

No. 621,483.

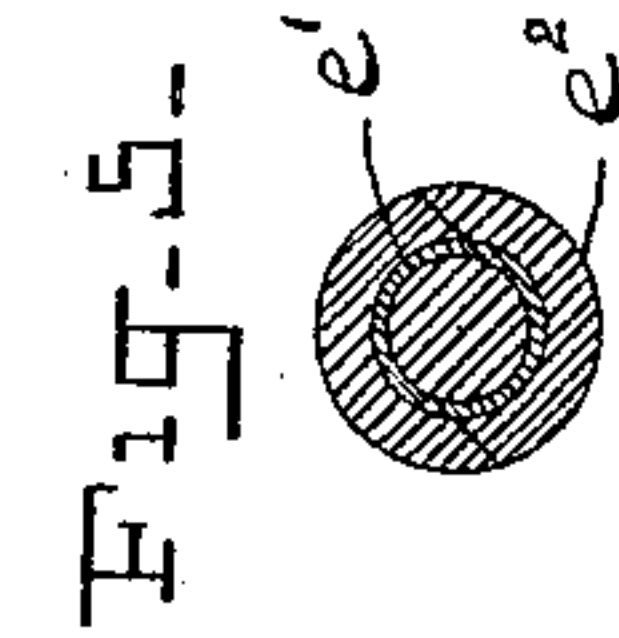
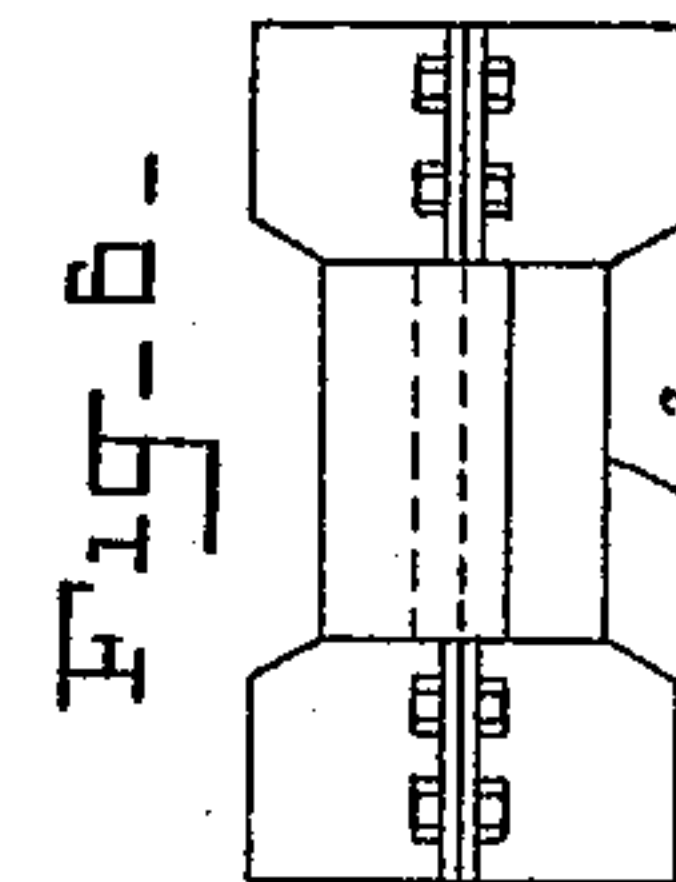
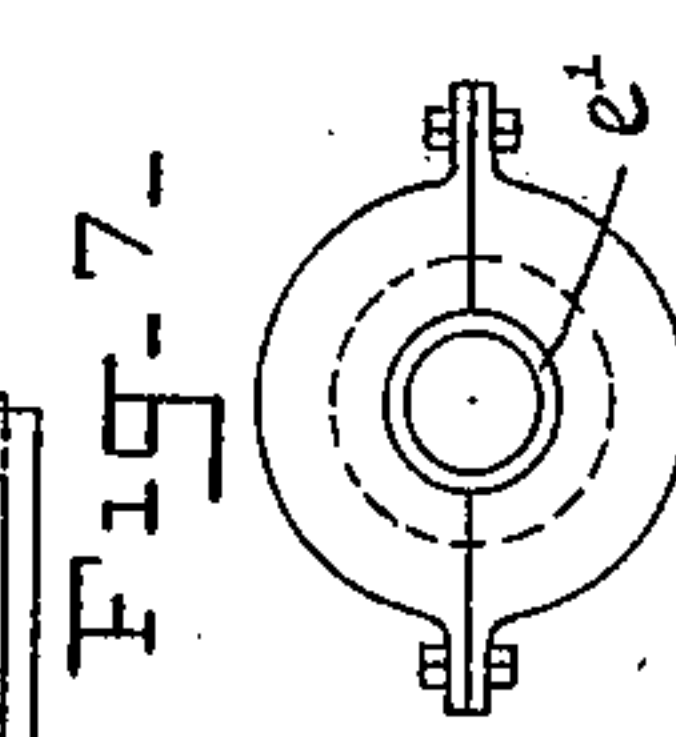
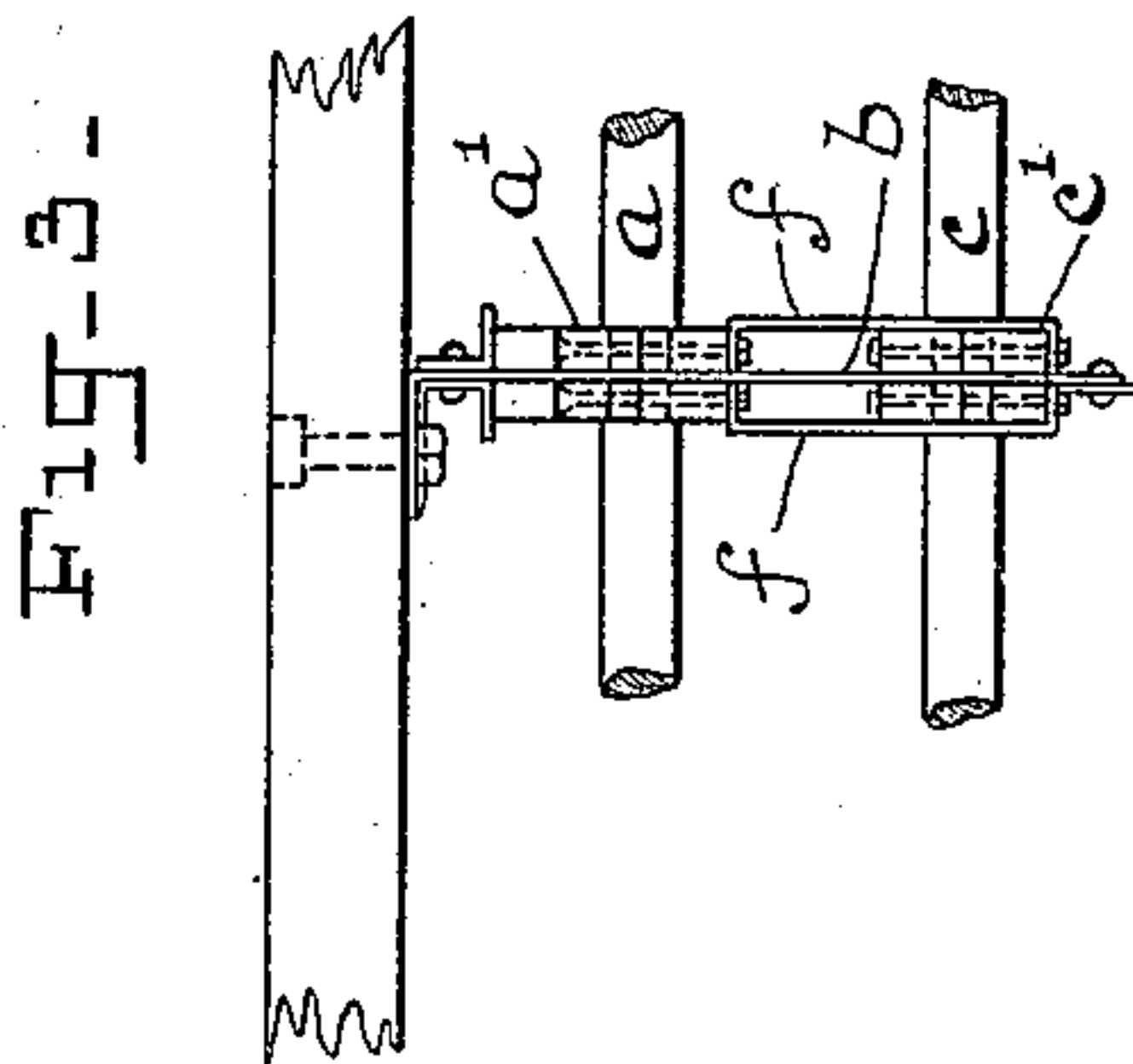
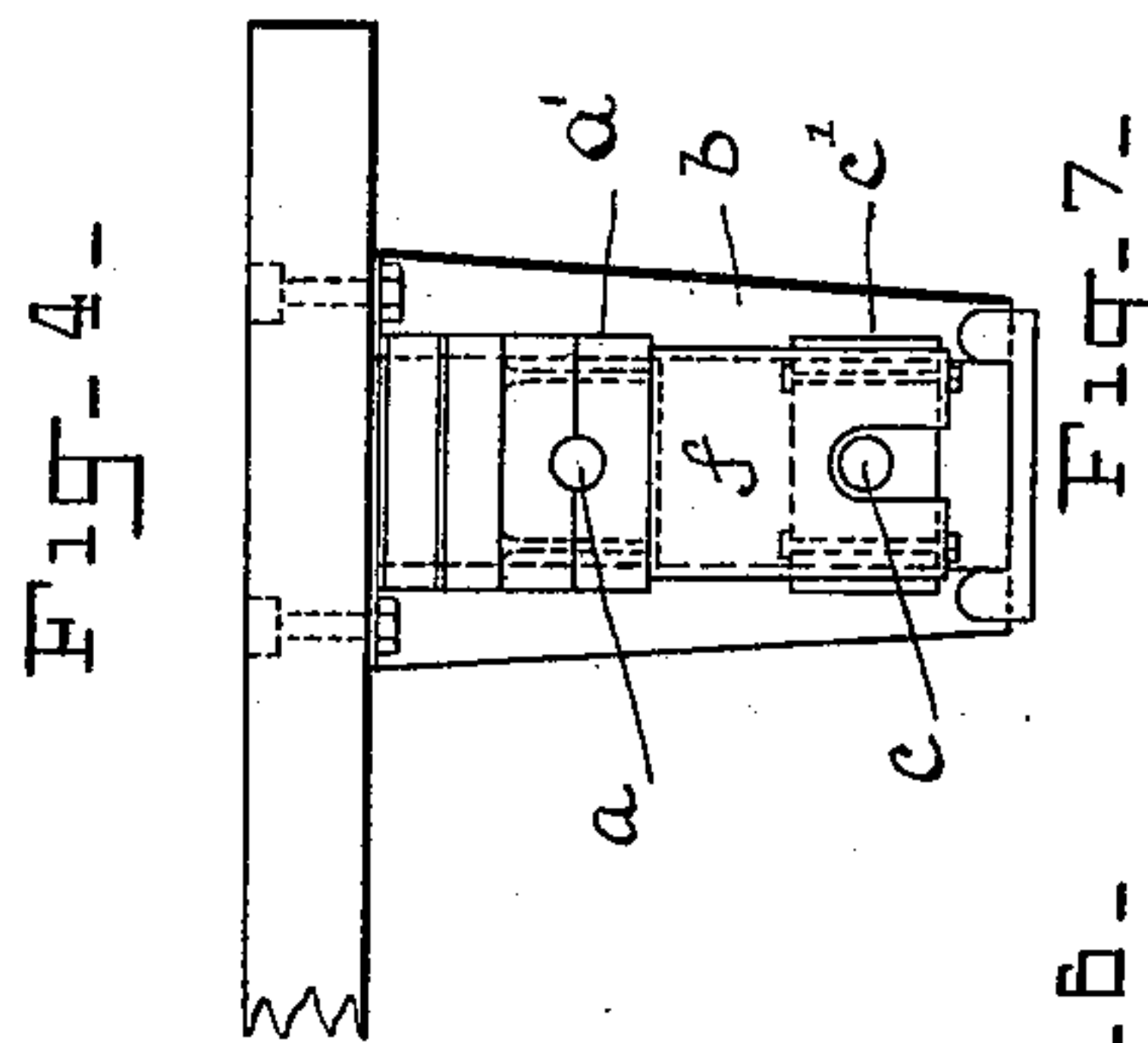
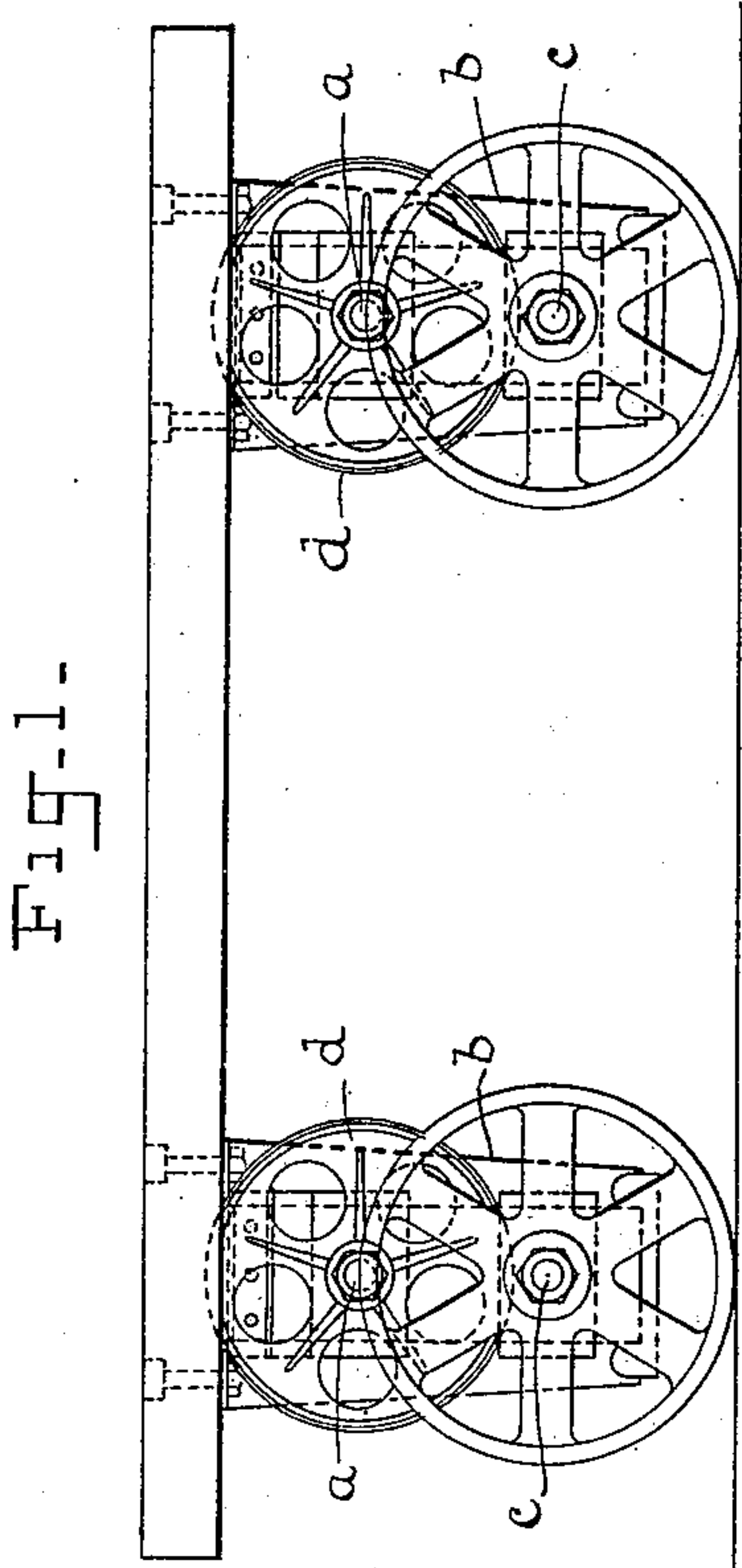
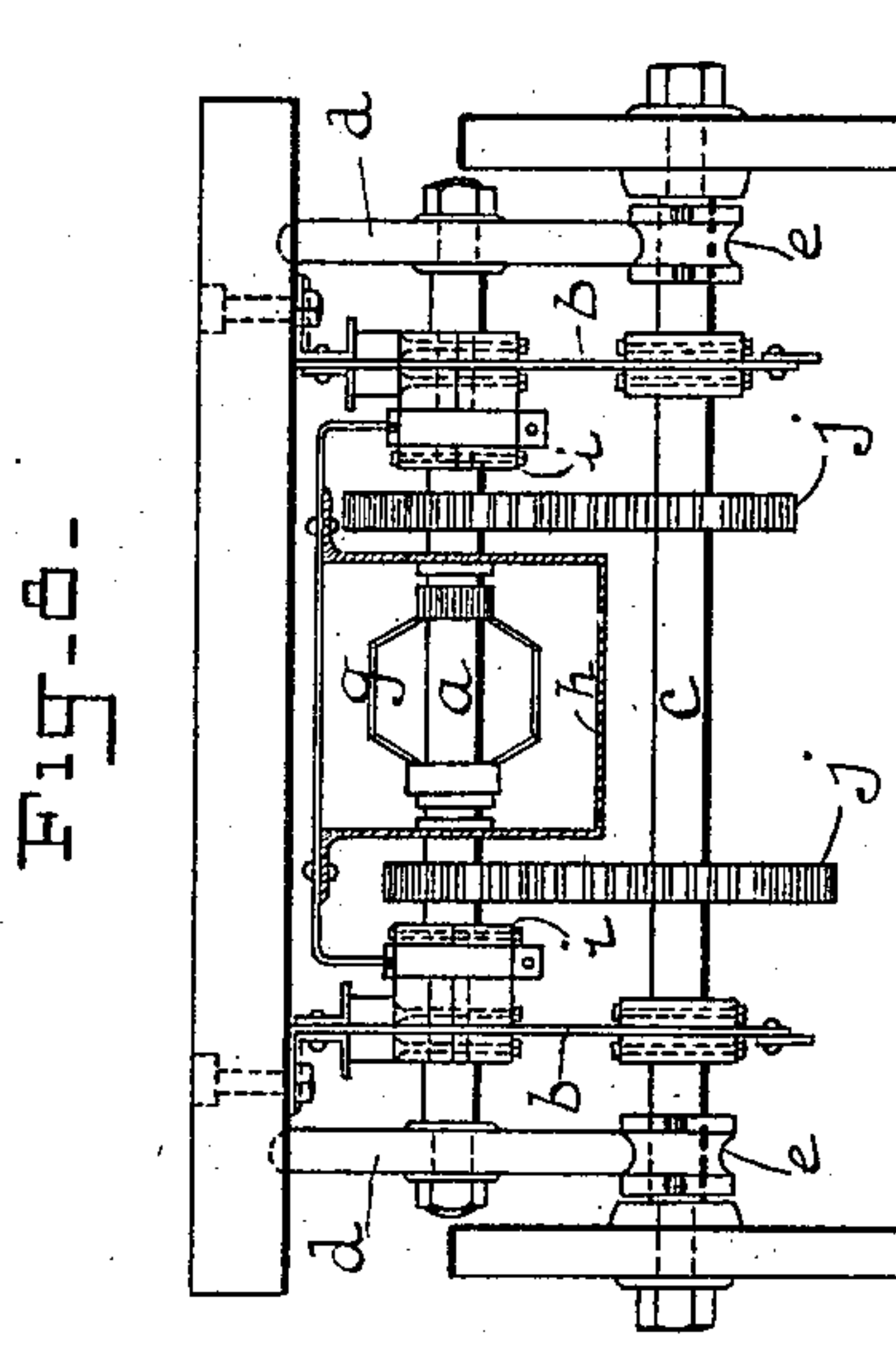
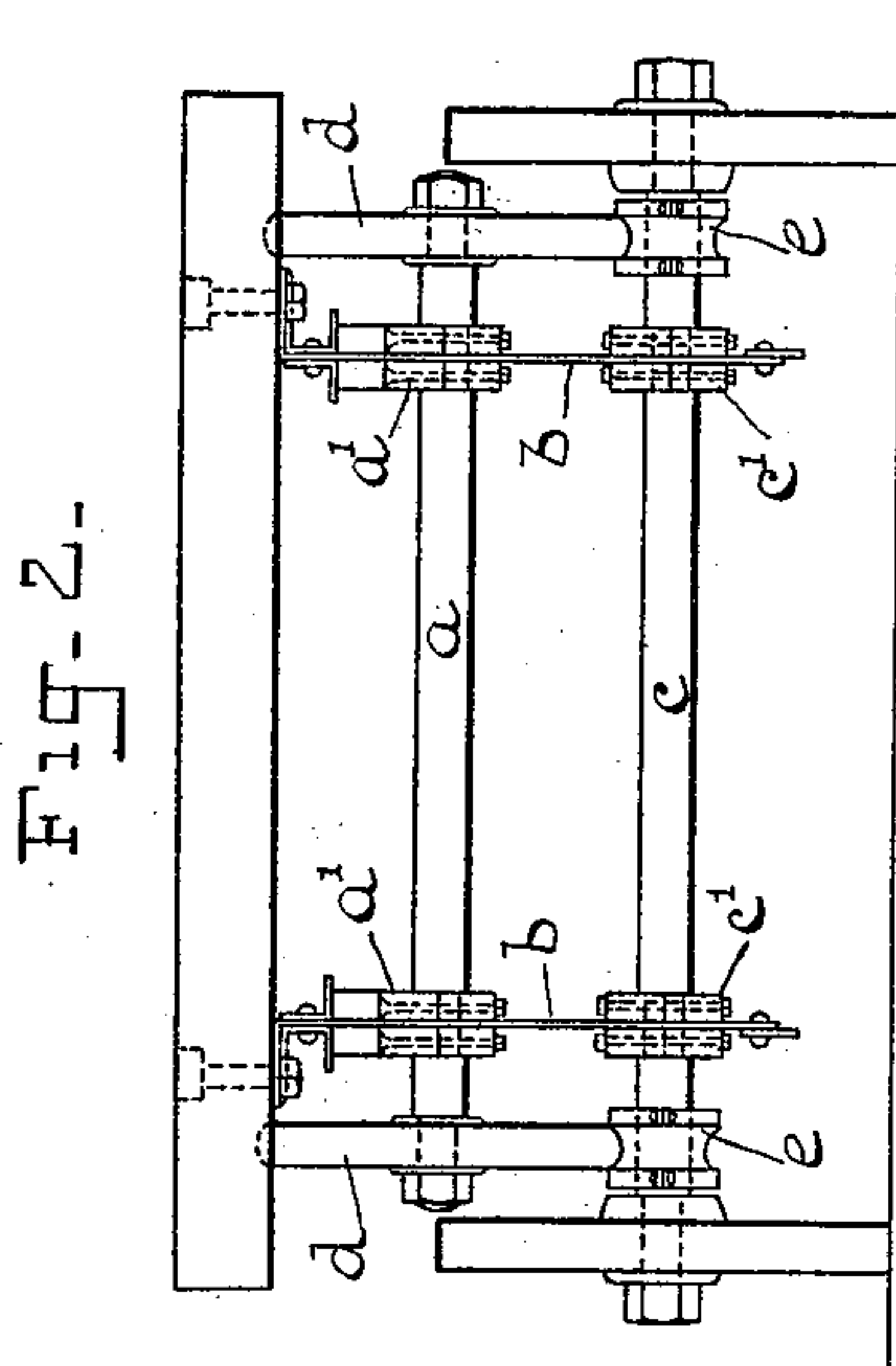
Patented Mar. 21, 1899.

W. J. BREWER.
AUTOMOTOR CARRIAGE OR VEHICLE.

(Application filed Mar. 3, 1898.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses

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No. 621,483.

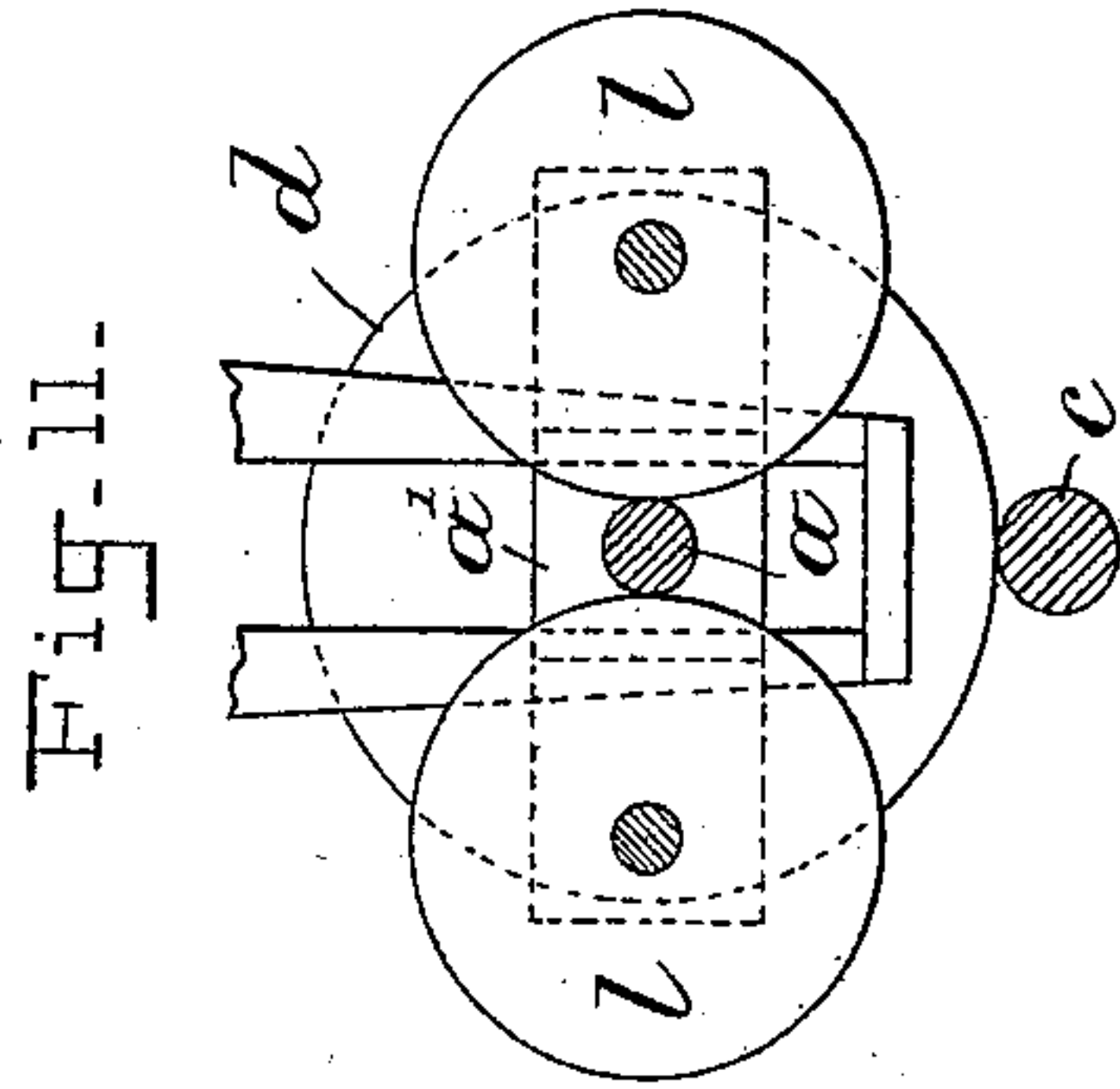
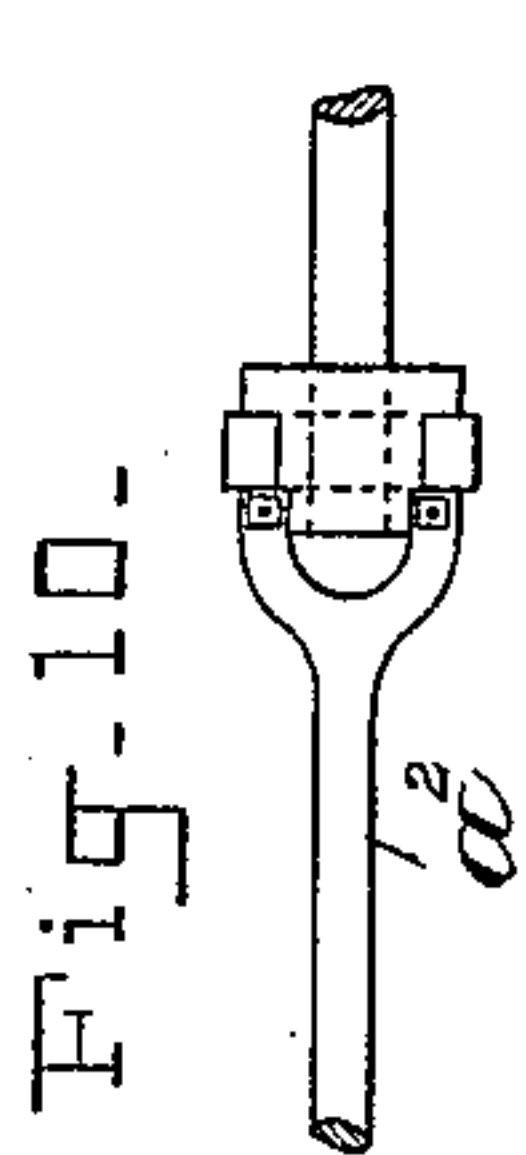
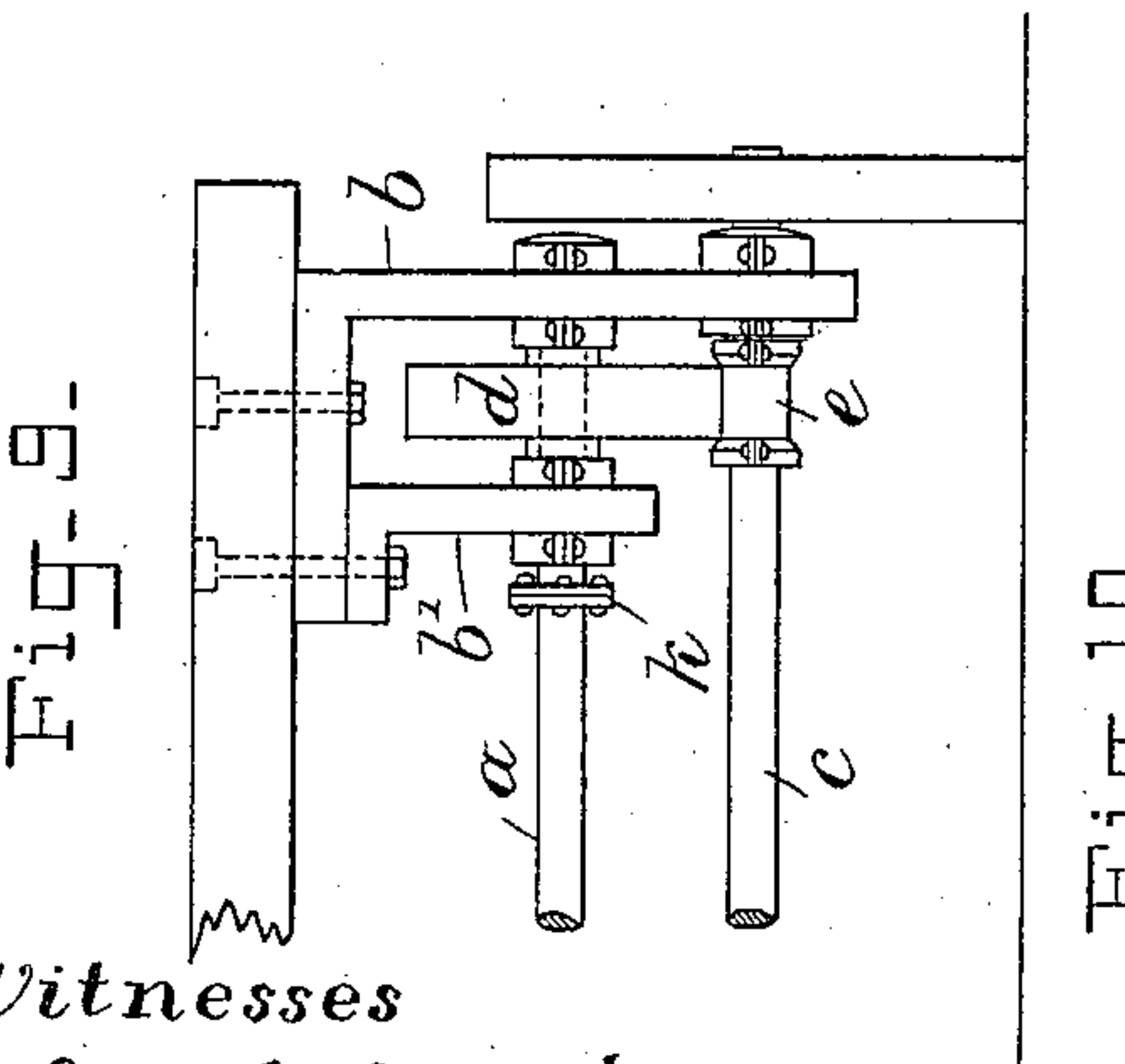
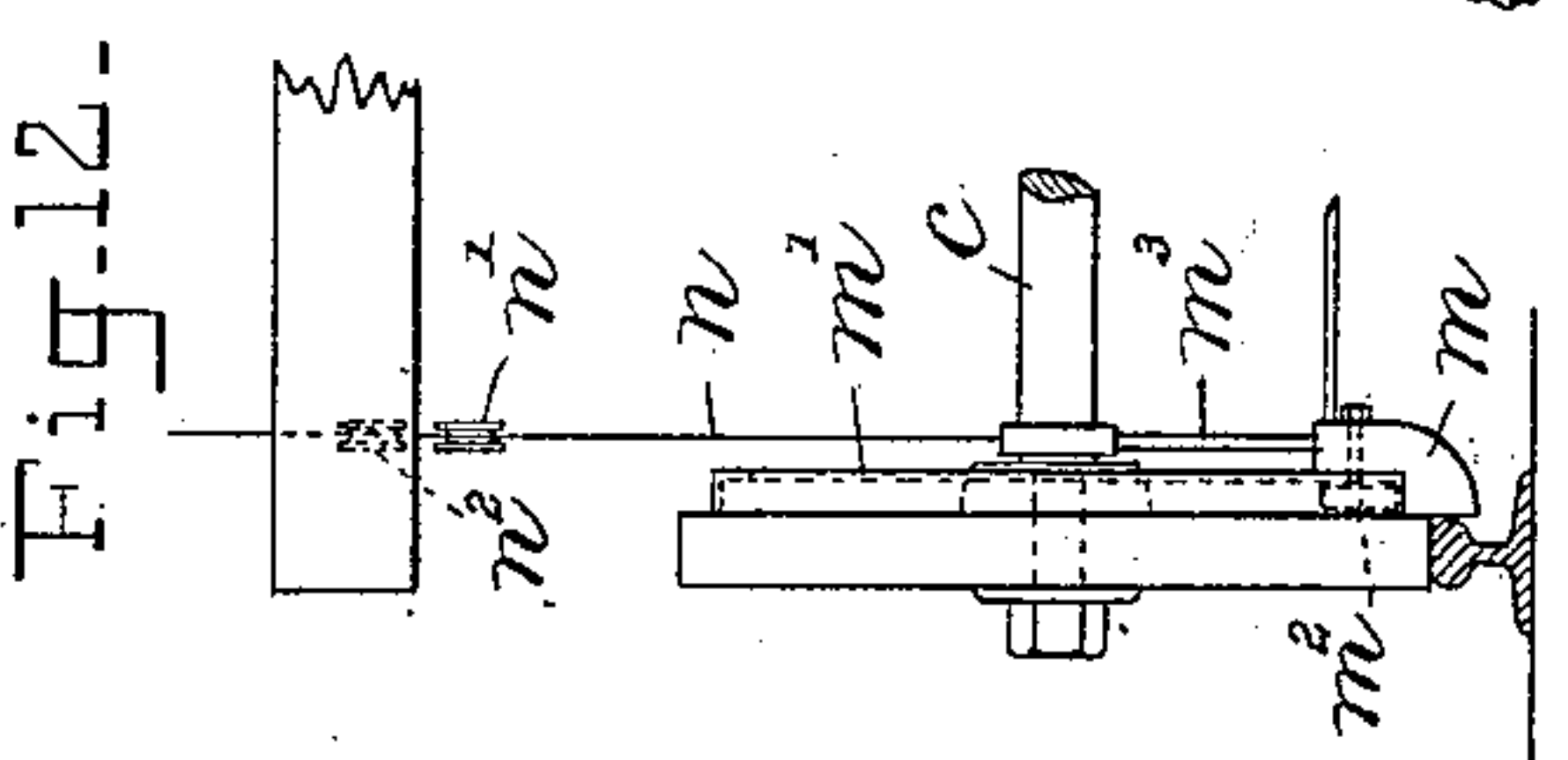
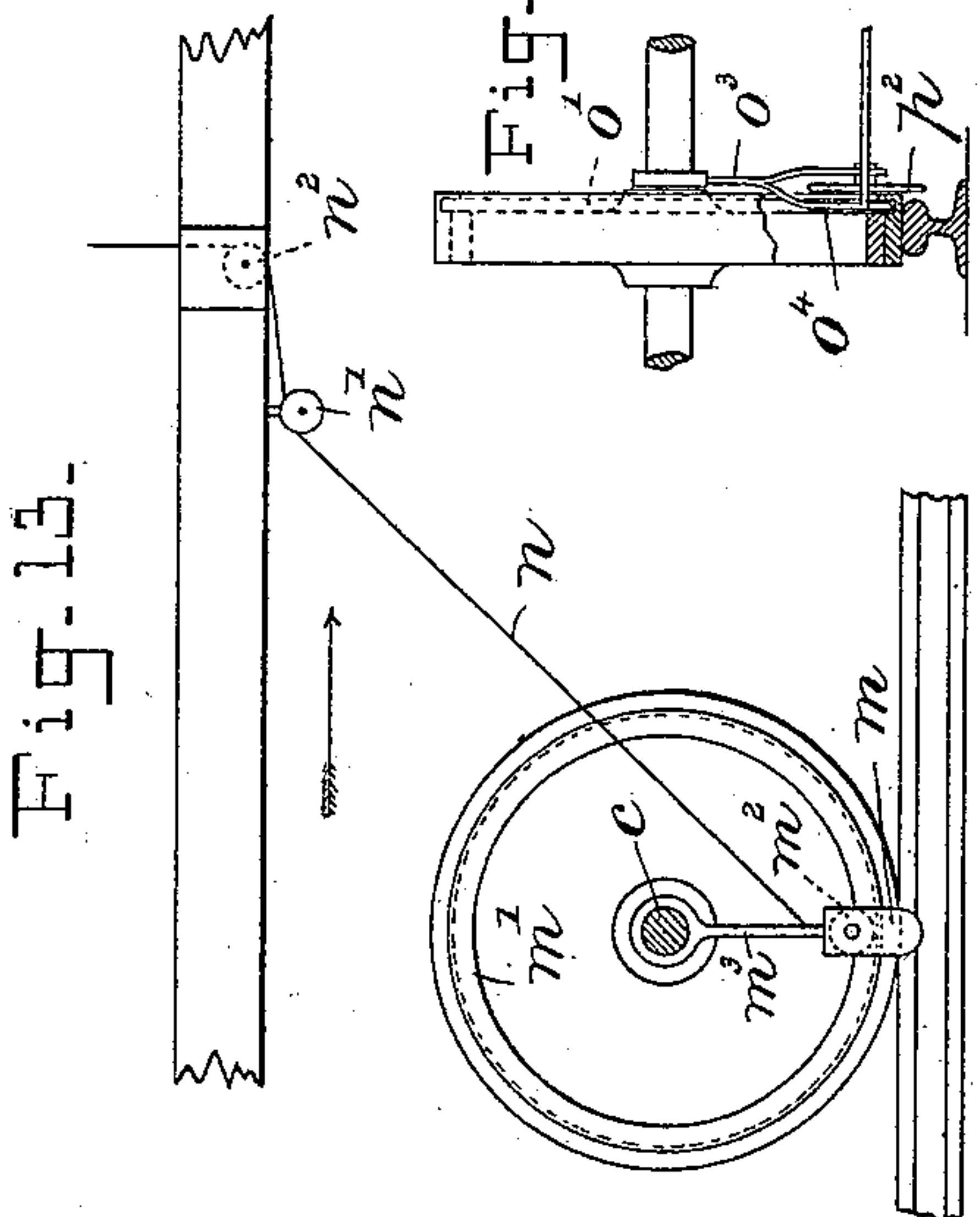
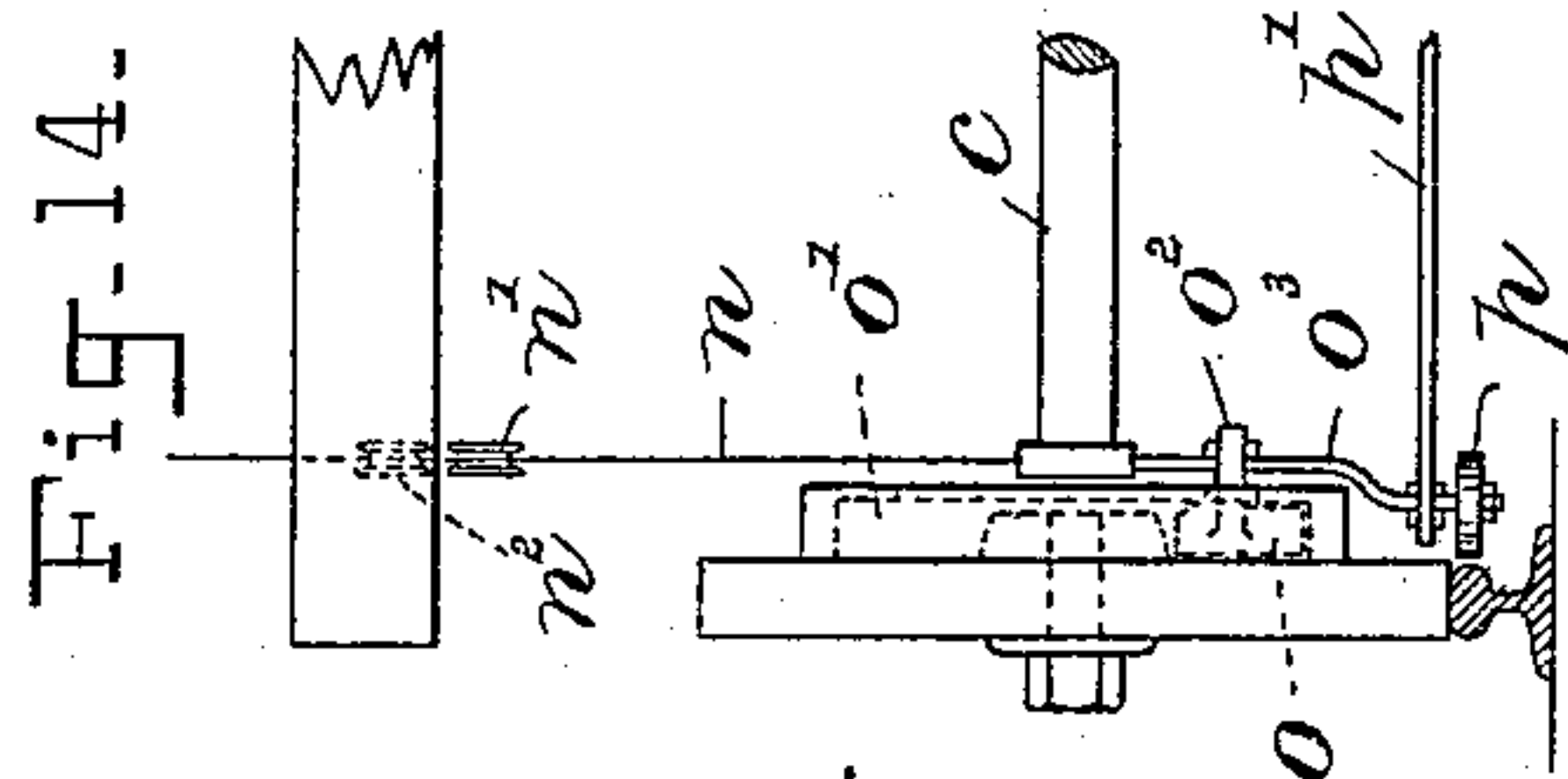
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3 Sheets—Sheet 2.



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AUTOMOTOR CARRIAGE OR VEHICLE.

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(No Model.)

3 Sheets—Sheet 3.

Fig. 16.

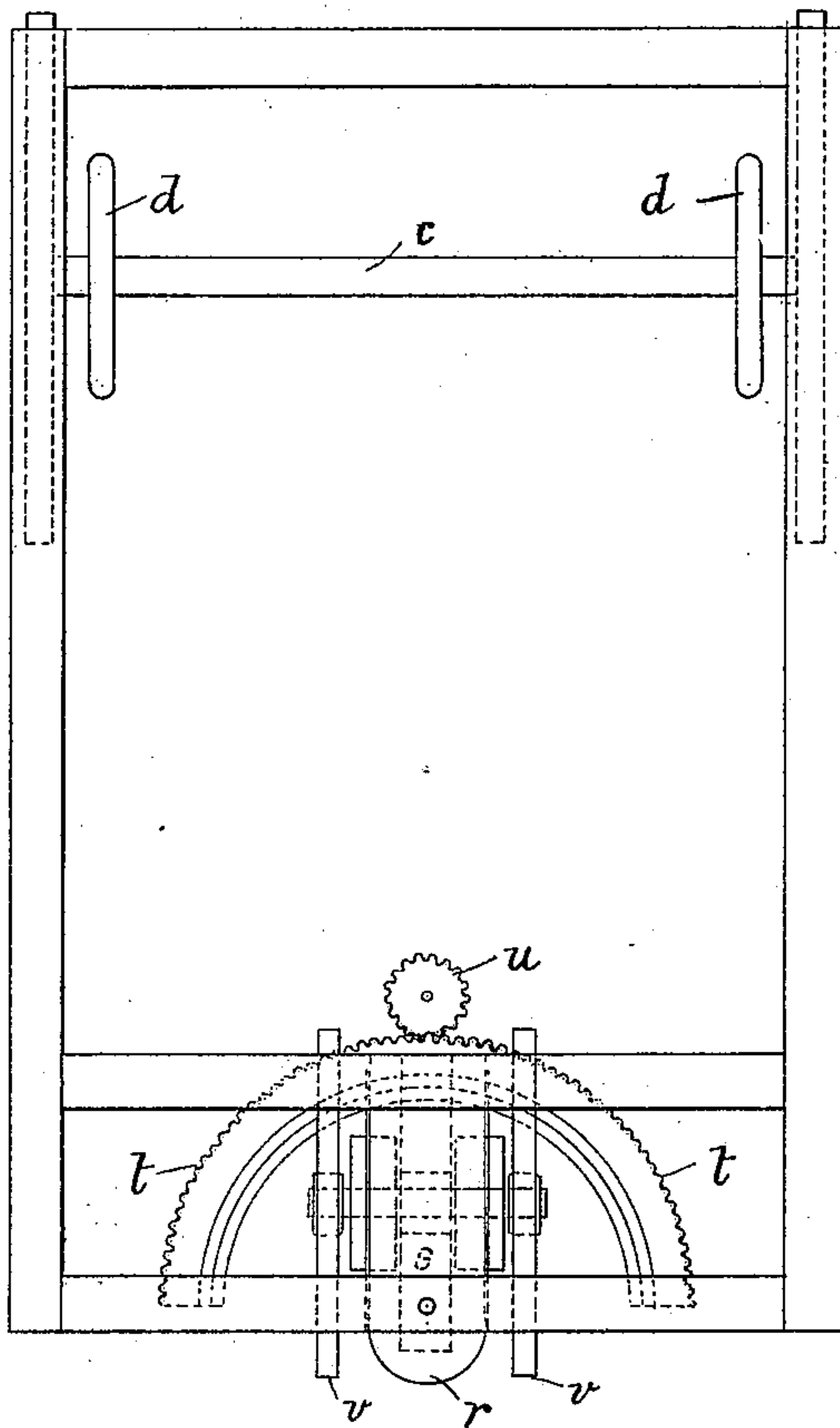
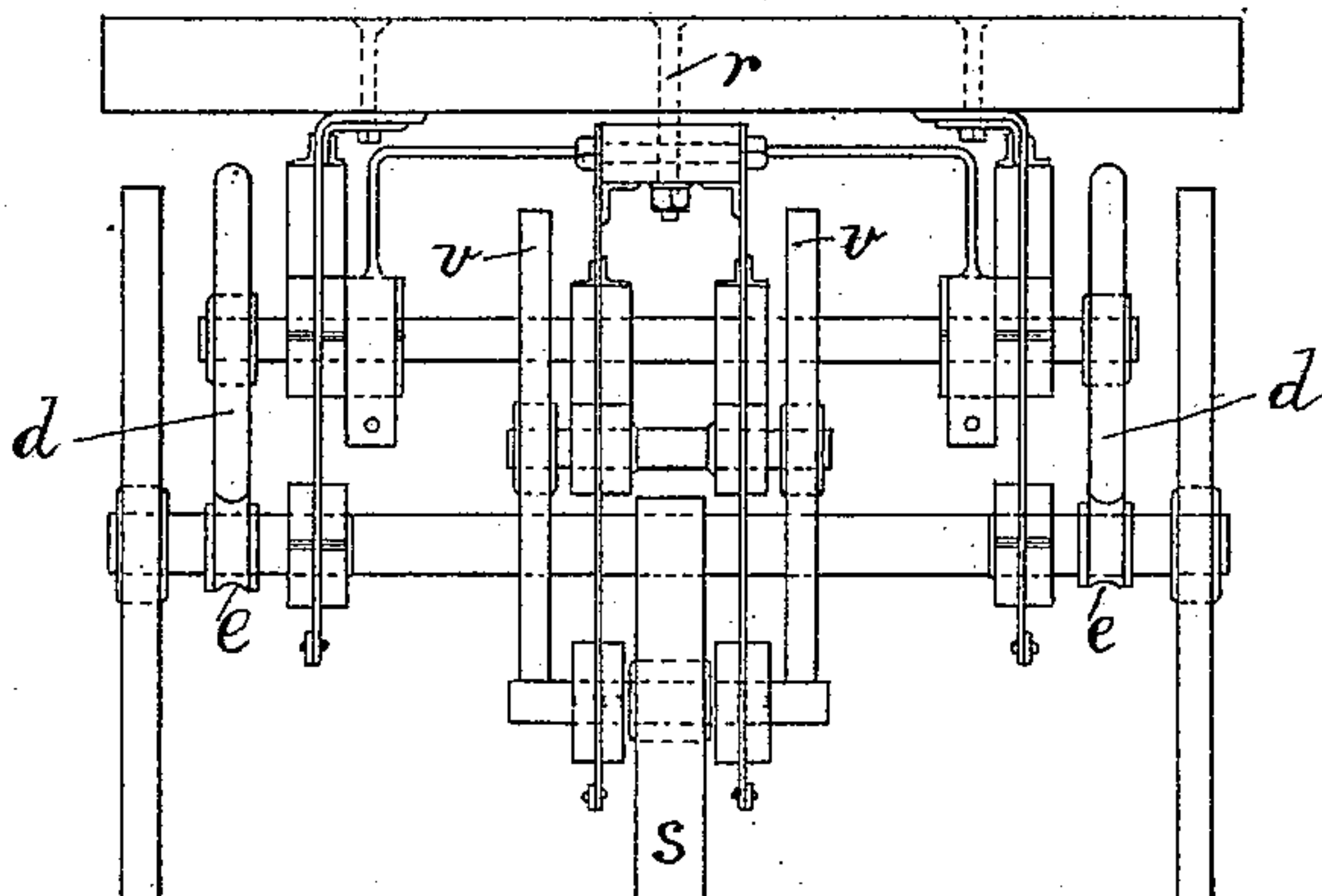


Fig. 17.



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UNITED STATES PATENT OFFICE.

WILLIAM JOHN BREWER, OF PIMLICO, ENGLAND, ASSIGNOR OF ONE-HALF
TO JOHN EDWARD COOPER, OF WITHERNSEA, ENGLAND.

AUTOMOTOR CARRIAGE OR VEHICLE.

SPECIFICATION forming part of Letters Patent No. 621,483, dated March 21, 1899.

Application filed March 3, 1898. Serial No. 672,384. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM JOHN BREWER, a subject of the Queen of Great Britain and Ireland, residing at Pimlico, in the county of Surrey, England, have invented certain new and useful Improvements in Automotor Carriages or Vehicles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to automotor carriages or vehicles adapted to run on ordinary roads, tramways, or railways, and effects improvements in the action and construction of such automotor-carriages comprising various combinations of attachments to the vehicle proper, each combination being specially adapted for a certain purpose, but all designed and arranged to be operated together in effecting the purpose of my said invention, by the use of which these several advantages are attained. All heavy working parts are entirely below and clear of the main body or passenger-compartment of the car or vehicle, which is free from vibration in consequence, and the autocar is furnished with antifriction-rollers, thereby enabling heavier loads to be drawn with a less expenditure of power. The autocar is readily adapted to either road or rail and is easy to steer. Furthermore, the parts arranged for the relief of friction on the axles of the car are available for facilitating the use of an electric motor as the driving power.

Having now set forth the main objects and utility of my invention, I will proceed to further explain the same by referring to the accompanying drawings, in which the car or passenger-compartment is entirely omitted as being unnecessary for the purpose of explaining the invention.

Figure 1 is a side elevation, and Fig. 2 a corresponding transverse view, of those parts of an automotor-carriage which are constructed in accordance with my invention. Figs. 3 and 4 are end and side views, respectively, of a horn-plate and illustrate in detail the method of fixing the axle-boxes therein for adjustment. Figs. 5, 6, and 7 are detail views of the collar on the main axle and drawn to a larger scale. Fig. 8 is a trans-

verse view like Fig. 2, but showing an electric motor mounted in position for driving the car. Figs. 9 to 17, inclusive, illustrate in detail some of the improvements comprised in my invention hereinafter described.

Referring more especially to Figs. 1 to 4, inclusive, I provide an antifriction-axle *a*, mounted in the same horn-plates *b* and directly above each main axle *c*, so that the wheels or disks *d*, which preferably run loose. The antifriction-axles are in rolling contact with collars *e* on the main axles, the boxes *a'* and *c'* of the axles *a* and *c*, respectively, being split to make them adjustable for the purpose of taking up the wear, which arrangement also enables the antifriction-axles to be readily removable without disturbing the main axles, which will then carry the vehicle in the ordinary way. In connection with these split axle-boxes a special construction is shown in detail in Figs. 3 and 4, in which *f* is an adjusting and guide box accurately fitting into the horn-plate *b*, so as to have a vertical movement only. The axle-boxes are secured to this adjusting and guide box by which they are kept to the exact distance apart and are also accurately guided to share the same vertical movement in exact line with each other. Upon this arrangement depends the proper rolling contact between the disk or wheel *d* on the antifriction-axle *a* and the collar *e* on the main axle *c*, which latter may have either a concave or convex form on its working side, the periphery of the disk conforming thereto.

Referring to Figs. 5, 6, and 7, *e'* is a lining of insulating or other material, such as rubber or soft metal, used to prevent the current from an electric motor (when one is used) passing through the collar to the antifriction-wheels and other parts, and the outer covering *e''* is used to prevent vibration to the main axle and to reduce noise in traveling. The collar is preferably jointed across a center line in the flanges, as shown in Fig. 7, and on the diagonal in the reel or barrel, as shown in Fig. 5, so that the wheels *d* meet a joint which is less abrupt by being set to an angle, which saves wear in the surfaces in rolling contact.

Referring to Fig. 8, which illustrates in transverse view in what manner the antifric-

tion-axle can be used in conjunction with the main axle as a means for mounting and operating a motor free of any other connection with the main body of the car, it will be observed that the antifriction-axle a can also be used as the driving-shaft of the electric motor g , inclosed in the casing h , supports for which are conveniently provided in the form of cross-bars i , extending between the journal-boxes or other fixed parts clear of the gearing-wheels j . These gearing-wheels are preferably designed for quick driving on one side and slow driving on the other, the arrangement for which, together with the in and out of gear mechanism, being omitted from the drawings as not being part of my present invention, but only to be regarded as a useful accessory designed in the usual way.

If the antifriction-axle a is made up in sections, as shown in Fig. 9, the said sections being united together by flanged joints, as at k , the arrangement admits of the electric motor and the intermediate section of the antifrictional axle on which it is mounted being bodily removed, or where an auxiliary horn-plate b' is provided, as shown in Fig. 9, an axle journaled into each of the horn-plates b b' may be provided, one for each antifriction-roller d , in which case the intervening section of shaft a may be altogether dispensed with. Where the intermediate section of shaft a is dispensed with, a fixed shaft a^2 may be attached to the axle-box, as shown in plan in Fig. 10, to serve as a fixture for carrying the motor or oil or other engine.

Fig. 11 is a detail view looking from inside, illustrating an alternative device for reducing friction on the antifriction-axle a and the main axle c by prolonging the axle-box a' , so as to form further axle-boxes to support the axles of the side rollers l . This prolongation of the axle-box is between the side rollers l and the antifriction-wheel d . This prolongation of the antifriction axle-box may be used to support an axle or axles without the use of side rollers l . To adapt the wheels of the car to run on a railway or tram-track, as well as on the ordinary road, I provide a guard-lip or rail-guard wheel placed beyond the periphery of the road-wheel. Suitable mechanism for this purpose is shown in Figs. 12, 13, 14, and 15.

Referring to Figs. 12 and 13, a guard-lip m , suspended from the main axle c in the position shown, serves the purpose of the usual wheel-flange, and in order to effect its purpose must retain a constant position relatively to the wheel, so as to be carried along the rail side. At the same time the guard-lip must be so secured to the wheel-rim that it serves the purpose of a rigid flange. To comply with these conditions, an undercut recess m' is provided at the back of the wheel near to the periphery for the accommodation of a roller, such as m^2 , which is bolted to the guard-lip bar m^3 . The guard-lip m , with its hanger-

bar m^3 , can be lifted up clear of the roll of the wheel, but is kept rigidly in the position shown in Figs. 12 and 13 when used as a lip-guard. In order to retain the guard-lip in the constant position relatively to the wheel or to be drawn up out of the way of the rail, it is connected to a wire rope n , trained over pulleys n' and n^2 to a position to be controlled by the driver or otherwise adjusted. As the car travels in the direction indicated by the arrow the tendency of the guard-lip to lag or swing back is prevented by the wire rope, which holds it in the working or vertical position. When not required, it is drawn up out of the way of the rail by means of the wire rope. Fig. 14 is a modification of this arrangement, in which a block o closely fits into the channel o' of a hanger-bar. The extension o^2 is constructed to hold the rod o^3 , supporting the rail-guard wheel p , which in Fig. 14 takes the place of the guard-lip m in Figs. 12 and 13. The same attachment of the rod o^3 as in Figs. 12 and 13 will be required to the main axle, or the antifriction-axle may be used for the same purpose in the modifications illustrated in Figs. 12, 13, and 14. The cross-rod p' is connected to the opposite rail-guard wheel, so as to prevent too great a strain on the channel o' . When this gage-guard is lowered for use, it is kept in position by either two opposite tension-rods, or one rigid rod may be used, or suitable wire rope may be adjusted for that purpose. Fig. 15 is a further modification of this arrangement in which the extension o^4 of the hanger-bar o^3 closely fits into the channel o' . This extension o^4 of the hanger-bar supports the rail-guard wheel p^2 .

Fig. 16 illustrates in plan view, and Fig. 17 in front elevation, the under frame of a motor-car fitted with a forecarriage constructed according to my invention for facilitating steering. In these views the forecarriage is pivoted at r in front of the vehicle and runs upon the steering-wheel s and is operated and controlled by the segmental spur-wheel t , into which gears the pinion u , operated by the driver. The wheels v , above the steering-wheels s , act as antifriction-wheels to the steering-axle in like manner to the wheels d on the main axle c , as already described with reference to Figs. 1 and 2. Where an electric motor is used, in this case it is mounted on the rear antifriction-axle, or it may be mounted on the steering antifriction-axle, gearing into main steering-axle.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In an automotor-car, the combination of a car-body, horn-plates directly secured thereto, journal-boxes mounted in said horn-plates, a main axle having wheels secured thereto mounted in the lower pair of journals and having collars thereon, an antifriction-axle mounted in the upper pair of journals and

disks mounted on said antifriction-axle engaging the collars on the main axle, substantially as described.

2. In an automotor-car, the combination of
5 a car-body, horn-plates provided with slots secured thereto, two journal-boxes mounted in each of said horn-plates and secured together and adapted to slide in said slots, a main axle having wheels secured thereto
10 mounted in the lower pair of journals and having collars thereon, an antifriction-axle mounted in the upper pair of journals, and disks mounted on said antifriction-axle adapted to revolve thereon and engaging the col-
15 lars on the main axle, substantially as described.

3. In an automotor-car, the combination with the main axle, of wheels fixed thereon, collars each composed of two sections diagonally jointed on the barrel and fastened together by bolts, and a layer of insulating material between each of said collars and said axle, substantially as described.

4. In an automotor-car, the combination of
25 a car-body, horn-plates fixed thereto, journals mounted in said horn-plates, a main axle mounted in the lower pair of journals, wheels and cushions attached to said main axle, an antifriction-axle mounted on the upper pair
30 of journals, disks loosely mounted on said antifriction-axle and engaging said collars, an electric motor mounted on said antifriction-axle, and gearing on said axles, substantially as described.

35 5. In an automotor-car, the combination with a car-body, main horn-plates attached thereto, secondary horn-plates also attached thereto, journals mounted in said horn-plates, a main axle mounted in the lower pair of said
40 journals, and provided with wheels and collars fastened thereto, a sectional antifriction-axle mounted in the upper sets of journals, and disks loosely mounted on said antifric-

tion-axle and engaging the collars on the main axle, substantially as described.

6. In an automotor-car, the combination of
45 a car-body, horn-plates fixed thereto, journal-boxes mounted in said horn-plates, a main axle mounted in the lower pair of journals and provided with cushions and wheels fixed
50 thereto, a main antifriction-axle mounted above said main axle in the upper set of journals, disks on said antifriction-axle engaging with the collars on said main axle, secondary antifriction-axes mounted on a line with
55 the main antifriction-axle, and antifriction-wheels mounted on said secondary axle and engaging said main antifriction-axle, substantially as described.

7. In an automotor-car, the combination of
60 the main axle, wheels supported thereon, each wheel being provided with an interior portion of less diameter than the main portion of the wheel, an arm revolubly mounted in said axle, a wheel mounted on said arm parallel
65 to the main axle, and means for bringing said wheel down to an operative position for preventing said main wheel from running off a track, and means for fastening it in that po-
70 sition, substantially as described.

8. In an automotor-car, the combination of a car-body and steering mechanism therefor, consisting of a main steering-wheel, supports therefor, an antifriction-axle mounted above
75 the axle of the steering-wheel, friction-disks mounted on said axle and engaging with the axle of the steering-wheel, an operating spur-gear and a pinion meshing therewith, substantially as described.

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

WILLIAM JOHN BREWER.

Witnesses:

H. D. JAMESON,
A. NUTTING.