

No. 724,658.

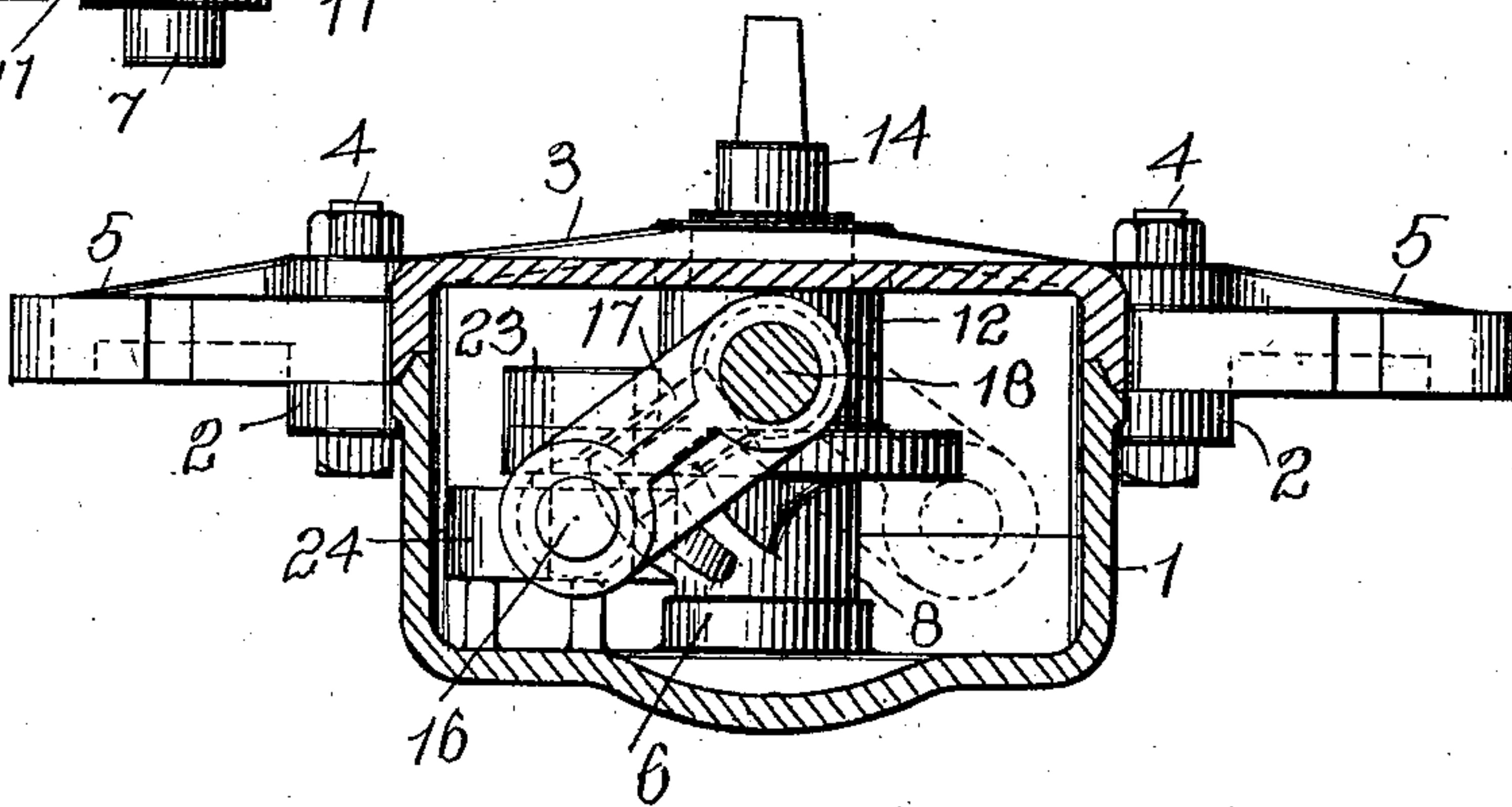
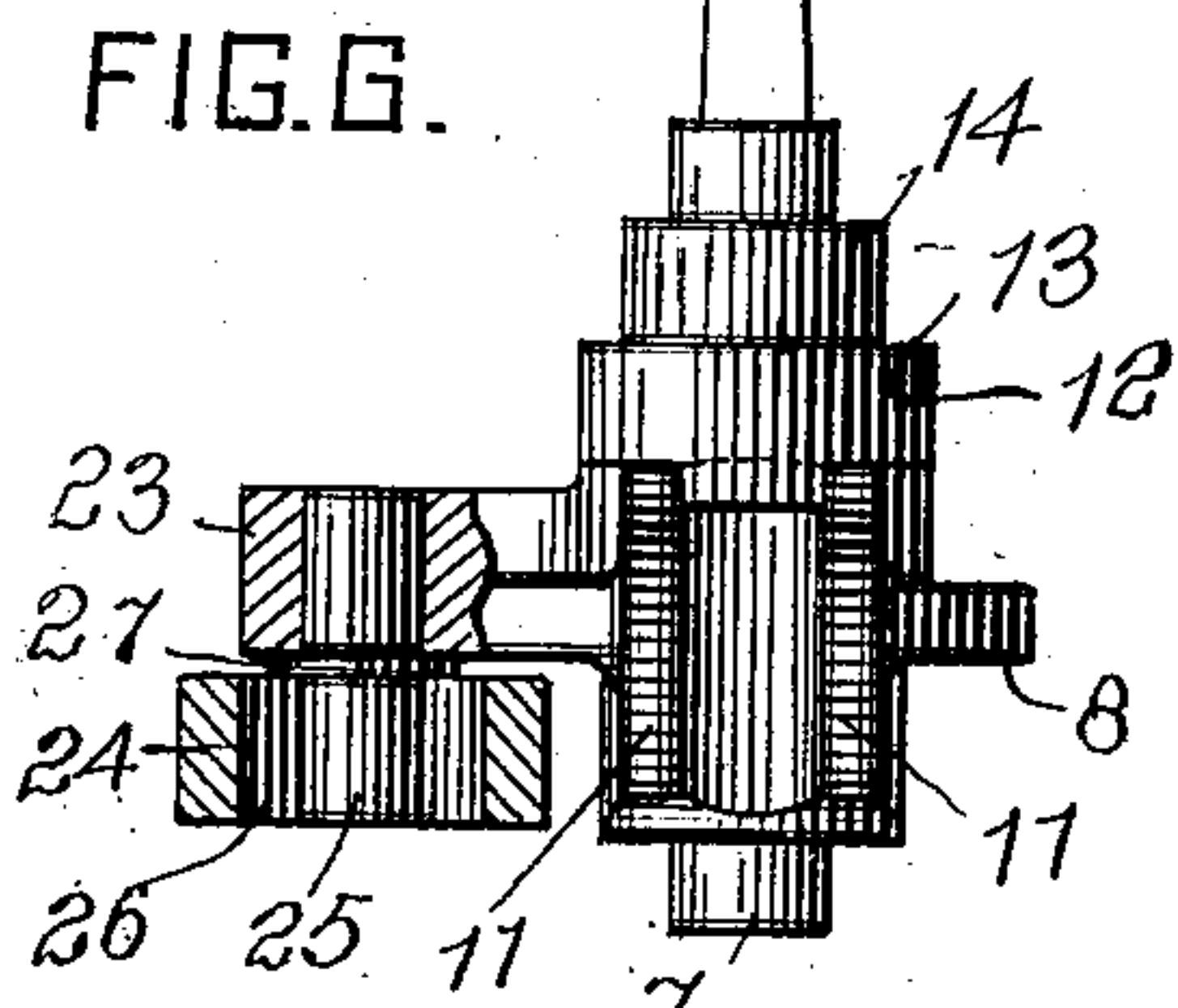
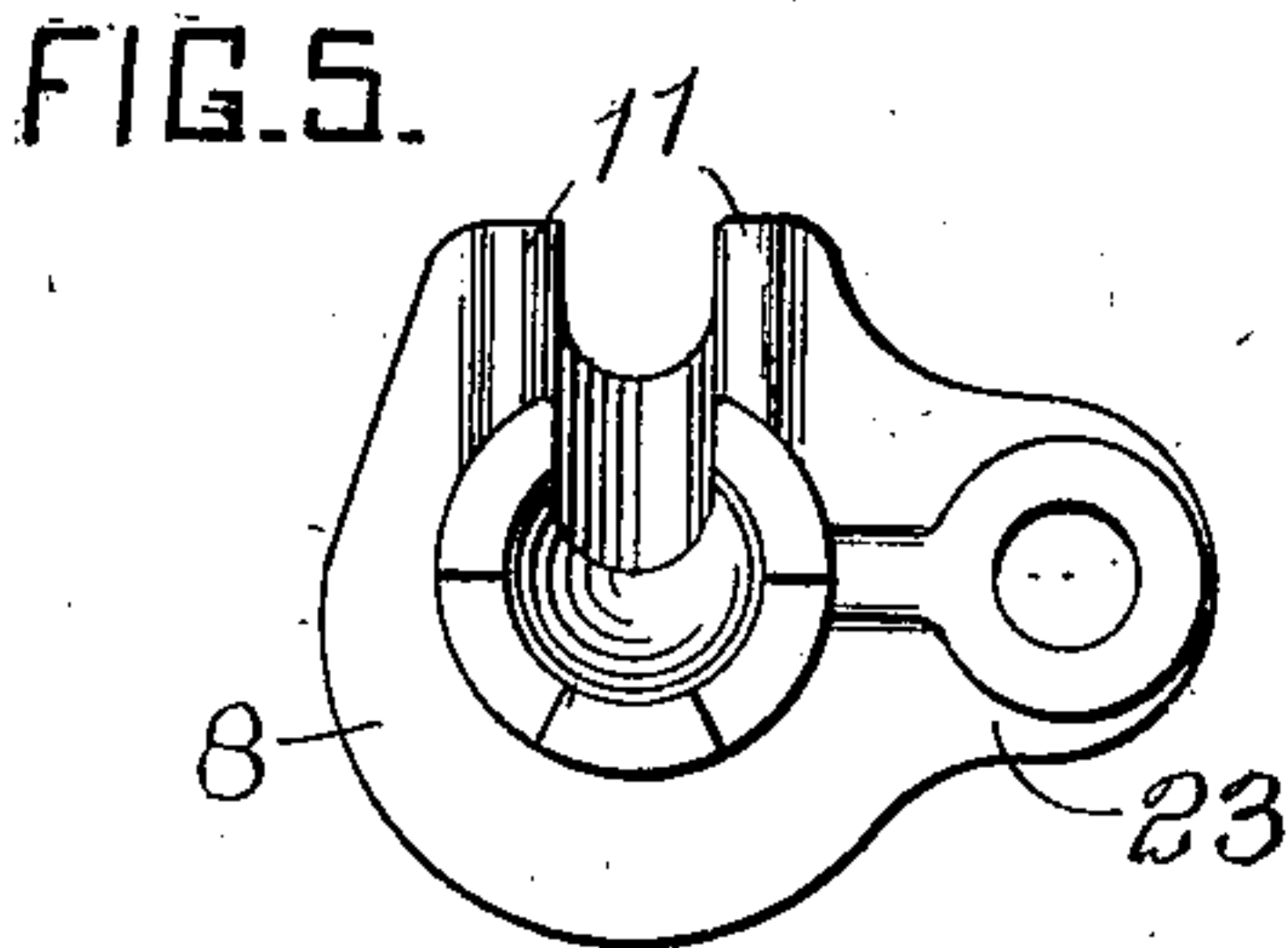
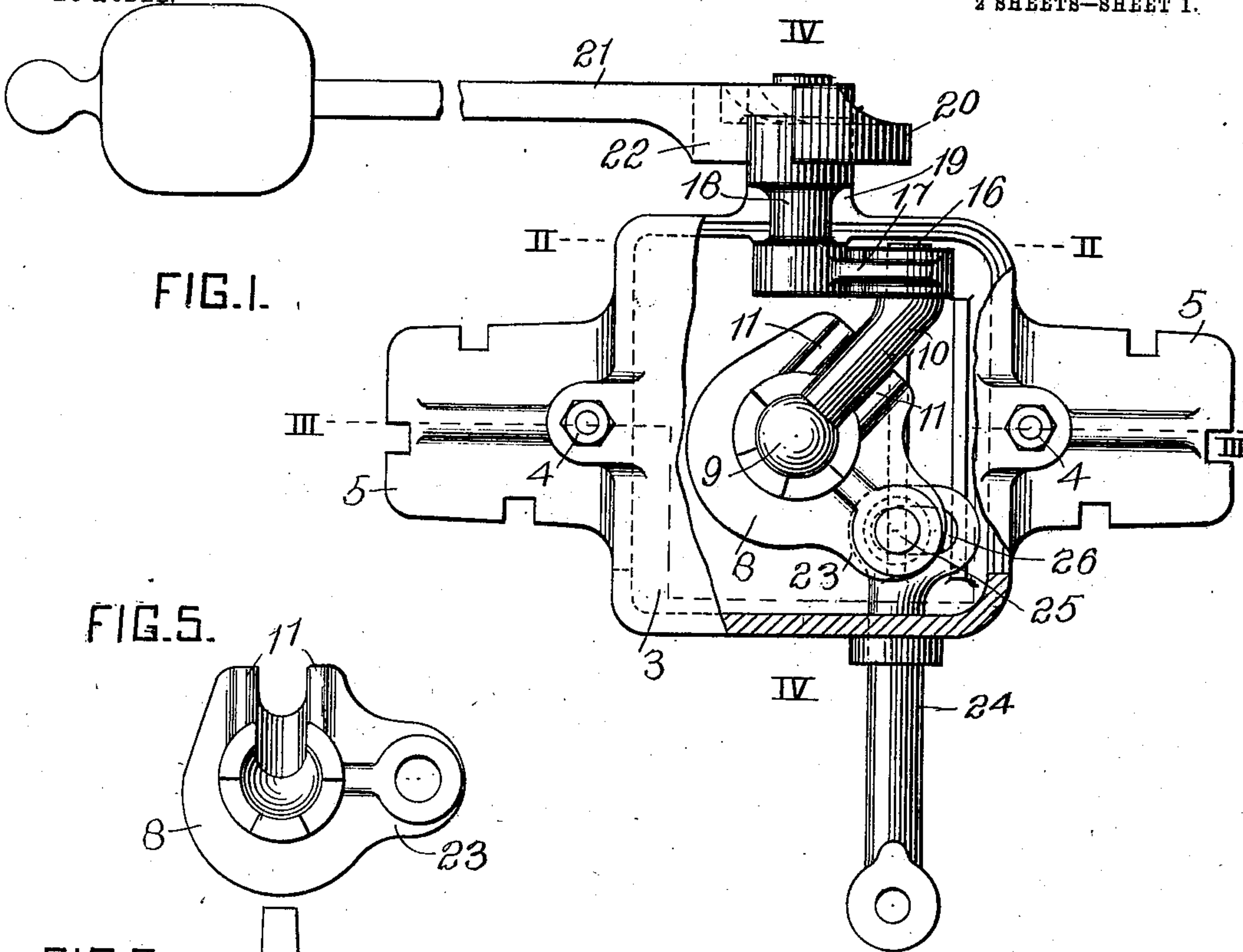
PATENTED APR. 7, 1903.

A. B. BELLOWS.
SWITCH STAND.

APPLICATION FILED SEPT. 3, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES -

Herbert Bradley.
Fred Kirchner.

INVENTOR

Arthur B. Bellows
by Darius B. Wolcott Att'y.

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2 SHEETS—SHEET 2.

FIG. 3.

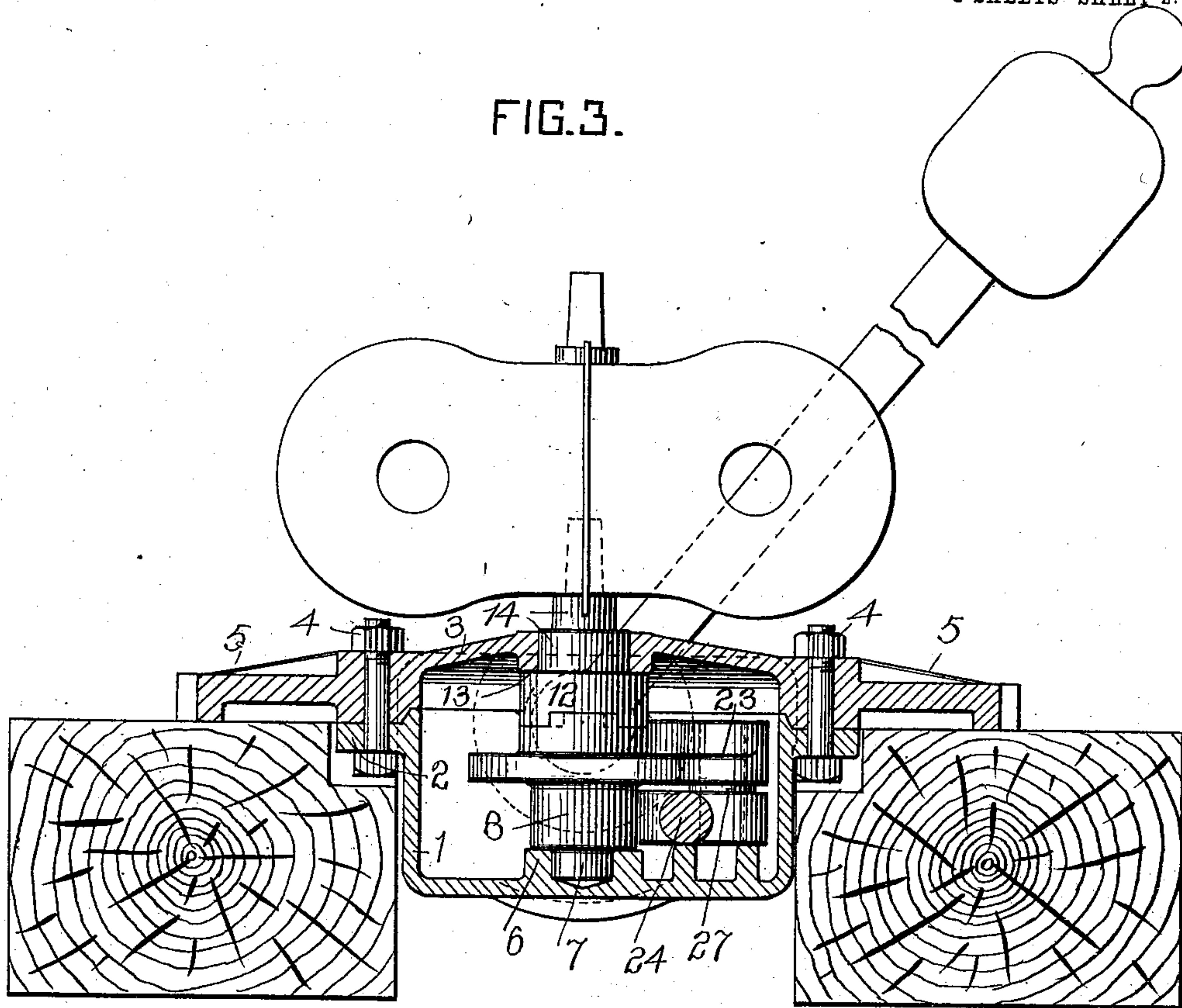
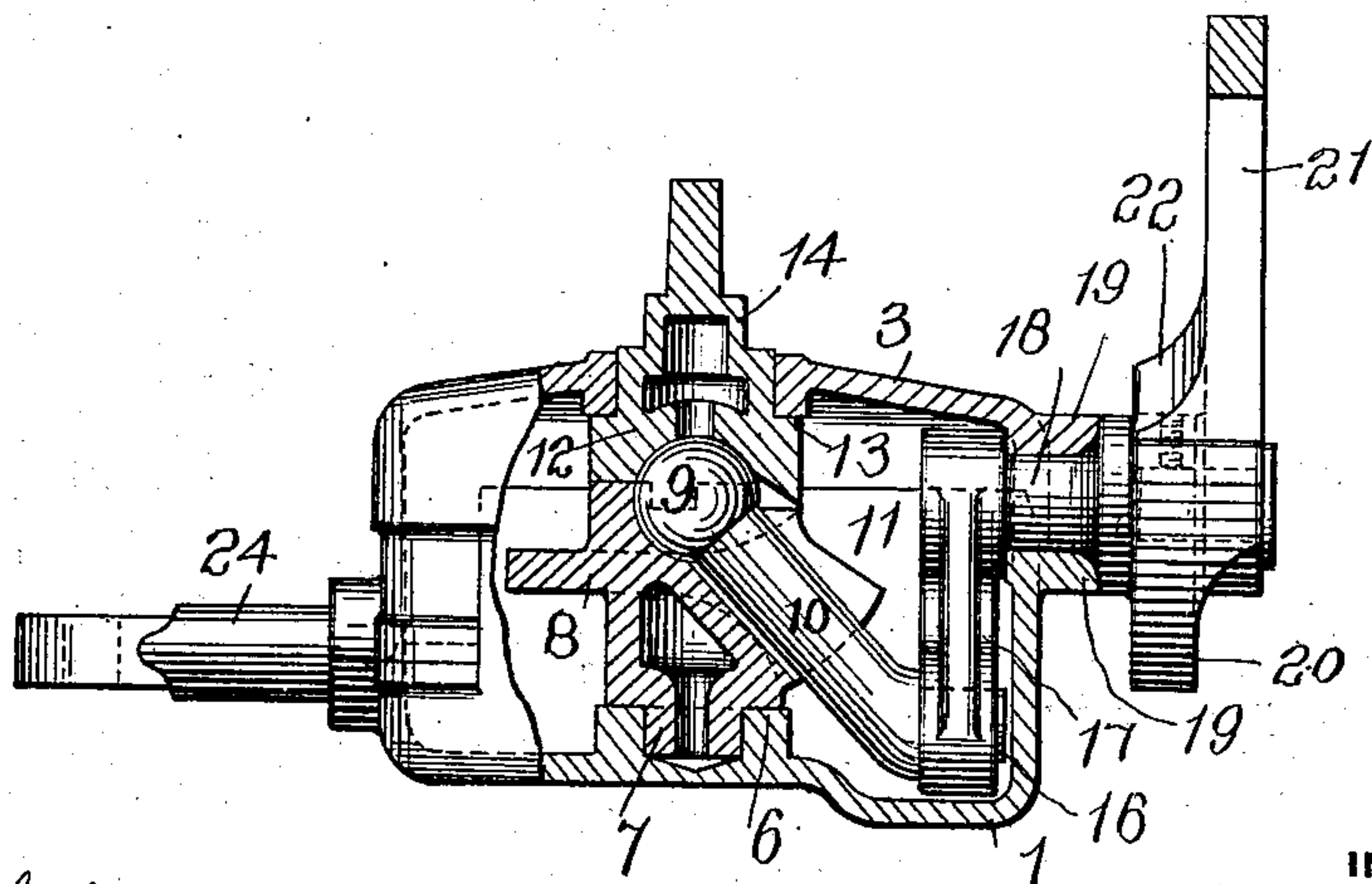


FIG. 4.



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UNITED STATES PATENT OFFICE.

ARTHUR B. BELLOWS, OF PITTSBURG, PENNSYLVANIA.

SWITCH-STAND.

SPECIFICATION forming part of Letters Patent No. 724,658, dated April 7, 1903.

Application filed September 3, 1902. Serial No. 121,949. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR B. BELLOWS, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented or discovered certain new and useful Improvements in Switch-Stands, of which improvements the following is a specification.

The invention described herein relates to certain improvements in switch-stands, and has for its object a construction and combination of parts whereby motion may be transmitted from a crank-arm operative in one plane to a crank-arm adapted to oscillate in a plane at right angles thereto.

It is a further object of the invention to provide for the securing of the several parts of the switch-stand in operative relation by the cover or top portion of the case or shell.

The invention is hereinafter more fully described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a top plan view of my improved switch-box with a portion of the cover broken away. Fig. 2 is a sectional elevation on the plane indicated by the line II II, Fig. 1. Figs. 3 and 4 are sectional elevations on planes indicated, respectively, by the lines III III and IV IV, Fig. 1. Figs. 5 and 6 are detail views.

In the practice of my invention the mechanism, except the operating-lever, is inclosed within a case or shell consisting of a bottom portion 1, provided on opposite sides with lugs or flanges 2, to which the top or cover 3 is secured by bolts 4, said top or cover having laterally-projecting flanges 5, whereby the box or case may be secured on the ends of cross-ties or other suitable foundations.

The bottom portion of the box or case is provided with a socket 6 for the reception of a journal 7 on the lower end of the transmitting-shaft 8. The upper end of this shaft is provided with a semispherical socket for the reception of a spherical journal or ball 9 on the end of an arm 10. This socket has a portion of its side wall cut away to permit of the extension of the arm 10 therethrough, and side walls or wings 11 extend from the edges of the cut-away portion along each side of the

arm, so as to afford a strong lateral bearing for the arm during the operation of the switch. The ball 9 is held in position in the socket of the shaft 8 by means of a cap 12, having a semispherical socket therein, the edges of said socket being formed with projections or lugs fitting into corresponding recesses formed around the edges of the socket of the shaft 8, as clearly shown in Figs. 1, 3, 4, and 5. The cap 12, which forms a continuation of the shaft 8, is provided with shoulder 13, on which the cover of the case will bear and hold the cap 12 in position on the shaft when the cover is bolted to the lower portion of the case or shell. The cap portion 12 is provided with a spindle 14, projecting up through the cover of the case or shell for the reception of the target 15.

The outer end of the arm 10 is provided with a journal-pin 16, formed at an angle to the arm and fitting loosely within an opening in the crank-arm 17, formed on or secured to the driving-shaft 18, which is shown with its journal portion arranged in suitable bearings 19, formed partly in the lower portion of the case or shell and partly in the cover, as clearly shown in Fig. 4. On the outer end of this driving-shaft a notched disk 20 is secured, but may be formed integral therewith, and a lever 21, provided with a shoulder 22, is pivotally connected to the shaft in such manner that the shoulder 22 will project into the notch in the disk, and the lever will be free to move independent of the shaft for a distance equal to the distance between the shoulders formed by notching the disk 20. By this construction the operating hand-lever 21 can have a movement through an arc of approximately ninety degrees (90°) or from a horizontal to a vertical position before the shoulder 22 will bear against the shoulders formed by notching the disk, so that no material labor is required to raise the lever to a position in which power may be conveniently applied to shift the switch.

The shaft 8 is provided with an arm 23, extending laterally therefrom and adapted to be connected to the switch-rod 24 by means of a pin 25. This pin, whose lower portion extends into a slot 26 in the switch-rod 24, is

provided with a collar 27 about midway of its length and adapted to rest upon the switch-rod. The arm or extension 23 from the shaft 8 bears upon this collar and prevents the pin 5 from jumping out while in operation.

In congregating the parts the switch-rod 24 will be first placed in position, the case or shell on the switch-rod side being divided along the plane of the axis of the rod when in position. The connected pin is then placed in position and the shaft 8 adjusted with its journal in the bearing-socket 6 and the opening in the laterally-extending arm fitting over the pin 25. The arm 10, with its journal-pin 15 fitted in the crank-arm 17 on the driving-shaft 18, is then placed in position, as shown in Fig. 4. The cap 12 of the shaft 8 is then placed in position, inclosing the ball on the arm 10, and the cover 3 of the case bolted in position on the lower portion, thereby firmly to secure all the parts in operative relation to each other.

By reference to Fig. 2 it will be clearly seen that the several parts are so constructed and adjusted that the crank-arm will move in shifting the switch through an arc of approximately ninety degrees, (90°), although the operating-lever moves through an arc of one hundred and eighty degrees, (180°). By this construction and arrangement the axis of the journal-pin on the arm 10 will always be below the axis or center of rotation of the driving-shaft 15, so that there can be no dead-point or point wherein the crank-arm cannot be shifted by force applied to the switch-rod through the running of a train through a closed switch or power otherwise applied to the switch-rails. By this construction all danger of injury to the switch-operating mechanism from the train passing through a closed switch can be avoided.

While not necessary, it is preferred to employ wings 11 on the shaft 8, so as to provide a better bearing for the arm 10.

It will be observed that the radial slot or opening from the ball-socket in the shaft 8, formed in part by the wings 11, is elongated vertically, so as to permit of the vertical movement of the arm 10 when shifted by the crank-arm 17. The ball-and-socket connection between the shaft 8 and arm 10 permits not only the vertical movement of said arm, but also its axial oscillation when being shifted by the crank-arm.

It is characteristic of my improved switch mechanism that all the parts intermediate of the switch-rails and the operating-lever are held in operative relation to each other by the cover 2 of the case or shell, thereby avoiding the use of set-screws, keys, or other similar devices.

I claim herein as my invention—

1. A switch-stand having in combination a sectional case or shell, a switch-rod, a vertical shaft connected to said rod, a driving-shaft

provided with a crank-arm, and an arm having pivotal connections with the vertical shaft and the crank-arm, said parts being held in operative relation by the case or shell, substantially as set forth.

2. A switch-stand having in combination a switch-rod, a vertical shaft connected to said rod and an arm for operating said shaft, and having a ball and socket connected therewith, substantially as set forth.

3. A switch-stand having in combination a switch-rod, a vertical shaft connected to said rod and provided with a circular socket in its upper end, an arm provided with a ball fitting in the socket in the shaft, said arm engaging the sides of a notch or recess extending from the socket, substantially as set forth.

4. A switch-stand having in combination a switch-rod, a vertical shaft connected to said rod and provided with a circular socket, an arm provided with a ball arranged in said socket, and a socketed cap provided with a spindle and connected to the shaft so as to rotate therewith, substantially as set forth.

5. A switch-stand having in combination a switch-rod, a vertical shaft connected to said rod and provided with a circular socket, an arm provided with a ball arranged in said socket, and said arm extending through a notch or recess in the wall of the socket, and wings or side bearings extending from the shaft alongside of said arm, substantially as set forth.

6. A switch-stand having in combination a switch-rod, a vertical shaft connected to said rod, an arm having a ball-and-socket engagement with the shaft and provided with a journal-pin, a driving-shaft provided with a crank-arm engaging said journal-pin, substantially as set forth.

7. A switch-stand having in combination a switch-rod, a vertical shaft provided with an arm extending out over the rod, and a pin projecting into said openings in said arm and rod, and provided with a collar located between the arm and rod, substantially as set forth.

8. A switch-stand having in combination a sectional case or shell, a switch-rod extending into the case or shell, a vertical shaft having its lower end journaled in a bearing in the case or shell and connected to the switch-rod, said shaft having spherical socket and a radial notch or recess extending therefrom a cap provided with a spherical socket and interlocking with the shaft, and having a spindle extending through the cover of the case or shell, said cover bearing on a shoulder on the cap, an arm provided with a ball at one end and having a journal at its opposite end, a driving-shaft arranged in bearings in the case or shell and having a crank-arm engaging the journal on the arm, and a lever for rotating the driving-shaft, substantially as set forth.

9. A switch-stand having in combination a

switch-rod, a shaft formed by interlocking
sections and connected to the switch-rod, and
an arm having one end held in engagement
with the shaft by the interlocking sections
5 thereof, substantially as set forth.

10. A switch-stand having in combination a
switch-rod, a shaft formed by sections and
connected to the switch-rod, and an arm hav-
ing one end held in engagement with the shaft

by the sections thereof, substantially as set forth.

In testimony whereof I have hereunto set
my hand.

ARTHUR B. BELLOWS.

Witnesses:

DARWIN S. WOLCOTT,
GEO. B. BLEMING.