

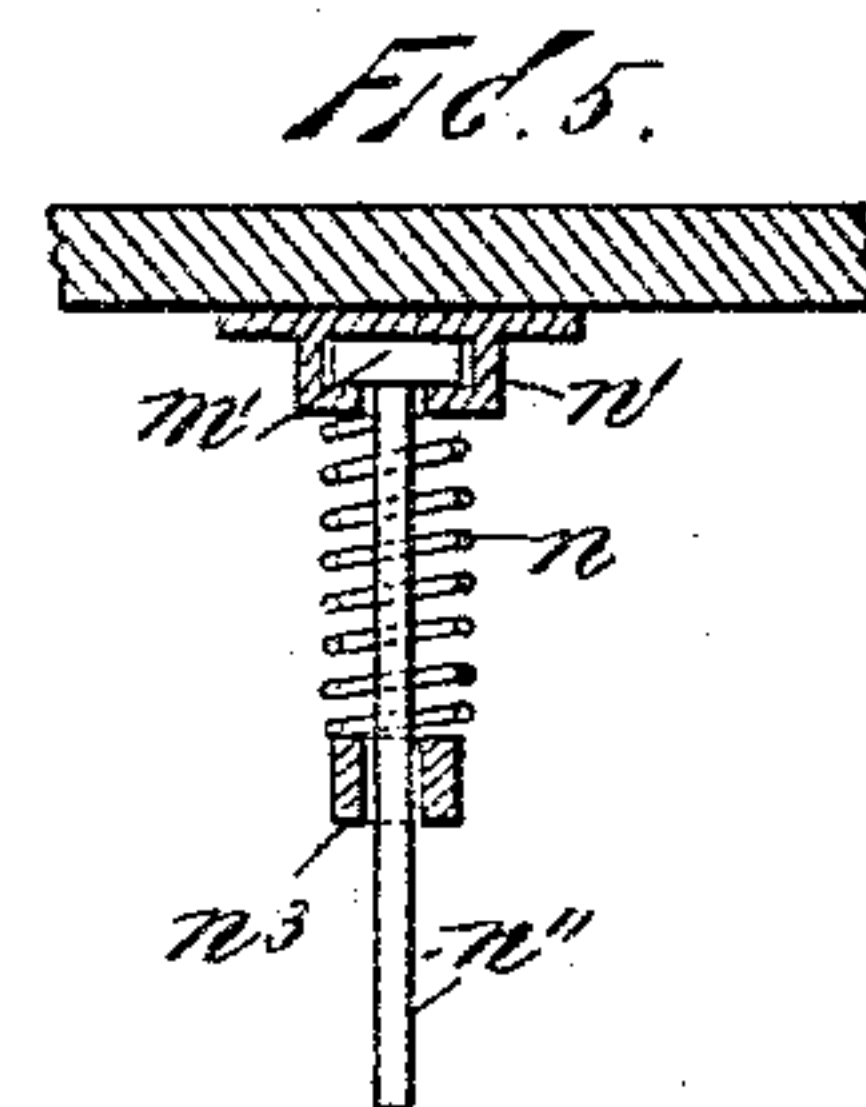
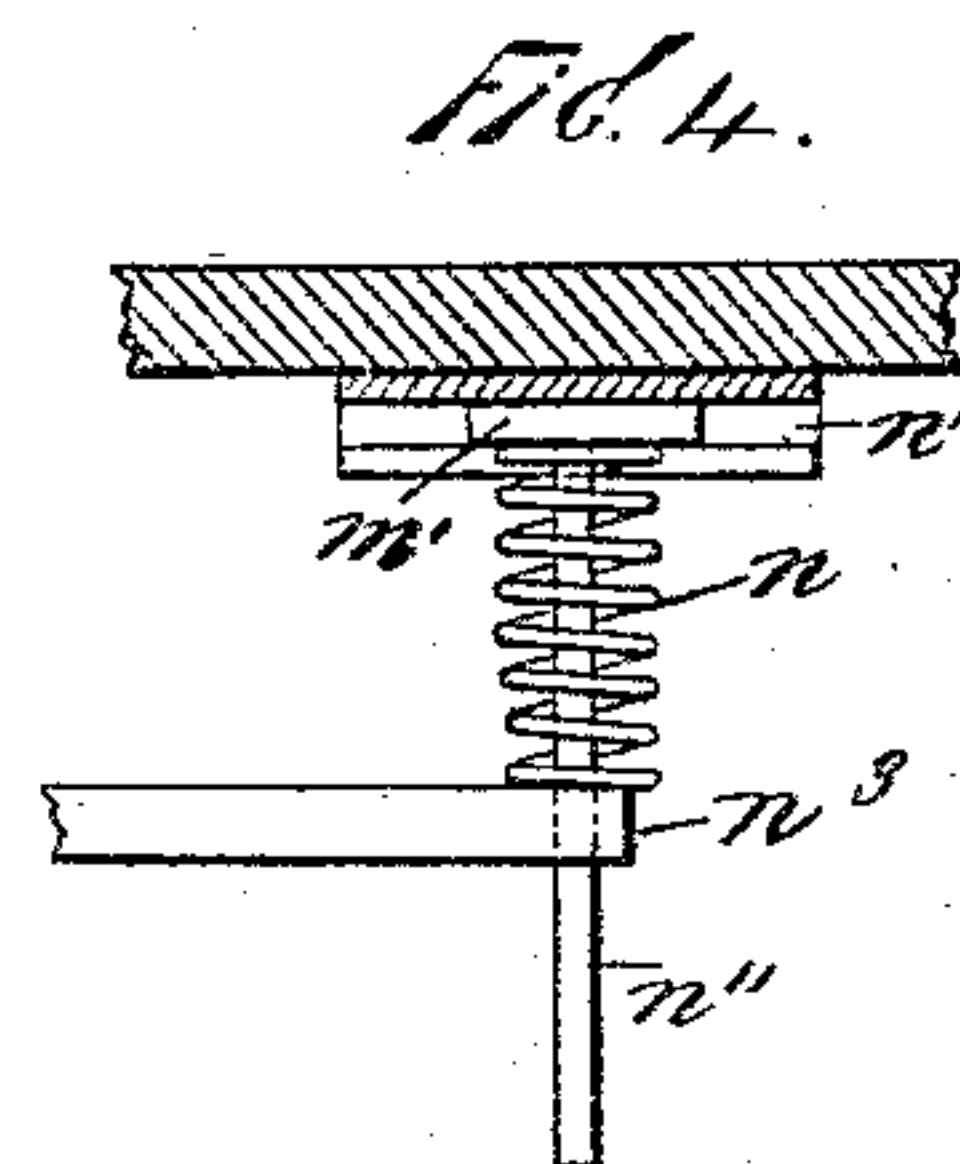
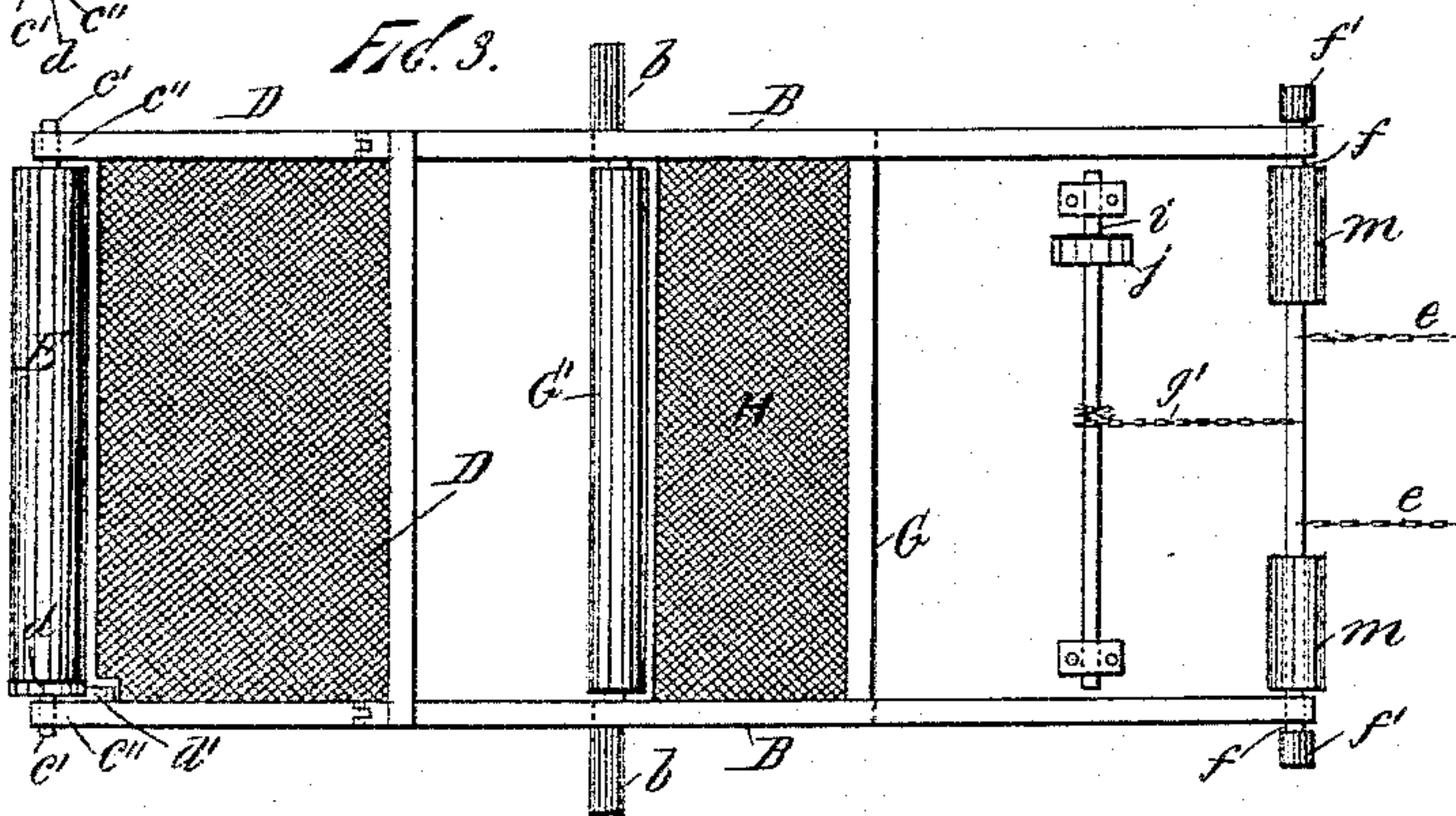
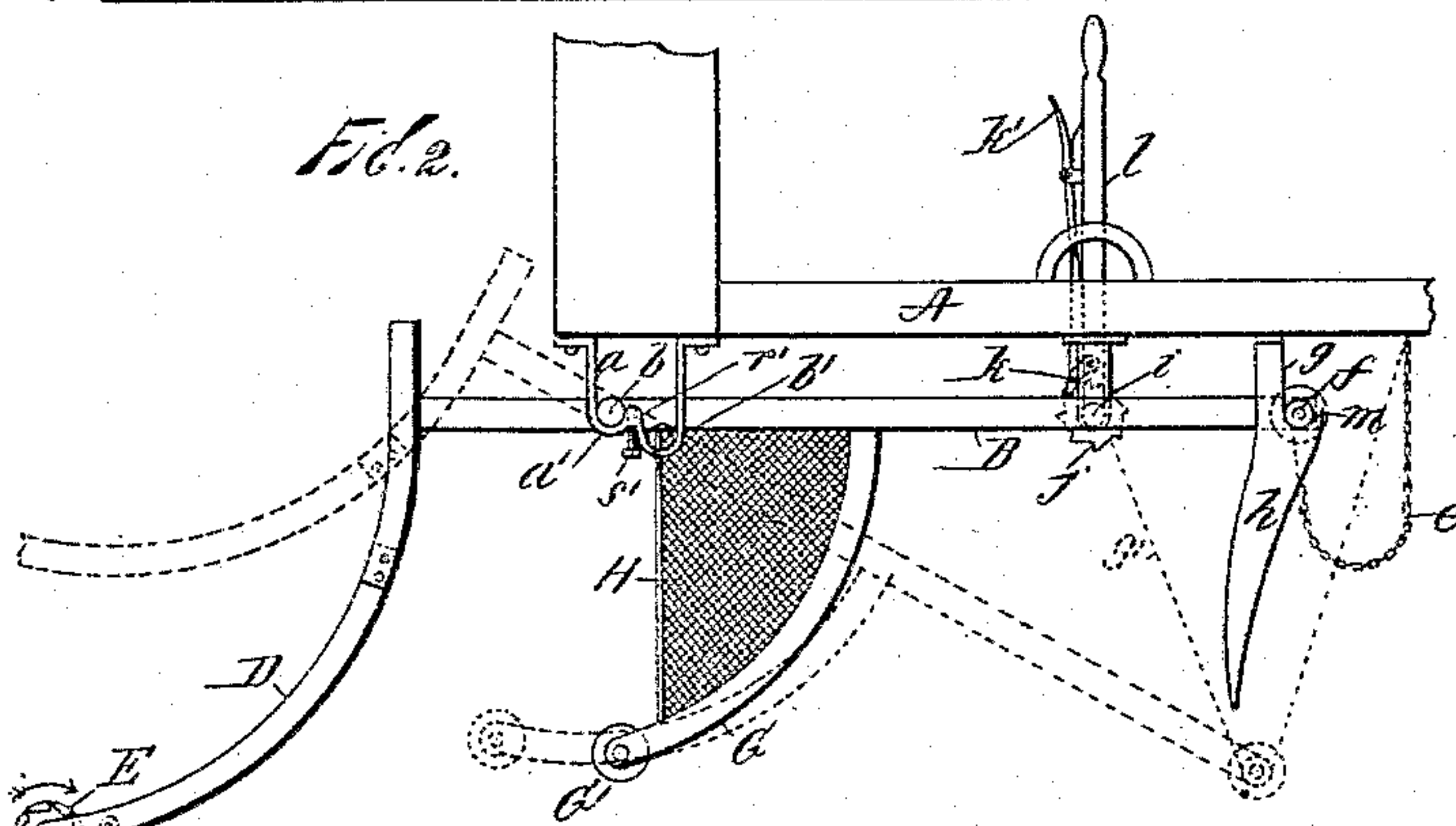
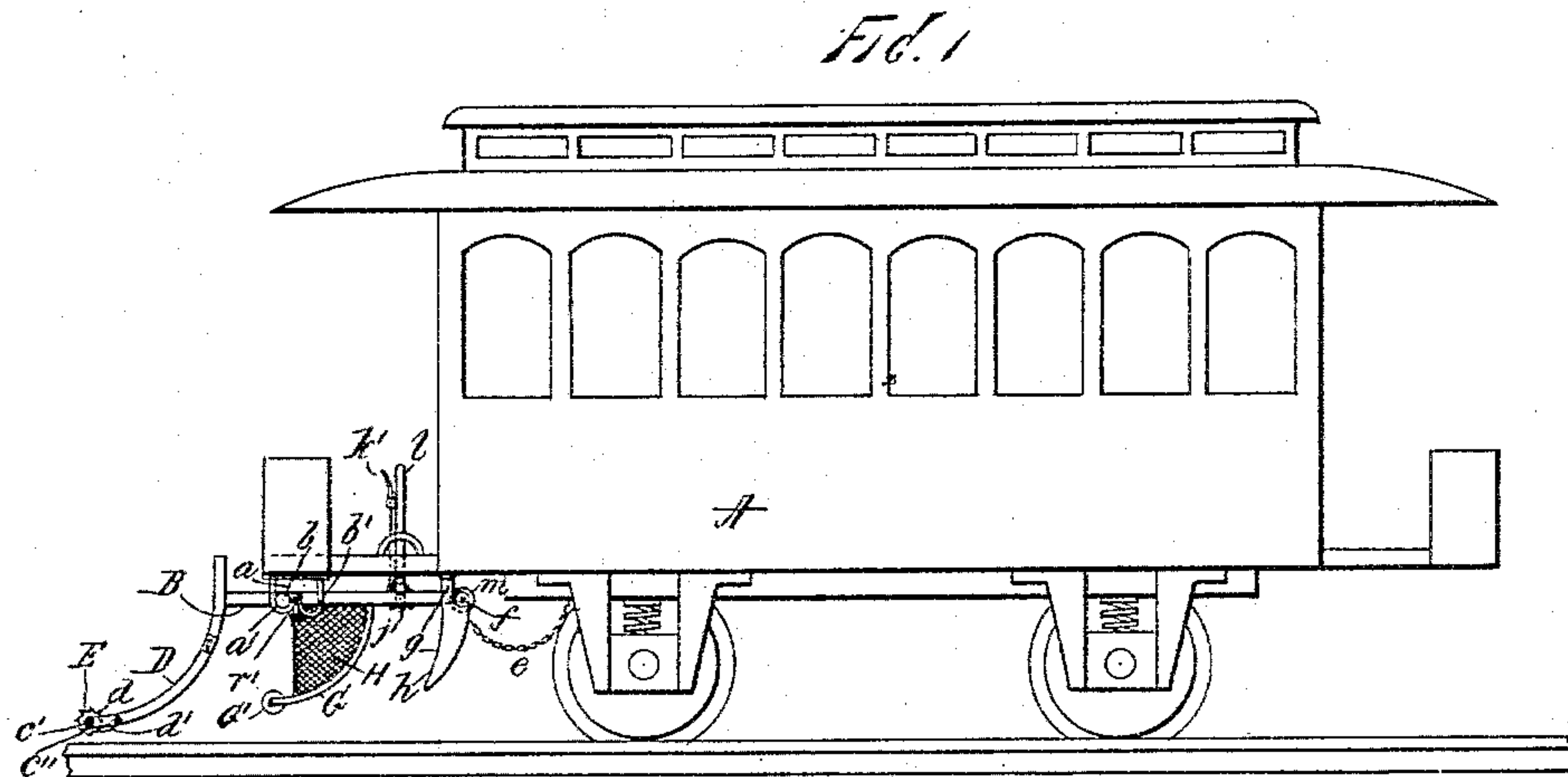
(No Model.)

O. R. ROUTH.

SAFETY APPARATUS FOR STREET RAILWAY CARS.

No. 533,497.

Patented Feb. 5, 1895.



Witnesses:
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UNITED STATES PATENT OFFICE.

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SAFETY APPARATUS FOR STREET-RAILWAY CARS.

SPECIFICATION forming part of Letters Patent No. 533,497, dated February 5, 1895.

Application filed May 19, 1894. Serial No. 511,792. (No model.)

To all whom it may concern:

Be it known that I, OSWALD R. ROUTH, of Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Safety Apparatus for Street-Railway Cars; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a side view of a street railway car provided with my invention. Fig. 2 is a vertical transverse sectional view on a larger scale further illustrating my said invention. Fig. 3 is an inverted plan view of the parts shown in Fig. 2. Fig. 4 is a detail sectional view showing a modification embraced in my said invention, and Fig. 5 is a like view, taken in a plane at right angles to that of Fig. 1, further illustrating said modification.

This invention relates to that class of apparatuses intended for use in connection with cars or vehicles run upon street railways by other than horse-power, and designed to prevent injury to pedestrians and others in front of the car when the latter is in rapid motion.

My invention comprises certain novel combinations of parts whereby I provide an apparatus of the class mentioned which is quick and certain in operation, simple and strong in construction, and adapted to meet the various contingencies of danger incident to the use and operation of railway cars run or operated by electric trolleys, storage batteries, cable traction, or other substitutes for draft animals.

A is the body of the car which may be of any ordinary or suitable construction. From the under side of this body depend any suitable number, preferably two, stirrups, *a*, placed at opposite sides of the car each of which has two sockets, *a'*, and, *b'*, respectively. The innermost, *b'*, of these sockets is somewhat lower than the other, *a'*, of said sockets.

B is a frame supported upon two gudgeons, *b*, which extend laterally from the said frame which is placed underneath the car-body, A. These gudgeons rest in the stirrups, *a*.

Upon the forward or outer end of the frame, B, is the fender, D, which has in a general way the form shown in Figs. 1 and 2, so that a person falling or thrown may be lifted thereby when the fender is raised as hereinafter presently explained. This fender may be of any suitable construction as, for example, of wire-

cloth or netting, of basket work, or of wood, or of sheet metal, &c. In the front or outermost end of this fender is provided a roller, E, the journals, *c'*, of which work in suitable bearings, *c''*, provided on adjacent parts of the fender. This roller is provided with one or more ratchet wheels, *d*, and provided to the fender in due relation with said ratchet wheel or wheels is a pawl, or pawls, *d'*, so arranged as to permit the roller to rotate in the direction indicated by the arrow in Figs. 1 and 2, that is to say, in a direction upward and backward at its front, but to prevent any rotation or partial rotation of said roller in a reverse direction.

Extended from the car-body to the inner end of the frame, B, is a stop chain, *e*, or equivalent device which limits the downward movement of said end of said frame when the fender is raised in the operation of the apparatus in the rescue of a pedestrian or other person in advance of the rapidly moving car.

When the parts are in position as shown in Fig. 1, for anticipated operation, the gudgeons of the frame rest in the outer sockets, *a'*. The rear end of the frame has lateral studs, *f*, preferably provided with antifriction rollers, *f'*, which, when the parts are in the position just specified, rest in hooks, *g*, which depend from the car-body and which are open at their rear or inner sides as more clearly shown in Fig. 2, so that when the frame is pushed inward the studs, *f*, will pass over from the hooks and permit the loaded end of the frame to fall, thereby raising the fender, D, in a proportionate degree. When the frame, B, is in this position the fender D, is depressed with its roller, running at any preferred distance from the ground, but preferably as near the latter as possible consistent with its clearing the usual obstacles existent along a street railroad track. Extended downward from the hooks, *g*, are guides, *h*, the office of which is to guide the studs, *f*, back to the hooks, *g*, after the frame has been dislodged by the passage of the studs, *f*, from the hooks, *g*, as just set forth in the use and operation of the apparatus in the emergencies for which it is designed.

The rear or inner part of the frame, B, is provided with a lifting chain, *g'*, or equivalent, which extends to a winding drum, *i*, carried by the car-body above. This drum is provided with a ratchet wheel, *j*, which is

acted upon by a pawl, *k*, on a lever, *l*, in such manner that, when the frame is depressed after an operation of the apparatus, the lifting chain, *g'*, may be wound upon the drum to raise the frame to its normal position by a to-and-fro movement of said lever. To permit the movement of the frame in a subsequent operation of the apparatus it is of course necessary to withdraw the pawl, *k*, from the ratchet wheel, *j*. This may be provided for by any suitable means as, for example, by the well known device of a supplemental lever, *k'*, pivoted to the lever, *l*, and connected with the pawl in such a way that the latter is lifted from the ratchet wheel when the upper end of the supplemental lever is pressed toward the corresponding part of the lever, *l*.

The rearmost or inner end of the frame, *B*, is loaded to facilitate its prompt descent, and the consequent prompt lifting of the fender, in the operation of the apparatus. This loading may be by weights, *m*, attached as shown in Fig. 3 to the said part of the frame as shown in Figs. 1, 2 and 3, or by springs, *n*, as illustrated in Figs. 4 and 5, in which latter case the upper ends of the springs, *n*, should be attached to slides, *m'*, which move in guides, *n'*, which latter are longitudinal with the car-body, the lower ends of the springs resting against the inner part of the frame with a tension adapted to press the latter downward, a stem, *n''*, being extended from each of said slides through each spring, *n*, and through a hole or opening, *n³*, in the adjacent part of the frame, the object of the stem being to retain the spring in working position and in due relation with its slide, *m'*, and with the adjacent end of the frame.

Back of the stirrups, *a*, and downward and forwardly extended from the frame, *B*, is a supplemental fender, *G*, which in its general form and structure is similar to the fender, *D*, and which may be provided with a roller, *G'*, at its front or outer end. This supplemental fender is of course behind the fender, *D*, when the apparatus is in position for operation. Extended downward from the car-body is a vertical basket, *H*, open in front, which occupies the upper part of the space immediately in front of the supplemental fender.

In practice it is intended that each car shall be provided with two apparatuses, one at each end of the car, that at the front end of the car, as the latter is moving, being in position for use and operation. As in such case the apparatus at one end of the car is a duplicate of that at the other, a description of the structure and operation as at one end of the car applies equally to both.

Normally as hereinbefore explained the gudgeons, *b*, rest on the outermost sockets, *a'*, of the stirrups, *a*, with the loaded rear end of the frame, *B*, supported by the hooks, *g*. Upon reaching a pedestrian or person in front of the advancing car, the roller, *E*, first comes in contact with such person at a point as near

the ground as may be, and inasmuch as the roller, *E*, is prevented by the pawl, *d'*, and ratchet wheel, *d*, from turning except in the direction of the arrow, (that is to say in an upward direction at its front) and as this direction of motion of said roller tends to carry the person directly over upon or against the fender, *D*, it follows that the latter is caused to receive said person upon its front and upper surface, and the person thus struck is kept from being thrown between the fender and the ground. Meanwhile, the impact of the fender against the person tends to move the frame, *B*, inward or backward with reference to the car-body and thereby carries the gudgeons, *b*, over the projections, *r*, (which separate the sockets, *a'*, from the sockets, *b'*,) into the sockets, *b'* and at the same time carries the studs, *f*, clear of the hooks, *g*, thereby permitting the loaded rear or inner end of the frame to descend, consequently raising the fender to a position more or less horizontal as shown in dotted outline in Fig. 2, to cradle and retain the person therein in a condition and position of comparative safety. When the fender, *D*, is thus raised, the downward movement of the inner part of the frame, *B*, brings the supplemental fender, *G*, into a depressed position so that in the event of another person being in the way of the advancing car before the fender, *D*, is again brought to its normal position, such other person will be caught by the supplemental fender and directed over and upon the same into the basket, *H*.

To provide for regulating the ease with which the frame, *B*, may be moved back by impact against a person or obstacle upon the track in advance of the car, the projections, *r'*, between the sockets are provided with set-screws, *s*, arranged in such manner as to constitute part of said projection, so that by raising or lowering, as the case may be, the said set screws, the resistance afforded to the inward movement of the frame may be adjusted to any desired degree.

In the operation of the apparatus as described, the parts are brought to the positions shown in dotted outline in Fig. 2. To replace them in their normal position for repeated operation the frame is lifted by the lifting chain, *g'*, as hereinbefore explained, the studs, *f*, being guided by the guides, *h*, back to the hooks, *g*, the trend of the lifting chain being such that, when the frame has been brought adjacent to said hooks the frame will be drawn longitudinally so that the gudgeons are returned to the sockets, *a'*, simultaneous with the passing of the studs, *f*, upon the hooks.

It will be observed that as concerns the sockets, *a'*, *b'*, it is practically immaterial for the purposes of my invention, if they are formed in the stirrups, *a*, and adapted to receive the gudgeons, *b*, on the frame, or whether the gudgeons be provided in fixed relation to the car-body and the sockets formed upon the frame, *B*, inasmuch as the one construction is

manifestly equivalent to the other in character and operation. In like manner while it is preferred that the hooks, *g*, be open at their inner sides to receive the studs, *f*, it is clear that the hooks may be provided upon the frame, *B*, open at their forward or outer sides and arranged to catch upon fixed studs arranged in place of the hooks, *g*, as shown in the drawings. This being merely a reversal of the positions of the parts without changing their mode of operation, is, of course, an equivalent for the arrangement represented in the drawings and herein more especially described.

To prevent hinderance to the backward movement of the car when the loaded end of the frame, *B*, is depressed, the weights, *m*, shown in Fig. 3 are of cylindrical form and axially journaled upon a cross-shaft at the inner part of the said frame, so that when the said end is depressed the weights, if brought in contact with the ground, revolve after the manner of wheels and prevent the end of the frame from wedging against the ground and retarding the reversed movement of the car. In such case the stop-chain is of such length as to prevent the frame, when depressed, from being moved forward or outward to bring the studs, *b*, into the forward or outermost sockets, *a'*. It is of course to be understood that instead of two or more cylindrical weights axially journaled as described a single such roller may be employed. When desired sleeves may be loosely placed upon the gudgeons, *g*, to act as anti-friction rollers in the passage of the gudgeons from the sockets, *a'*, to the sockets, *b'*, and conversely.

What I claim as my invention is—

1. The combination with the stirrups, *a*, having the sockets, *a'*, *b'*, and the hooks, *g*, open at their inner sides, a frame, *B*, loaded at its inner part and having the fender, *D*, at its forward end, of a supplemental fender, *G*, suspended from said frame and arranged to be brought into position for use when the fender, *D*, is raised in the use and operation of the apparatus, substantially as herein set forth.

2. The combination with the stirrups, *a*, having the sockets, *a'*, *b'*, the hooks, *g*, open at their inner sides, a frame, *B*, loaded at its inner part and having the fender, *D*, at its forward end, and a supplemental fender, *G*, suspended from said frame, of a basket, *H*, suspended from the car-body in front of said supplemental fender, substantially as and for the purpose herein set forth.

3. The combination with the stirrups, *a*, having the sockets, *a'*, *b'*, and the hooks, *g*, open at their inner sides, of the frame, *B*, loaded at its rear or inner part and having the fender, *D*, at its front or outer end, of the guides, *h*, arranged to guide the frame when lifted into normal relations with the said sockets and hooks to hold the frame and fender in position for renewed use or operation, substantially as herein set forth.

4. The combination with the stirrups, *a*, having the sockets, *a'*, *b'*, the hooks, *g*, open at their inner sides and the frame, *B*, loaded at its inner part and having the fender, *D*, at its forward end, of the lifting chain, *g'*, and means for actuating said chain to lift the frame to bring the fender into position for renewed use and operation, substantially as herein set forth.

5. The combination with the stirrups, *a*, having the sockets, *a'*, *b'*, and the hooks, *g*, open at their inner sides, and the frame, *B*, loaded at its inner part and having the fender, *D*, at its forward end, of the lifting chain, *g'*, means for actuating said chain to lift the frame, and the guides, *h*, for guiding the inner end of the frame to its bearings upon the hooks, substantially as and for the purpose herein set forth.

6. The combination with the stirrups, *a*, having the sockets, *a'*, *b'*, the hooks, *g*, open at their inner ends, and the frame, *B*, loaded at its inner part and having the fender, *D*, at its outer end, of the adjustable set-screws, *s*, placed between the sockets, *a'*, *b'*, whereby resistance in the operation of the apparatus to the transfer of the gudgeons, *b*, of the frame from the sockets, *a'*, to the sockets, *b'*, may be regulated, substantially as herein set forth.

7. The combination with the stirrups, *a*, having the sockets, *a'*, *b'*, the hooks, *g*, open at their inner sides, and the frame, *B*, loaded at its inner part and having the fender, *D*, at its forward end, of the stop chain, *e*, for limiting the downward movement of the loaded end of the frame in the operation of the apparatus, substantially as herein set forth.

8. The combination with the stirrups, *a*, having the sockets, *a'*, *b'*, and the hooks, *g*, open at their inner sides, of the frame, *B*, loaded at its inner part and having the fender, *D*, at its forward end, of the lifting chain *g'*, drum, *i*, ratchet wheel, *j*, and lever, *l*, having the pawl, *k*, arranged to lift the loaded part of the frame by the to-and-fro movement of the lever, substantially as herein set forth.

9. The combination with the sockets, *a'*, *b'*, and the frame, *B*, having the fender, *D*, at its forward end, of a cylindrical weight or weights, *m*, axially journaled at the rear or inner part of the said frame, substantially as and for the purpose herein set forth.

10. The combination with the sockets, *a'*, *b'*, and the frame, *B*, having the fender, *D*, at its forward end, of a cylindrical weight or weights axially journaled at the rear or inner part of said frame, and a stop chain arranged to prevent the forward movement of the frame from the sockets, *b'*, to the sockets, *a'*, when the loaded end of the frame is depressed, substantially as herein set forth.

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Witnesses:

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