C. A. LINDSTRÖM.

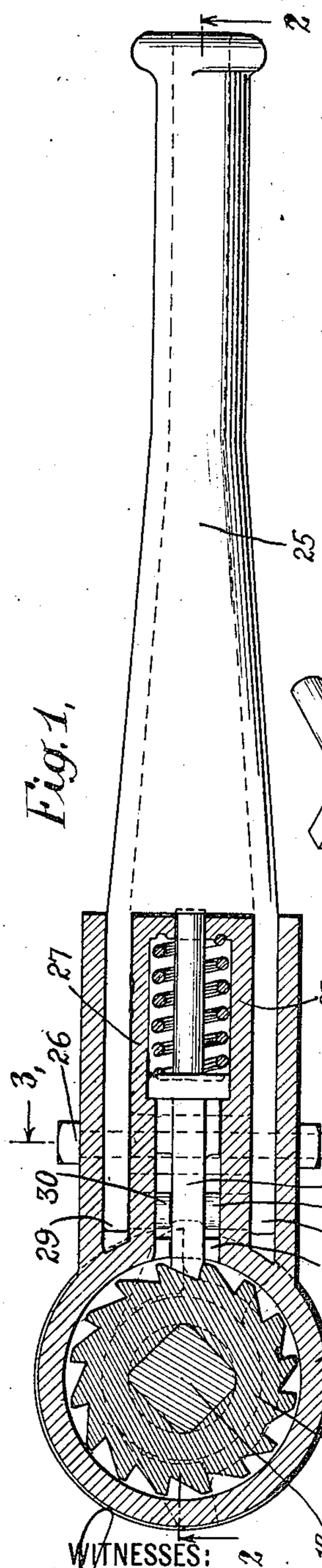
BRAKE ACTUATING MECHANISM.

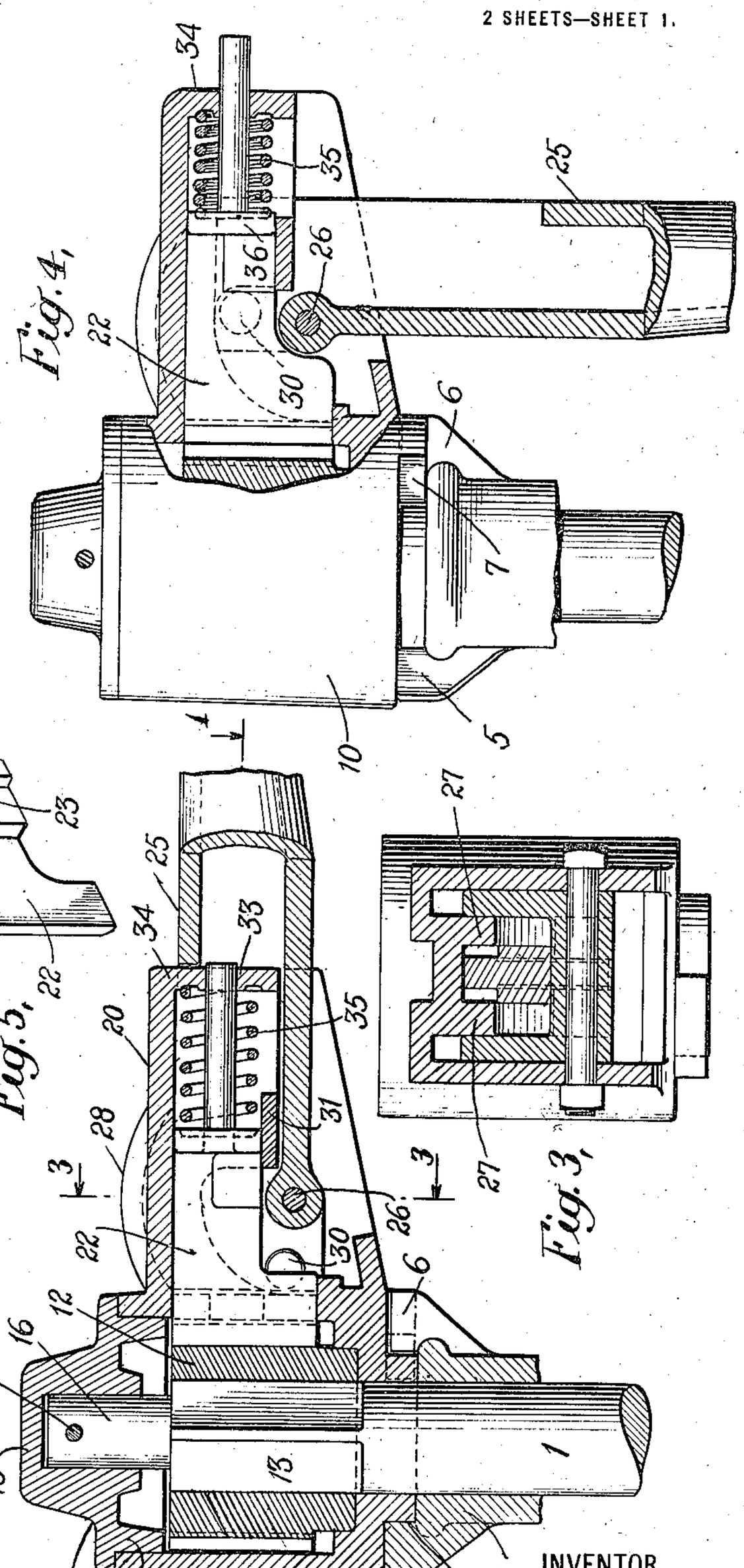
APPLICATION FILED NOV. 23, 1914.

1,166,771.

Patented Jan. 4, 1916.

2 SHEETS—SHEET 1.





WITNESSES:

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2 SHEETS—SHEET 2.

Fig. 6,

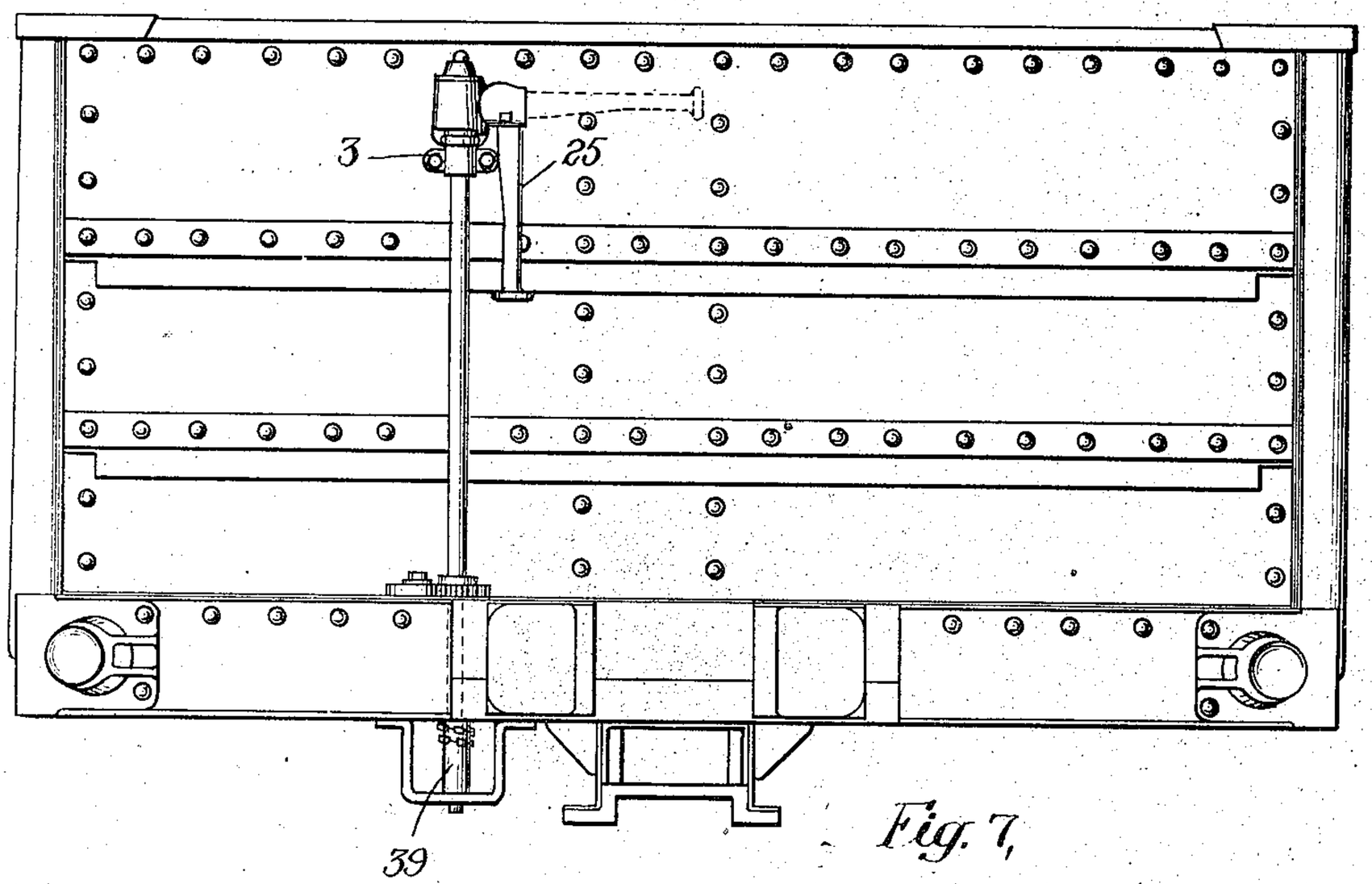

Fig. 7,

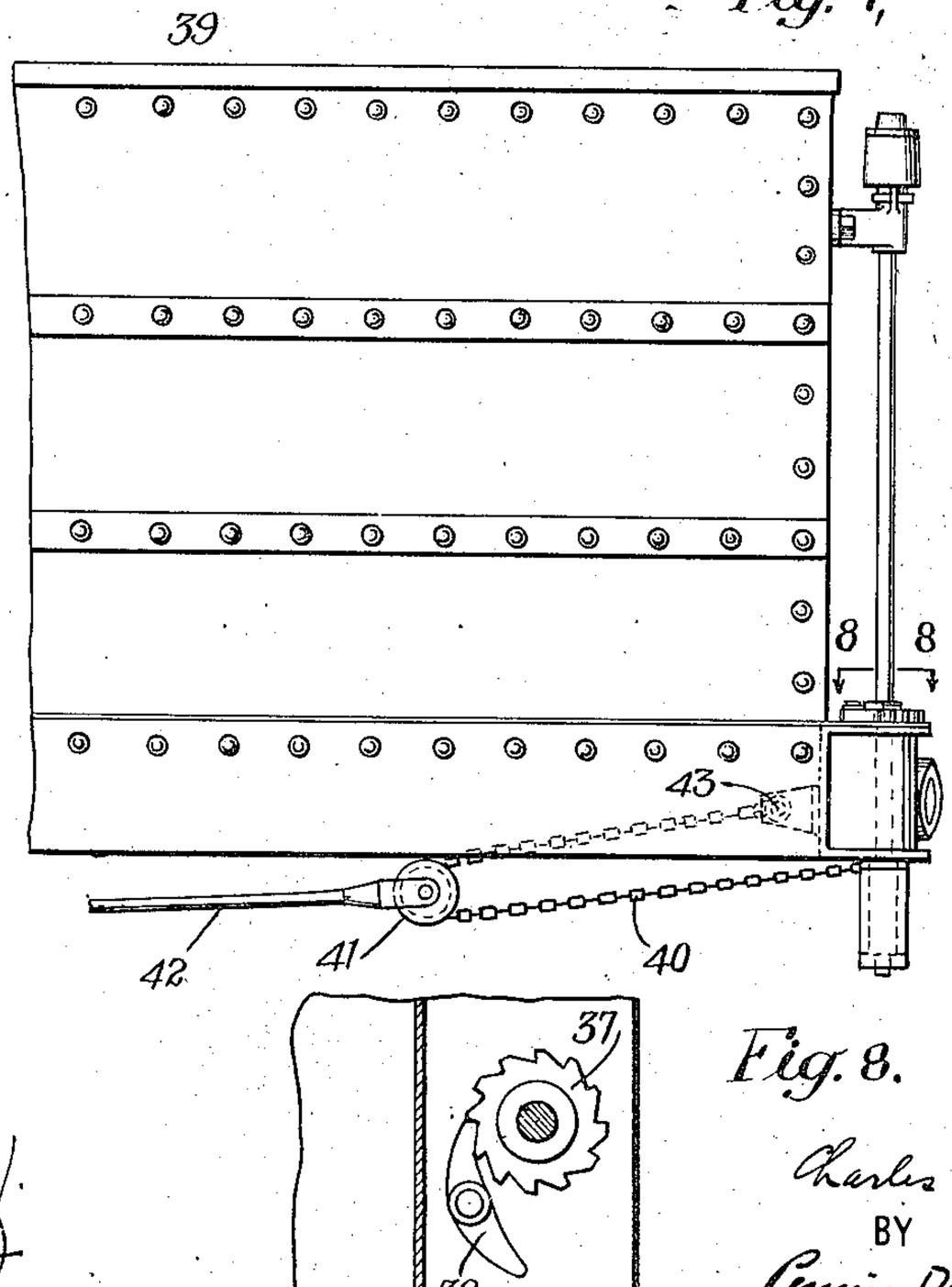

Fig. 8.

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UNITED STATES PATENT OFFICE.

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BRAKE-ACTUATING MECHANISM.

1,166,771. Specification of Letters Patent. Patented Jan. 4, 1916.

Original application filed June 21, 1912, Serial No. 704,992. Divided and this application filed November 23, 1914. Serial No. 873,446.

To all whom it may concern:

Be it known that I, CHARLES A. LINDSTRÖM, a citizen of the United States, residing at Allegheny, county of Allegheny, State of Pennsylvania, have invented certain new and uesful Improvements in Brake-Actuating Mechanism, (division of my application Serial No. 704,992, filed June 21, 1912, Patent No. 1,120,151, dated December 8, 1914;) 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.

My invention has relation to brake actuating mechanism. More specifically stated, it relates to hand-brake actuating mechanism of the type which includes drop levers which are adapted to be raised from a depending or folded position to a horizontal or extended position when it is desired to actuate the mechanism for the purpose of applying the brakes.

One of the objects of my invention is to provide an improved construction of means for automatically actuating the clutch mechanism which is interposed between the said hand lever and the brake staff when the said lever is raised or lowered.

Other objects and advantages of my invention will be specifically referred to hereinafter in the detailed description of my invention, or will be apparent therefrom.

An embodiment of my invention is illustrated in the accompanying drawings, but it will be understood that changes in the details of construction may be made within the scope of the claims without departing therefrom.

In the drawings, Figure 1 is a horizontal sectional view of mechanism embodying my invention taken on the line 1—1 of Fig. 2, also showing in top plan view the handle portion of the same; Fig. 2 is a vertical section taken on the line 2—2 of Fig. 1, and also shows a portion of the handle in side elevation and a portion thereof broken away; Fig. 3 is a transverse sectional view on the line 3—3 of Figs. 1 and 2; Fig. 4 is a view partly in elevation and partly in section with parts broken away showing the upper end portion of the brake staff provided with my invention; Fig. 5 is a perspective view of a pawl having a stem integrally connected therewith, which pawl is adapted to be engaged with and disengaged from the teeth of a ratchet wheel secured upon the brake staff; Fig. 6 is a view in end elevation of a car having a brake staff provided with brake actuating mechanism embodying my invention; Fig. 7 is a view in elevation of a portion of the side of a car illustrating the brake actuating mechanism comprising my invention, and showing the connection of the brake staff with the brake beam actuating rod underneath the car; and Fig. 8 is a view taken on the line 8—8 of Fig. 7, showing in plan a ratchet wheel secured to the same brake staff and a pivot pawl in engagement with the same.

Although my invention is illustrated in Figs. 6 and 7 of the drawings as being applied to a freight car of the gondola type, it will be understood that it is as well applicable to cars of other constructions, such, for instance, as day passenger cars and Pullman passenger cars, and the brake staff may be arranged either vertically, as shown, or horizontally, as will be readily understood.

Referring to the drawings, 1 designates a brake staff which is journaled at its upper end in a bearing 2 provided in a bracket 3 which is secured by means of bolts or otherwise to some portion of a car, such, for instance, as the sides or ends of the body of the car, being shown in Figs. 6 and 7 as connected with the end of the body of the car.

The upper edge of the bracket 3 at points upon opposite sides of the bearing formed therein is provided with stop lugs 5 and 6 which are adapted to engage the opposite sides of a coöperating stop lug 7 formed upon a housing 10 which surrounds and is secured to the upper end portion of the brake staff 1. The lower end of the housing is reduced as indicated at 11, and the end of such reduced portion rests upon the upper edge of the bearing 2, as is clearly shown in the drawings.

12 designates a ratchet wheel provided with a squared or angular opening which fits upon the squared or angular upper end portion 13 of the brake staff 1. Such ratchet wheel is located in the housing 10. The upper end of the housing is inclosed by means of a cap 14 having an upwardly pro-

jecting portion 15 which is hollow for the reception of the reduced upper end 16 of the brake staff 1. Such cap is secured to the reduced end 16 by means of a cross-pin 17. The cap is also provided with an annular flange 18 which fits inside the upper end of the housing 10. The fit between the flange 18 and the housing is such that the latter may be rotated relatively to the cap 14.

The housing is provided with a hollow projection 20 which extends laterally from one side thereof and is also provided with an opening 21 in alinement with such projection in and through which opening a pawl 22, supported upon the housing structure, is adapted to operate for engagement with and disengagement from the teeth upon the ratchet wheel 12. The pawl 22 is provided with shoulders 23 for a purpose to be hereinafter mentioned.

25 designates the handle by means of which the brake mechanism is actuated, which handle at its inner end is forked and extends into the hollow projection 20 and is pivotally connected thereto by means of a pivot 26. The bottom and opposite side portions of the inner end of the handle 25 extend into the projection 20, the bottom being situated near the lower edge or side of the said housing, while the opposite inner end portions of the sides are located inside of the opposite sides of the projection 20 in narrow spaces formed between downwardly projecting ribs 27 and the inner surface of the opposite sides. The pivot pin 26 is connected to the inner end of the bottom of the said handle. The top of the projection 20 is provided with raised or lifted portions 28 in which arcuate shaped spaces are provided concentric with the pivot pin 26, which spaces provide paths for the movement of the corners 29 at the inner ends of the sides of the handle 25.

Projecting inwardly from the lower edges in the inner ends of the sides of the handle, beyond pivot 26, are lugs 30 which are adapted to engage shoulders 23 formed upon the opposite sides of the pawl 22 when the handle is moved from the horizontal position, shown in Figs. 1 and 2, to a depending or folded position, as shown in Fig. 4.

The pawl projects through and operates in the opening 21 formed in the side of the housing 10 in alinement with the central portion of the projection 20, and is supported upon the lower edge of the said opening and upon a cross-plate 31 extending between the lower portions of the sides of the projection 20. The pawl 22 is also provided with an integral extension 32 which is slidingly supported in an opening 33 in the outer closed end 34 of the projection 20. A spring 35 which is coiled around the extension 32 and one end of which bears against the outer closed end 34 of the projection 20, and the opposite end of which bears against the flanges 36, formed upon the outer end of the pawl 22, exerts pressure against the said pawl to cause the same to move inwardly to engage the ratchet teeth upon the ratchet wheel 12.

When the handle is dropped from the position shown in Figs. 1 and 2, the lugs 30 thereon engage the shoulders 23 to cause the automatic outward movement of the pawl 22 in opposition to the spring 35 to disengage said pawl from the ratchet teeth on the ratchet wheel 12. On the other hand, a movement of the handle from the position shown in Fig. 4, to that shown in Figs. 1 and 2, relieves the lugs 30 from contact with the shoulders 23 and permits the spring 35 to cause automatic movement of the pawl inwardly to engage the said ratchet teeth.

It will be observed that when the handle is moved in one direction, the beveled end of the pawl 22 rides over the teeth of the ratchet wheel 12, whereas when the handle is moved in the opposite direction, the said pawl engages the said ratchet teeth and causes rotation of the ratchet wheel together with the brake staff connected thereto. It will also be noted that the engagement of the lugs 7 upon the housing with the lugs 5 and 6 upon the bracket 2 limits the angular movement of the said housing and the handle of the brake actuating mechanism.

When the brake actuating mechanism is being operated for the purpose of applying the brake, it is necessary that means be provided for holding the brake staff against rotation during the interval when the handle is being returned to its initial position, at which time the pawl or other equivalent device rides over the teeth of the ratchet device secured to the brake staff. For this purpose I have provided the usual ratchet wheel 37 which is secured to the lower end portion of the brake staff 1, as indicated in Fig. 7 of the drawings, which ratchet wheel is adapted to be engaged by a dog or pawl 38 pivoted to a stationary part of the car, which dog or pawl is adapted to be disengaged from the said ratchet by a kick of the foot or in any other convenient manner. The said ratchet and pawl also operate to hold the said staff against rotation during periods when the clutch mechanism for operatively connecting the handle to the staff is in disengaged or inoperative position.

The brake staff is extended in the construction illustrated to a point below the bottom of the car body, as indicated at 39, and to such extension the usual chain or other equivalent means 40 is secured, which chain in this embodiment extends around a sheave 41 which is rotatably supported upon the end of a brake applying rod 42 underneath the car. From the said sheave the chain 40 extends toward the end of the car

and is connected to a fixed point on the car, as indicated at 43. When rotated in one direction the chain 40 is wound upon the extension of the brake staff 1 to apply the brakes, through the brake applying rod 42, and when rotated in the opposite direction, the said chain is unwound to release the brakes from the car wheels.

It should be understood that other suitable forms and constructions of clutch mechanism than that illustrated may be employed for connecting the hand lever to the brake staff to rotate the same for applying the brakes and for disconnecting the said clutch mechanism when the said staff rotates in the opposite direction to release the brakes.

I caim:

1. In a brake handle, the combination of a clutch mechanism comprising opposing clutch members one of which is continuously spring-pressed and is slidingly movable into engagement with the other of said members or into a disengaging position with relation thereto, a rotatable member exterior to said movable clutch member and rotatable therewith, and a drop lever pivotally mounted upon said exterior rotatable member to fulcrum thereon and have engagement with said movable clutch member for moving the same into a disengaging position with relation to said other clutch member upon the dropping of said lever.

2. In a brake handle, the combination of an exterior rotary member, means for supporting said member, a clutch mechanism comprising opposing clutch members one of which, a slidingly movable member, rotates with said exterior rotary member to have engagement with the other of said clutch members, said movable clutch member being continuously urged toward the other and being movable also into a disengaging position with relation to said other clutch member, and a drop lever secured to said exterior rotary member for rotating the same and said movable clutch member as said lever is turned, said lever being pivotally mounted upon said exterior rotary member to fulcrum thereon to engage said movable clutch member and to move the same into a disengaging position upon the dropping of said lever.

3. In a brake handle, the combination of a rotary member, a spring bearing against said member, clutch mechanism comprising opposing clutch members, one of which, a slidingly movable member, rotates with said rotary member and may have spring pressed engagement with the other of said clutch members, said movable clutch member being movable also into a position of disengagement with relation to said other clutch member, and a brake lever pivotally mounted upon said first-named rotary member to turn thereon and occupy either an outturned position or a down-turned position, said lever having a part engaging said movable clutch member and maintaining the same in a disengaging position when said lever is occupying its down-turned position.

4. In a brake handle, the combination of an exterior member, means for supporting said member to rotate without endwise displacement, a clutch mechanism comprising opposing clutch members of which one is a slidingly movable member rotatable with said exterior rotary member to have engagement with the other of said clutch members, said movable clutch member being continuously urged toward the other clutch member but being displaceable into a disengaging position with relation to said other of the clutch members, and a lever pivotally mounted upon said exterior rotary member for rotating the same and said movable clutch member as said lever is turned, said lever having also an operative engagement with said movable clutch member for moving the same into a disengaging position upon the pivotal turning of said lever on said exterior rotary member.

5. In a brake handle, the combination of a clutch mechanism comprising opposing clutch members one of which members is slidingly movable to have engagement with the other of said members or into a disengaging position with relation thereto, a rotary casing rotatable with said movable clutch member, a spring bearing against said casing and permitting one of said clutch members to shift backward over the other and a drop lever pivotally mounted upon said casing for rotating the same and said movable clutch member as said lever is turned laterally said lever being adapted also to have engagement with said movable clutch member and move the same into a disengaging position away from said other clutch member upon the dropping of said lever.

6. In a brake handle, the combination of an exterior rotatable member, a spring therein, means for supporting said member to rotate without endwise displacement, a clutch mechanism comprising opposing clutch members, one a movable clutch member rotatable with said exterior rotary member to have a changeable engagement with the other of said clutch members, said movable clutch member being slidable longitudinally within said exterior rotary member and against said spring into a disengaging position with relation to said other clutch member, said movable clutch member presenting also an exterior edge, and a lever pivotally mounted upon said exterior rotary member for rotating the same and said movable clutch member, said lever being adapted also to have engagement with said edge for

moving said movable clutch member into a disengaging position upon the dropping of said lever.

7. In a brake handle, the combination of a rotary casing, means for supporting said casing, a clutch mechanism comprising opposing clutch members, one a movable clutch member rotatable with said casing and slidable with respect thereto, a spring housed in said casing and permitting relative movement between said clutch members, and a drop lever secured to said casing for rotating the same and said movable clutch member, said lever being adapted to engage said movable clutch member and move the same upon the dropping of said lever.

8. In a brake handle, the combination of a rotary exterior casing, means for supporting said casing to rotate without endwise displacement, a clutch mechanism comprising opposing clutch members, one a movable clutch member coöperating with the other of said members to have operative engagement therewith or be movable away from the same to a disengaging position, said movable clutch member being rotatable with said casing and slidable endwise with relation thereto, means constantly urging said movable clutch member into engagement with the other clutch member, and a lever pivotally mounted upon said casing for moving the same and said movable clutch member, said lever being adapted also to engage said movable clutch member and move the same into a disengaging position upon the dropping of said lever.

9. In a brake handle, the combination of a rotary casing, means for supporting said casing, a clutch mechanism comprising opposing clutch members, one a movable member coöperating with the other of said clutch members to have operative engagement therewith or be movable away from the same into a disengaging position, said movable clutch member being rotatable with said casing and slidable endwise with relation thereto, a spring normally engaging said movable clutch member, and a lever having a handle and forked arms mounted to turn within the opposite sides of said casing and presenting parts adapted to have engagement with said movable clutch member for moving the same against the tension of said spring and into a disengaging position upon the dropping of said lever.

10. In a brake handle, the combination of a rotary casing, means for supporting said casing, a clutch mechanism comprising opposing clutch members, one a movable member constantly urged toward the other of said clutch members to have operative engagement therewith but movable away from the same into a disengaging position, said movable clutch member being rotatable with said casing and slidable endwise with relation thereto, and a lever having forked arms with butts on the ends thereof turning within the opposite sides of said casing with members eccentrically arranged thereon to engage said movable clutch member upon the dropping of said lever substantially as described.

11. In a brake handle, the combination of a central post, a casing, means for mounting said casing upon said post to rotate thereon without endwise displacement, a clutch mechanism comprising opposing clutch members, one a movable clutch member rotatable with said casing and slidable therein into a disengaging position with relation to the other of said clutch members, a spring engaging said movable clutch member, and a drop lever secured to said casing for rotating the same and said movable clutch member, said lever being adapted also to engage said movable clutch member and move the same against the tension of said spring and into a disengaging position upon the dropping of said lever.

12. Brake acuating mechanism including in combination a brake staff, a ratchet wheel secured upon said brake staff, a housing secured to turn about said staff and inclosing and protecting said ratchet wheel, said housing having a lateral projection closed at its top and end, a pawl supported in said housing and adapted to coöperate with said ratchet wheel, said pawl projecting into said closed extension of the housing, a drop handle pivoted to said housing and provided with means beyond its pivotal center for moving said pawl out of operative engagement with the ratchet wheel when the handle is folded down out of the way.

13. Brake actuating mechanism including in combination a brake staff, a ratchet wheel secured upon said brake staff, means covering and protecting said ratchet wheel and the end of said staff and pinned to said staff to prevent removal therefrom, said covering means having a lateral extension closed at the top and end, a pawl for operatively engaging said ratchet wheel, said pawl having an end projecting into said closed lateral extension, and a drop handle pivoted to said housing and provided with means beyond its pivotal axis for engaging said pawl and moving the pawl out of operative engagement with the ratchet wheel when the handle is folded down out of the way.

14. Brake actuating mechanism including in combination a brake staff, a ratchet secured upon said staff, a clutch member continuously urged toward said ratchet and adapted to engage the ratchet in one direction of oscillation and to disengage therefrom in the reverse direction of oscillation in order to convert oscillatory movements of the clutch member into unidirectional rotary movements of the brake staff, a cover-

ing for said clutch member, and a hand lever pivoted to swing from a non-interfering depending position to an extended operative position for oscillation of said clutch member, the inner end of said hand lever being bifurcated and provided with a pair of opposing lugs for engaging the clutch member to disengage it from the ratchet when the handle is in its depending position but allowing it to engage the ratchet when the handle is in its extended position.

15. In a brake, the combination of a brake staff, a ratchet wheel thereon, said ratchet wheel having an irregular shaped opening and said brake staff having an irregular shaped end projecting into said opening whereby the turning of the ratchet wheel may turn the staff, covering means fastened to the end of said staff above said ratchet wheel, a sliding pawl continuously urged toward operative engagement with said ratchet wheel and a drop handle with a bifurcated inner end carrying opposing lugs which serve as cams for moving said pawl out of operative engagement with said ratchet when the handle is dropped, but allows said pawl to come into operative engagement with the ratchet when the handle is extended into operative position.

16. In a brake, the combination of a supporting member, a member located above the same, a brake shaft projecting through the first-named member and finding a bearing in the other member, a ratchet wheel located between said members, said ratchet wheel having an irregular shaped opening and said brake shaft having an irregular shaped end fitting said opening, the lower part of said ratchet wheel being formed into a downwardly extending annular flange, a sliding spring-pressed pawl directly engaging said ratchet wheel, a housing inclosing said ratchet wheel and adapted to turn with respect thereto, and a drop handle for moving said pawl out of operative engagement with said ratchet.

17. In a brake, the combination of a supporting member, a second member secured over the supporting member, a brake shaft projecting through the supporting member and having a round end seated in the other member, a third member rotatable with respect to said brake shaft and located between the first two members, a ratchet wheel secured to said brake shaft and having its lower portion formed into a depending annular bearing flange, a sliding pawl engaging said ratchet wheel and a drop handle secured to the third member and arranged to rotate said member on the brake shaft between the first and second members, and operative when dropped to disconnect said pawl from its ratchet, said shaft having an irregular shaped end and the ratchet wheel having an irregular shaped recess whereby one must turn with the other as the ratchet wheel is turned by said lever or handle.

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

CHARLES A. LINDSTRÖM.

Witnesses:
GEO. B. BLEMING,
L. H. JOHNSON.