

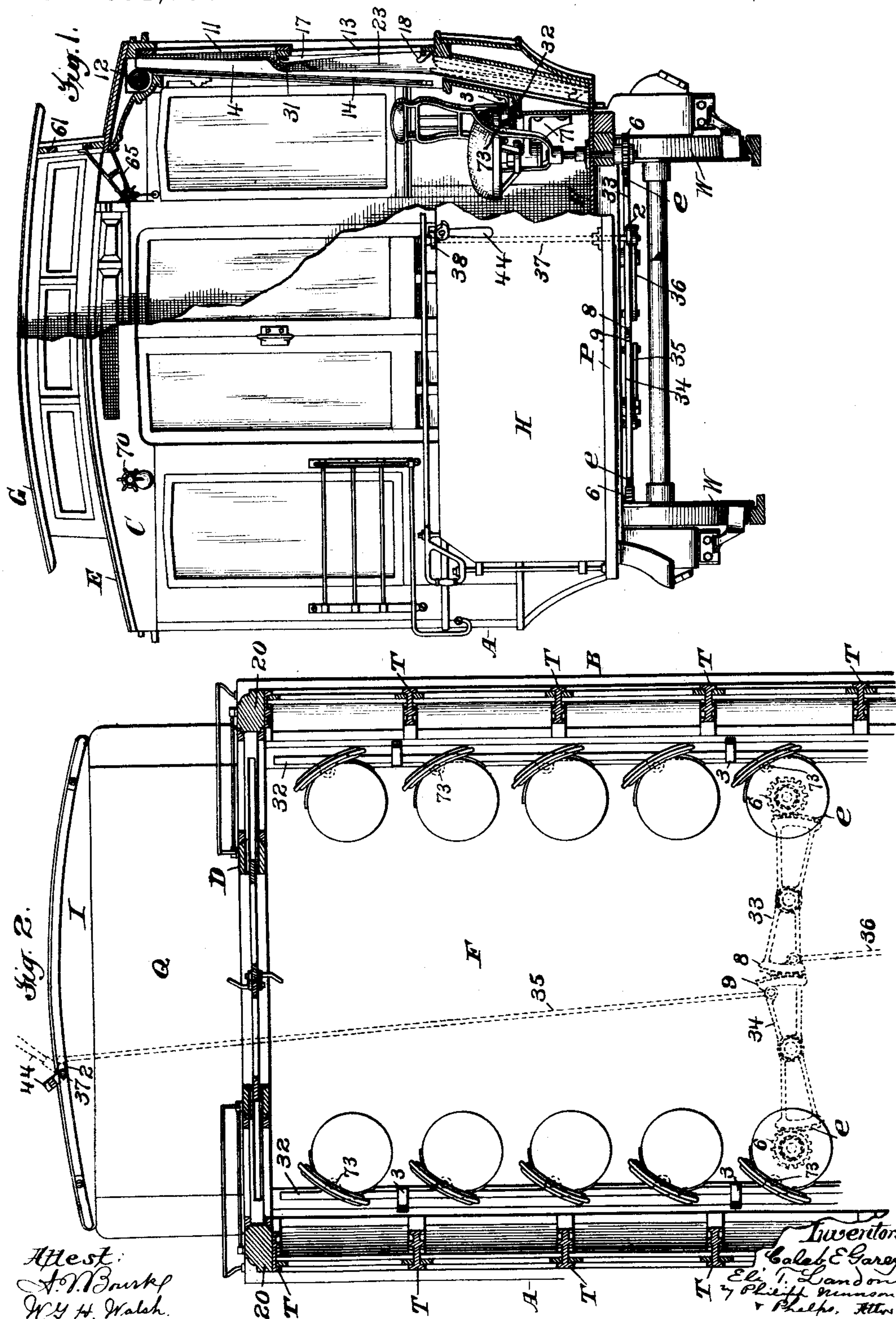
(No Model.)

4 Sheets—Sheet 1.

C. E. GAREY & E. T. LANDON.
STREET RAILWAY CAR.

No. 601,000.

Patented Mar. 22, 1898.



Attest:
A. N. Barker
W. H. H. Walsh.

Inventors
C. E. Garey
E. T. Landon
By Philip Munson
Attorney

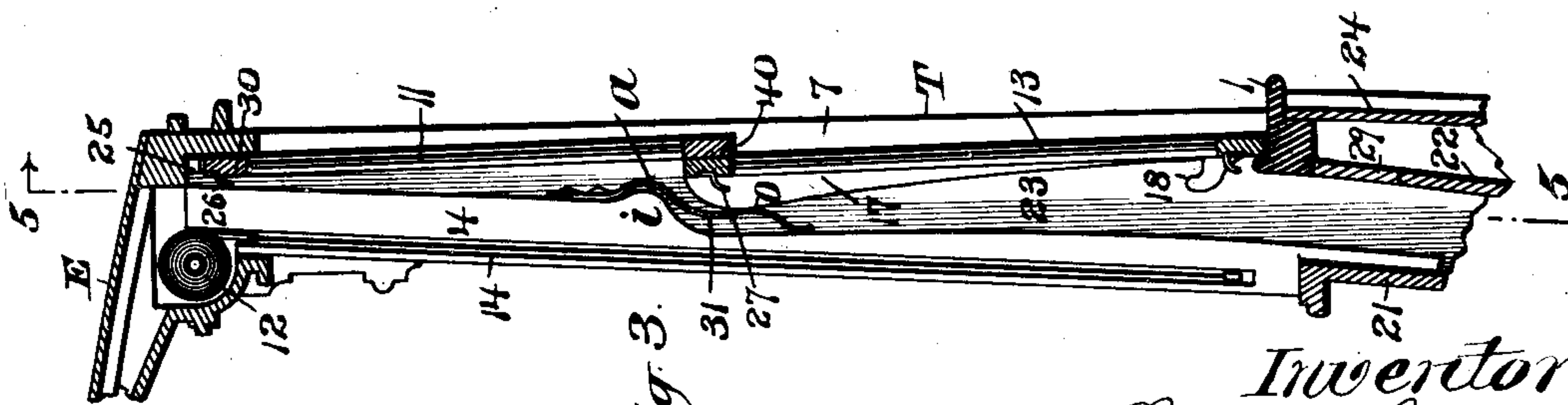
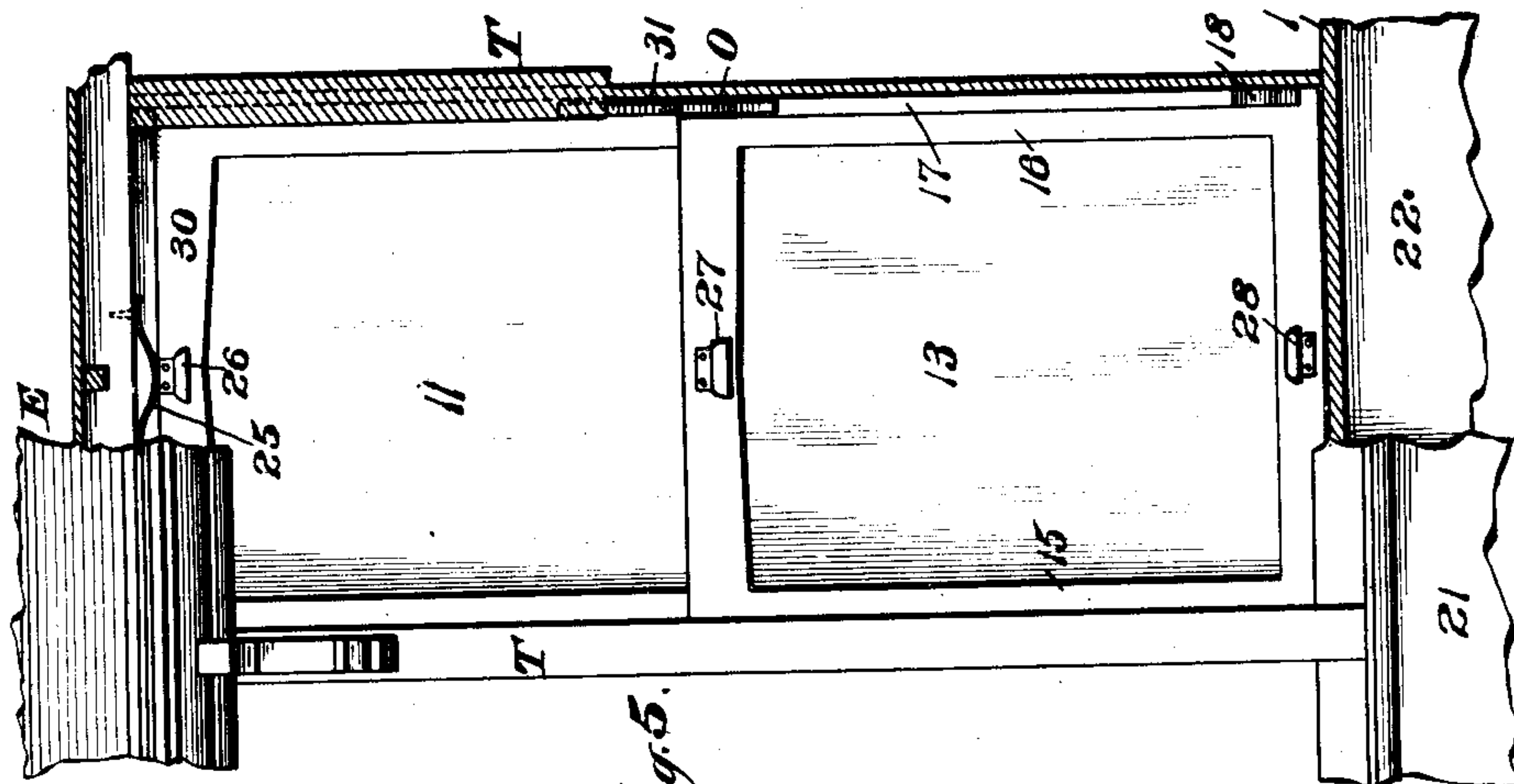
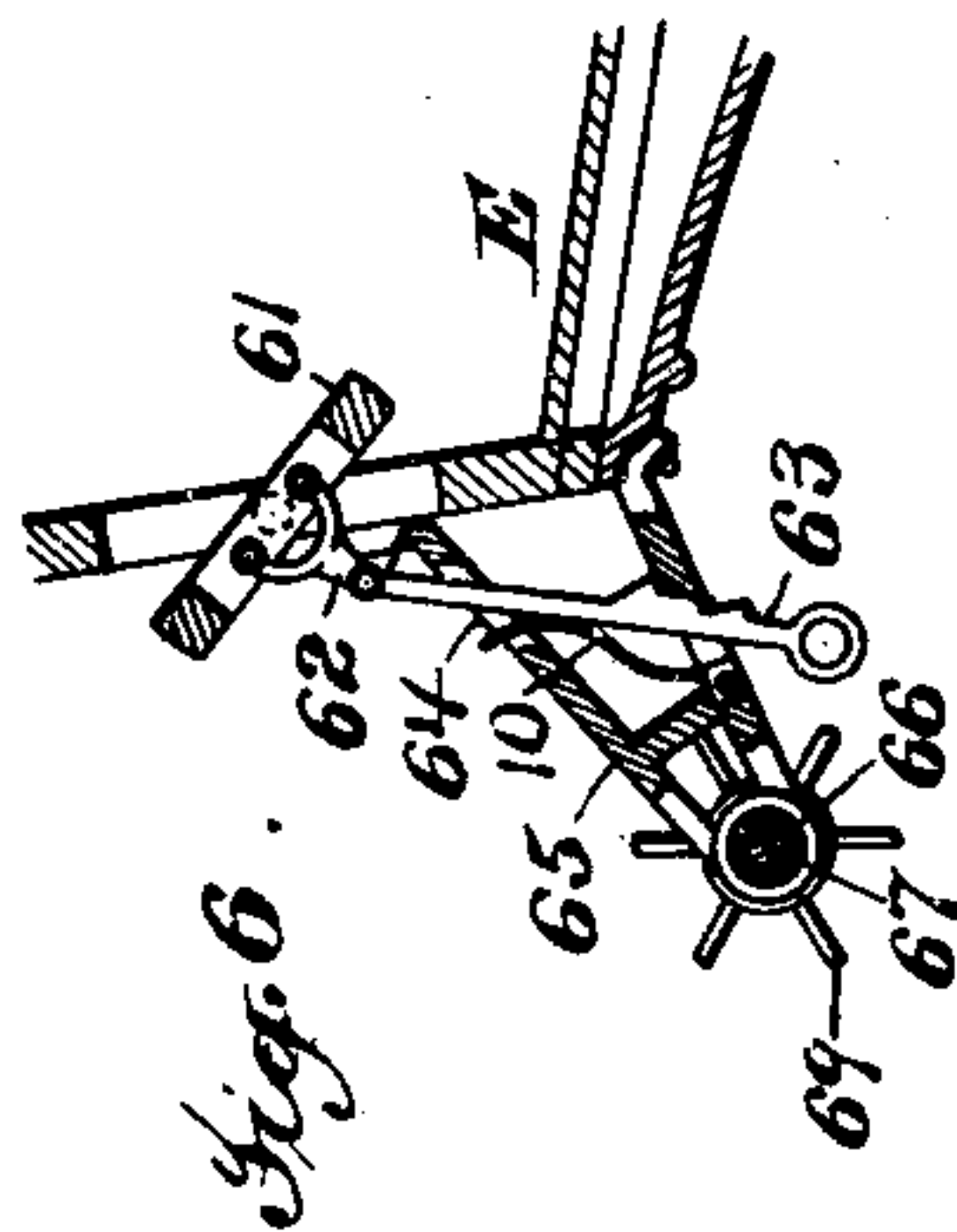
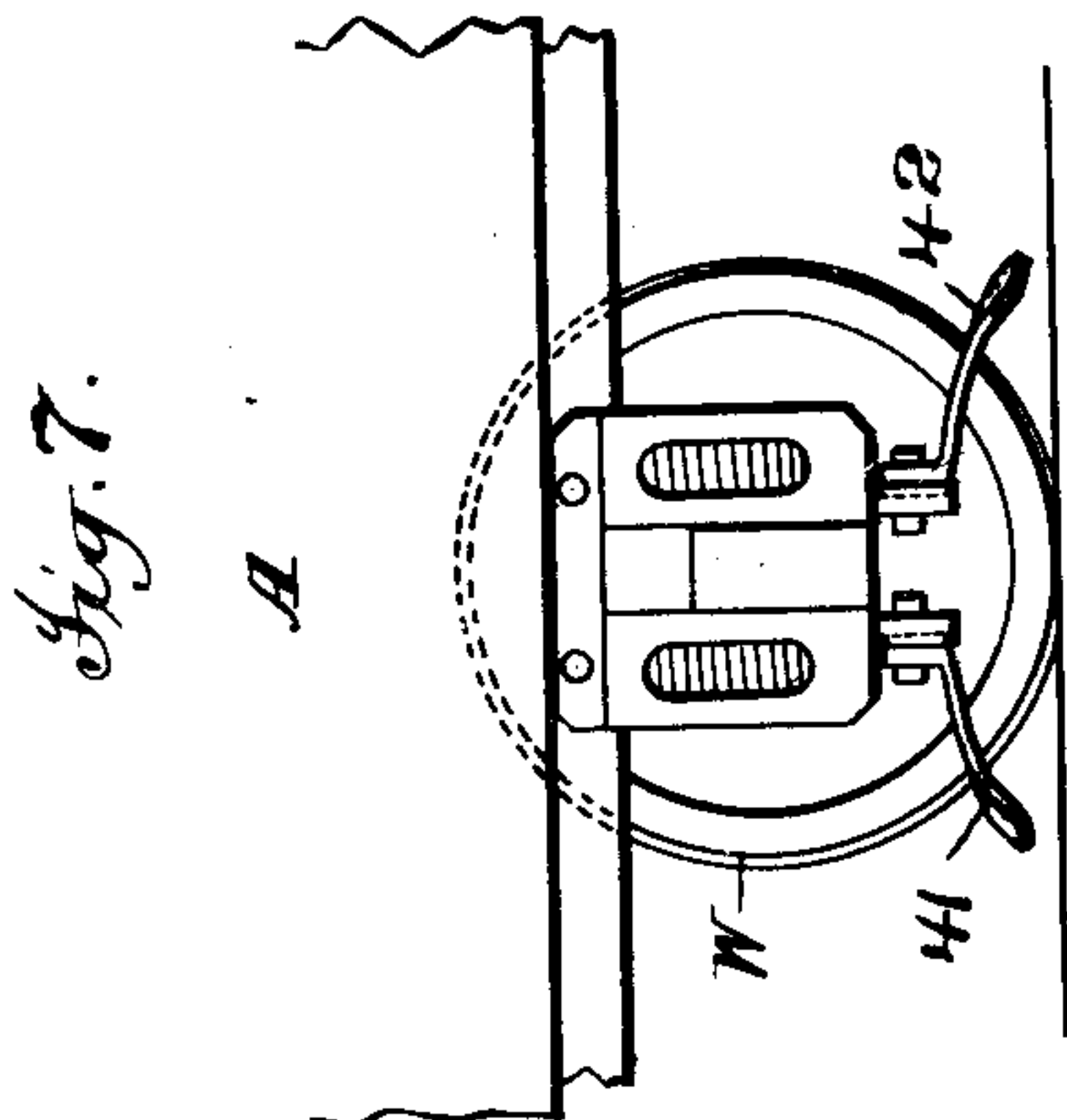
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Attest:
A. V. Bourke
W. H. H. Walsh.

Inventors
Caleb E. Garey
E. T. Landon
By Phileas Munson & Phelps
Attys

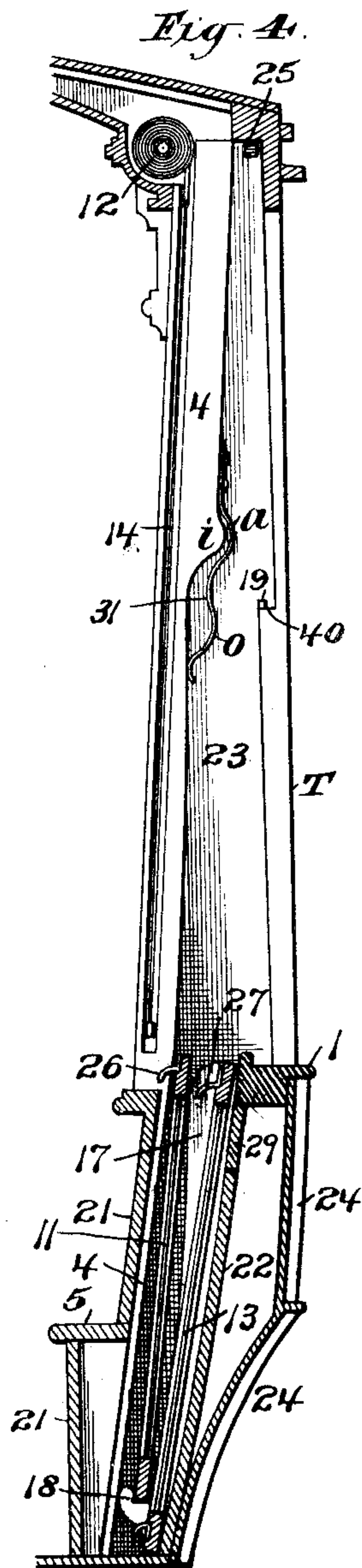
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4 Sheets—Sheet 3.

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A. M. Bourke
W. G. H. Walsh.

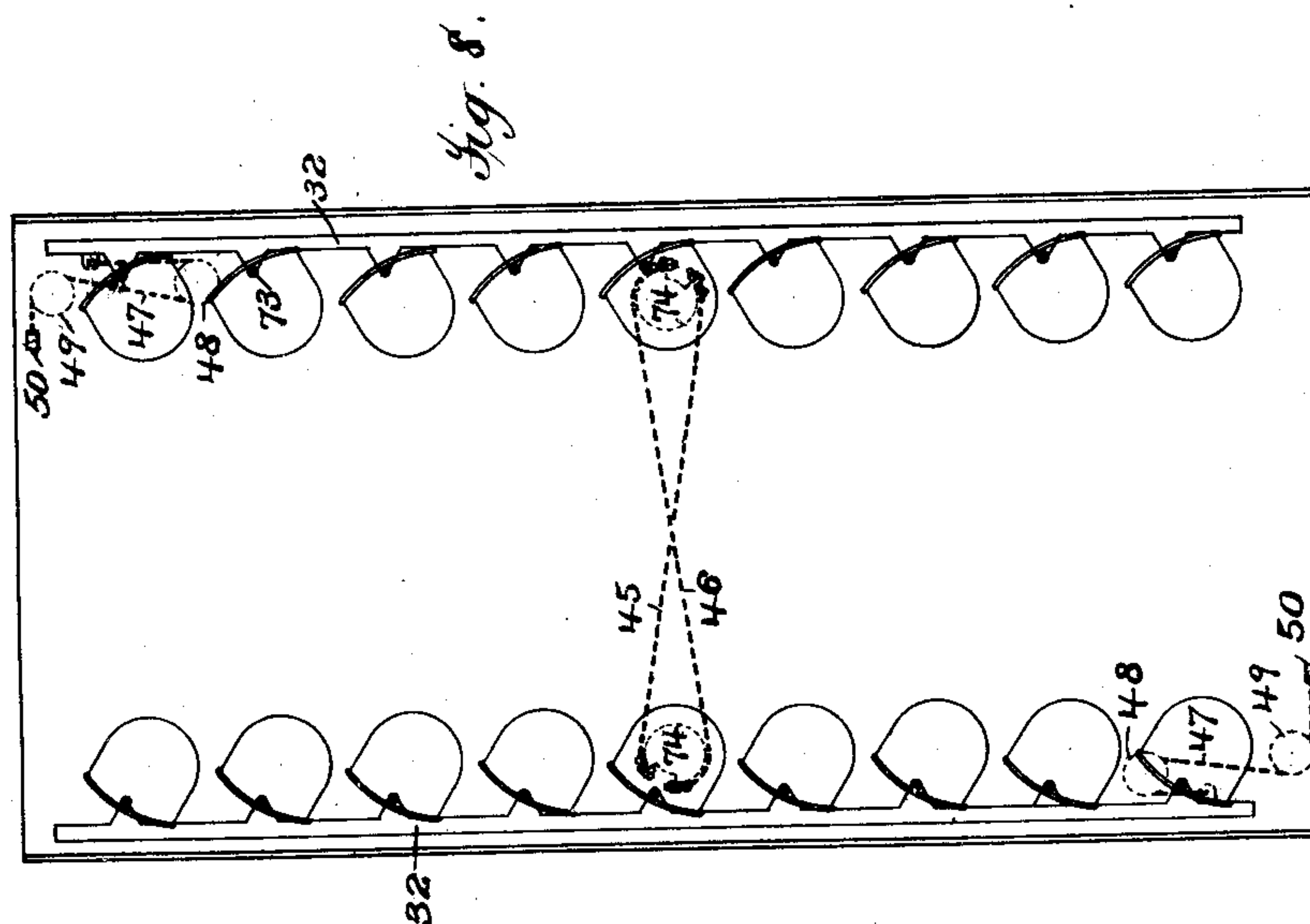
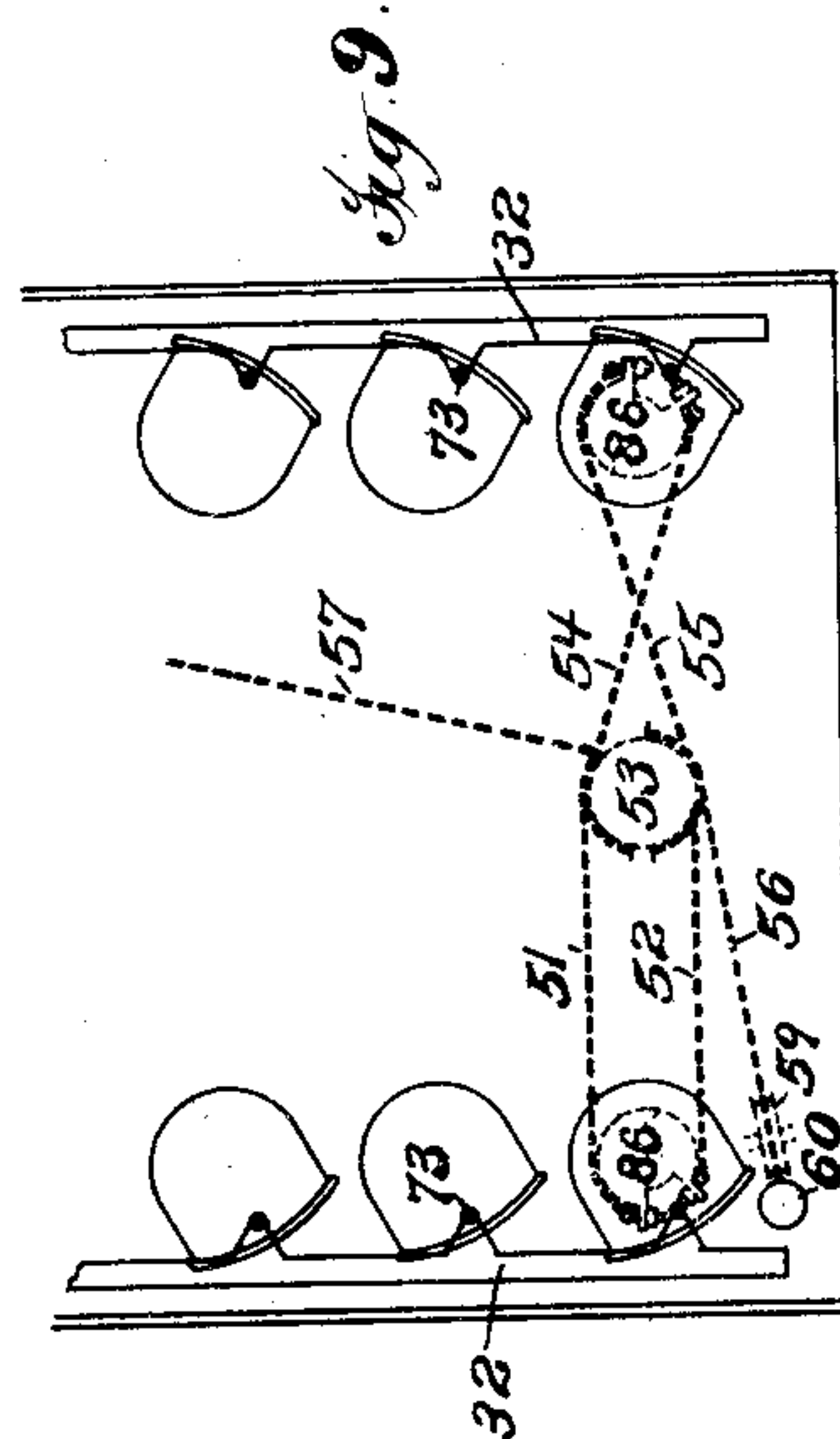
Inventors

Caleb E. Garey
Eli T. Landon
J. Chieff, Kenneth & Phelps
Attys

4 Sheets—Sheet 4.

No. 601,000.

Patented Mar. 22, 1898.



Attest:
J. V. Bourke
W. L. H. Walsh.

Inventors
 Caleb C. Garry
 Eli T. Landen
 7 Philipps Munson & Phelps
 Attys.

UNITED STATES PATENT OFFICE.

CALEB E. GAREY AND ELI T. LANDON, OF NEW YORK, N. Y.

STREET-RAILWAY CAR.

SPECIFICATION forming part of Letters Patent No. 601,000, dated March 22, 1898.

Application filed August 14, 1896. Serial No. 602,720. (No model.)

To all whom it may concern:

Be it known that we, CALEB E. GAREY and ELI T. LANDON, citizens of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Street-Railway Cars, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

These improvements, although applicable to passenger-transporting vehicles, are shown herein as applied to a street-railway car.

The principal object of the invention is to combine in a single structure the means whereby a car may be changed from what is commonly known as a "closed" car into an open car, and vice versa—that is, providing a car-body with means for closing it so tightly as to make it secure against adverse weather conditions, which means, on the other hand, are capable of providing the car with such openings as to practically make it a skeleton structure, admitting free circulation of air throughout the same.

Another principal feature of these improvements is the provision of rotative seats and means for mounting and so operating the same that economy of space and independent or individual seating means are obtained, the area within the car-body is economized, increased room for passengers is provided, and a free and clear floor is obtained.

All of these features, together with the means for carrying them into effect, as well as other improvements relating to them, whereby a universal sanitary street-car is provided, will be so fully hereinafter explained and finally claimed as to need no further preliminary setting forth.

The most practical embodiment of these improvements now known to us is shown in the accompanying drawings, in which they are illustrated as follows:

Figure 1 is an end elevation of a street-railway car with the right-hand portion broken away to expose the interior parts thereof. Fig. 2 is a sectional plan view of one end of such a car, said view being taken just above the chair-backs. Fig. 3 is a vertical sectional elevation of one side of the car, showing the windows closed, the view being enlarged to better illustrate the parts. Fig. 4 is a similar

view showing the windows opened. Fig. 5 is an inside facial elevation of a portion of a car side, the view in part being taken upon the section-line 5 of Fig. 3, looking in the direction of its attached arrow. Fig. 6 is a sectional elevation of a ventilator and the means for operating the same. Fig. 7 is a side elevation of fender attachments for the running-gear. Fig. 8 is a diagrammatic plan view of the seats and means for simultaneously operating the same, and Fig. 9 is a modification thereof.

To aid a ready understanding of the various features of the invention and the improvements effected, a detailed description of the structure of the various parts will now be given.

The body of the car is in general composed of two sides A B, two ends C D, a roof E, and floor F, constituting a hollow rectangular structure, as is common. The roof E has the usual raised portion G, providing for light and ventilation. The floor F is continued front and rear to form platforms P Q, from which rise fenders H I, and said body is provided with pairs of wheels W W, carried by an ordinary truck; but any other running-gear may be used.

Between the posts 20, at the four corners of the car-body, the sides A and B are respectively divided into window-spaces by the pillars T, in which pillars T are formed single runways 23 for the sash of the windows 11 13, and they also have narrow slots 14 formed in them as guideways for the curtains 12. The permanently-closed portion of the car sides A B is beneath the window-sill or side rail 1 and extends from end to end of the car and rises from the floor thereof to a height substantially a third of that of the car-body, thus providing above the sill 1 window-spaces substantially equal to two-thirds of the height of the car-body from which the windows may be removed—in other words, enabling the car to be opened from a point near the seats to a point close to the roof. This closed portion of the car is formed by the inner lining 21 and partition 22 and an outer panel 24. The partition 22 is set in such relation to the lining 21 as to provide a receptacle for the housing of the two sash when they are lapped one upon the other, as shown in Fig. 4, and this

partition 22 extends to the under side of the sill 1, which latter has an upwardly-projecting ledge at its inner edge sufficiently high to maintain the sash in place when rested upon the sill 1, as in Figs. 3 and 5.

The pillars T are each provided with a single runway 23 for both the window-sash, and each such runway extends from top to bottom of the car. It is formed between the inner and outer faces or projecting parts 4 7, and at its upper portion each runway is of a width to snugly receive the top rail 30 of the upper sash, as in Fig. 3. Its outer face or edge, formed by the projection 7, is straight from its upper end to its midway portion or slightly greater than the length of its upper sash, where it is stepped to form a horizontal shoulder 40, from the inner edge of which rises a tenon 19, so as to enable such upper sash to rest in a vertical position when raised into place and be secured there by said tenons entering sockets in the under side of its bottom rail at the ends thereof. From the shoulder 40 to the sill or rail 1 this outer face or projection is also straight and forms at a distance equal to the thickness of the upper sash inward of the car a facial support for the side rails of the lower sash, so that the same, when resting upon the sill 1, as in Fig. 3, will have its top rail in front of and bearing facially against the lower rail of the upper sash, said two sash thus being supported when raised into place to close the car in substantially vertical positions. The inner face or edge, formed by the projection 4, of each runway 23 in these pillars T is at its upper portion inclined inwardly to the necessary extent to permit the lower portion of the upper sash to be swung inwardly to clear the shoulder 40 and provide for its downward movement, and the inner face or edge of the lower portion of said runway, formed by the projection 4, is also inclined sufficiently not only to allow the lower edge of the bottom sash to be moved inwardly over the sash-receptacle at the bottom of the car side and thus enable it to descend into it, but provide a sufficient space to permit the upper sash to slide downwardly over said lower sash when it is housed in this receptacle and enter into the same to be housed itself, in which receptacle the two sash rest side by side or one over the other, as best seen in Fig. 4, said sash then resting substantially embraced between the projection 4 and the partition 22, which latter might, below a longitudinal board 29, be constituted by projections like 7, formed as a part of the pillars T.

The lower sash is provided on each of its side rails 15 16 with a vertical guiding-strip 17, the top of which is enlarged to form an outwardly-curved projection from the top rail of said sash and gradually diminishes by an inward curve until it is lost at or near the lower rail; but at a point near the lower rail said sash is provided with a hooked projection 18, (see Fig. 3,) which is at such a dis-

tance from the top rail of such lower sash as to enable pairs of these hooked projections 18 to receive and support the top sash when the same is lowered into their embrace, as in Fig. 4. These guiding-strips 17 serve the function of not only guiding the top sash over the bottom sash, thus separating them a distance apart, so that one may be protected from the other, but its enlarged curved upper end also coöperates with a spring 31, so that the top rail of the bottom sash may force the bottom rail of the top sash snugly into its position when supported by the shoulder 40, and thus enable both sash to be held snugly and tightly in position and prevent their rattling or other disturbance. This spring 31 is double—that is, it is an elongated leaf-spring having two bends in it and a free lower end and is attached at its upper end to the inner side of the runway 23, so that its lower end depends free, the functions of which double bends will be understood in the operation of the sash, which will presently be described. At its top such window-space is provided with a spring 25, or springs may be used, the downward pressure of which acts to hold the upper sash seated upon the shoulder 40 and the tenons 19. Each upper sash is provided with a handle 26, by which it may be conveniently raised and lowered, and each lower sash 13 is provided upon its top and bottom rails, respectively, with handles 27 28, by which it may be raised and lowered.

Assuming that the car is closed by having its windows raised and held in place to fill the window-openings, they will stand as is illustrated in Fig. 3. It now being desired to open the car and put it into its skeleton or open condition the lower sash 13 will be lifted by its handle 28, so as to clear its bottom rail from the slight upward projection of the sill 1, and will be drawn inward, moving on the lower bend of the spring 31 as a pivot until it hangs beyond the partition 22, whereupon it is lowered into the receptacle below the sill 1, when the handle 28 being released and the sash sustained by the handle 27 it may be lowered into the position which it is shown to occupy in Fig. 4, where its bottom rail rests upon the bottom of the car, its back inclines and is supported by the partition 22 or projection 7, and its hooked projections 18 contact with the face 4. Thereupon the upper sash is pressed slightly upward against its sustaining-spring 25, so that its bottom rail may move clear from off the tenons 19 and shoulder 40. This sash thus swung outward has its side rails pressed against the upper bend α of the spring 31, and as it is slowly lowered its top rail will follow the outer edge 7 of the upper part of the runway 23, while its side rails will slide over said bend α of the spring 31, which, disposed as shown, will compel its taking an inclined position, and so bear it against the shoulder 40 as to incline and guide it downwardly in a direction leading to the space formed between

the guiding-strips 17 of the bottom sash and the edge 4, which strips 17, when reached, aided, if necessary, by their curved upper ends, will guide such upper sash between said
 5 guiding-strips 17 and the lower portion of said face 4, said sash descending in said vertical direction until its bottom rails rest or are seated in the hooks 18, as in Fig. 4, where the two sash will be housed and rest side by side
 10 in the receptacle and be braced widthwise between the faces 4 and partitions 22 and prevented from rattling and having their upper ends even with or in substantial alinement with the side rail or sill 1. In this position
 15 the bottom or outer sash as it rests in the receptacle may not be raised without first removing the inner or top sash, which may be freely lifted by its handle 26. When so raised, it will be carried past the lower bend *o* of the
 20 spring 31, and its side rails contacting with the upper bends *a* of said spring will be constantly pressed outwardly thereof in contact with the shoulder 40 until its bottom rail clears the same, when it will move over the
 25 same into its position at the upper end of the runway 23 and drop to its seat upon the support 40. Then the lower sash may be lifted by its handle 27 until its top rail contacts with the bend *o* of the spring 31 and is arrested by the stop *i*, at which time, because of
 30 the pressure of the bends *o* upon its projecting guides 17, its side rails at their upper ends will, constantly bearing against the shoulder 40, cause its bottom rail, then above the
 35 ledge projecting above the sill 1, to be thrown outward beyond said ledge and over the sill, whereupon the window will when released drop to rest upon the sill 1, at which time the lower bend *o*, still pressing upon its top rail,
 40 will press that rail snugly against the lower rail of the upper sash. In this condition the window-spaces will be closed and the car become a tight structure. By this construction it will be observed that substantially the major
 45 part of the car-body is provided with window-openings, whereby, because of the provision for supporting the sash substantially below the seats, a skeleton or open car is provided, which may be readily converted into
 50 a tight or closed car without the dismemberment of any part of it and with great facility, and thus be provided with an extended lighting-surface when closed for winter use or during inclement weather and with an extended
 55 ventilating or air space when opened for summer use. This structure, furthermore, provides not only the great advantages of its capacity to be converted from a closed car to a substantially open car, but furnishes a low
 60 protecting-body nearly to the seat height, having the capacity of protecting the occupants from falling out, their garments from being disarranged or injured, and accident occurring to the person from the outside when the
 65 car is used in its opened condition, in which opened condition it affords all of the advantages of an ordinary skeleton car, which may

not only be converted readily into a closed car, but one so tightly closed as to afford perfect protection from the elements.

Another improvement effected herein is the
 70 construction, arrangement, and mode of operating the seats. These seats are individual chairs, each mounted upon a bracket-pedestal secured to the side of the car and projecting
 75 therein. These brackets are provided with sockets for receiving the spindles or shafts depending from the chairs, which latter are arranged to make a quarter-turn. The chairs
 80 composing the row along each side of the car are set so closely together as to afford no foot-space between them fore and aft or longitudinally of the car, and normally the
 85 fronts of the chairs are presented obliquely to the direction in which the car is moving, in which position they are fixedly held, so that they may not be disturbed, thereby enabling
 one passenger to sit slightly lapped past the other, and the car thus made capable of containing a larger complement of passengers
 90 than may be secured with ordinary cross or long side seats, and, moreover, by this arrangement each passenger is afforded more lateral room and has an unobstructed front view. These chairs so mounted have no support
 95 from the floor, and thus leave the latter clear, and provide not only for the proper cleansing of the car, but provide additional foot-space and room for packages. These
 100 seats are further arranged so that their direction may be simultaneously changed obliquely toward one or the other end of the car at the end of its route. A preferred means
 105 of accomplishing this is illustrated herein, and it consists in attaching the bank or row of chairs on each side of the car together by means of a connecting-bar 32, which is coupled to each by a pivot 73, (see Figs. 2 and
 8,) said bar 32 sliding longitudinally upon the
 110 plate 5, which connects the upper and lower parts of the inner lining 21 together, being there held in place by means of brackets 3. Two of these chairs, preferably the central
 115 ones, and one on each side have the shaft upon which they turn in their supporting-brackets extended through the car-bottom or stringer
 thereof and provided beneath the car with a
 120 pinion 6, said pinion being engaged by segments *e* at the ends of rocking arms 33 34, pivoted to the bottom of the car and having at their meeting ends intermeshing segments
 8 9, the result being that when these segments are rocked the pinions 6 are partially rotated
 125 to turn not only the chairs with which they are connected to a proper distance to face them in the desired direction, but causing all
 of the chairs on opposite sides of the car to move correspondingly by reason of their connecting-bars 32. Various ways may be adopted
 130 for operating these rocking arms 33 34, but a good way is to provide them with the rods 35 36, (shown,) one running to each end of the car under the platforms and being connected to a rock-arm 2, which is fast to a ver-

tical shaft 37, from the upper end of which projects a rock-arm 38, having a turned-down or hinged handle 44, by which the requisite operation is performed for rocking the shaft 37 in opposite directions to turn the chairs from one oblique position to the other and lock the shaft to hold the chairs in their respective positions, the handle 44 coacting for this purpose with notches in a fixed member or otherwise, as usual in similar hinged handle constructions. (See Figs. 1 and 2.)

Other means and dispositions of parts may be used; but we have illustrated and described in Figs. 1 and 2 a practical construction which we prefer. In Figs. 8 and 9, however, we have illustrated modifications which are practical and which we will now describe.

Referring to Fig. 8, it will be found that the various chairs are connected together in single rows on each side of the car for simultaneous movement by means of the bars 32, as before, and that the rows of chairs on opposite sides of the car are connected together for conjoint movement by means of connecting-chains 45 and 46, which chains have their opposite ends attached to the circular portion of the pedestal of the opposite chairs or to pulleys 74, fast thereon, each chain being a separate member and the two being crossed, so that the seats will not only simultaneously move to oblique positions, but so that the opposite rows will point in the same direction. In this arrangement the bars 32 on each side and at opposite ends of the car are provided with a chain 47, which moves around pulleys 48 and 49 and is connected at the lower end of a lever 50, the upper end of which will protrude either into the body of the car near its end partition or rise in like relation to the fender. In Fig. 9 a similar chain arrangement is shown; but therein provision is made for operating the same by foot-power. In that arrangement the chains secured to the pedestals of the opposite chairs through which the power is to be communicated are duplex. Thus two chains 51 and 52 are fastened at one end to the pedestal or wheel 86 thereon of the chair and in the center have their opposite ends fastened to an operating sheave or pulley 53, and from this central sheave or pulley there extends to the opposite chair chains 54 and 55, which are crossed and have their outer ends fastened to the pedestal or pulley 86 thereon of said chair. From this central operating-pulley 53 a chain 56 extends outward toward the corner of the car at one end, where it passes over a pulley 59 and is attached to the bottom of a vertically-operating foot-lever 60, which, of course, will protrude upward into the body of the car and from said central operating sheave or pulley. Another chain 57 extends to the diagonally opposite corner of the car at its opposite end, where it passes over a pulley (like 59) and is attached to a foot operating-lever (like 60, not shown) and constructed like that illustrated in Fig. 8. These modifications are

simple and effective and may be adopted, if desired. Of course each row of seats might be independently rotated; but it is preferable to adjust them simultaneously.

In railway-cars, especially those provided for the transportation of passengers in streets, great danger of injury exists from persons accidentally falling beneath the wheels of the car, and to prevent this many forms of fenders have been devised. In order to provide a fender which will adequately operate to prevent the wheels of a car passing over any part of a person and thus injuring him, we have contrived a structure suitable for the purpose, which is illustrated in Fig. 7 and will now be described. It consists of bars of metal having sufficient resiliency to enable them not only to readily move downward toward the rail when contact therewith is had with an obstructing body but to return to their normal position in close proximity to the rail but clear of the same. These fenders are preferably made in two parts, as the bars 41 42, having right-angular inner ends suiting them for attachment to the car-axle box, so that they extend in opposite directions therefrom, from which inner ends their shanks spring outwardly and downwardly, their outer ends terminating in enlarged ends over the tracks, so as to afford a broad surface to contact with the obstruction without injuring the same, especially if it be any part of a human being. These fenders, being spring-like, will when in contact with an obstruction be bent downwardly, thereby to so cover the track as to prevent the obstruction from passing beneath into contact with the wheel, and being inclined will additionally tend to lift the obstruction upward away from the track, and additionally, by reason of their sidewise inclination, will act to move the obstruction sidewise or force it away from the track-wheel and car. Of course the double fender thus arranged might be made in a single piece and attached to the box by its central portion; but it is preferable to make it in two pieces, as shown, because of the convenience afforded thereby of adjusting each of its parts independently of the other and aiding ready repair to either member without disturbing the other.

In Fig. 6 we have illustrated in enlarged detail a novel construction of swinging ventilators hung in the raised roof of the car and means for their operation and have also illustrated a new way of operating the starting-bells of street-railway cars, which we will now describe. The ventilator is a long sash 61, hung so as to swing horizontally on central pivots in a suitable opening provided in the sides of the raised roof G. At one of its ends it is supplied with an arm 62, to the end of which inside the car is attached an operating-bar 63, which is guided in slots 64, formed through the brackets 65, which extend inward from said raised roof and primarily operate to support the rod 66, which extends longitu-

dinally through the car from end to end as a support for depending holding-straps. Within these slots 64 there is provided a spring 10, the face of which is to bear upon the operating-rod 63 and hold its toothed inner portion in proper position upon the lower member of the bracket 65 and thus sustain the ventilator in its opened, closed, or adjusted position, as the case may be.

10 The rod 66 is a hollow pipe-like structure supported at intervals within the car by the brackets 65. Within this rod 66 a shaft 67 is housed, which shaft extends from the outside of the car at one end, as seen in Fig. 1, 15 where it is provided with an operating star-wheel 70, and extends through the car at the other end, where it is provided with means for operating the clapper of the bell, and immediately from end to end of the car within 20 the same at suitable intervals, as shown in Figs. 1 and 6, this shaft is also provided with star-wheels, as 68 69, attached to said bell-shaft 67 between sections of the pipe-like rod 66, whereby the same may be operated 25 conveniently at different points.

We have also provided this car with an improved attachment for its double doors, which doors slide horizontally in suitable recesses in the ends of the car (see Fig. 2) and are provided with connecting means, whereby the 30 movement of one door is communicated to the other in any of the common ways and which means are so well understood in this art that they need no further description. These doors 35 meet in the center when closed and require for greater convenience that when opened they shall project to the least extent from said recess. To accomplish this, we have provided them with an improved handle, (shown 40 best in Fig. 2,) which handle is so constructed that when the doors are opened they shall project in the door-opening to but a very slight extent. To this end each door is provided with a single handle. Each has suitable 45 means for attaching it to the outer edge of the door, so that it shall project therefrom at such an angle and extent as is requisite for its protrusion to be intercepted by the hand when used for moving the door, one of such handles 50 projecting inwardly from one door and the other outwardly from the other door, the two being thus practically alined and projecting in opposite directions from the common meeting edge of the doors when closed.

55 What is claimed is—

1. In a car-body, the combination with pillars forming window-openings and provided with single runways therefor, of double sash the bottom member whereof is provided with 60 guiding-strips to separate the sash when moving one over the other and when housed, substantially as described.

2. In a car-body, the combination with pillars forming window-openings and provided 65 with single runways for double sash and sup-

porting-shoulders for the top sash, of double springs having bends *a*, *o*, whereby the sash are guided and controlled in making their movements for opening and closing the window-spaces, substantially as described. 70

3. In a car-body, the combination with pillars forming window-openings and provided with single runways therefor, of double sash the bottom member whereof is provided with guiding-strips to separate the sash, said runways being provided with supporting-shoulders for the top sash, and springs *a* operating to throw the upper sash over said guiding-strips and inside the lower sash when descending, substantially as described. 75 80

4. In a car-body, the combination with pillars forming window-openings and provided with single runways therefor, of double sash the bottom member whereof is provided with guiding-strips to separate the sash, said runways being provided with supporting-shoulders for the top sash and with springs *o* operating to throw the bottom sash outward when raised, and into contact with the top sash to hold the same in place, substantially 85 90 as described.

5. The combination with a series or row of rotative seats along each side of the car-body, and means for connecting the rotative bodies of each together, of operating-levers, rods, 95 and a locking device, whereby the seats of each row when the lever is unlocked and moved are simultaneously rotated from one oblique position in one direction to a corresponding oblique position in the opposite direction and relocked in their new position, 100 substantially as described.

6. The combination with the car-body, of a series or row of rotative seats along each side thereof and means for connecting the rotative 105 bodies of each together, and means for connecting the two rows of seats together, and operating-levers, rods and connections whereby the seats composing both rows are simultaneously rotated from one oblique position 110 in one direction to a corresponding oblique position in the opposite direction, substantially as described.

7. The combination with the opposite rows of rotative chairs the chairs of each row being connected together for conjoint movement, and with the rotative pedestals of opposite chairs in said rows, of a chain-wheel pivoted to the car-bottom, chains fast to said pedestals and chain-wheel, and chains connecting the latter with foot-levers at opposite 115 120 ends of the car, substantially as described.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

CALEB E. GAREY.
ELI T. LANDON.

Witnesses:

ISAAC S. GILBERT,
M. WRIGHT.