

July 12, 1938.

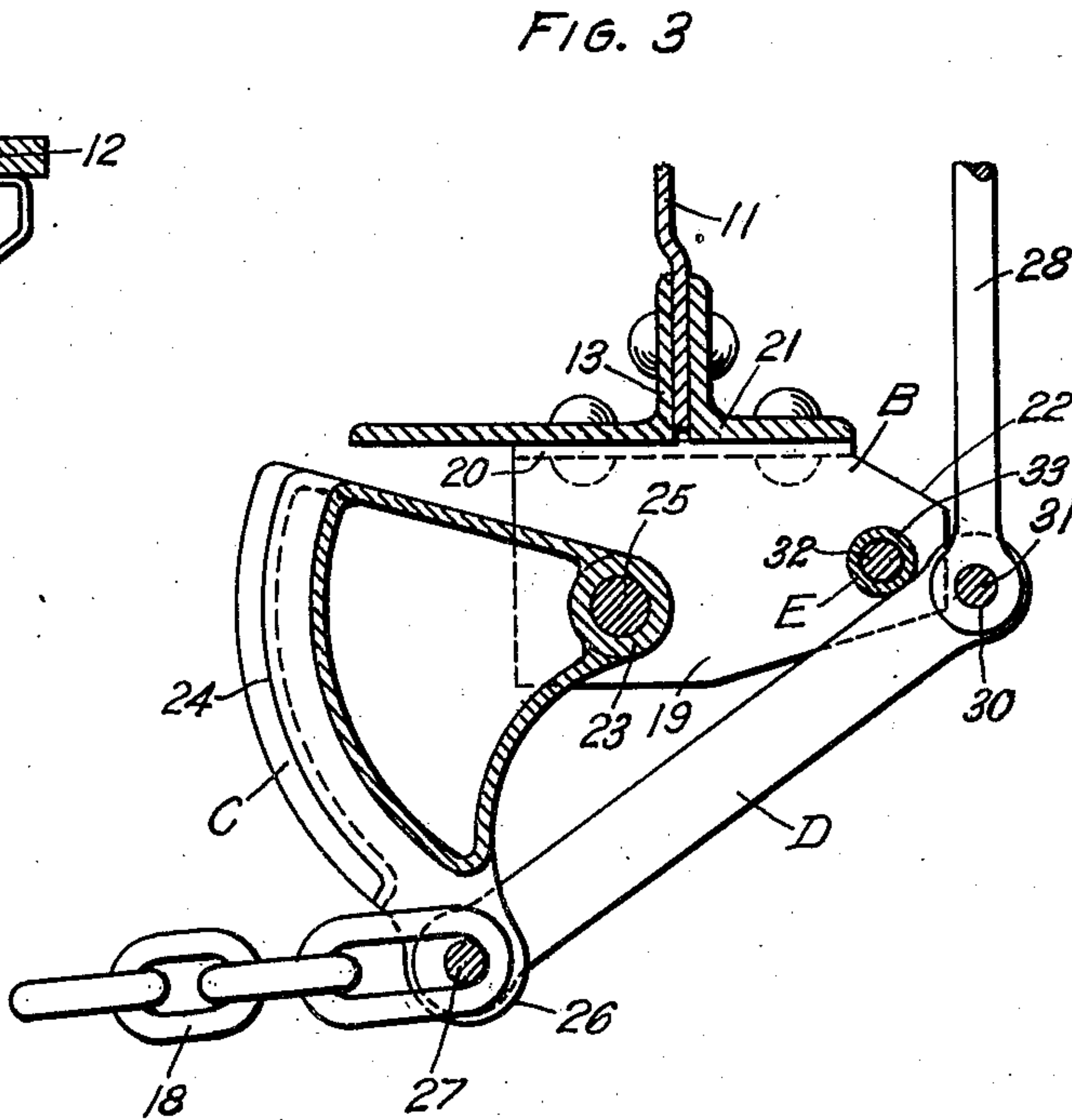
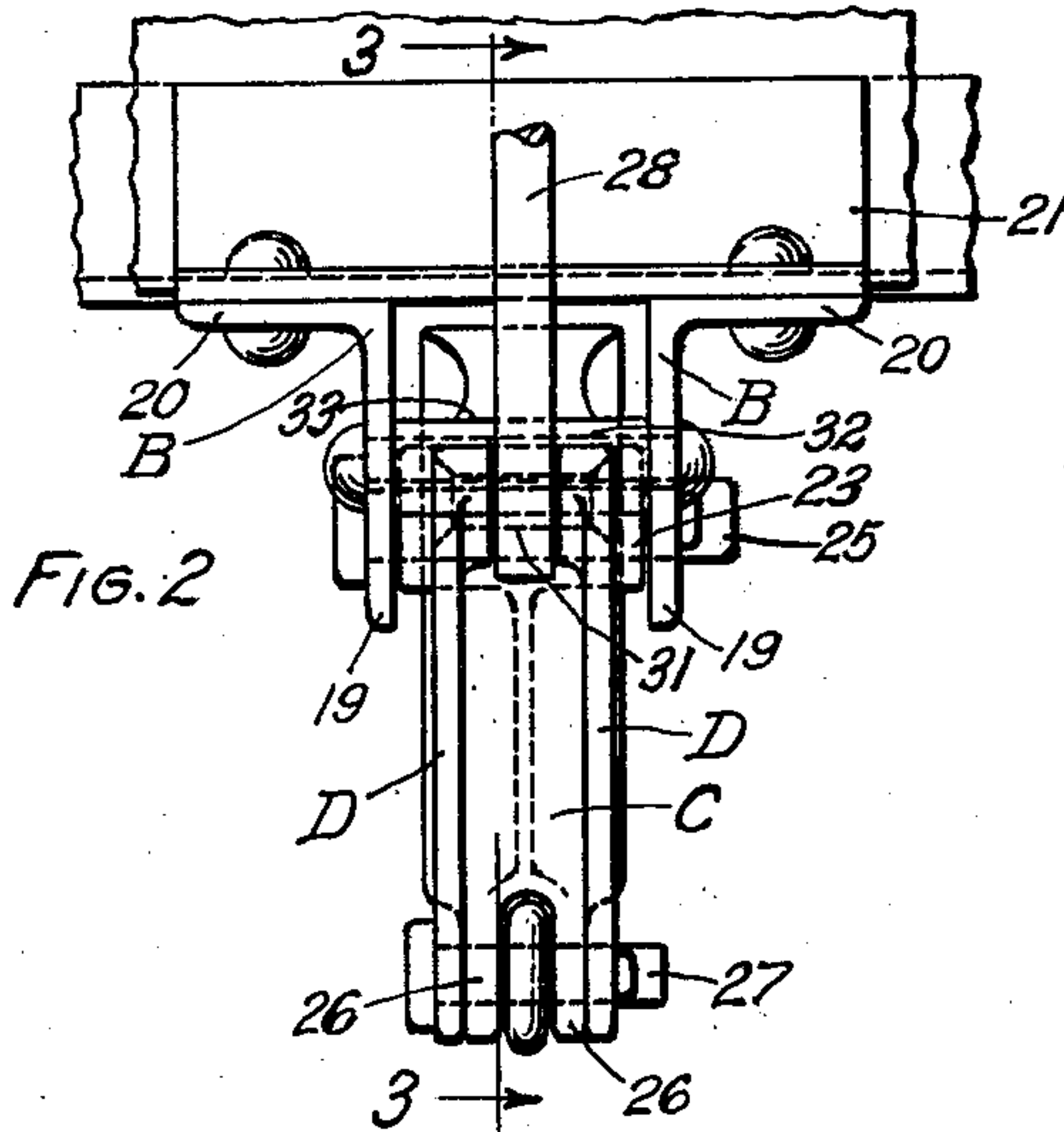
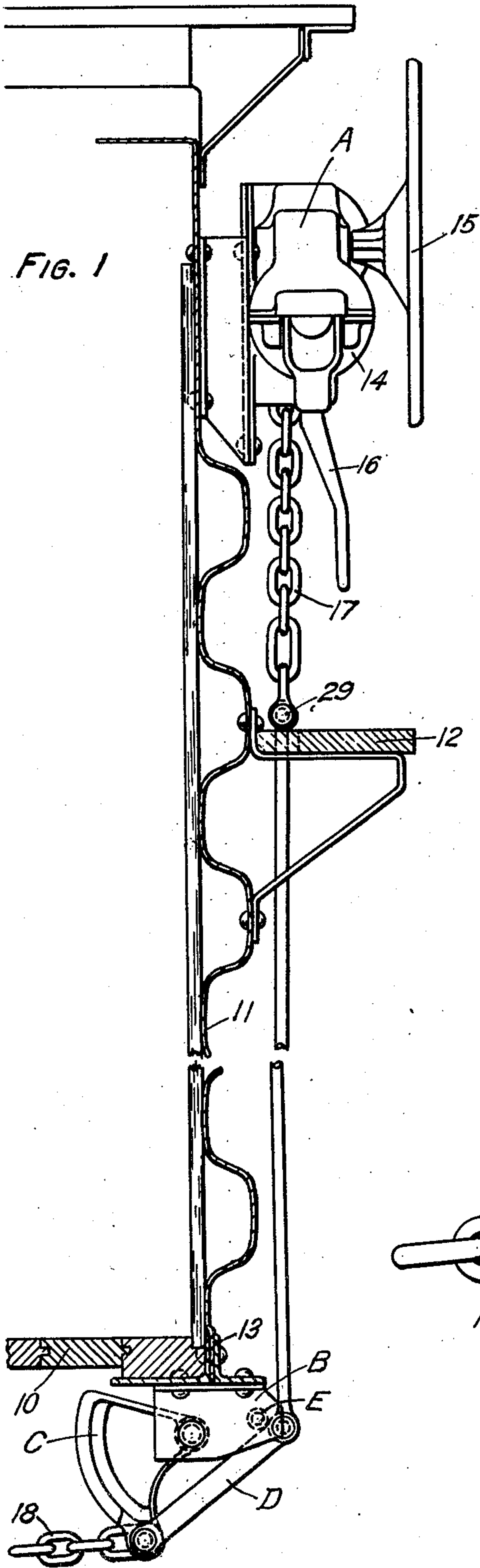
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2,123,584

QUICK TAKE-UP MECHANISM FOR HAND BRAKES

Filed Dec. 14, 1936

2 Sheets-Sheet 1



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FIG. 4

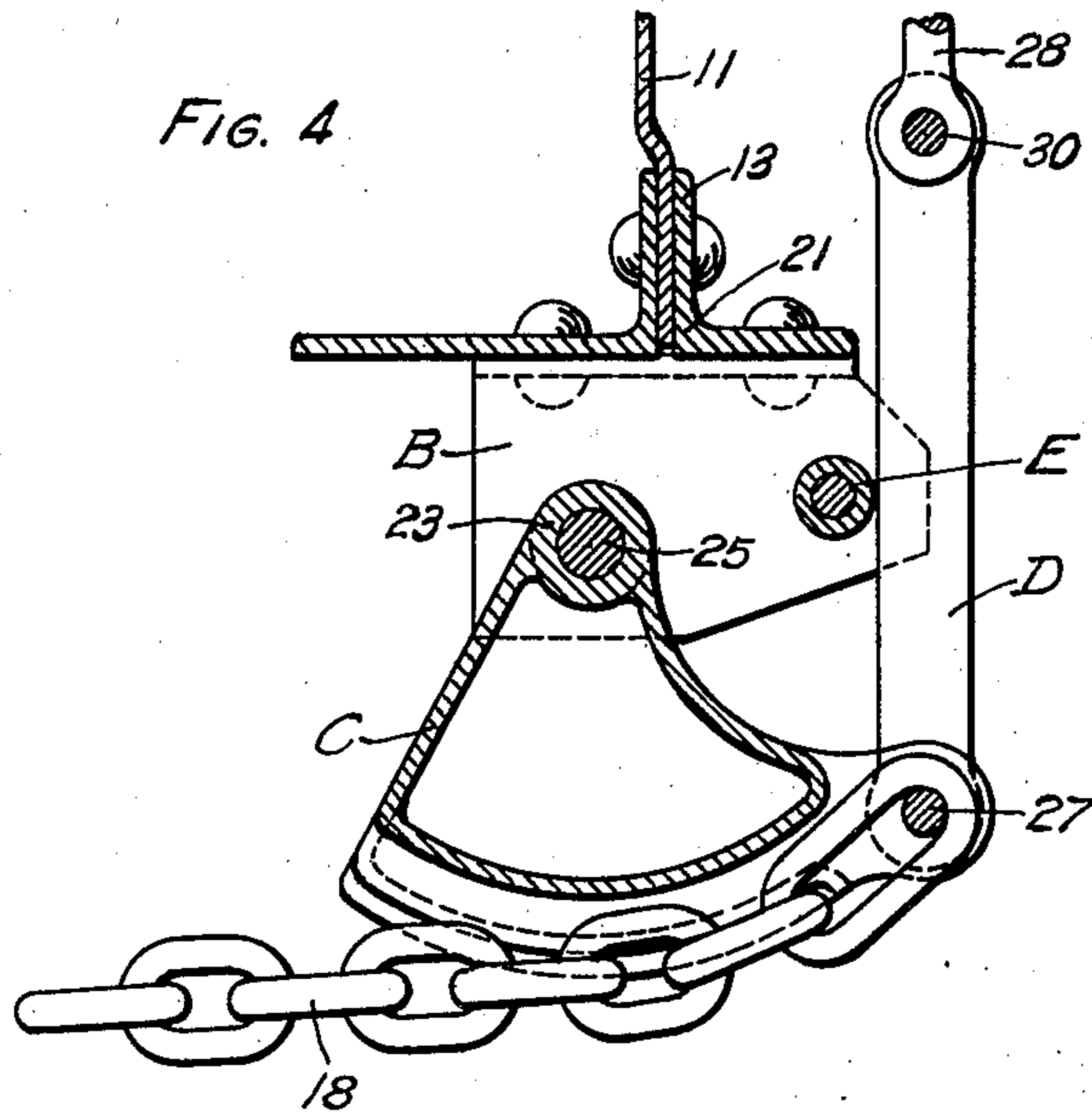
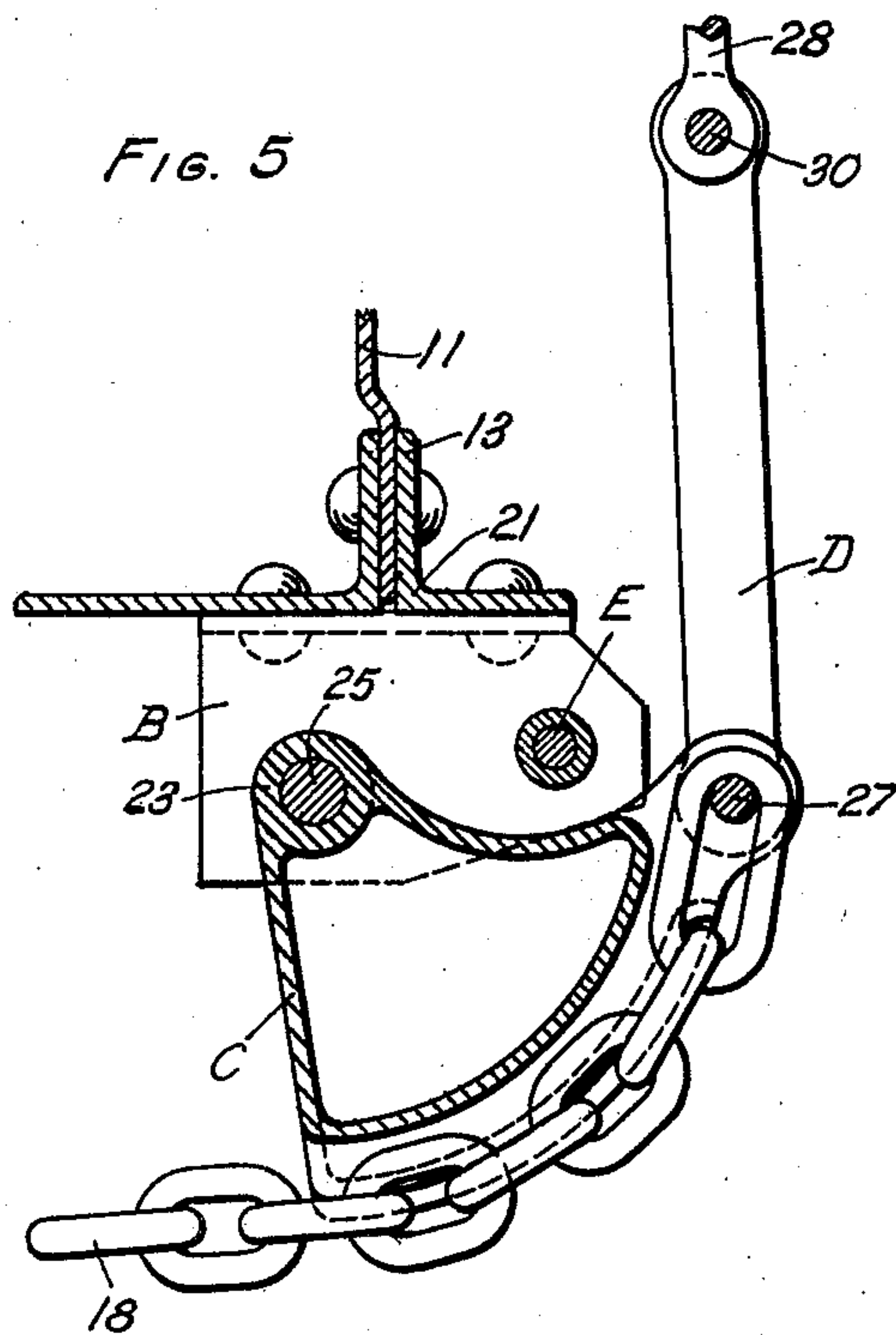


FIG. 5



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UNITED STATES PATENT OFFICE

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QUICK TAKE-UP MECHANISM FOR HAND
BRAKES

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6 Claims. (Cl. 254—149)

This invention relates to improvements in quick take-up mechanism for hand brakes.

One object of the invention is to provide a quick take-up mechanism for power multiplying hand brakes for railway cars, comprising lever link means so arranged and designed that the same is operative during the initial application of the brakes to quickly take-up the usual slack in the brake mechanism, but which link means is rendered inoperative as a lever and serves only as a connecting link of the brake mechanism during the final application of the brakes, thereby transmitting the full effect of the power multiplication of the hand brake means to the brake mechanism proper of the car.

A more specific object of the invention is to provide quick take-up mechanism of the character specified in the preceding paragraph, wherein the lever acting link for effecting quick take-up is interposed between the pull-up mechanism of the hand brakes and the chain leading to the brake shoes and has sliding and rocking engagement with a relatively fixed pivot to produce rapid take-up of the chain leading to the brake shoes, imparting quick movement to a rocking winding element to which the last named chain is anchored.

Other objects of the invention will more clearly appear from the description and claims herein-after following.

In the drawings forming a part of this specification, Figure 1 is a vertical, longitudinal, sectional view through the end portion of a railway car, illustrating my improvements in connection therewith, said view being partly broken. Figure 2 is an elevational view, looking from right to left in Figure 1, on an enlarged scale, of the mechanism at the bottom of Figure 1. Figure 3 is a vertical, sectional view, corresponding substantially to the line 3—3 of Figure 2, with the floor of the car omitted and other parts of the car broken away. Figures 4 and 5 are views similar to Figure 3, but showing the parts in different positions.

In said drawings, 10 indicates the end portion of a railway car, having a vertical end wall 11 on which is mounted the usual platform 12 for the brakeman. The end sill of the car is indicated by 13.

My improved quick take-up means is herein illustrated in connection with a power multiplying hand brake mechanism A of well-known type, comprising a worm driven winding element for the brake chain, as shown in Patents Nos. 1,974,581 and 1,854,804. The chain winding

element and associated mechanism of the hand brake A are contained in a housing 14 secured to the end wall of the car and said mechanism is actuated by the usual hand wheel 15, as disclosed in the patents hereinbefore referred to. The worm operated actuating means is connected to the winding element by a lever operated clutch means. In the brake illustrated herein, the clutch operating lever is indicated by 16. The winding element of the power multiplying brake mechanism A has a chain section 17 connected thereto, said section being wound on said element when the hand wheel 15 is rotated in brake tightening direction and being unwound therefrom when the hand wheel is rotated in a reverse direction. Motion of the chain 17 is transmitted to the chain section 18 leading to the brake mechanism proper of the car through my improved take-up mechanism.

The improved quick take-up mechanism comprises broadly a combined supporting and guide bracket B; a swinging chain guide member C pivotally supported on said bracket; a pair of links D—D pivoted to the member C and actuated by the pull-up chain 17 of the hand brakes; and a fixed combined pivot and guide member E on the bracket B.

The combined supporting and guide bracket B comprises a pair of vertically disposed, laterally spaced plates 19—19 having outturned top flanges 20—20 secured to the underneath side of the end sill structure 13 of the car by rivets or similar securing elements. The plates 19—19 project outwardly beyond the end of the car and a bracing angle plate 21 is secured to said projecting portions and the vertical end wall 11 of the car. The outer ends of the plates 19—19 are reduced in width, as indicated at 22—22.

The swinging chain guide member C is in the form of a casting having a hub portion 23 and a curved chain guide portion 24 spaced from said hub portion. The member C is pivotally supported on the bracket B by a pin 25 extending through the hub portion 23 and having its opposite ends fixed in aligned openings provided at the inner end portions of the plates 19—19. At the outer end of the chain guide portion 24, the member C has a pair of projecting, laterally spaced ears 26—26 for a purpose hereinafter described.

The links D—D are of like design, each link being in the form of an elongated heavy bar having pin receiving openings at opposite ends thereof. The links D—D are disposed on opposite sides of the ears 26—26 of the member C and

have their lower ends pivotally connected to said ears by a pin 27 extending through the pin receiving openings at the lower ends of the links and aligned pin receiving openings provided in said ears. The pin 27 also serves to anchor the chain 18 to the member C, said pin being engaged through the end link of the chain 18, which end link is disposed between the ears 26—26. The upper ends of the links D—D are pivotally connected to the lower end of a pull-up rod 28 anchored to the chain 17, as indicated at 29. The pull-up rod 28 has an eye 30 at its lower end disposed between the links D—D. A pivot pin 31 extending through the openings at the upper ends of the links D—D and the eye 30 of the rod 28 serves to connect these parts.

The combined pivot and guide member E is secured to the projecting portions 22—22 of the plates 20—20 of the bracket B and comprises a pin or bar 32 extending between said plates and a tubular bushing or roller 33 rotatably supported on said pin. The opposite ends of the pin 32 are fixed in openings provided in the plates 20—20.

In the operation of applying the brakes, the chain 17 is forcibly pulled upwardly by the power multiplying means of the brake mechanism A, thereby pulling upwardly on the links D—D through the connecting pull-up rod 28. During the initial upward pulling action, the quick take-up links D—D will be rocked on the fixed pivot E and slide upwardly thereon, thereby effecting a rapid swinging movement of the connection of the lower ends of the links D—D with the swinging member C to quickly take up the slack in the chain 18 and start winding of the chain on the curved guide of this member until the parts are moved from the position shown in Figure 3 to that shown in Figure 4. Upon further upward pulling action of the chain 17, the links D—D swing away from the pivot E to entirely clear the same, whereupon the links no longer function as lever means and serve merely as connecting links in the pull-up means, thereby swinging the member C at a much slower rate during the remainder of the brake applying action, thus transmitting the full effect of the power multiplication of the hand operated brake mechanism A to the chain 18 and the brake mechanism proper of the car until the brakes have been fully set, or until the parts reach approximately the position shown in Figure 5.

Under normal conditions this last mentioned movement will be rather limited compared to the take-up movement as my improved take-up mechanism serves to take up substantially all of the slack during swinging movement of the links D—D on the pivot E. However, if under exceptionally unusual conditions additional movement of the chain 18 is required to fully set the brakes, due to the existence of excessive slack in the mechanism, the member C may be swung considerably beyond the amount required to fully set the brakes under normal conditions, the limit of movement of the parts not being reached until they are moved some distance beyond the position shown in Figure 5.

In this connection it is pointed out that the amount of movement shown in Figure 5 is far in excess of that required to meet the most abnormal and unusual conditions which are actually encountered in railway practice.

When the brakes are released by the chain 17 being unwound from the winding mechanism of the hand brake A, the member C, due to the pull

of the chain 18, swings in a clockwise direction as viewed in Figure 5 from approximately the position shown in this figure through the position shown in Figure 4 to that shown in Figure 3.

I have herein shown and described what I now consider the preferred manner of carrying out my invention, but the same is merely illustrative and I contemplate all changes and modifications that come within the scope of the claims appended hereto.

I claim:

1. In a quick take-up mechanism for hand brakes for cars, the combination with a pivotally supporting swinging member; of an operating link pivotally connected at one end to said member remote from the pivot of the latter; a fulcrum support on which the other end of said link is adapted to rock, said last named end of the link being connected to the pull-up element of the hand operated mechanism of the brakes; and flexible means connecting the swinging member to the brake mechanism proper of the car.

2. In a quick take-up mechanism for hand brakes for cars, the combination with a pivotally supported swinging member mounted on the car, said swinging member having a chain winding guide face thereon; of an operating link pivotally connected at one end to said member at a point remote from the pivot of the latter; a fulcrum support on which the other end portion of said link is adapted to pivot, said support being spaced from the pivot of said member, said last named end of the link being connected to the pull-up element of the hand operated mechanism of the brakes; and flexible means connecting the swinging member to the brake mechanism proper of the car, said flexible means being windable on the guide face of said member.

3. In a quick take-up mechanism for hand brakes for cars, the combination with a pivotally supported swinging member mounted on the car, said member having an elongated chain winding guide surface thereon; of a link pivotally connected at its lower end to said member at the inner end of the chain guide, the upper end of said link being connected to the pull-up element of the hand operated brake mechanism of the car; a fixed fulcrum abutment on which said link is rockable; and flexible means anchored to said member at the outer end of the chain winding guide surface thereof, windable on said surface, and connecting said member to the brake mechanism proper of the car.

4. In a quick take-up mechanism for hand brakes for cars, the combination with a pivotally supported swinging chain winding member operatively connected to the brake mechanism proper of the car by a chain anchored to said member and windable thereon; of a link connected to the pull-up mechanism of the hand operated brake means and pivoted to said member at a point remote from the pivotal axis of the latter; and a fulcrum support on which said link is rockable and slidable.

5. In means for transmitting motion from the hand operated means of a railway car brake to the brake mechanism proper of the car, the combination with a rocking member operatively connected to said brake mechanism proper; of a link connecting the rocking member to the hand operated means; and a fulcrum support in the path of movement of said link for supporting said link for swinging movement, said fulcrum support being spaced from the pivotal axis of said rocking member a distance less than the distance

between said axis and the connection of said link with said member.

6. In means for transmitting motion from the hand operated means of a railway car brake to
5 the brake mechanism proper of the car, the combination with a rocking member having a chain winding guide surface thereon remote from the pivotal axis thereof; of a power transmitting chain anchored to said member and windable on
10 said surface; a fixed fulcrum member spaced

from the axis of pivotal movement of said member; a link rockable on said fixed fulcrum member; a pivotal connection between said member and the lower end of said link, said pivotal connection being a greater distance from said axis
5 than the fixed fulcrum support; and pull-up means connecting the upper end of said link to the hand operated brake means of the car.

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