

No. 628,645.

Patented July 11, 1899.

W. B. BROWN.

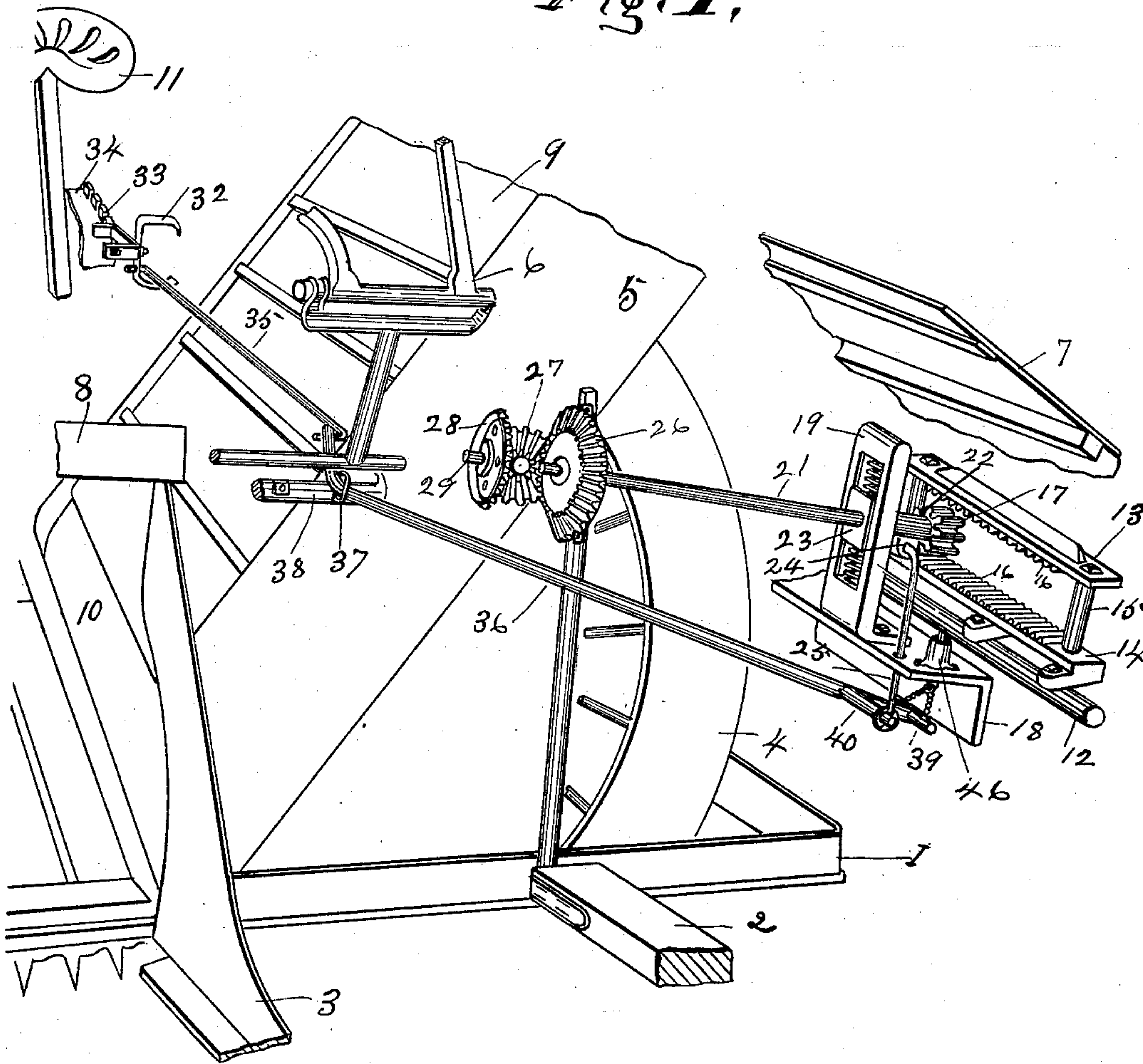
SHIFTING DEVICE FOR SELF BINDING MACHINES.

(Application filed Aug. 17, 1898.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



WITNESSES:

Adelaide Kearns.  
Edward F. Tierney.

Willis B. Brown INVENTOR

BY *Chapin & Denny*  
His ATTORNEYS.

No. 628,645.

Patented July 11, 1899.

W. B. BROWN.

SHIFTING DEVICE FOR SELF BINDING MACHINES.

(Application filed Aug. 17, 1898.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 2.

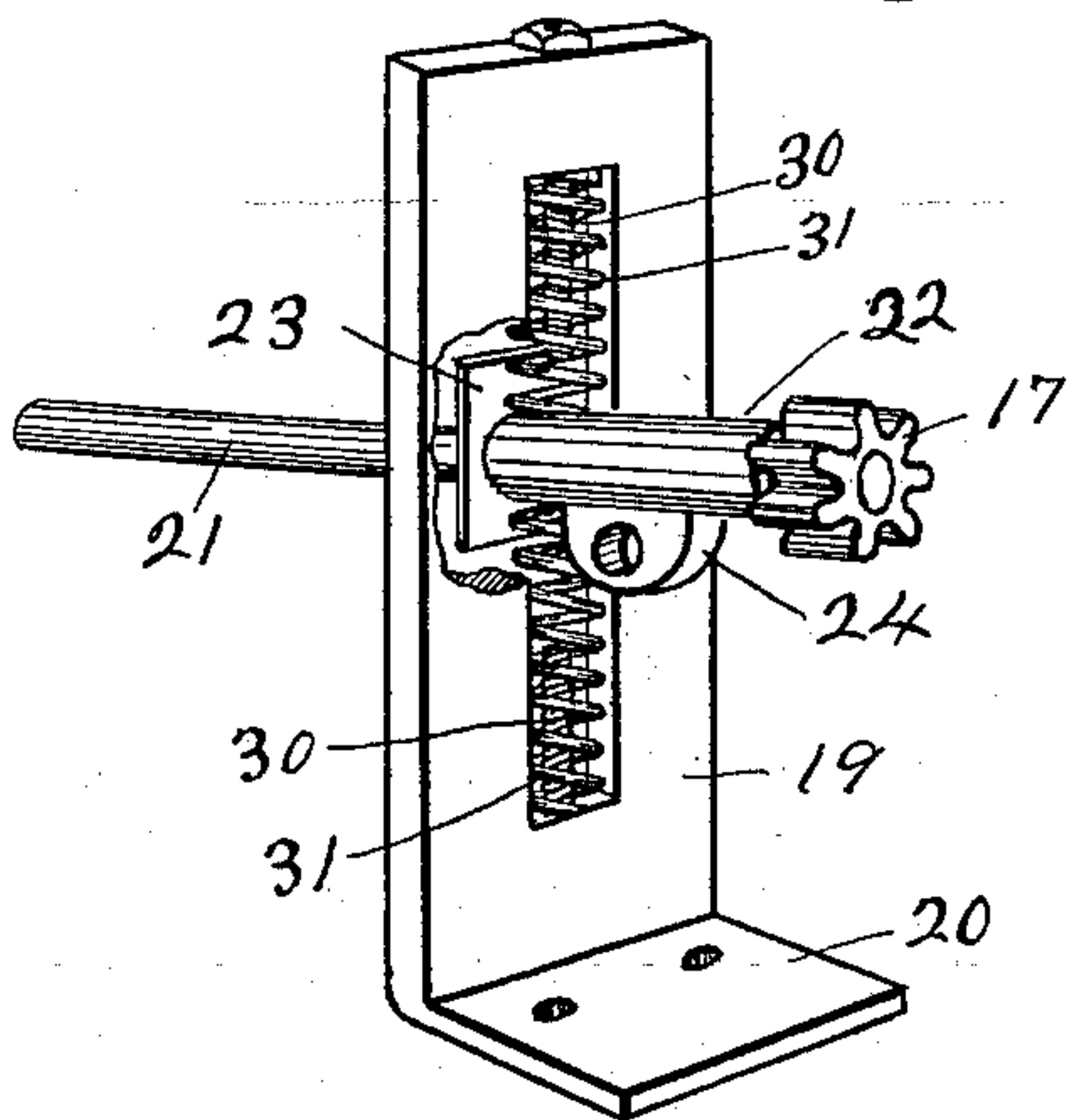


Fig. 3.

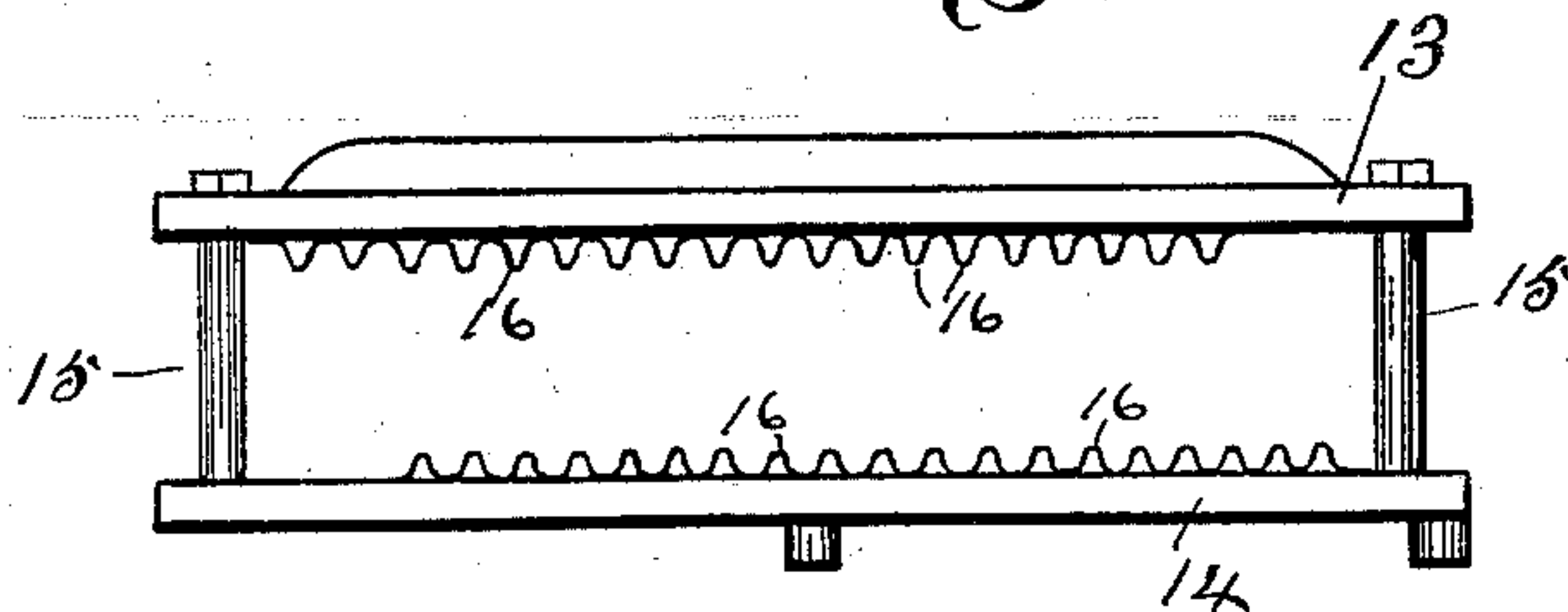


Fig. 4.

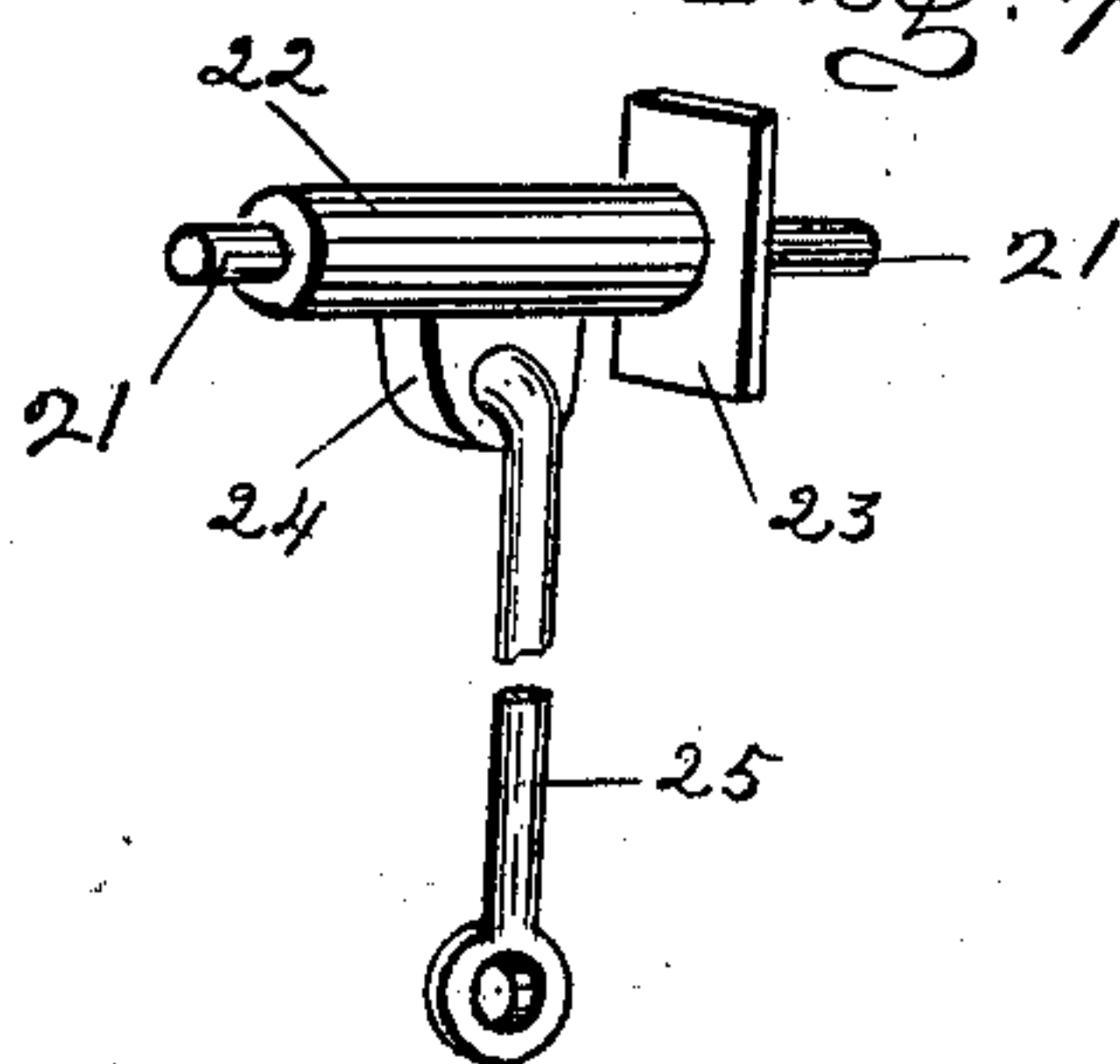


Fig. 5.

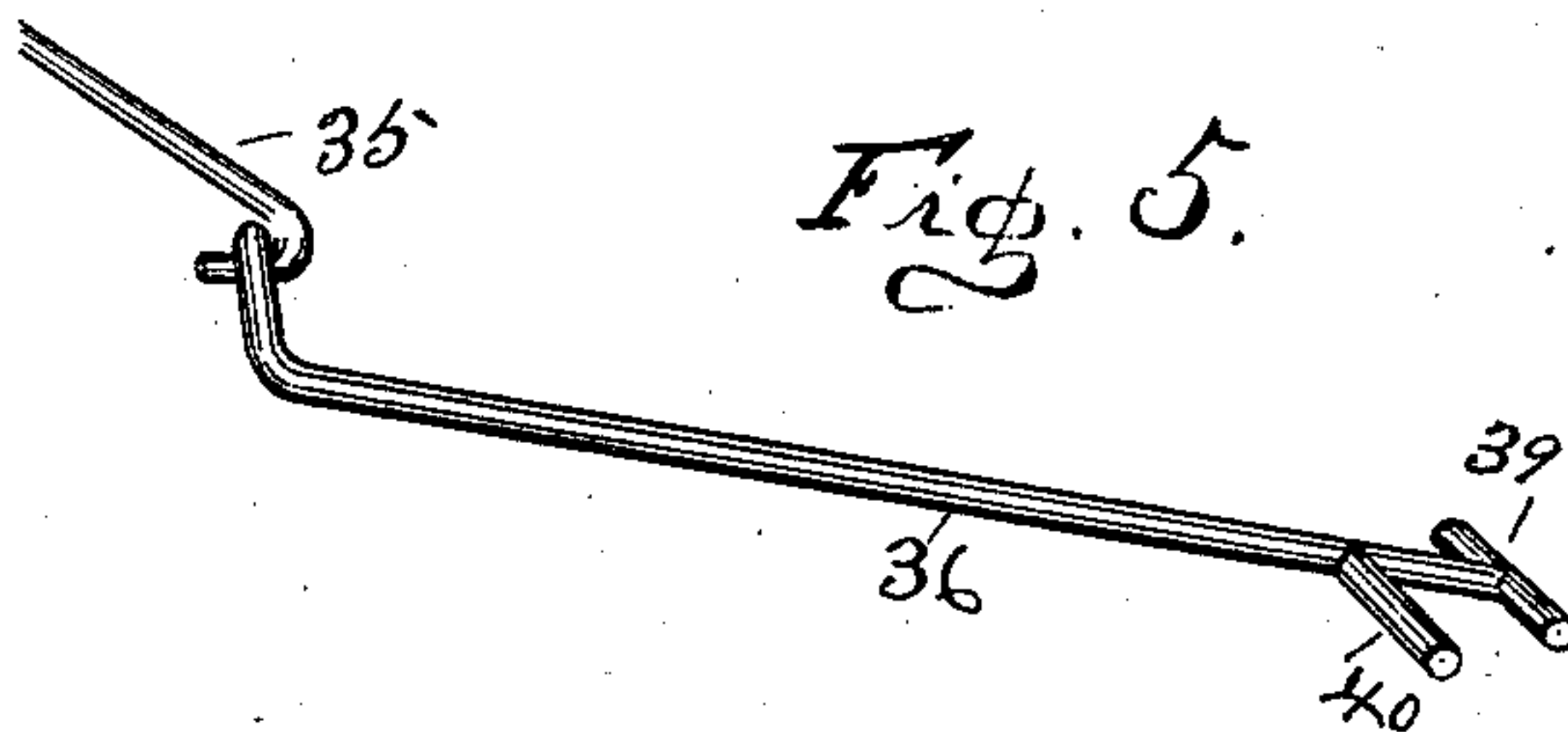


Fig. 6.

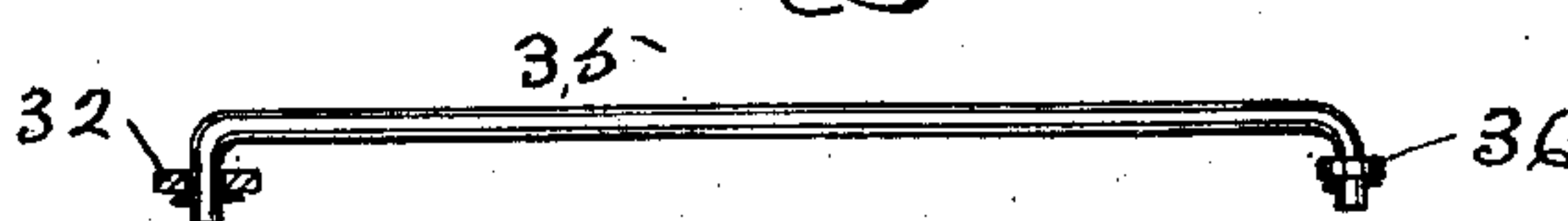


Fig. 7.

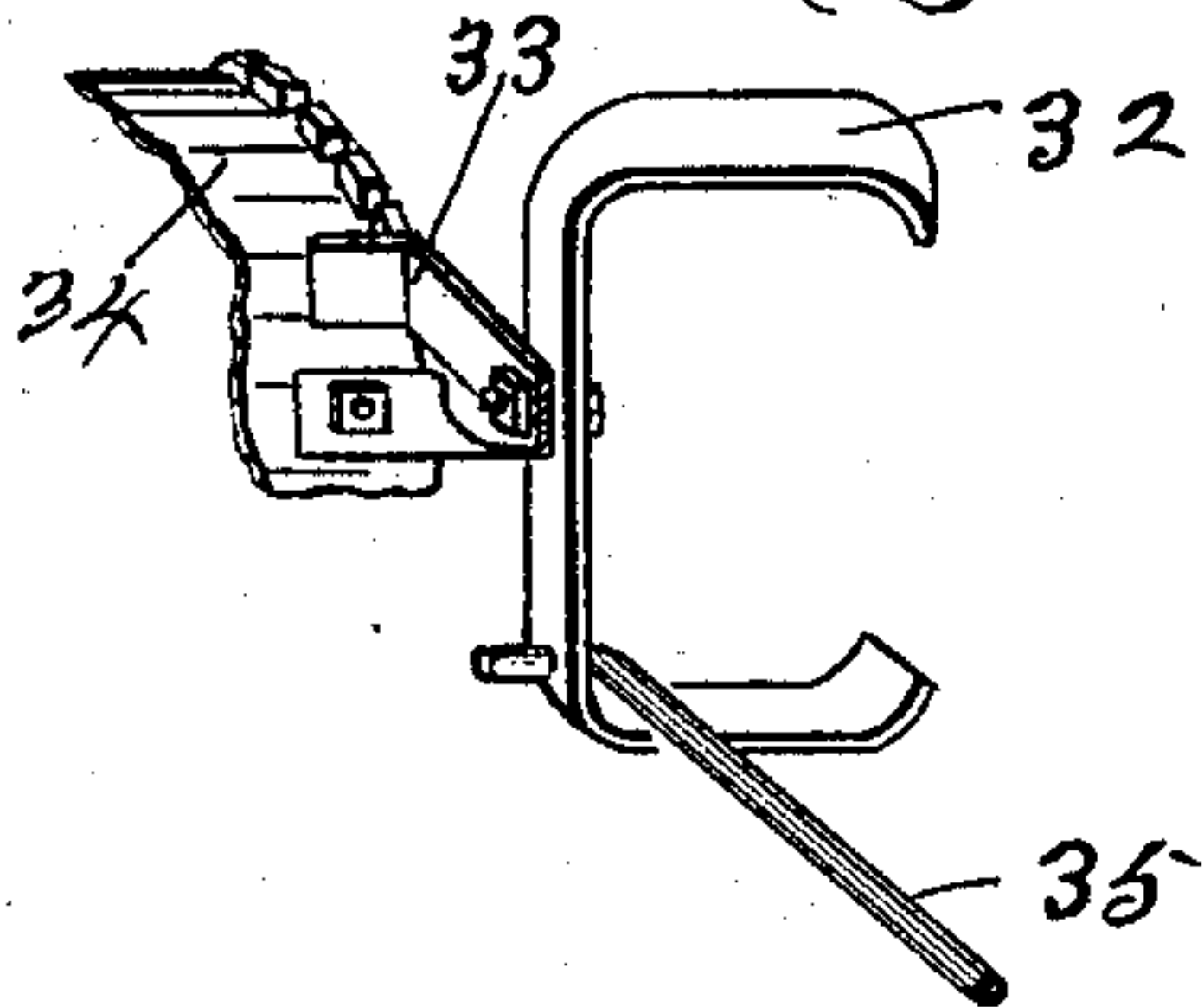
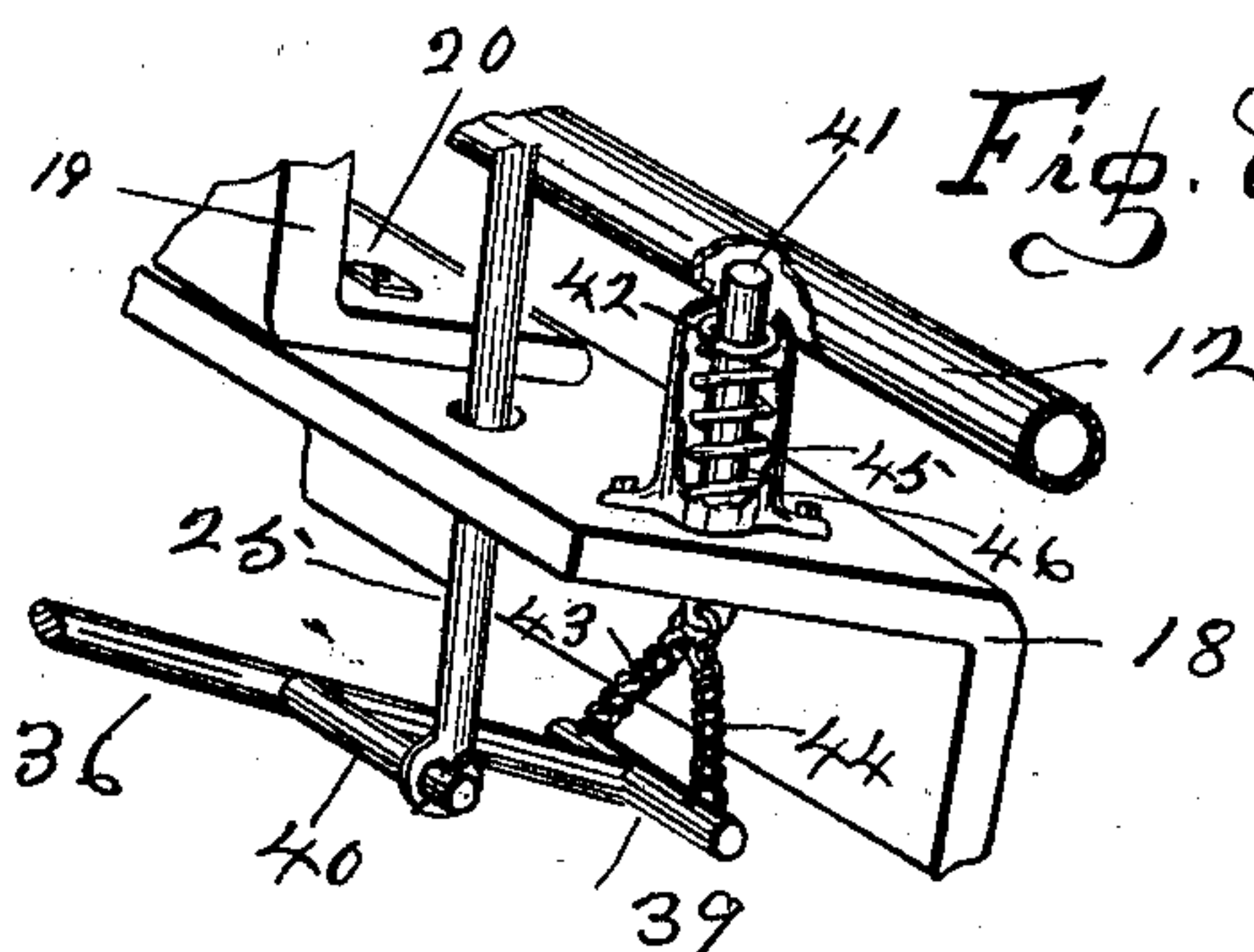


Fig. 8.



WITNESSES:

Adelaide Kearns.

Edward F. Tierney.

Willis B. Brown INVENTOR

BY *Chapin & Denny*

His ATTORNEYS.



# UNITED STATES PATENT OFFICE.

WILLIS B. BROWN, OF AUBURN, INDIANA.

## SHIFTING DEVICE FOR SELF-BINDING MACHINES.

SPECIFICATION forming part of Letters Patent No. 628,645, dated July 11, 1899.

Application filed August 17, 1898. Serial No. 688,775. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIS B. BROWN, a citizen of the United States, residing at Auburn, in the county of De Kalb, in the State of Indiana, have invented certain new and useful Improvements in Shifting Devices for Self-Binding Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to improvements in shifting devices for self-binding machines.

It is well known that the binder of a harvesting-machine is made laterally adjustable transversely of the machine to compensate for the varying length of the grain-straw in a well-understood manner, that the present method of shifting the said binder is by means of a hand-lever, and that as the operator has several other hand-levers requiring frequent manipulation it is desirable that he be relieved of this additional one.

The object, therefore, of my present invention is to provide a cheap, simple, and efficient means for readily and conveniently shifting or adjusting the binder in a self-binding harvester by means of foot-power to accommodate the varying lengths of the grain.

My improvement consists of a double or two-part rack-bar rigidly fixed upon the binder-frame and adapted to move therewith, a horizontal power-transmitting shaft having upon its spring-pressed outer end a pinion arranged between the parallel sections of said rack-bar, adapted to form an actuating engagement with either of said rack-bar sections separately, but not simultaneously, the said pinion being normally held out of engagement with both of said sections, the said shaft having upon its other end a bevel gear-wheel in mesh with the reel-actuating gear-wheel, a pedal-lever pivotally mounted in a fixed position or support within convenient reach of the operator, a series of levers pivotally connecting the said pedal with the vertically-adjustable spring-pressed end of said shaft, and a locking device adapted to rigidly secure the binder in position under the described conditions.

In the accompanying drawings similar reference-numerals indicate like parts throughout the several views.

Figure 1 is a perspective view of my invention in position upon a common form of self-binding harvester, showing only so much of the harvesting-machine as is necessary to indicate the relative arrangement of my improvement thereon. Fig. 2 is an enlarged detail of the means for normally supporting the rigid pinion out of engagement with the rack-bar sections, showing the loose sleeve adjacent to said pinion, to which the operating-levers are connected. Fig. 3 is a detail side view of the double rack-bar. Fig. 4 is a detail of the upright connecting-rod in the lever mechanism in position in the loose sleeve on the outer end of the power-transmitting shaft. Figs. 5 and 6 are details of the remaining levers for transmitting the actuating impulse from the pedal-lever. Fig. 7 is a detail of the pivoted pedal-lever, showing the manner of securing it in position upon the notched sector-plate or lever-stand. Fig. 8 is an enlarged detail of the locking device adapted to secure the binder in any desired position against displacement.

Referring now particularly to Fig. 1, I have shown only so much of the self-binding machine as is necessary to illustrate the relative arrangement of the operative parts of my invention. The harvester-frame 1, having a tongue 2, the divider 3, the main or bull wheel 4, the grain-elevator 5, provided with the conveyer-belts or traveling aprons 9 and 10, the reel 8, the reel-supporting frame 6, the binder-deck 7, and the operator's seat 11, all of which are shown only in part, are of the usual or other proper construction and arrangement.

Upon any proper portion of the binder-frame, preferably upon a longitudinal extension of the gas-pipe 12, is rigidly fixed by bolts or in other proper manner a double rack consisting of the horizontal rack-bars 13 and 14 in parallel arrangement and rigidly held in position by the upright bolts or pins 15. These rack-bars are provided upon their inner and adjacent faces with transverse teeth 16, adapted for a meshing engagement with the actuating-pinion 17, presently to be described. The lower rack-bar has upon its



lower face a plurality of inwardly-projecting and apertured lugs or feet, by means of which it is rigidly bolted to its supporting-pipe 12, which is about eight inches longer than such portion is ordinarily. This rack-bar is of sufficient length to permit a proper lateral adjustment of the said binder attachment. The teeth upon said rack-bar sections do not extend quite their full length, a vacant space being left at one end of each bar, as shown in Fig. 3, upon the inner end of the bar 14 and upon the other end of bar 13. The purpose of thus omitting teeth upon the said rack-bars is to limit the longitudinal movement of the rack-bar, as hereinafter described. Directly below the gas-pipe 12 and a proper distance therefrom is arranged the inverted angle-iron 18, whose inner end is rigidly secured to any suitable support. To the upper face of this angle-iron is rigidly fixed the upright guide 19 by means of proper rivets or bolts through a lateral flange 20 upon the lower end thereof. This guide 19 consists of a metal plate having an extended longitudinal opening adapted to receive and contain the power-transmitting shaft 21. Upon the outer end of this shaft 21 is fixed a rigid pinion 17, adapted to form a meshing engagement with either the upper or lower rack, as shown. Adjacent to the inner face of said pinion upon the said shaft is arranged a loose collar 22, having its rear end loosely arranged in the said guide 19 and provided upon its extremity with an integral or fixed plate 23, which is slightly wider than the said opening in said plate to prevent longitudinal displacement of said pinion by a forward thrust of said shaft. To the lower face of said collar 22 is arranged an apertured ear 24, in which the upper end of the forward operating-rod 25 is hooked or secured. Upon the other end of the said shaft 21 is fixed the rigid bevel gear-wheel 26, adapted to form a meshing engagement with and to be actuated by the bevel gear-wheel 27, which also actuates the reel mechanism through the meshing gear-wheel 28 and its power-transmitting shaft 29. The said guide 19 has in suitable openings in each extremity thereof a fixed bolt 30, whose inner end projects into said central opening nearly to, but out of contact with, the said collar 22, Fig. 2. Upon the inner end of said bolts is loosely mounted a coil-spring 31, having one end thereof bearing against the said collar 22 and the other end against the adjacent face of said opening. By this construction the said pinion 17 is normally held in close proximity to, but out of contact with, the said racks 16 by the said springs, and any vertical adjustment of the said pinion to bring it into contact with either of said racks will have to be made against the tension of one or the other of said springs. The means by which the operator brings the said pinion into an actuating engagement with said racks may be described as follows: A pedal-lever 32, Fig. 7, is pivotally mounted midway its

ends upon a proper supporting-bracket 33, which in turn is rigidly fixed to and supported by the hand-lever stand 34. The thrust-lever rod 35, of proper dimensions, has its ends bent to form a hook upon each end thereof. Its rear end is then hooked in a proper opening in said pedal, near one extremity thereof, and its forward end is hooked in a suitable eye in the adjacent end of the operating-rod 36. The rear end of this rod 36 is loosely mounted in a suitable bracket or bearing 37 upon one of the braces 38 for the elevator or other proper location, and has its extremity bent to an inclined relation to the said rod, and has a horizontal T 39 upon its forward extremity. This bevel-rod 36 also has at or near its forward end a short lateral rigid rod 40 and is adapted for a rocking movement under the impulse of the said rod 35. To the free end of this rod 40 is loosely secured the lower end of the said link-rod 25, the upper hooked end of which is loosely mounted in the eye of the said ear or lug 24. This link-rod passes through an elongated vertical slot in the said angle-iron 18, as shown, though this rod may, if desired, be arranged to pass upward at the rear of said angle-iron and have its upper end secured to the lower end of the said plate 23. At a suitable point on said angle-iron 18 is arranged a vertical perforation in which is loosely mounted a pin 41, having near its upper end a rigid collar 42 and having its lower extended end provided with an eye, to which the upper ends of the short connecting-chains 43 and 44 are secured, the other ends of said chains being fastened to the opposite ends or arms of the head 39 of said operating-rod 36. Upon this pin 41 is loosely mounted a spiral spring 45, having one end thereof bearing against the lower face of said rigid collar 42 and its other end bearing against the upper face of said angle-iron. This spring and collar are then inclosed in a proper hood or shield 46, having a suitable perforation in its top for the upper free end of said pin 41, which is adapted under the tension of said spring to automatically enter one of a series of perforations upon the lower face of said gas-pipe for the purpose of rigidly locking the binder in any desired lateral adjustment.

The operating of my invention thus described is, briefly stated, as follows: The operator, seated upon the seat 11, with his usual adjusting hand-levers at his right hand, is free to hold his lines in his left hand and operate my improvement at pleasure with his left foot, as follows: When it is desired to shift the binder in a well-understood manner for the proper binding of long grain, the operator presses forward and downward upon the upper end of the pedal 32, thereby giving the thrust-lever 35 a rearward pull, which thereby oscillates or rocks the lever 36 to the left, thus throwing upward the free end of the short arm 40 thereof. This movement obviously forces the link-rod 25 upward,



thereby throwing the revolving pinion 17 into an actuating engagement with the upper rack 13, which thus shifts or adjusts the binder in the desired direction or rearwardly. This movement of the said rocking lever 36 also withdraws the locking-pin 41 from its engagement with the said apertured pipe 12 by means of the chain 43 against the tension of the spiral spring 45. Obviously when the operator removes the said pressure from the pedal 32 the said pin of the locking device will automatically engage the next adjacent perforation in the said pipe 12, and thereby rigidly secure the binder in the desired position under all ordinary conditions of service. When it is desired to adjust the binder for short grain, the above operation is reversed, the operator pushing forward against the lower end of said pedal, which thrusts the rod 35 forward and rocks or oscillates the rod or lever 36 to the right, thereby pulling downward on the link-rod 25 and bringing the said revolving pinion 17 into an actuating engagement with the lower rack 14, which thus shifts the binder in a forward direction.

As a precaution against the effects of momentary inattention upon the part of the operator, the last two or three teeth are omitted upon the rear end of said racks relative to the direction of travel of the said binder, thereby throwing the said pinion out of its engagement before any damage can result.

It is obvious that my improvement can be variously modified in its details of construction and arrangement without departing from the spirit and scope of my invention, which consists in providing a binder-shifting attachment adapted to be operated by foot-power.

Having thus described my invention, what I desire to secure by Letters Patent is—

1. A shifting attachment for self-binding machines consisting of a double rack-bar fixed upon the binder-frame; a revoluble pinion adapted to shift the said binder by an actuating engagement with the said rack-bar, and normally out of mesh therewith; means for driving the said pinion; and means for bringing the said pinion into an actuating engagement with either section of said rack-bar as described.

2. In a binder-shifting attachment, a double rack-bar fixed upon the binder-frame; an actuating meshing pinion adapted to engage but one section of said rack-bar at a time; means for normally supporting said pinion out of such engagement; a pedal-lever under the control of the operator; and means for pivotally connecting the said pedal-lever with the said pinion whereby the said pinion is brought into such an actuating engagement at pleasure.

3. In a binder-shifting device a double rack-

bar consisting of two horizontal racks in vertical alinement mounted upon the binder-frame; means for laterally adjusting said binder consisting of a revoluble shaft having upon its inner end a fixed bevel gear-wheel, and having upon its outer end a rigid pinion normally out of mesh with said racks, but adapted for an actuating engagement therewith at the pleasure of the operator; a pivoted pedal-lever; means for pivotally connecting the said pedal-lever with the forward end of said shaft for the purpose specified; and means for locking or securing the said binder in any desired adjustment.

4. The combination in an apparatus of the class specified, of a two-part rack-bar whose parallel sections are in vertical alinement; a power-transmitting shaft having upon its outer end a proper driving-gear, and having upon its inner end a fixed pinion adapted for a meshing engagement with said rack-bar; a loose sleeve arranged upon the said shaft adjacent to the said pinion as described; an upright supporting-guide adapted to normally secure the said pinion out of such engagement, but permitting such engagement against the tension of oppositely-arranged coil-springs by a vertical adjustment as shown; an actuating pedal-lever; and means for connecting said pedal-lever with the forward end of said shaft.

5. In an apparatus of the class specified, a two-part rack-bar having parallel sections in vertical alinement; a power-transmitting shaft having upon one end a driving-gear, and having upon the other end a rigid pinion adapted for an actuating engagement with said rack-bar; a loose sleeve on said shaft adjacent to said pinion; an upright supporting-guide having a central longitudinal opening for said shaft, and provided with spiral springs in said opening upon the opposite sides of said shaft, and adapted to normally support the said pinion out of engagement with said rack-bar as described; a pivoted pedal-lever; a pivoted thrust-lever 35 having one end connected to the said pedal and the other end to the rod 36; the operating rocking lever or rod 36 arranged as shown; and a link-rod 25 pivotally connecting the forward end of said rocking lever with said sleeve for the purpose of vertically adjusting said pinion into a meshing engagement with either of said rack-bar sections against the tension of said springs, all substantially as described.

Signed by me at Auburn, in the county of De Kalb, State of Indiana, this 13th day of August, A. D. 1898.

WILLIS B. BROWN.

Witnesses:

MICHAEL BOLAND,  
CARL R. BROWN.