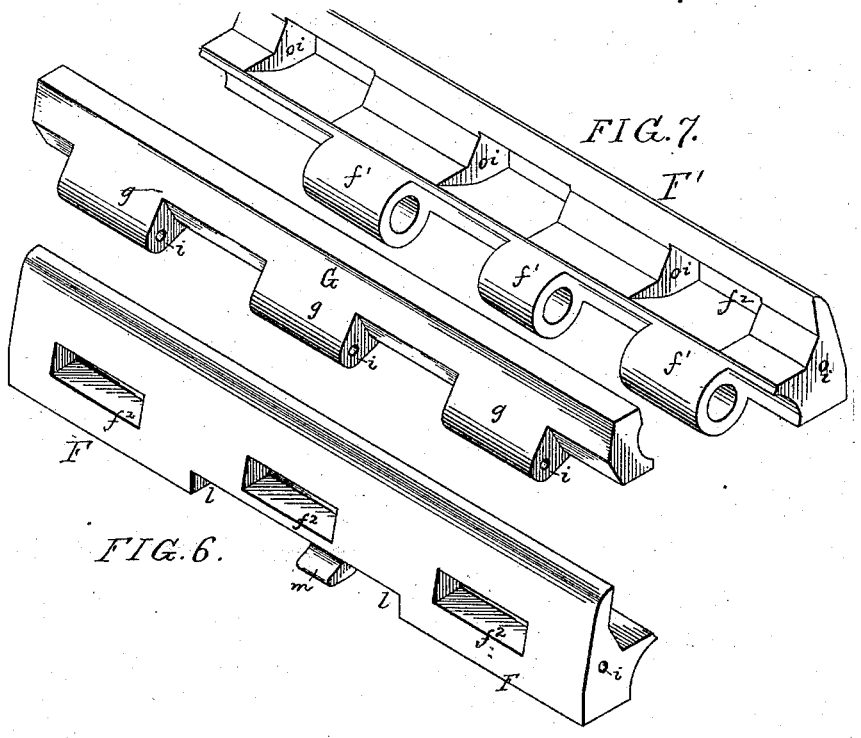
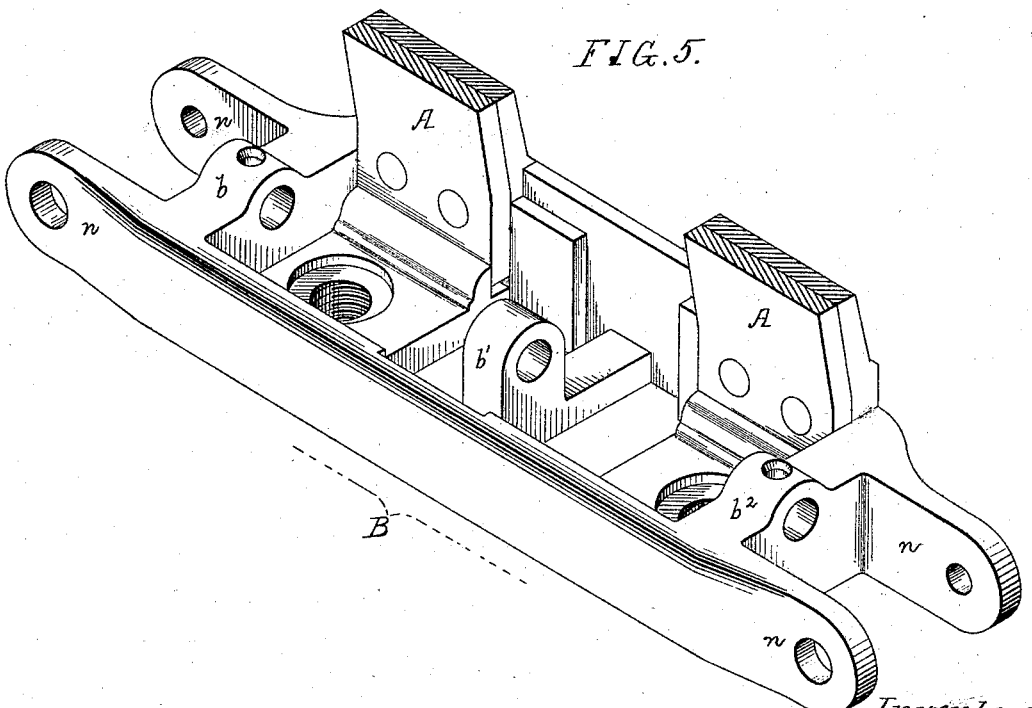



FIG. 7.

FIG. 6.

FIG. 5.




Witnesses:
Alex. Barkoff
William F. Davis

Inventors
Edward Samuel &
Victor Angerer
by their Attorneys
Howson & Sons

# UNITED STATES PATENT OFFICE.

EDWARD SAMUEL AND VICTOR ANGERER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNORS TO WILLIAM WHARTON, JUNIOR, AND COMPANY, (LIMITED,) OF SAME PLACE.

## CABLE-GRIP.

SPECIFICATION forming part of Letters Patent No. 344,598, dated June 29, 1886.

Application filed February 15, 1886. Serial No. 191,981. (No model.)

*To all whom it may concern:*

Be it known that we, EDWARD SAMUEL, a citizen of the United States, and VICTOR ANGERER, a subject of the Emperor of Austria-Hungary, both residing in Philadelphia, Pennsylvania, have invented certain Improvements in Cable-Grips, of which the following is a specification.

The main object of our invention is to construct a strong and efficient cable-grip, which will grasp and hold the cable with the least strain on the parts, a further object being to strengthen and simplify the grip in its detailed construction, as fully described hereinafter.

In the accompanying drawings, Figure 1 is a longitudinal sectional view on the line 1 2, Fig. 2, of our improved gripping device. Fig. 2 is an end view looking in the direction of the arrow 1, Fig. 1. Fig. 3 is a transverse section on the line 3 4, Fig. 1. Figs. 4, 5, 6, 7, and 8 are perspective views of detached parts of the device; and Figs. 9 and 10 are views of modifications of the device.

A A are the prominent plates of the gripping device, attached at their upper ends to suitable supports on the car-axles, and having at their lower ends a box, B, which carries the gripping-jaws.

D is the central movable bar, located between the plates A A, and adapted to be moved vertically by any of the devices now in common use to open and close the gripping-jaws.

In former cable-grips, where the cable is above and carried in the grip, it has been usual to so construct the parts that the jaws are closed to grip the cable by the pushing or depressing of the operating-bar, thereby subjecting it to a compression strain, which its form is ill adapted to resist, it being weaker than the two hanging or resisting bars. To obviate this strain, we so combine the operating-bar with the jaws that the said bar is subjected to a pulling strain or tension to close the jaws and to open them, which requires little or no strain. It is subjected to compression, as we will now describe.

The box B is of the general form shown in Fig. 5, and has lugs $b$ $b'$ $b^2$, for the reception of a central pivot-pin, E, which is held in the lugs by pins $e$ $e$, passing through both the lugs $b$ $b^2$ and the pivot.

Hung to the pivot-pin E are two jaws, F F', preferably of the form illustrated in Figs. 6 and 7, and having projecting lugs $f$ $f'$, for the reception of the pivot-pin. Secured to these jaws F F' are removable wearing-faces G G', which are preferably of the form shown in Fig. 8, and which have lugs $g$ $g'$, projecting into recesses $f^2$ in the jaws F F'.

The jaws and lugs on the wearing-faces are provided with openings $i$, through which rods or pins I are passed, in order to secure the wearing-faces to the jaws, these pins being readily withdrawn when it is desired to remove the wearing-faces, when they become worn, without disturbing the remaining portions of the device.

The bar D is of the form shown in Fig. 4, being bent at its lower end, and having two projections, $d$ $d'$, united by curved webs $d^2$. These webs are strengthened by ribs $k$, forming on each side guides $k'$ $k'$, fitting snugly in corresponding grooves in the box B, Fig. 5. The projections $d$ $d'$ bear against and act on the inclined under sides, $l$ $l$, of the pivoted gripping-jaws, so that by raising the bar D the projections $d$ $d'$ bear against said inclines $l$ $l$, and thereby cause the jaws to swing upon the pivot-pin E, and thus press the wearing-faces G G' firmly against the cable. The jaws will return to their open normal position, as in Fig. 3, when the bar D is pushed down; but we prefer to provide the under side of the jaws F F' with lugs $m$ $m$, which extend under the projections $d$ $d'$ of the bar D, so that as said bar is pushed down it will open the jaws, as will be readily seen on reference to Fig. 3.

Secured to the plates A A at a point above the jaws is a shield-plate, W, extending across the full length of the grip, and having a projecting portion, $w$, (see Figs. 2 and 3,) to prevent dirt, &c., from getting between the jaw F' and the plates A or bar D, the plate at the same time acting as a lateral brace and stiffener for the bars A.

On each end of the box B are bearings $n$, for the carrying-rollers N, which support the cable, and to the under side of the box are secured the horizontal guide-wheels S, in the manner which we will now proceed to describe. Each wheel S revolves on a journal, $s$, which

has a threaded portion, $s'$, and a head, $s^2$, the threaded portion being screwed into a threaded opening in the box B, and thus confining the wheel S vertically to the box; but in order to prevent the journal $s$ from partaking of the rotary motion of the wheel S, and thus working loose, we provide a washer, $t$, resting on the box B, a screw-bolt, $u$, passing through this washer and into the journal $s$, as shown in Fig. 1. The thread of this screw differs in pitch from the screw on the portion $s'$ of the journal; or one may be a right-hand and the other a left-hand thread, so that the tendency of one to loosen will be counteracted by the other. In some cases only one jaw, F, may be pivoted, as shown in the modification, Fig. 9; but we prefer to pivot both, as above described, as such arrangement reduces the motion by one-half in the operating-bar, causes an equal wear of the faces, and does not distort the cable from its central position in the grip, thus obviating undue wear on the hanger-bars at the level of the slot-iron. We also prefer to place friction-rollers $j\,j$ along the bearing-edges $d\,d$ of the bar D, as in Fig. 10, where the grip is of a size to permit such rollers to be used.

We claim as our invention—

1. The combination, in a cable-gripping device, of the stationary frame carrying gripping-jaws, having the pivot or pivots below the cable, with a movable bar acting on one or both jaws, substantially as described, whereby the jaws are closed when the bar is subjected to tension, all substantially as set forth.

2. The combination of the plates A and box B, carrying gripping-jaws F F′, pivoted below the cable, with a movable bar, D, acting upon the said jaws to close them when the bar is elevated, substantially as described.

3. The combination of the box B and the gripping jaw pivoted thereto and having a lug, $m$, with a movable bar, D, having a bearing-surface, $d$, adapted to act upon the under side of said jaw and upon the lug $m$, as and for the purpose set forth.

4. The combination of the box B, the jaw F, pivoted to the box and having recesses $f^2$, with a removable wearing-face, G, having lugs $g$, adapted to the recesses, and a rod, I, for securing the removable face to the jaws, all substantially as set forth.

5. The combination, in a gripping device, of the horizontal wheel S, with threaded journal $s$, and a screw-bolt, $u$, the thread on which differs from that on the journal, substantially as set forth.

6. The combination of the cable-grip having pivoted jaws, with the shield W above the jaws, substantially as specified.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

EDWD. SAMUEL.
VICTOR ANGERER.

Witnesses:
WILLIAM F. DAVIS,
HARRY SMITH.