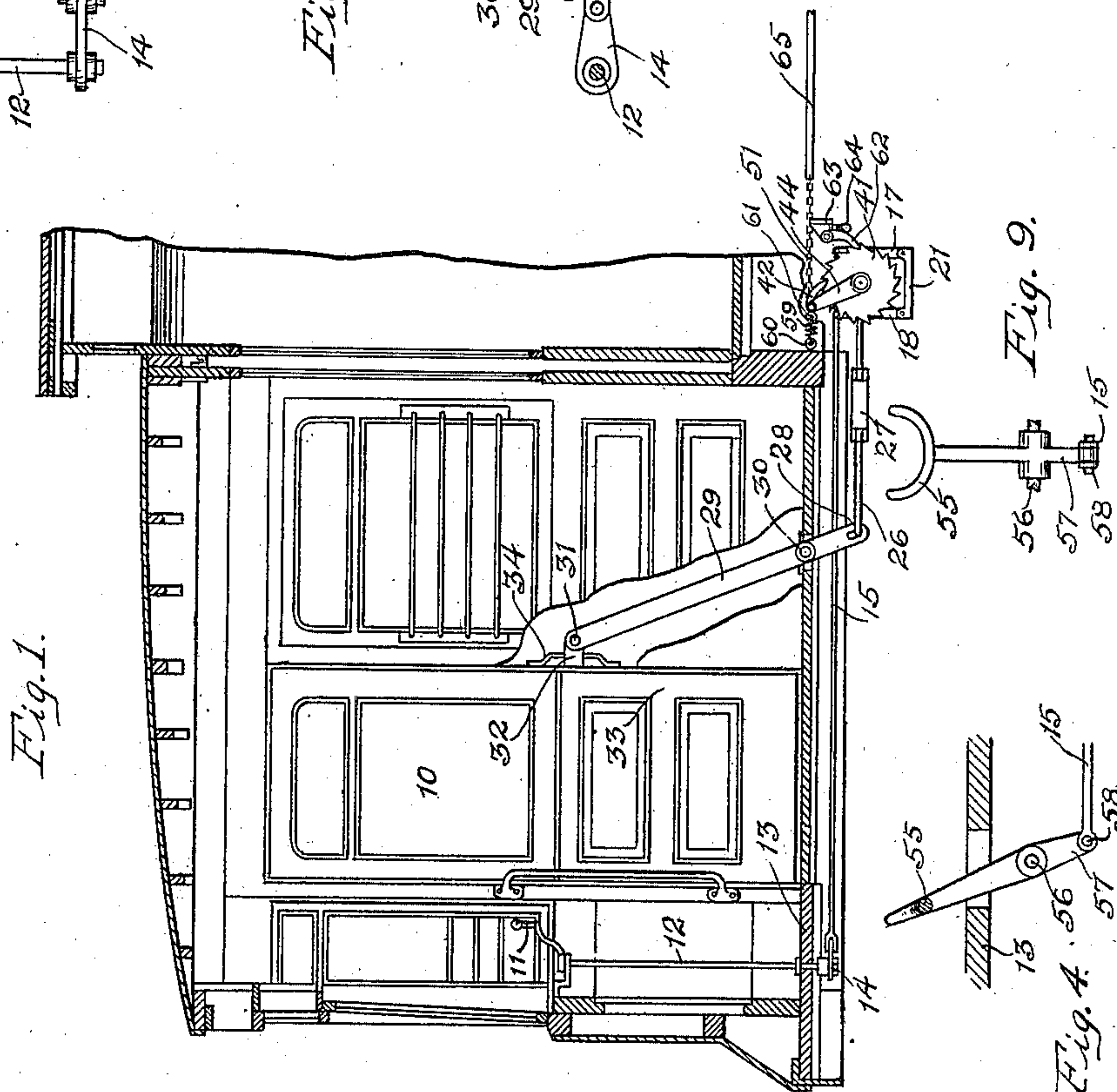
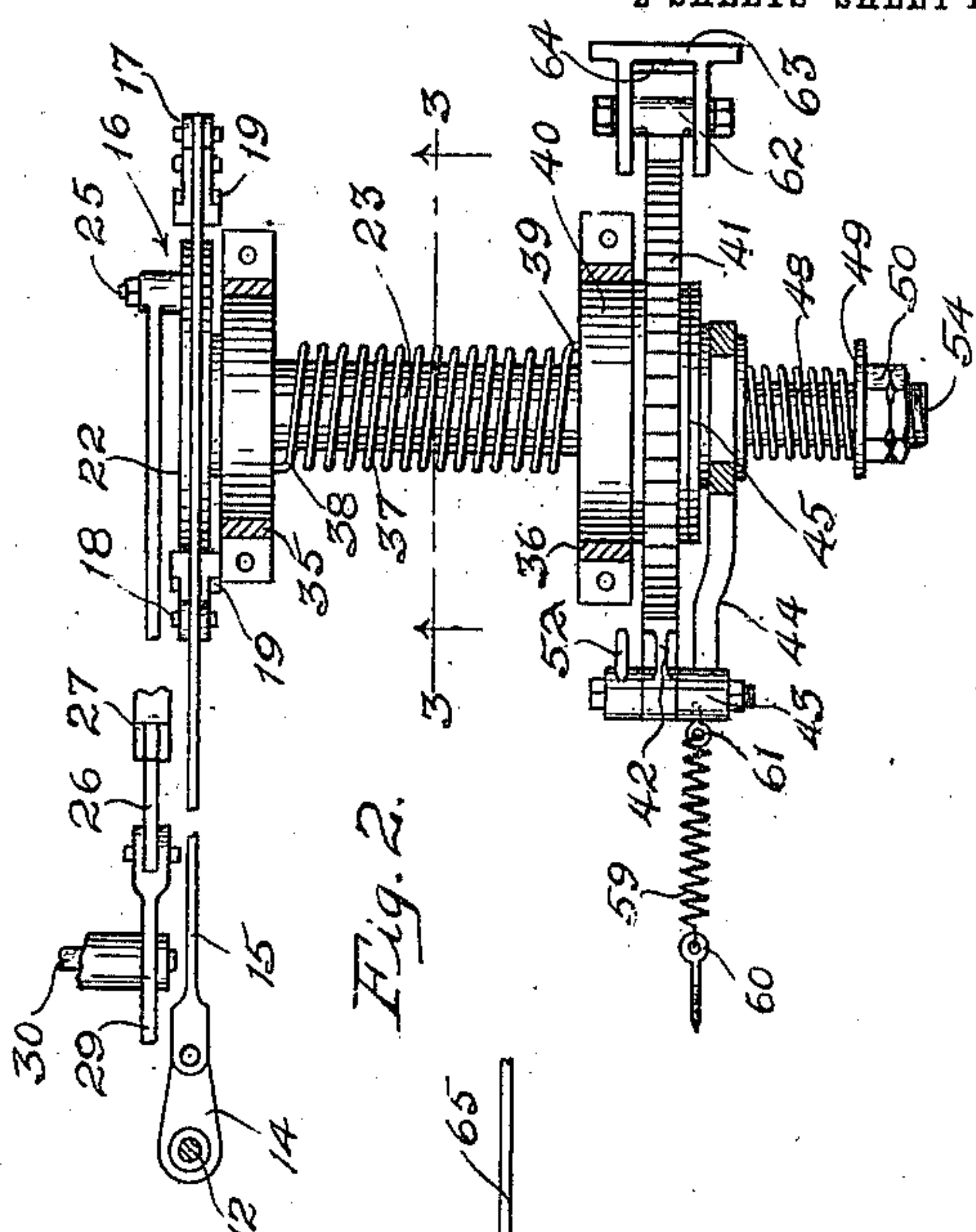
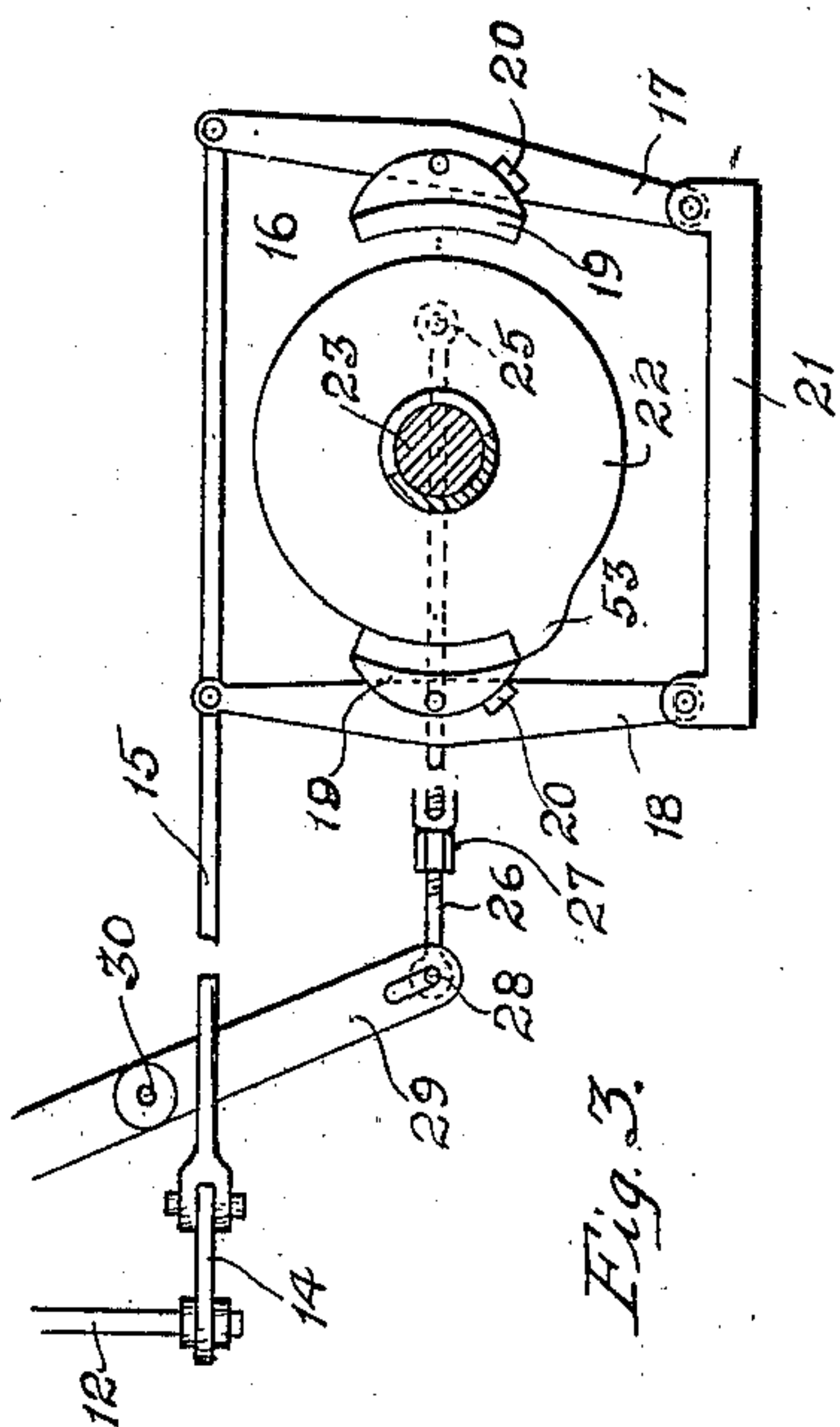


989,477.

2 SHEETS—SHEET 1.



Witnesses:

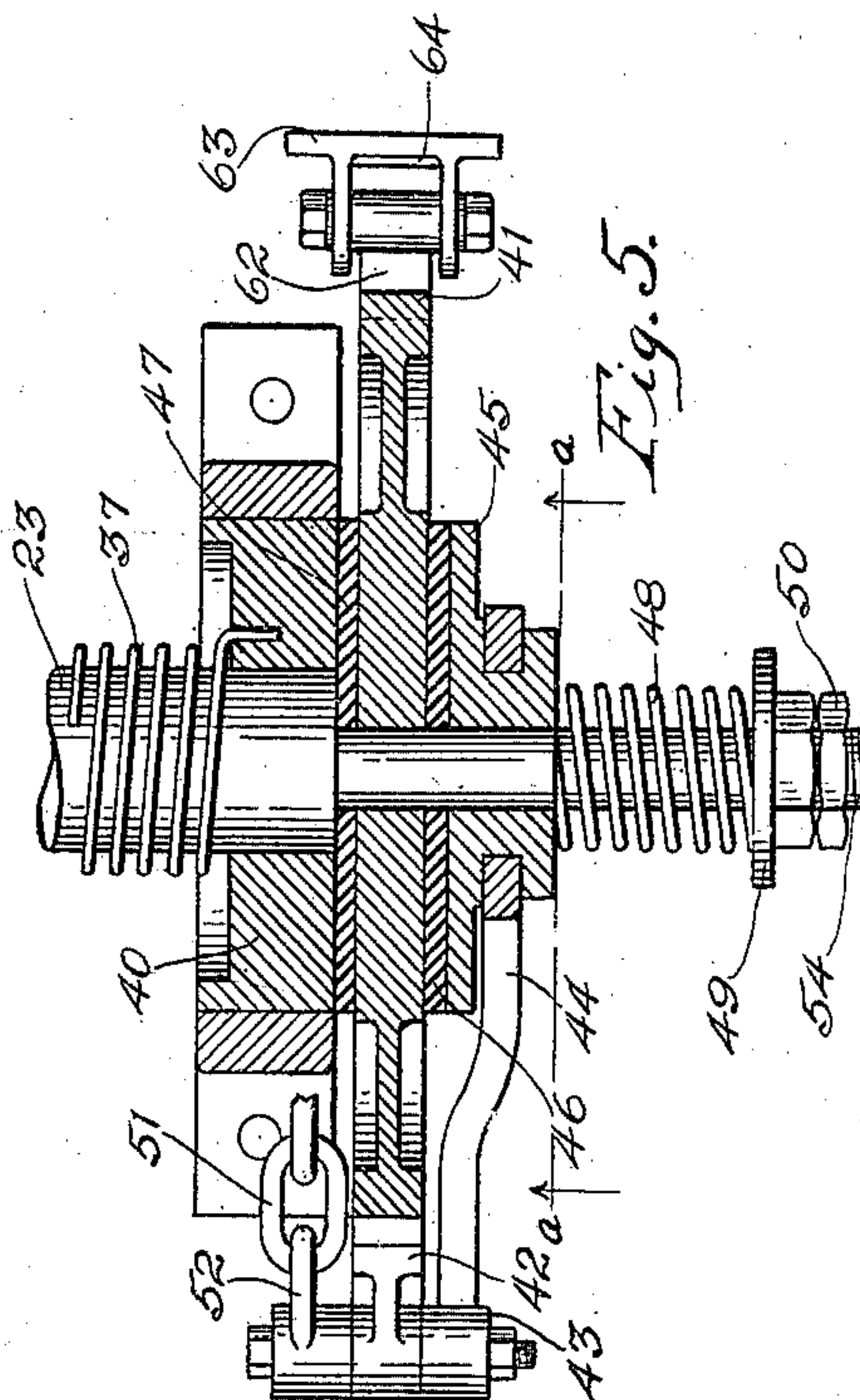
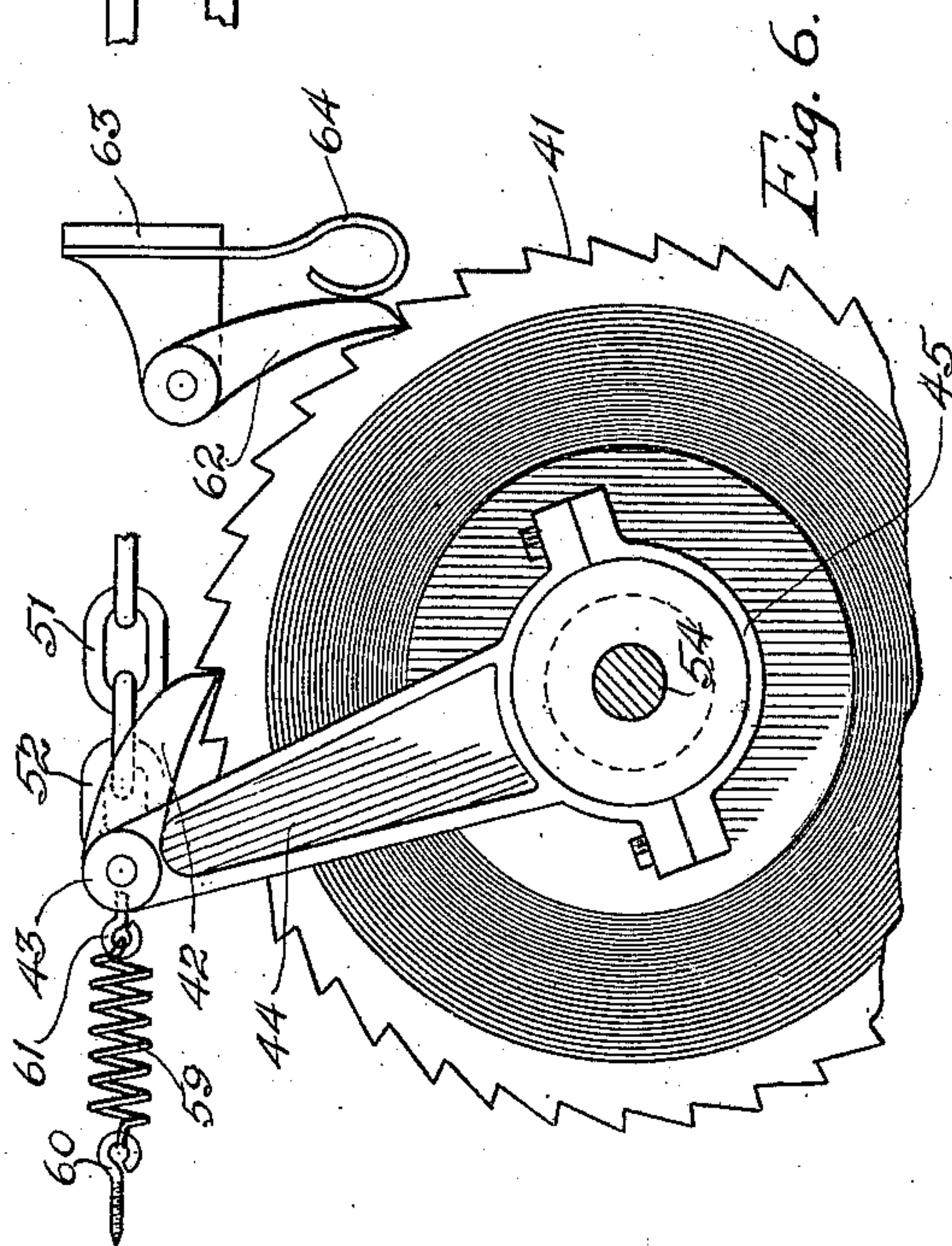
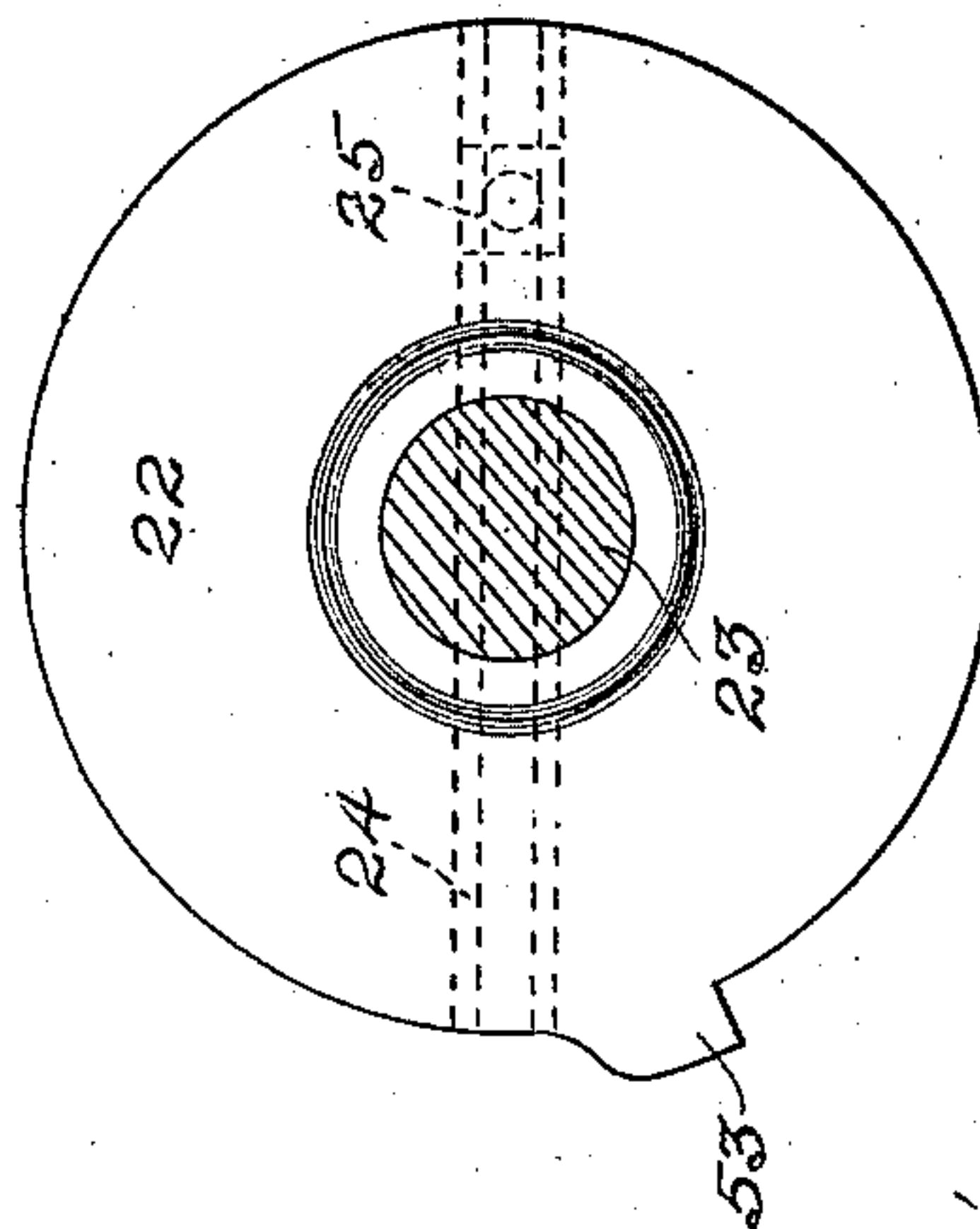
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989,477.

2. SHEETS—SHEET 2.



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WALKER BANNING, OF CHICAGO, ILLINOIS.

CAR-DOOR-OPERATING MECHANISM.

989,477.

Specification of Letters Patent. Patented Apr. 11, 1911.

Application filed February 4, 1911. Serial No. 606,552.

To all whom it may concern:

Be it known that I, WALKER BANNING, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Car-Door-Operating Mechanism, of which the following is a specification.

This invention relates to improvements in the means for operating car doors; and has for its object, to construct a mechanism which is capable of being readily positioned on the car body without changing its construction, and which will have means of adjustment for keeping it in proper relation to the car door during the changes in position of the door which will occur during usage.

Another object is to provide suitable means for automatically generating the requisite power necessary to actuate the car door, and means for automatically maintaining and expending the desired power.

The invention further consists in the features of construction and combination of parts hereinafter described and claimed.

A preferred form of construction is shown in the drawings, in which—

Figure 1 is a side view of car platform, in section showing exit door operating mechanism applied thereto; Fig. 2, a top or plan view looking down on the power actuated door operating mechanism; Fig. 3, a cross section taken on line 3—3 of Fig. 2, looking in the direction of the arrow; Fig. 4, a detail showing foot control of operating mechanism; Fig. 5, a longitudinal sectional elevation taken through the friction winding mechanism; Fig. 6, a side elevation of Fig. 5, line *a— a*, looking in the direction of the arrow; Fig. 7, a sectional detail showing crank operating mechanism; Fig. 8, a side view of crank disk; and Fig. 9, a front view of stirrup for foot control.

This improved door operating mechanism is shown as applied to a car door 10. As indicated, the handle 11 actuates a staff 12, which has its lower end extending down through the car floor 13, and has secured to its lower end an arm 14, to which is pivotally secured an elongated rod 15. This

rod 15 serves as a connecting member of a movable rocker-brake 16, comprising opposite brake levers 17 and 18, respectively, carrying pivotally mounted brake shoes 19 held in proper position by means of lugs 20, or otherwise. The rocker levers 17 and 18 are pivotally mounted, as indicated, upon a fulcrum support 21.

A crank disk brake wheel 22 is mounted upon a shaft 23 and is provided with a transverse T-slot 24, for engaging and retaining an adjustable crank pin 25, which is positioned within the end of the connecting rod 26, adjustable by means of a turn-buckle 27, or otherwise. The further end of the adjustable connecting rod 26 is pivotally secured at 28 to the lower end of the door actuating lever 29, which is mounted toward its lower end in a floor bearing 30, and at its upper end is pivotally secured at 31 to a sliding bearing 32, which is vertically movable within the door frame or casing 33, traveling on slide rod 34 secured to the door.

Referring more especially to Fig. 2, the shaft 23 is disposed transversely underneath the car floor adjacent the car exit opening, and is held in fixed position by means of suitable bearings 35 and 36, respectively, which are secured to the car body and serve to maintain the same in fixed position with respect thereto. The adjustable crank rod 26 is shown positioned at one end of the shaft 23, and a coiled spring 37 is positioned about the shaft 23, having its respective ends 38 and 39 secured within the crank disk 22 and opposite friction drum 40, adjacent which is a ratchet wheel 41 normally engaging a dog 42, carried by a finger on an arm 44 moving about a collar 45, as best shown in Fig. 5.

Between the collar 45 and the ratchet wheel 41 is a fiber friction disk 46, and upon the opposite inner side of the ratchet wheel in similar position is likewise a corresponding fiber friction disk 47. Adjacent the collar 45, upon the outer end of the shaft 23, is a suitable compression spring 48, contacting at its outer end a washer 49, maintained in desired position by means of a nut 50 on the stud 54, as indicated in Fig. 5.

A tension connecting member 51 is secured at one end to a clevis or other suitable retainer 52, adjacent the dog 42, and at its other end is preferably secured to a brake pull rod or other brake parts 65.

The pawl arm 44 is maintained in normal operative position by means of a spring 59 having its opposite ends secured to eye-bolts 60 and 61 respectively. The ratchet wheel 41 is prevented from returning to its initial position by a complementary pawl 62 pivotally mounted in bracket 63, the pawl 62 being held in peripheral engagement with the ratchet wheel 41 by means of a spring 64, or otherwise. The eye-bolt 60 and bracket 63 may be fixed to car body or other suitable supports. It is only essential, in the construction shown, that means be provided for causing the ratchet wheel 41 to be positively actuated and maintained in fixed position for producing the winding action contemplated.

In operation, the action of the brake pull rod tends to move the tension connecting member 51 forward, thereby moving forward the dog 42, which in turn moves the ratchet wheel 41, thus winding the spring 37 to store energy to operate the door operating mechanism through crank disk 22, whose action is controlled by means of a stop 53, which is brought into normal contact or engagement with either of the brake shoes 19, depending upon the opened or closed position of the door. A slot 24 in the disk 22 serves as a means for regulating the length of door travel, and the turn-buckle 27 provides means for bringing the door 10 to its full opened or full closed position.

Obviously, the intermittent rotation of the crank disk 22 shall always be in the same direction, and the crank 26 moves through an arc of 180°, thereby either opening or closing the door 10, the stop 53 serving to regulate the energy expended by the spring 37, controlling same after the door has traveled through the required limits to be fully opened or closed, the brake shoes 19 serving as the means for controlling travel of door 10 at any period of its movement.

Although a crank disk 22 has been shown and described, it is obvious that other means, such as an eccentric, may be used, and it is not intended to limit the invention in any way thereto.

The function of the fiber friction disks 45 and 47 is to prevent over-winding of the spring 37 whenever more brake applications are made than is necessary to wind the spring to limit. The limit of tension of spring 37 is equivalent to the frictional resistance offered by the fiber friction disks 45 and 47, which is regulated by the auxiliary compression spring 48 produced by means of the adjusting nut 50 on stud 54.

It is not intended to limit this invention

to one in which a hand method of control is essential, and in Fig. 9 is shown a foot controlling device comprising a foot stirrup 55, having a stirrup fulcrum 56, and at its lower end 57 a pin 58 for connection with the elongated controlling rod 15.

The gist of the invention resides, broadly considered, in the provision of suitable mechanism for generating, storing, and regulating the use of power for actuating car doors, and although a preferred form of construction has been shown and described with considerable detail, it is not intended to limit the invention in any way thereto, since other equivalent power generating, operating and controlling mechanism might be employed therefor.

I claim:

1. In a car door operating mechanism, means for automatically generating power from the action of the brake mechanism, means for storing such power, and means for regulating the use of power for opening and closing a car door, substantially as described.

2. In a car door operating mechanism, means for generating power from the action of a brake pull rod, means for automatically storing such power, means for regulating the maximum amount of power to be stored, and power controlling means for regulating the movement of a car door, substantially as described.

3. In a car door operating mechanism, means for generating power from the action of a brake pull rod, means for automatically storing such power, means for regulating the maximum amount of power to be stored, and power controlling means in combination with a hand lever for regulating the movement of a car door, substantially as described.

4. In a car door operating mechanism, means for generating power, means for storing such power, comprising a revoluble shaft having a crank disk and a friction drum, a spring encircling said shaft and secured to said crank disk and friction drum, means for regulating the maximum amount of power to be stored, and power controlling means for regulating the movement of a car door, substantially as described.

5. In a car door operating mechanism, means for generating power from the action of a brake pull rod, means for storing such power, comprising a revoluble shaft having a crank disk and a friction drum, and a spring encircling said shaft and secured to said crank disk and friction drum, means for regulating the maximum amount of power to be stored, and power controlling means for regulating the movement of a car door, substantially as described.

6. In a car door operating mechanism, a transverse shaft carrying a crank disk and friction drum at its opposite ends, a spring encircling said shaft and having its opposite

ends secured to the crank disk and friction drum, an adjustable connecting rod secured to the crank disk and door operating mechanism, an adjustable crank pin for securing
5 the connecting rod in suitable attachment to the crank disk, means for automatically generating power from the action of the brake mechanism, and means for regulating the use of power for opening and closing a car door, substantially as described.

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Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
