

J. CRANE, JR.  
 ADVERTISING APPARATUS FOR CARS, &c.  
 APPLICATION FILED AUG. 10, 1903.

932,764.

Patented Aug. 31, 1909.

4 SHEETS—SHEET 1.

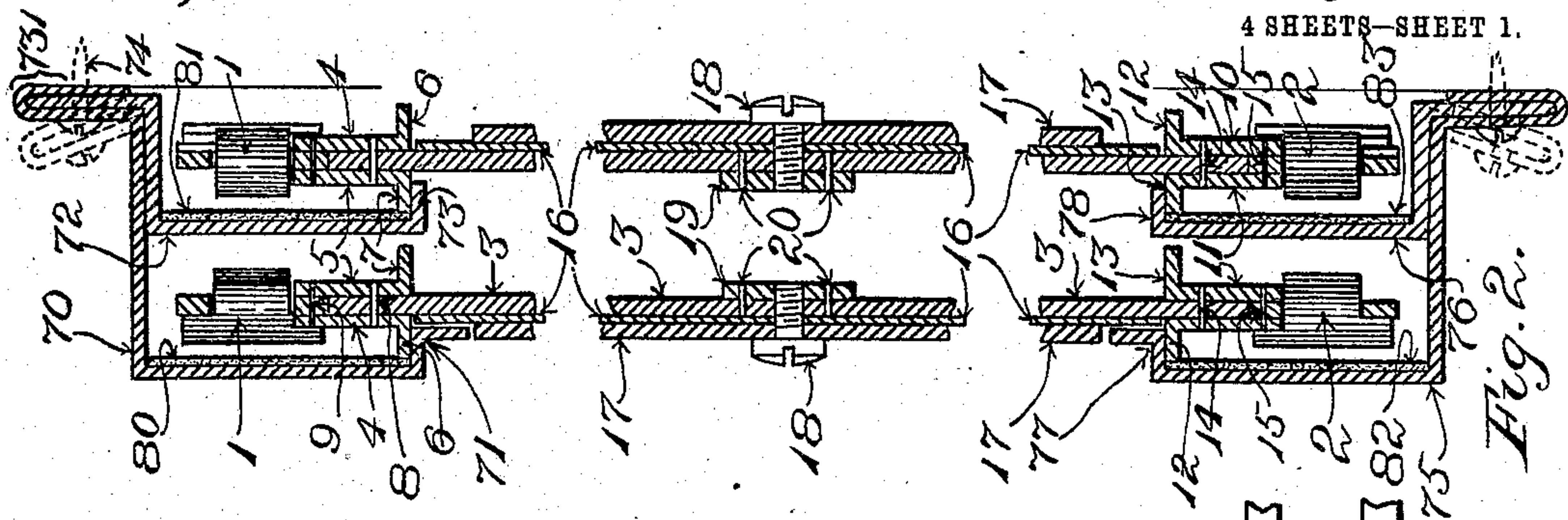


Fig. 2.

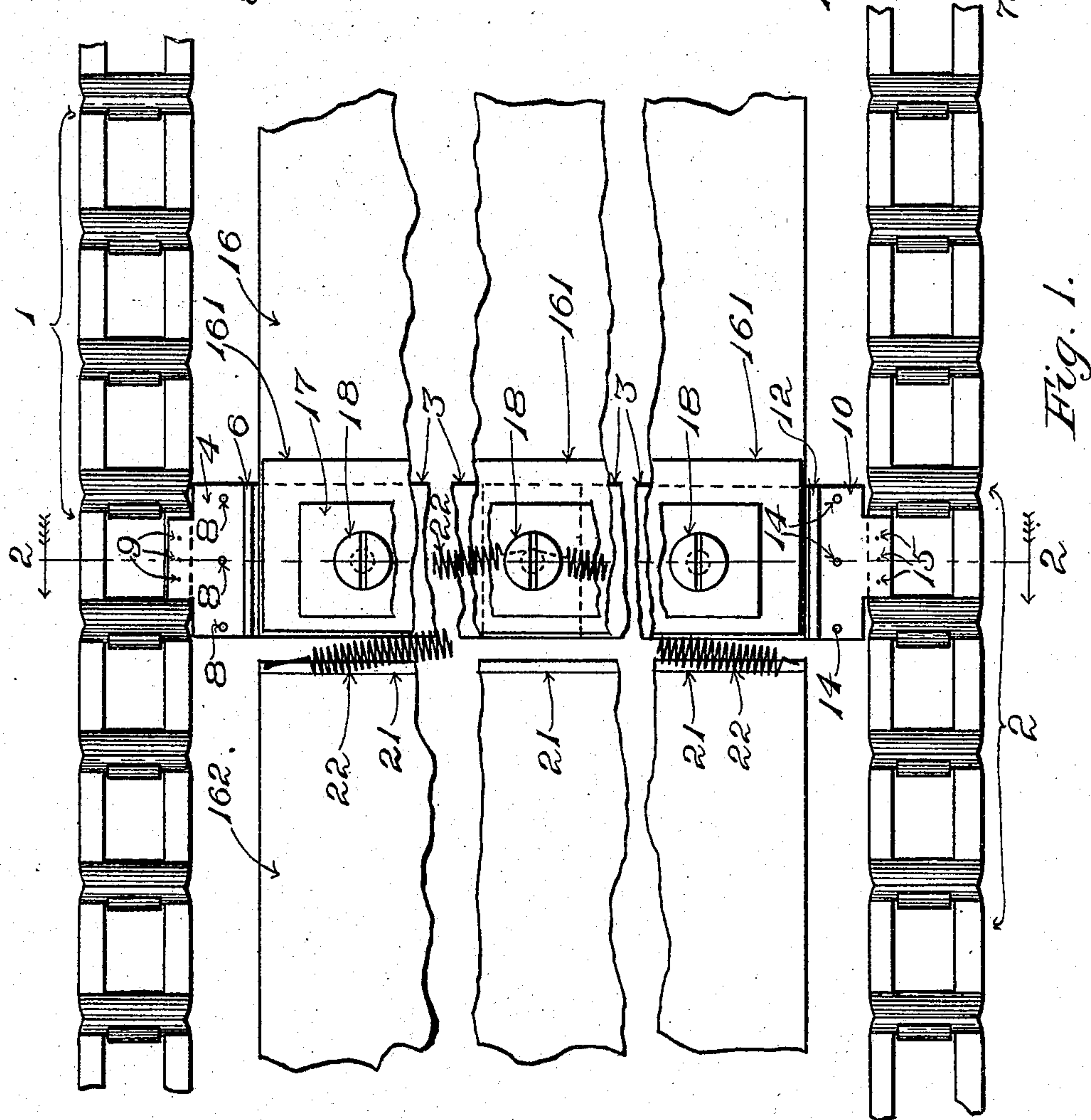


Fig. 1.

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 Joshua Crane, Jr.  
 by Levine Hall Rice  
 Attorney.

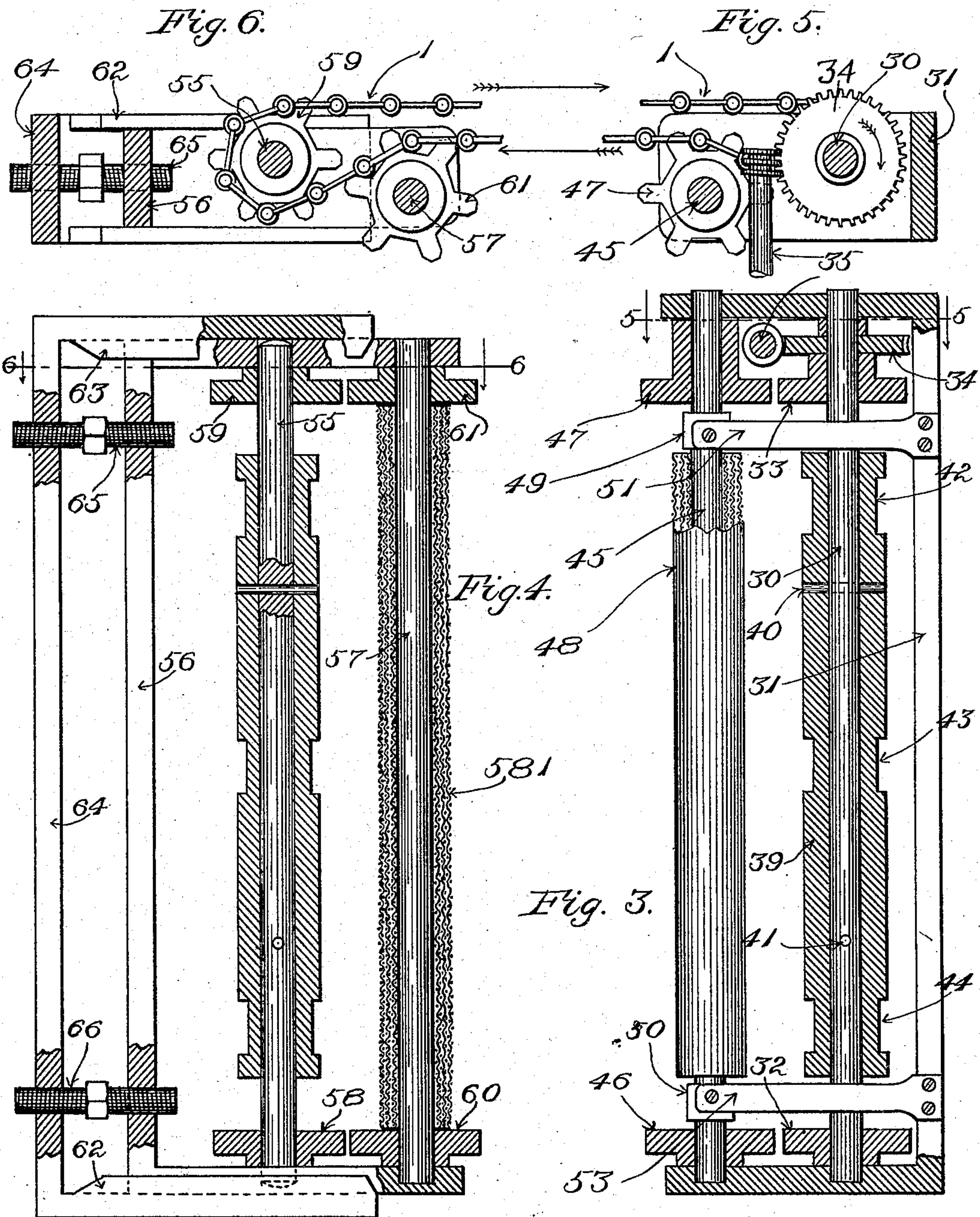


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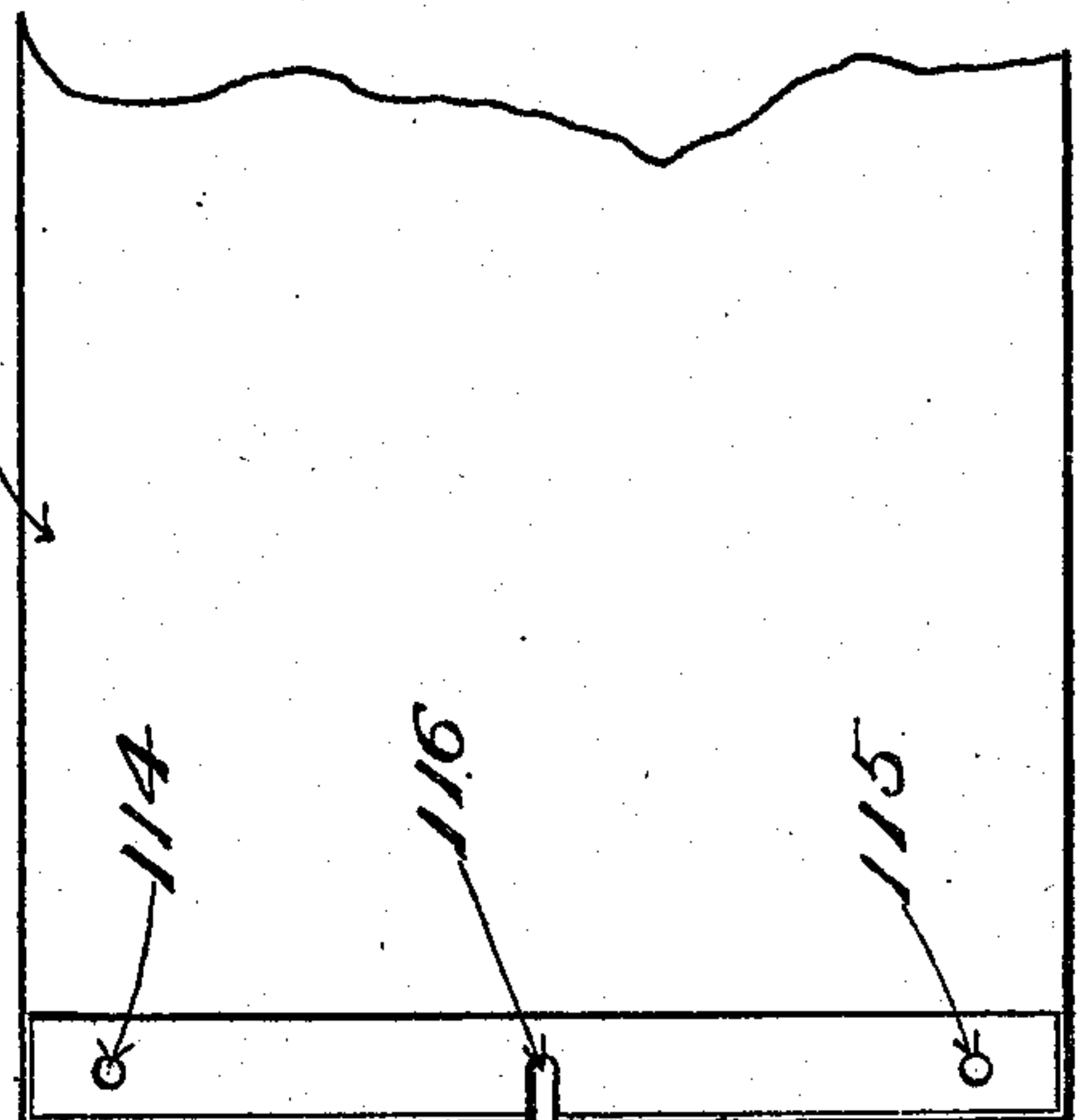
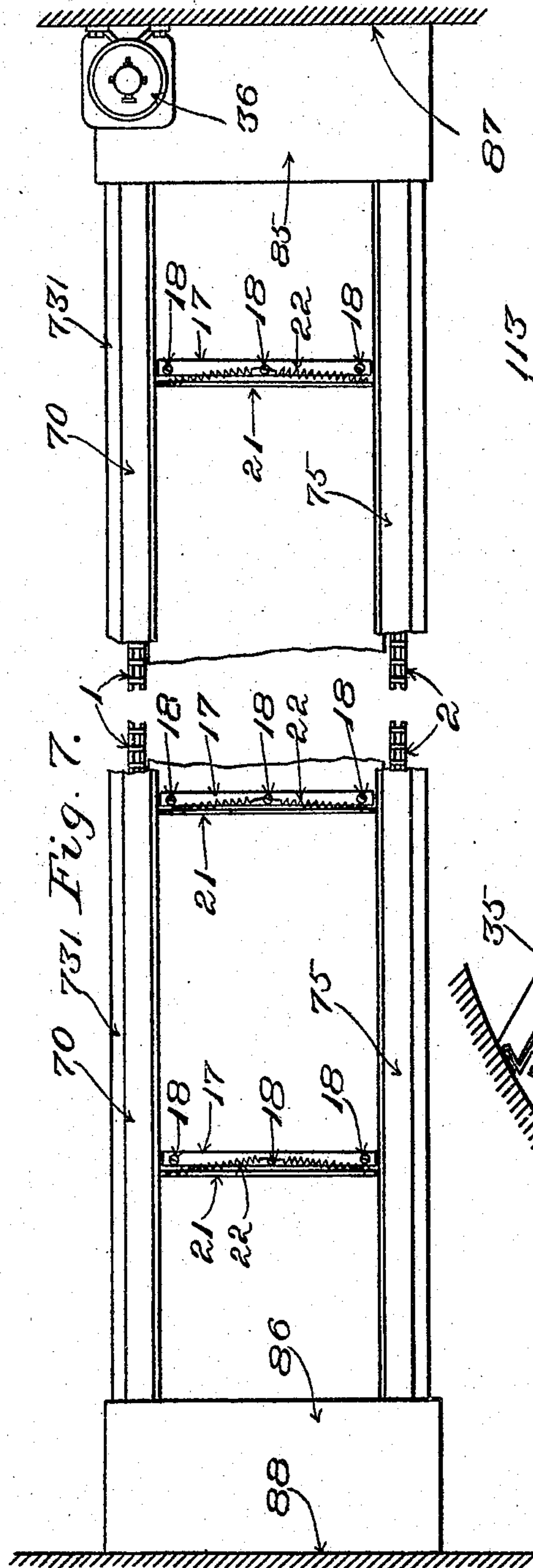


Fig. 14.

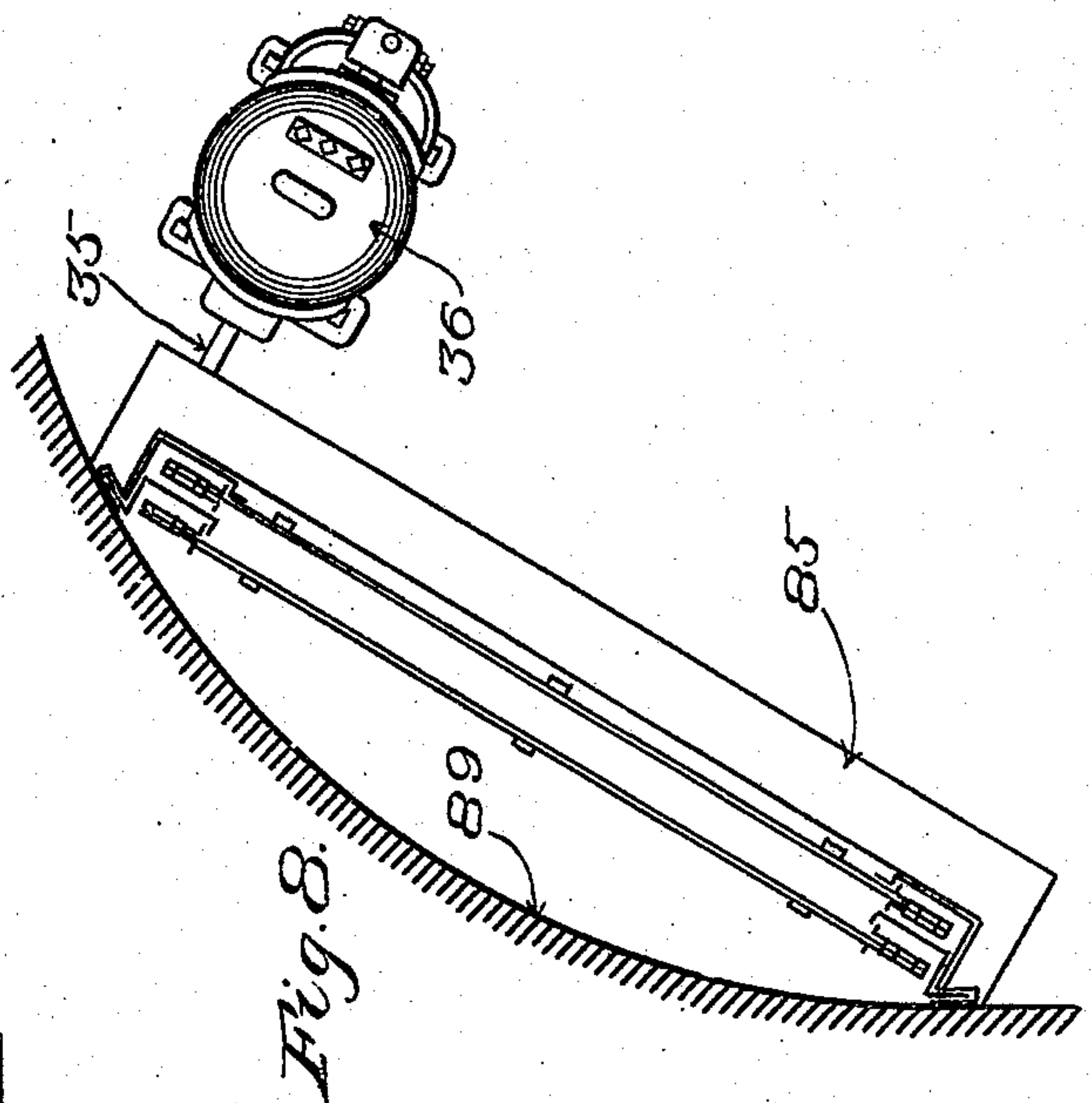


Fig. 8.

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 Oscar F. Hill  
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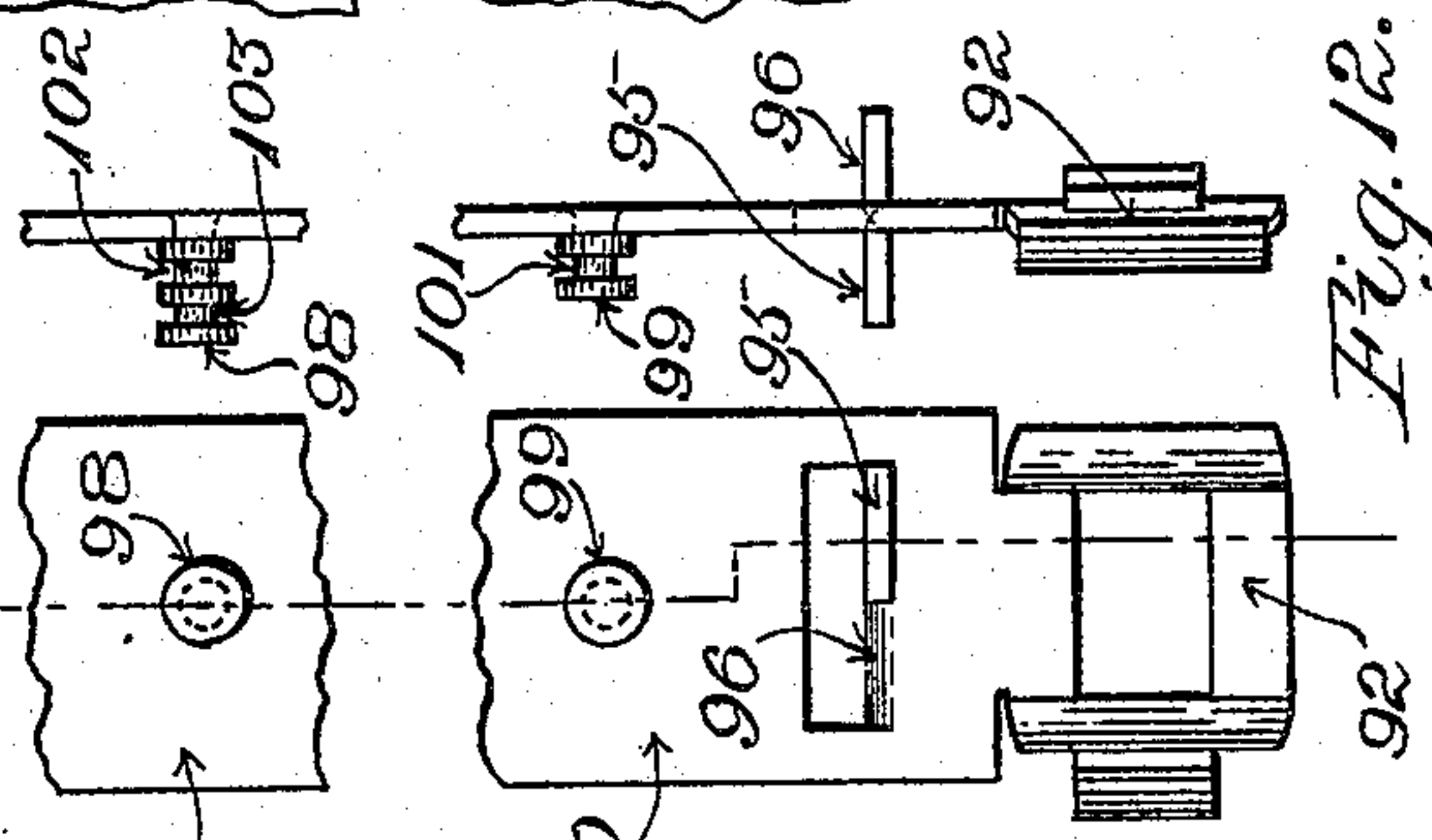
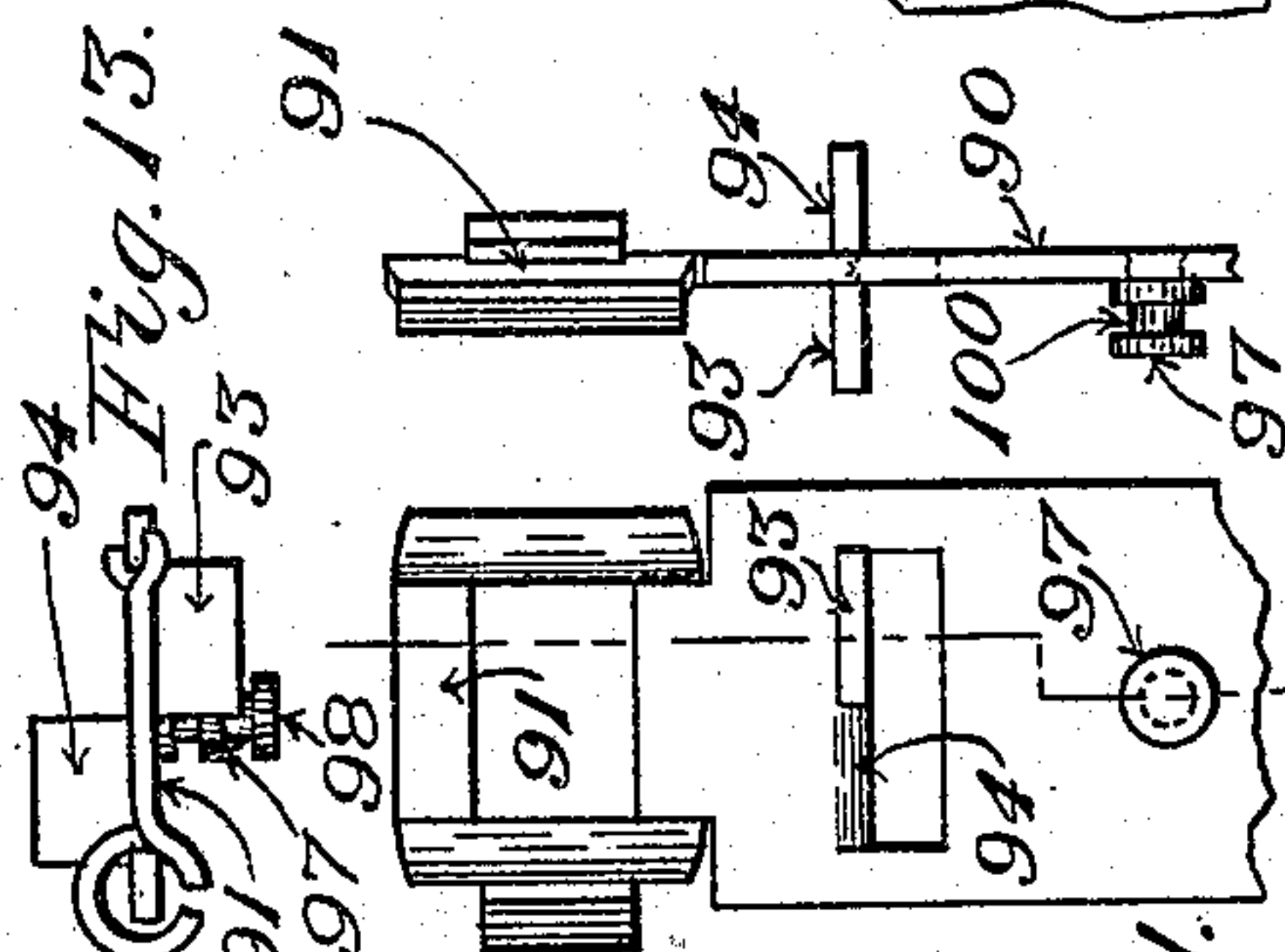
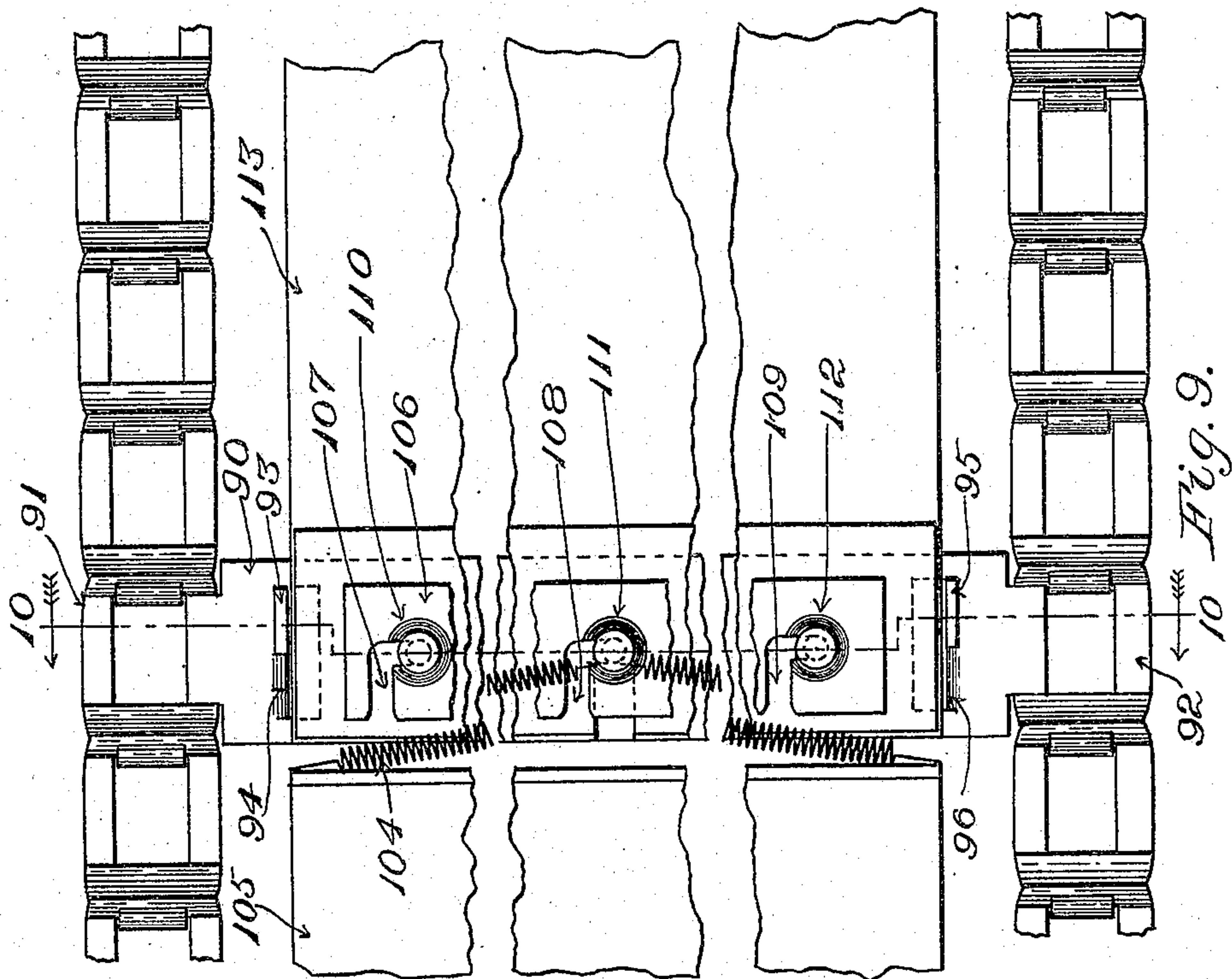
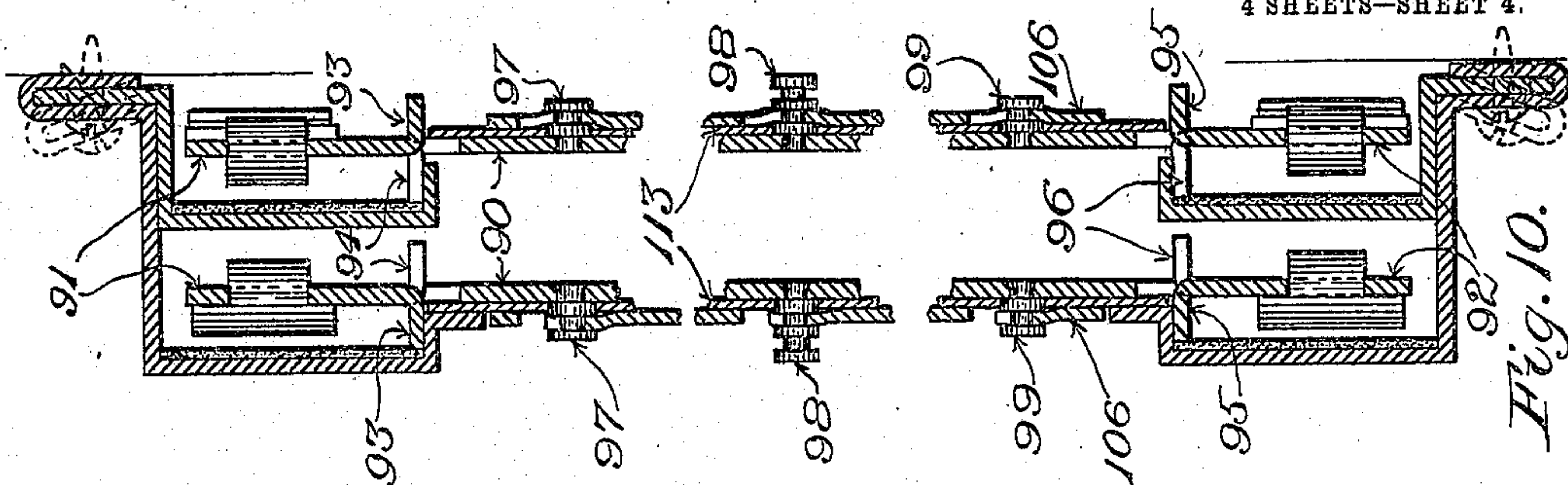


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4 SHEETS—SHEET 4.



Witnesses:  
 Oscar F. Hill  
 Alvin Tarr

Inventor:  
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# UNITED STATES PATENT OFFICE.

JOSHUA CRANE, JR., OF WESTWOOD, MASSACHUSETTS.

ADVERTISING APPARATUS FOR CARS, &c.

932,764.

Specification of Letters Patent.

Patented Aug. 31, 1909.

Application filed August 10, 1903. Serial No. 168,858.

*To all whom it may concern:*

Be it known that I, JOSHUA CRANE, Jr., a citizen of the United States, residing at Westwood, in the county of Norfolk, State of Massachusetts, have invented a certain new and useful Improvement in Advertising Apparatus for Cars, &c., of which the following is a specification, reference being had therein to the accompanying drawings.

10 The apparatus is adapted in most of its features to what is ordinarily termed a traveling sign, or more properly a traveling series of signs which are presented to view during a part of their course and are usually  
15 concealed from view during the remaining part of their course. In some of its important features, the improvement is rendered especially valuable for advertising purposes in street cars.

20 The object of the present invention is the production of a practical apparatus of the character above indicated.

The invention will first be described in connection with the accompanying drawings,  
25 which illustrate the best form thereof which I have thus far devised, and afterward the essential characteristics of the invention will be particularly pointed out and distinctly defined in the claims at the close of this  
30 specification.

In the drawings, Figure 1 is a face view of a portion of the traveling part of the apparatus, broken away in portions. Fig. 2 is a sectional view thereof taken on the plane  
35 that is indicated by the line 2—2 in Fig. 1, looking in the direction that is indicated by the arrows near the ends of said line, showing both the exposed portion and the returning or concealed portion of the traveling part of the apparatus, together with the stationary supporting means therefor. Fig. 3  
40 is a face view, partly in section, of the supporting and driving devices at one end of the apparatus. Fig. 4 is a similar view of the supporting devices at the other end of the apparatus. Fig. 5 is a section on the  
45 plane that is indicated by the line 5—5 of Fig. 3, looking in the direction that is indicated by the arrows near the ends of said line, showing also some elements of the traveling part of the apparatus. Fig. 6 is a sectional view on the line 6—6 of Fig. 4, looking in the direction that is indicated by the  
50 arrows near the ends of said line, and show-

ing some elements of the traveling part of 55 the apparatus. Fig. 7 is a reduced face view of the apparatus, with the end supporting and driving devices cased in. Fig. 8 is a section taken transversely of a car, and is somewhat in the nature of a diagrammatic 60 view. Fig. 9 is a face view of the traveling part of a modified form of the apparatus. Fig. 10 is a section taken on the line 10—10 in Fig. 9, looking in the direction that is indicated by the arrows located near the ends 65 of said line. The line of section is also indicated by the dotted line in Fig. 11. Fig. 11 is a face view of the bar that is employed in the structure shown in Figs. 9 and 10. Fig. 12 is an edge view of said bar. Fig. 13 is 70 a plan of said bar. Fig. 14 is a diagram of the forward end of the card or sheet employed in the structure shown in Figs. 9 and 10.

The traveling part of the apparatus consists of two chains connected at regular intervals by bars, the cards, or sheets, or other signs being supported by the latter. In the drawings, 1 designates the upper chain and 2 the lower chain. 80

3 is one of the bars.

4, 5, Figs. 1 and 2, are rectangular plates provided with flange portions 6 7. Said plates are applied on each side of one of the links of the chain 1 and are riveted thereto 85 by rivets 9. The plates 4 5 receive between them the upper end of the bar 3, 8, 8, being rivets which pass through the pieces 4 5 and the bar and secure these parts together. The attachment of the upper end of the bar 90 to the plates 4, 5, serves to connect the said end with the chain 1. The arrangement is duplicated at the lower end of the bar 3 in order to secure it to the chain 2, the rectangular plates at the bottom being designated 10 11, they having flanges 12 13. The rivets for securing the plates 10 11 to the chain 2 are designated 15, and the rivets securing the plates 10 and 11 and the lower end of the bar 3 together are designated 14. 100

16 is one of the cards or sheets bearing advertising matter thereon. In Fig. 1, the traveling part of the apparatus is supposed to be moving from right to left. The forward end of the card or sheet is applied to 105 the front face of the bar 3 and is secured thereon by a covering strip 17. Screws 18 pass through the covering strip, card or



sheet and bar, and enter screw-threaded holes in small stationary nuts or reinforcing plates one of which is shown at 19, Fig. 2, that are applied to the rear face of the bar and riveted thereto by rivets 20.

At 161 in Fig. 1 is indicated a strip of adhesive cloth which is applied to the front surface of the card or sheet 16 at the front edge thereof in order to provide against the possibility of the card or sheet being broken apart, through repeated flexure at said edge portion. The rear portion of an adjacent card or sheet 162 is also shown in Fig. 1. The rear edge of the card or sheet is stiffened and reinforced by a folded-over metal strip 21, and at the ends of said strip 21 are secured the ends of a supporting spring 22. Each of the cards or sheets 162 is thus spring held at its rear end, one purpose of this arrangement being to maintain the card or sheet in a flat condition when in motion, another purpose being to provide or compensate for variations in the distance between adjacent bars at different places in the travel of the traveling part of the apparatus, due for instance to stretching or shortening of the carrying chains resulting from differences in tension in passing through different portions of the apparatus, and other causes.

30, Figs. 3 and 5, is a shaft which is journaled in a frame 31 that in practice is attached to the car in which the apparatus is carried at the right-hand end of such car as regarded in the figures. The shaft 30 carries a sprocket 32 mounted near its lower end, a sprocket 33 mounted near its upper end, and a worm gear 34 mounted above the sprocket 33. The worm gear 34 is engaged by the worm shaft 35 which constitutes the shaft of the motor 36 (see Figs. 7 and 8).

39 is a roller mounted on the shaft 30 and secured thereon by pins 40 41. The roller 39 is provided with channeled portions 42 43 44 to accommodate the reinforcing plates 19 which project from the rear surfaces of the bars 3.

45, Figs. 3 and 5, is a second shaft that is mounted in the frame 31, said shaft carrying a lower sprocket 46, an upper sprocket 47, and a loose roller 48 composed of several windings of woolen cloth.

49 50 are leather-faced wooden blocks which bear against the surface of the shaft 45 above and below the roller 48, and 51 53 are spring metal arms attached to the frame 31 and extending into contact with the blocks 49 50, in order that the blocks may be held pressed against the surface of the shaft 45 and operate as a brake or drag thereon.

In Figs. 5 and 6, the long arrows indicate the direction of drive of the traveling part of the apparatus, the chains 1 and 2 passing from the rear around the sprockets 32 and 33 (not visible in Fig. 5) and thence partly around and behind the sprockets 46 and 47.

The shaft 45 on which the guiding roller 48 is mounted is so placed relatively to the shaft 30 that the forward or exposed run of the traveling part of the apparatus will be deflected or set back into a plane closely adjacent to the plane of the rear or concealed run thereof.

55, Figs. 4 and 6, is a shaft journaled in the frame 56, which latter also carries a shaft 57. Sprockets 58 59 are mounted near the lower and upper ends of the shaft 55 and sprockets 60 61 are similarly mounted on the shaft 57. The shafts 55 and 57 are located in the same relation to each other as are the shafts 30 and 45, and for the same purpose. The frame 56 slides in ways 62 63 in the frame 64, which latter is attached to the car at the left hand end thereof as regarded in the figures. The shaft 57 is provided with a loose woolen guiding roll 581 and in its position corresponds with the shaft 45, for the same purpose.

65, 66, Figs. 4 and 6, are turnbuckles connecting the sliding frame 56 with the frame 64 in order to provide for accurately adjusting the tension of the traveling part of the apparatus.

One purpose of the blocks 49, 50, Fig. 3, is to prevent the sprockets 46 47 from playing back and forth and occasioning noise and wear as the traveling part of the apparatus passes over the same, it being clear that at this point the least tension exists in said traveling part, and the most play is likely to occur.

The woolen rolls 48 and 581, Figs. 3 and 4, are left loose on the shafts 45 and 57 respectively, for the reason that the speed of travel of the cards or sheets as they pass over the rolls 48 and 581 differs from the speed of travel of the chains 1 and 2 as they pass over the sprockets 46 47 and 60 61.

70, Figs. 2 and 7, is a metal molding constituting a fixed way extending the length of the exposed portion of the apparatus, it being made somewhat in box shape as shown in Fig. 2 in order to inclose the chain 1 and permit the latter to take a sliding bearing thereon. The said bearing is taken by the flanges 6, Fig. 2, resting on the inwardly bent portion 71 of the molding. A second molding or fixed way 72, Fig. 2, serves in the same way to support the rear run of the chain 1, the flanges 7 sliding upon the inwardly turned flange 73 of said molding. The upper edge portion of the outer molding 70 is shown in Fig. 2 as doubled over the upper edge of the inner molding 72, as at 731, and 74 indicates one of a series of screws passing through the three thicknesses of the moldings at 731 and entering the woodwork of the car to which the moldings are affixed. The chain 2 is inclosed in similar moldings arranged reversely as indicated in Fig. 2, there being a molding 75



inclosing the front run of the chain 2, and a molding 76 inclosing the rear run of the chain 2. The molding 75 is bent inwardly and upwardly at its upper edge as at 77.

5 The molding 76 is bent inwardly at its upper edge as at 78. The flanges 12 and 13 pass just under the portions 77 78 of the moldings. As indicated in Fig. 2, 80 81 82 and 83 are leather strips attached to the inner faces of the moldings for the purpose of deadening the slight rattle of the chains which may occur when the apparatus is in operation. Those portions of the moldings which are attached to the woodwork of the car may be bent at the required angle to fit closely against such woodwork, as shown in dotted lines at top and bottom in Fig. 2.

10 In Figs. 7 and 8 85 86 are casings which inclose the frames 31 and 56 respectively, the end walls of the car being designated 87 and 88. The motor is shown at 36, it being a self contained motor, and being located on the end wall of the car at the driving end of the apparatus, in the substantially triangular space between the curved roof 89, the door frame and the frame of the end window. This position removes the motor from interference with the exposed advertising space in the apparatus, provides said motor with a solid support, and permits of the motor shaft being in direct connection, through the worm gear already described, with the shaft 30 carrying the driving sprockets 32 and 33. The motor being in front of the shafts 30 and 45 requires no additional space in the car for its accommodation. Fig. 8 also shows my improved apparatus arranged in the inclined position adjacent the curved roof of a car which I prefer in some cases, inas-  
40 much as it exposes the advertisements, etc., more plainly to view.

In Figs. 9 to 14 inclusive is shown a construction of bar and covering strip which will now be described. The bar is designated  
45 90. It is formed of sheet metal, and is stamped integral with the links 91 and 92 of the chain, at top and bottom, which correspond with the links in Figs. 1 and 2 to which the bar 3 is affixed. Flanges 93, 94, 95 and 96 are also struck up from the body portion of the bar, they corresponding to the flanges 6, 7, 12 and 13 of Figs. 1 and 2 and projecting in opposite directions from the bar. Preferably the flanges 93 and 94  
55 are formed by bending up in opposite directions the two halves of a flap cut from the body of the bar as shown clearly in the several figures the flanges 95, 96 being formed in like manner. The flanges at the bottom of the bar will be turned up so as each to be opposite that flange at the top which projects in the same direction from the bar. In the face of the bar are set pins, 97, 98, and 99, corresponding in position with the screws 18  
65 of Figs. 1 and 2. The pins 97 and 99 are

formed each with an annular groove 100, 101, respectively and the pin 98 is made longer than the pins 97 and 99 and is formed with two annular grooves 102 and 103. The groove 103 is for the reception of the middle  
70 portion of the spring 104 which connects the rear end of the card or sheet 105 with the bar 90.

106, Figs. 9 and 10 is the covering strip. It is provided with three L-shaped slots 107, 75 108, 109, which are so positioned as to fit over the pins 97, 98, 99, the annular grooves or necks 100, 101, 102 entering the slots 107, 109 and 108, respectively. The material of the covering strip is struck or bulged up  
80 around the ends of the slots 107, 108, 109 as at 110, 111, 112. When the covering strip has been fully applied to the pins, the effect of the raised portions 110, 111, 112 is to force the covering strip firmly against the card or  
85 sheet, here designated 113. One end of the latter is shown separately in Fig. 14, it being provided with two holes 114, 115, for engagement with pins 97, 99 and also provided with a slot 116 located properly to be slipped upon  
90 the pin 98. The slot 116 is formed instead of a hole, because it is not desirable to have to remove a single card or sheet from the when the card or sheet 113 is being applied to the bar 90, it being frequently necessary  
95 to remove a single card or sheet from the apparatus and to replace it with another without disturbing the preceding card or sheet.

The woolen rolls 48 and 581, offering a  
100 fabric surface in contact with the face of the cards or sheets, serve to prevent particles of dust and dirt from being rubbed or ground into the cards or sheets and tend to remove such particles. The rolls themselves may be  
105 replaced with clean rolls when an objectionable amount of dust and dirt has accumulated upon them.

What I claim is—

1. In an advertising apparatus, the combination of traveling supporting chains at top and bottom, a bar between the chains, a covering strip applied to the bar, and an advertisement bearing sheet having its edge secured between the bar and covering strip.  
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2. In an advertising apparatus, the combination of a traveling supporting element, an advertisement bearing sheet having apertures in one edge thereof, pins located upon said traveling element and engaging said  
120 apertures, and a covering strip applied to said edge of the sheet to retain the same in engagement with said pins.

3. In an advertising apparatus, the combination of a traveling element, a bar carried  
125 thereby, pins located upon the bar, an advertisement bearing sheet adapted to fit upon the pins, and a covering strip detachably engaging said pins and thereby securing said sheet in place.  
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4. In an advertising apparatus, the combination of a traveling element, a bar carried thereby, pins located upon the bar and having reduced portions or necks, an advertisement bearing sheet adapted to fit upon the pins, and a covering strip having slots engaging the necks of the pins and thereby securing said card or sheet in place.
5. In an advertising apparatus, the combination of a traveling element, a bar carried thereby, pins located upon the bar and having reduced portions or necks, an advertisement bearing sheet adapted to fit upon the pins, and a covering strip having slots engaging the necks of the pins and having raised portions operating to make contact with the pins and press the covering strip against the sheet to secure the latter in place.
6. In an advertising apparatus, the combination of a traveling supporting element, pins located thereon, an advertisement bearing sheet having its front edge applied to the pins, a covering strip securing the front edge of the sheet in place, a preceding sheet having its rear edge adjacent to the pins, and a spring connection extending rearward from the latter sheet and engaging with one of the aforesaid pins independent of said covering strip whereby the latter may be removed without disturbing said spring connection.
7. In an advertising apparatus, the combination of a traveling supporting element, an advertisement bearing sheet carried thereby, an adhesive cloth strip applied to one edge of said card or sheet, and means for securing said edge of the card or sheet to said traveling supporting element.
8. In an advertising apparatus, the combination of a horizontally traveling supporting element, an advertisement bearing sheet having apertures in the front edge thereof and a stiffening strip applied to the rear edge thereof, means for engaging and securing said apertured front edge of the sheet in an upward and downward position to said traveling element, and means for connecting said stiffened rear edge of the sheet in an upward and downward position with said element.
9. In an advertising apparatus, the combination of a supporting element traveling in a horizontal direction, an advertisement-bearing member having one end of the same positively fixed detachably to the said supporting element and thereby firmly supported across its width, and a spring-connection between the other end of the said member and the said supporting element, whereby the said member is held extended lengthwise in a horizontal direction in addition to being prevented from sagging downward.
10. In an advertising apparatus, the combination of upper and lower carrier-chains traveling in a horizontal direction, cross-bars connected therewith and extending upward and downward, an advertisement-bearing member having one end thereof fixedly connected up and down across its width directly to one of the said cross-bars, and a spring-connection between the other end of said member and a second cross-bar, whereby such member is held extended lengthwise in addition to being prevented from sagging downward.
11. In an advertising apparatus, in combination, a traveling supporting element cross-bars carried thereby, a card or sheet, means for fixedly connecting the leading end of said card or sheet with one of the said cross-bars, and a spring-connection having its ends respectively engaged with the rear end of said card or sheet at separated points near the top and bottom thereof only and its middle detachably engaged with the middle of the succeeding cross-bar only.
12. In an advertising apparatus, in combination, a traveling carrier, cross-bars carried thereby, a card or sheet, means for fixedly connecting one end of the said card or sheet with one cross-bar, a spring-connection having its ends connected with the other end of the card or sheet at opposite points, and a projection upon the middle of an adjacent cross-bar with which the middle of the said spring-connection is detachably engaged.
13. In an advertising apparatus, in combination, upper and lower traveling chains moving horizontally, cross-bars extending from one chain to the other, a card or sheet having one end thereof attached to one of the said cross-bars, a spring-connection having its respective ends attached at upper and lower points only to the other end of the said card or sheet and its middle engaged detachably with the middle of the length of the adjacent cross-bar only, the said spring-connection serving to support the said end in an upwardly extending position.
14. In an advertising apparatus, the combination of supporting-chains traveling in a horizontal direction, an advertisement-bearing member or the like, a clamp engaging one end of the said member and thereby supporting the said end, and spring-connections engaging with the other end of the said member and thereby extending and supporting such member.
15. In an advertising apparatus, the combination of a traveling advertisement-bearing element located in an inclined position, bearings attached to said element adjacent to the upper edge thereof, fixed ways having interior bearing surfaces engaged by the bearings and thereby suspending the traveling element, and other fixed ways engaging the lower portion of said element and thereby restraining the same from falling forward.
16. In an advertising apparatus, the com-



5 combination of a traveling advertisement-bearing element, bearings attached to the same adjacent to the upper edge thereof, bearings attached to said element adjacent to the lower edge thereof, fixed ways having interior bearing surfaces engaged by the upper bearings and serving to suspend the traveling element, and other fixed ways having interior bearing surfaces engaged by the lower bearings and serving to restrain the lower portion of said element from falling forward.

15 17. In an advertising apparatus, the combination of a traveling advertisement bearing element inclined to the vertical, bearings projecting in each direction therefrom, and a plurality of fixed ways adapted to support opposite runs of said traveling element by engagement with the corresponding bearings.

25 18. In an advertising apparatus, the combination of a traveling advertisement-bearing element inclined to the vertical and having opposite runs, flanges projecting in each direction therefrom, and moldings inclosing the edge of said traveling element and having ways extending under those flanges which are lowermost on the run being supported.

30 19. In an advertising apparatus, the combination of a traveling advertisement-bearing element having front and rear runs and provided with projections, end rollers over which the same passes, guiding means located adjacent to the end rollers for setting back the front or exposed run of said traveling element into a plane adjacent to the plane of the rear run thereof, and flanged moldings constituting ways and engaging with projections of said element for supporting said runs and attached at the rear of said runs to a fixed support.

45 20. In an advertising apparatus, the combination of a traveling advertisement-bearing element having front and rear runs and provided with projections, end rollers over which the same passes, guiding means located adjacent to the end rollers for setting back the front or exposed run of said traveling element into a plane adjacent to the plane of the rear run thereof, flanged sheet metal moldings bent to inclose the edges of said runs of said element and engaging with projections of the said runs to thereby support the same, and a fixed support, rearward of said element, to which said moldings are attached.

60 21. In an advertising apparatus, the combination of a car having a curved roof, separate moldings forming upper and lower ways directly affixed longitudinally thereon and a traveling advertisement-bearing element engaging at top and bottom with said ways and positioned in an inclined plane subtending the curve of said roof.

22. In an advertising apparatus, the combination of traveling advertising mechanism, an end roll over which the same passes, a guide roll adjacent to the end roll for setting back the front run of the said mechanism, a movable frame in which said rolls are journaled, and means for adjusting said frame end roll and guide roll in unison for thereby varying the tension in said mechanism.

75 23. In an advertising apparatus, the combination of a traveling advertising element having endless sprocket-chains, an end-roller for the same, a guiding roller succeeding the said end-roller and setting back the front run of the said element and chains, said guiding roller having sprocket-wheels engaging with said sprocket-chains, and a drag brake applied to the said guiding roller operating to prevent the sprockets from playing back and forth and occasioning noise and wear.

90 24. In an advertising apparatus, the combination of a traveling advertisement-bearing element having adjacent opposite runs, and fixed ways constituted of moldings inclosing the edge of said element and serving to support said runs, the rear edge portion of one molding being folded over the rear edge portion of the other molding to form a reinforced flange for attachment to a suitable support.

100 25. In an advertising apparatus, the combination of an end roller having sprockets at top and bottom, traveling chains at top and bottom passing over said sprockets, advertisement-bearing sheets supported between the chains, an idler shaft located adjacent to said end roller having sprockets for guiding the chains, and a loose roll on said idler shaft for guiding said sheets.

110 26. In an advertising apparatus, the combination of traveling advertisement-bearing sheets, and a guiding roll located at the front face of said sheets and having a surfacing of fabric.

115 27. In an advertising apparatus, the combination of an end roller having sprockets at top and bottom, traveling chains at top and bottom passing over said sprockets, advertisement-bearing sheets supported between the chains, an idler shaft located adjacent to said end roller having sprockets for guiding the chains, and a loose fabric roll on said idler shaft for guiding the sheets.

120 28. In an advertising apparatus, the combination of a traveling advertisement-bearing element, a series of flanges attached to the same adjacent to the upper edge thereof, a second series of flanges attached to said element adjacent to the lower edge thereof, fixed ways extending under the upper series of flanges and serving to suspend the traveling element, and other fixed ways extending forward of and over the lower series of

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flanges and serving to restrain the latter from forward and upward motion.

29. In a traveling advertising device, endless chains, sprockets around which the chains are caused to pass, an advertising sheet, and means for removably securing it to the chains, comprising interlocked back and front plates carried by the chains ar-

ranged to clamp the side edges of the sheet between them.

In testimony whereof I affix my signature in presence of two witnesses.

JOSHUA CRANE, JR.

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LEPINE HALL RICE.