No. 766,836. PATENTED AUG. 9, 1904.

C. MILLER & W. D. URICH.

FOLDING CHAIR.

APPLICATION FILED MAR. 9, 1903.

NO MODEL. 4 SHEETS—SHEET 1.

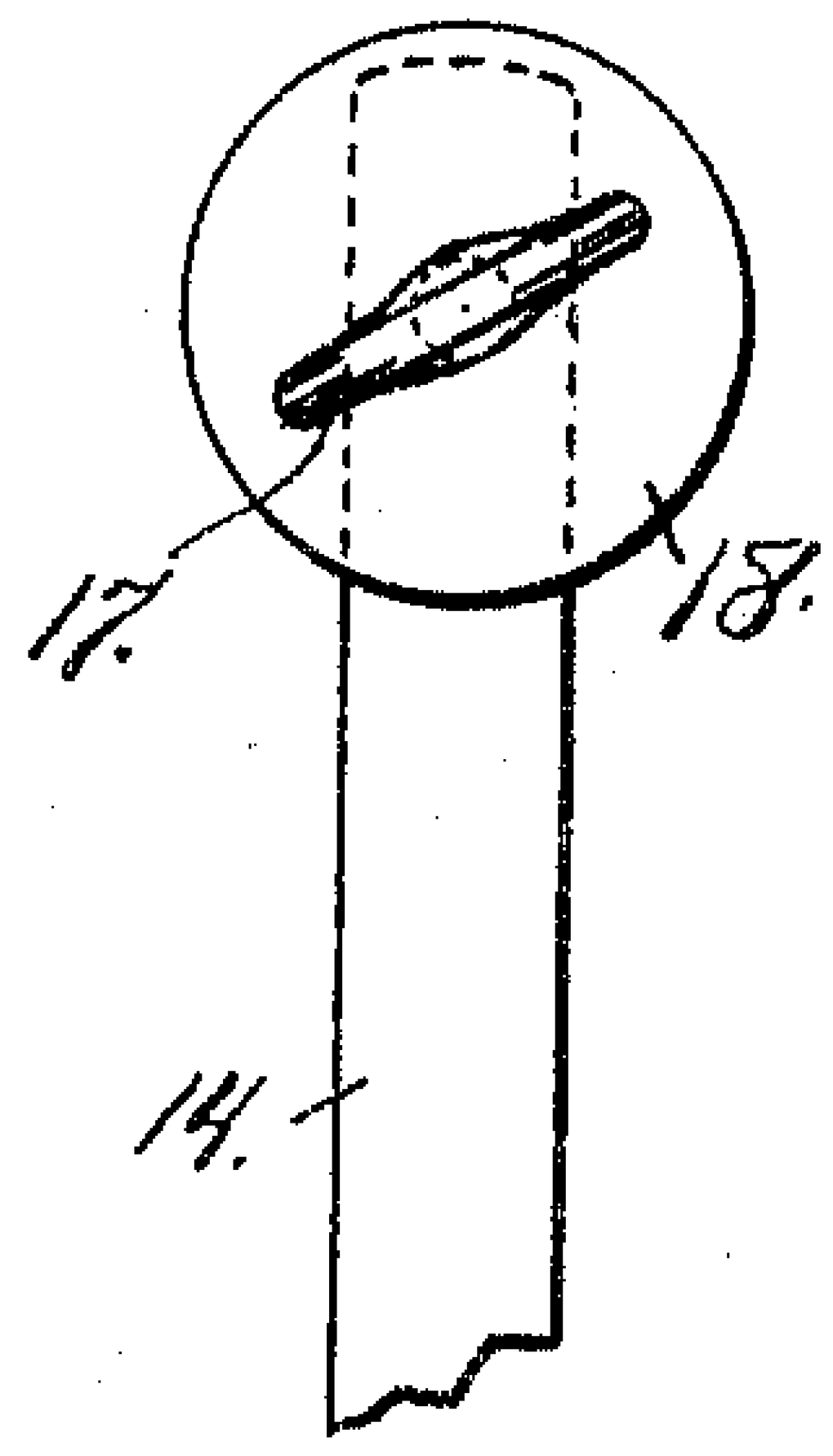

Fig. 10.

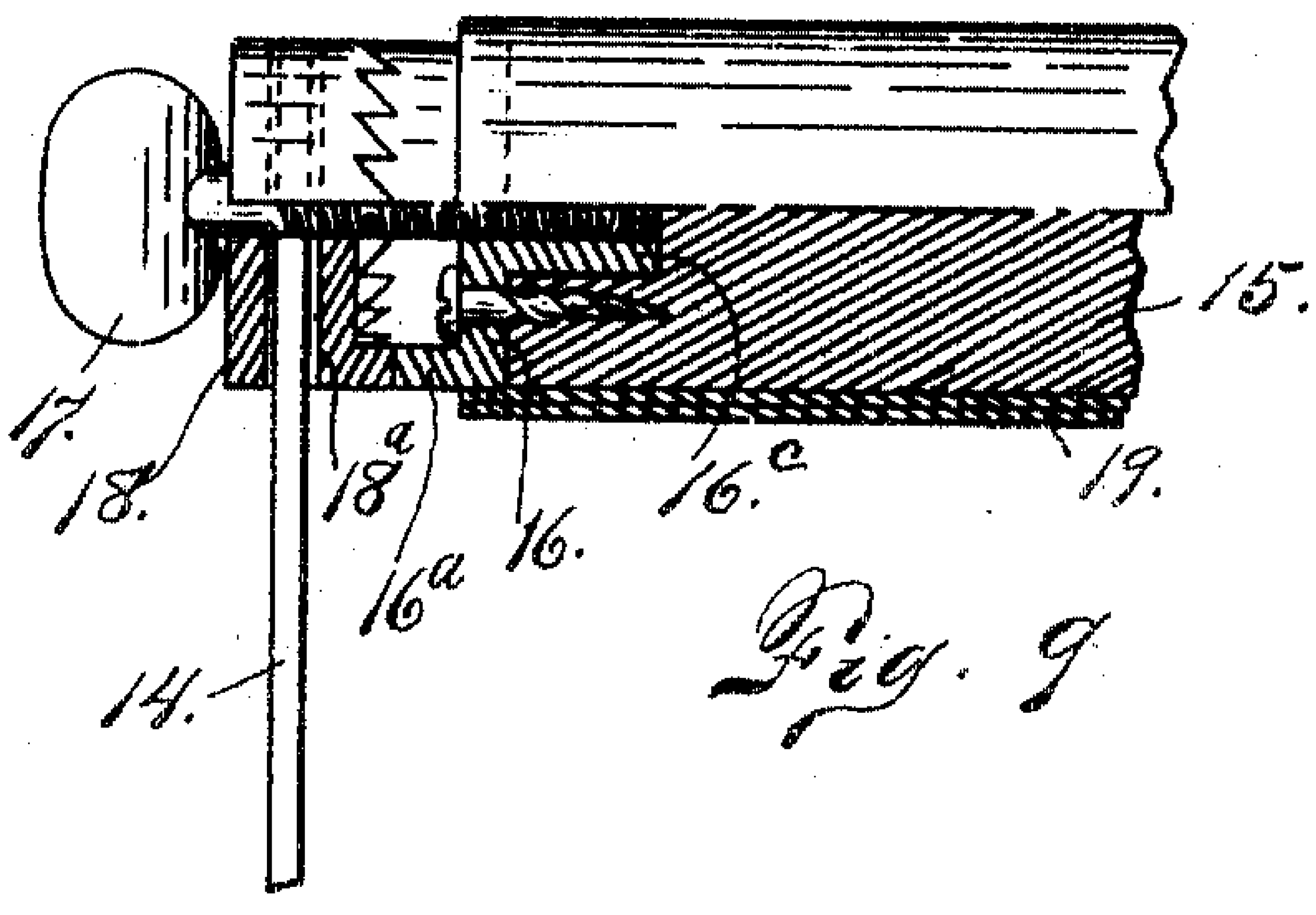

Fig. 9

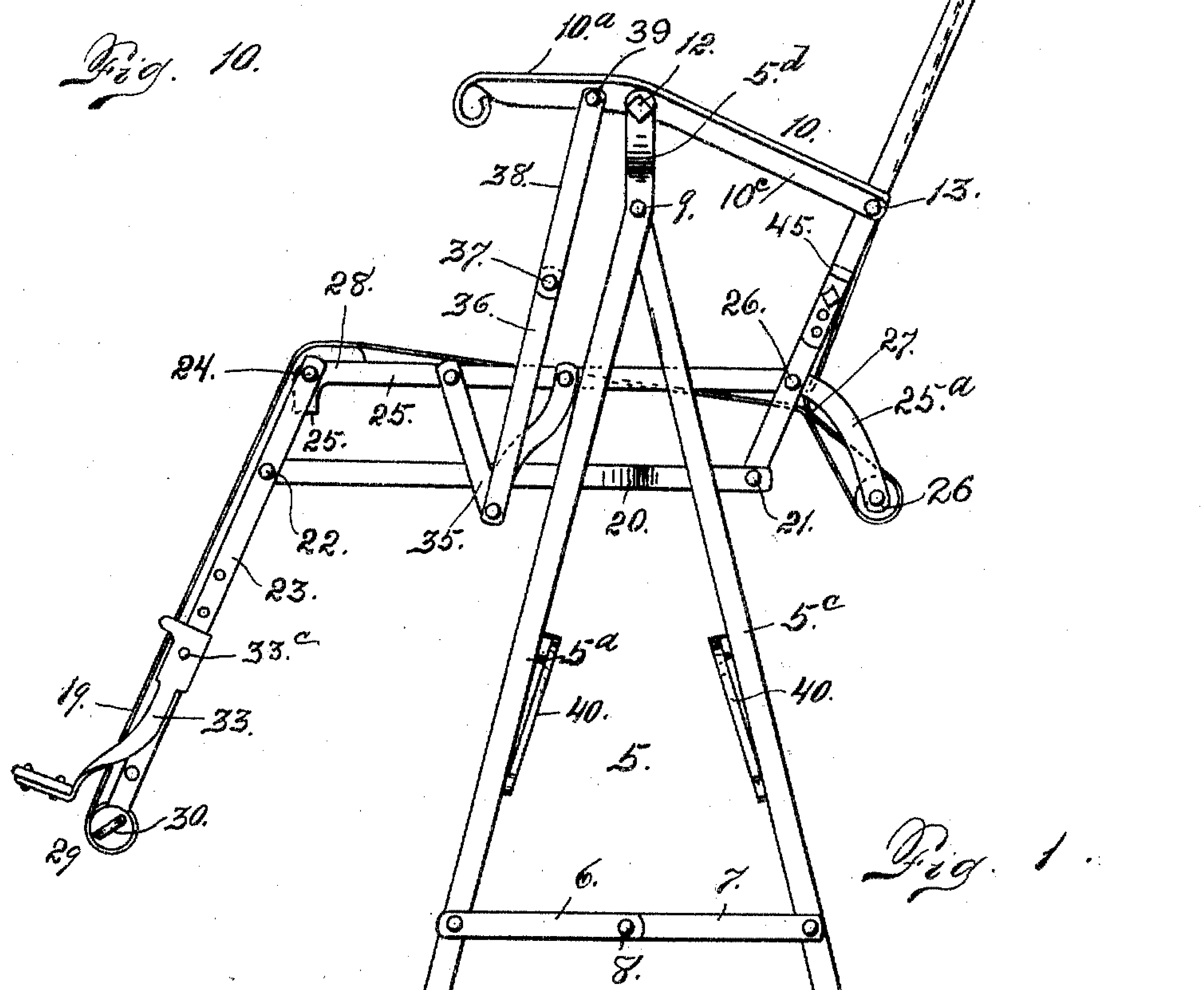

Fig. 1.

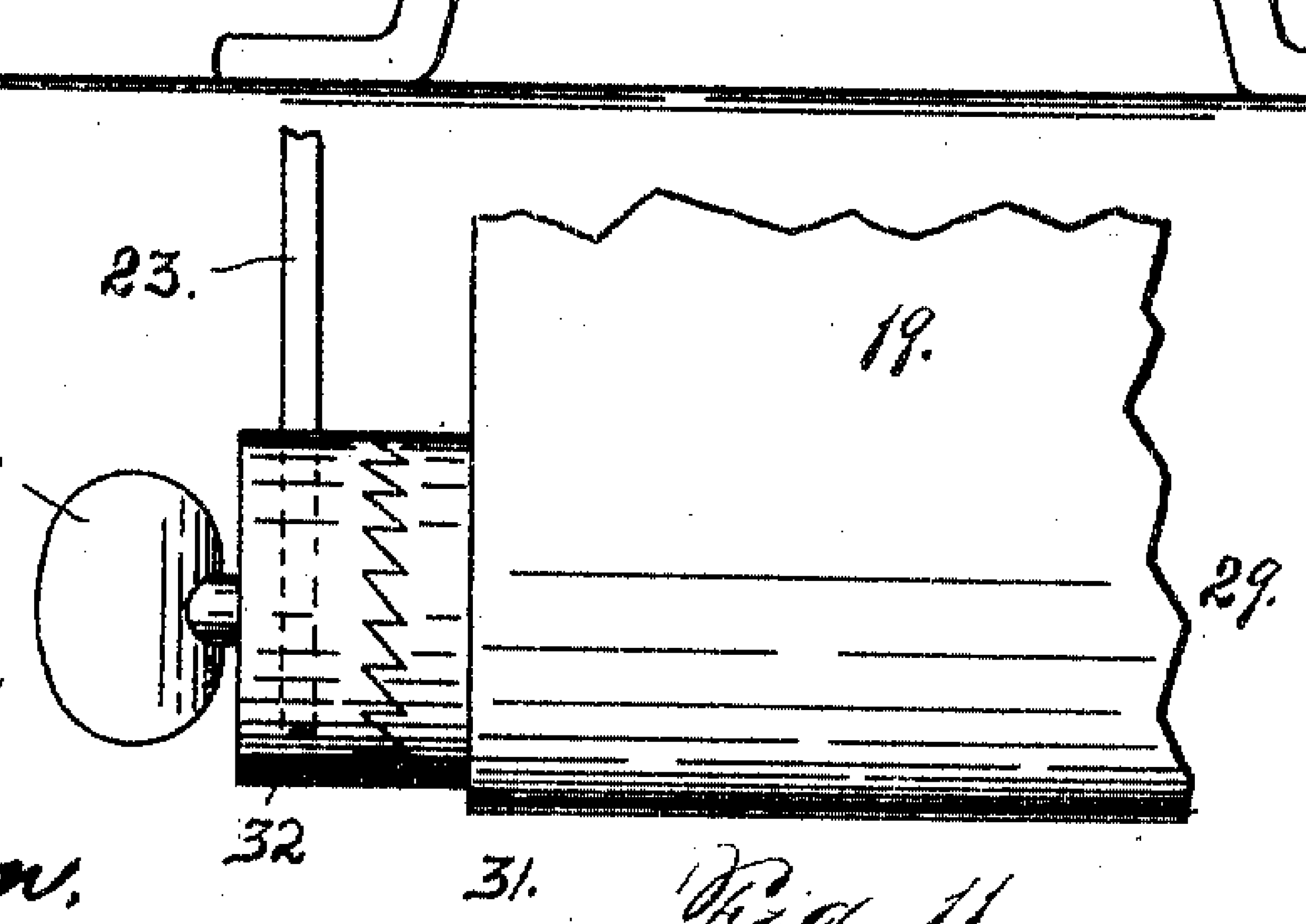

Fig. 11.

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NO MODEL. 4 SHEETS—SHEET 2.

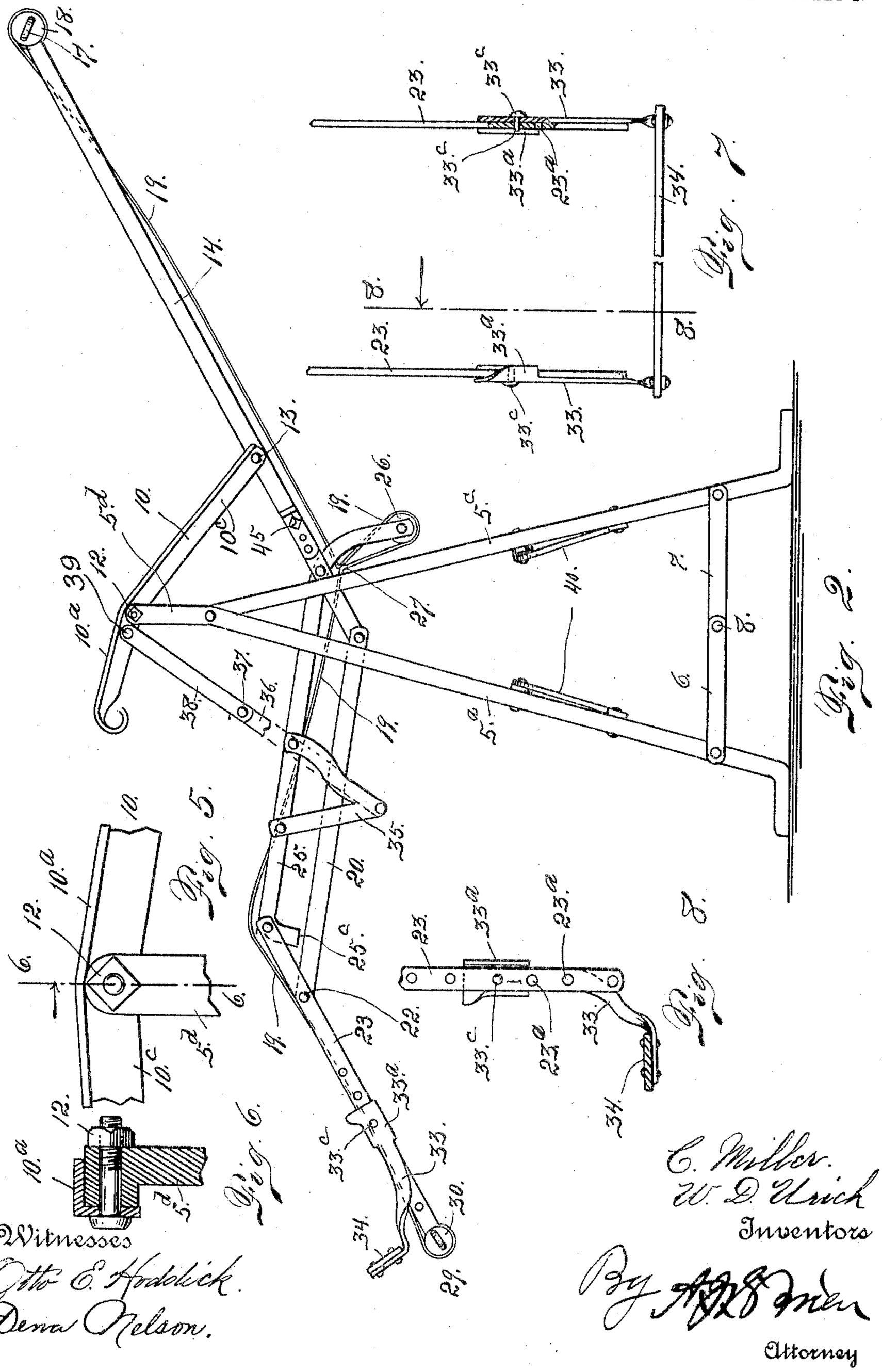

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

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NO MODEL. 4 SHEETS—SHEET 3.

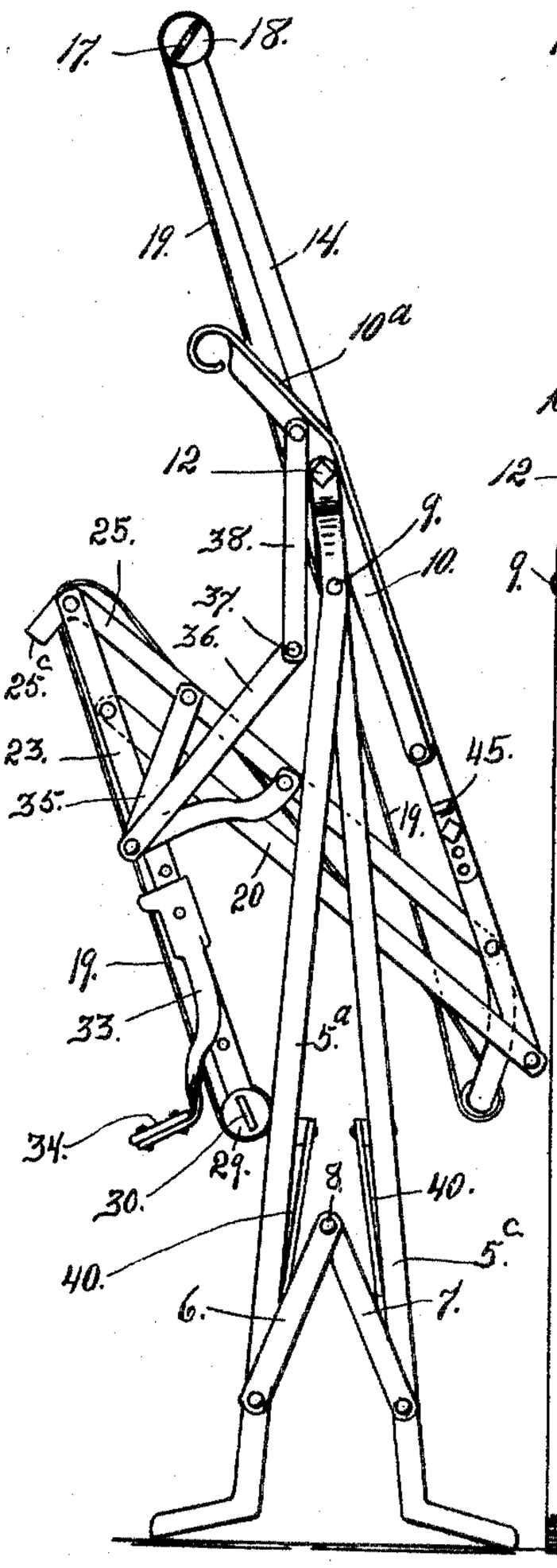

Fig. 3.

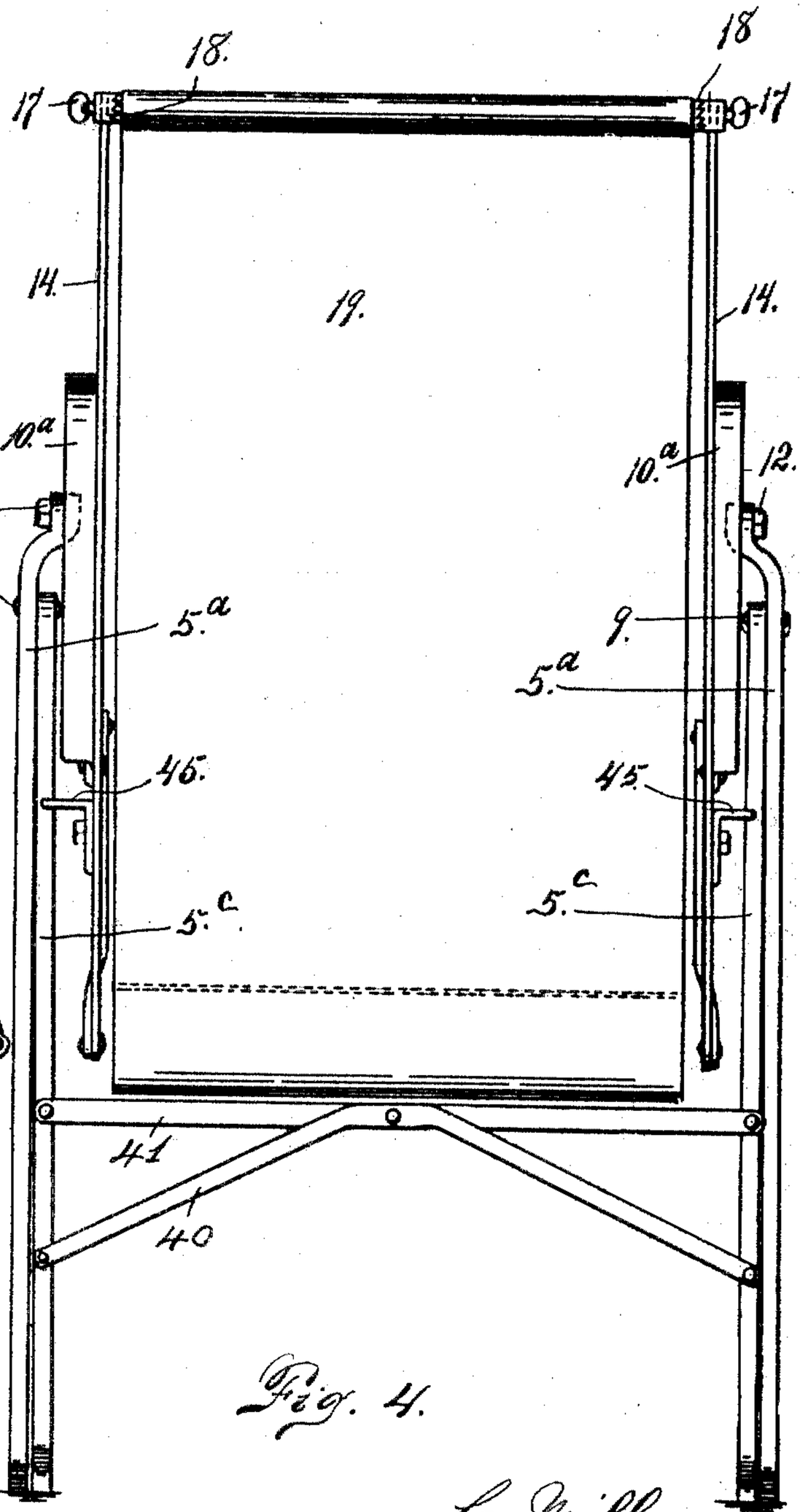

Fig. 4.

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NO MODEL. 4 SHEETS—SHEET 4.

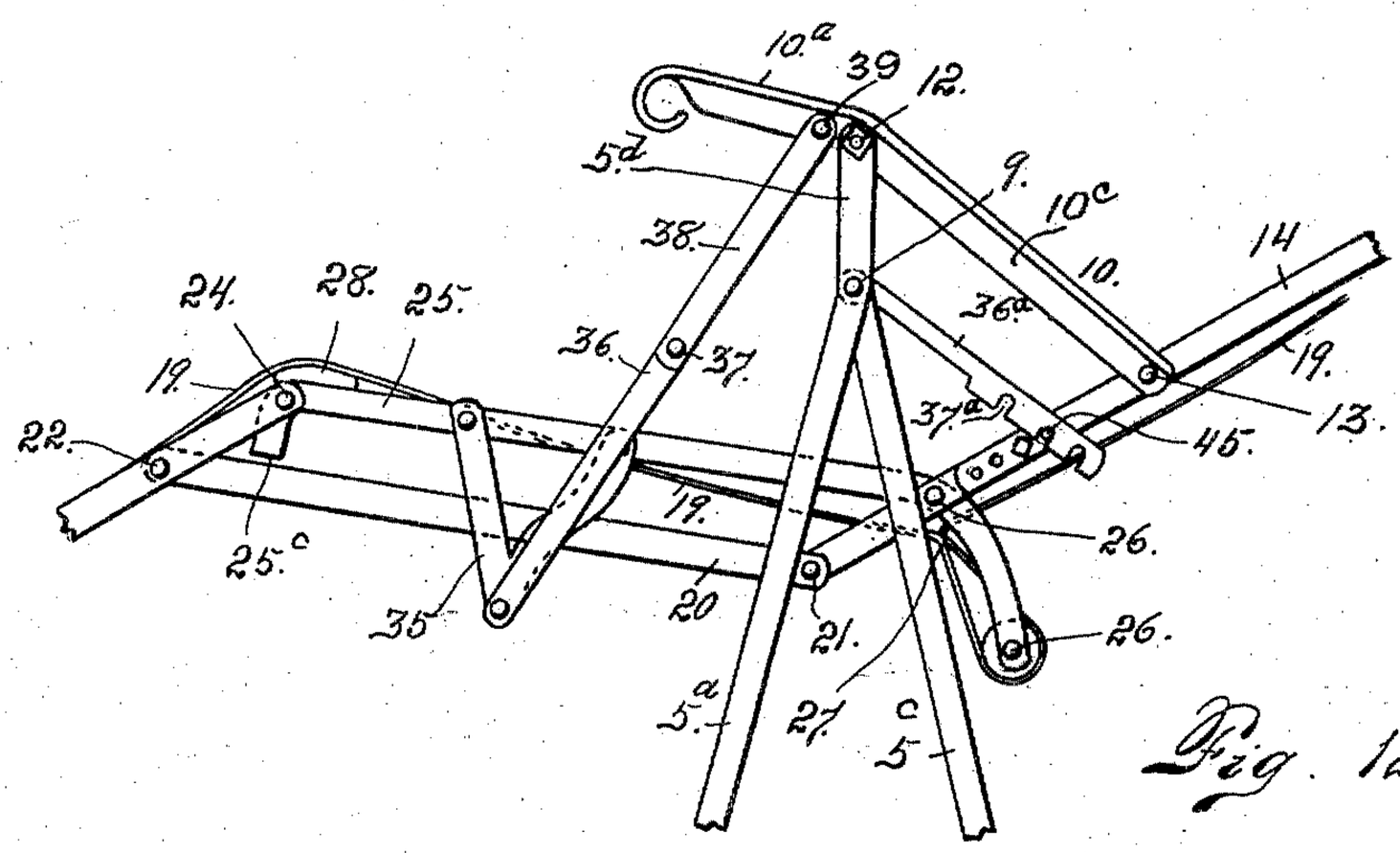

Fig. 12.

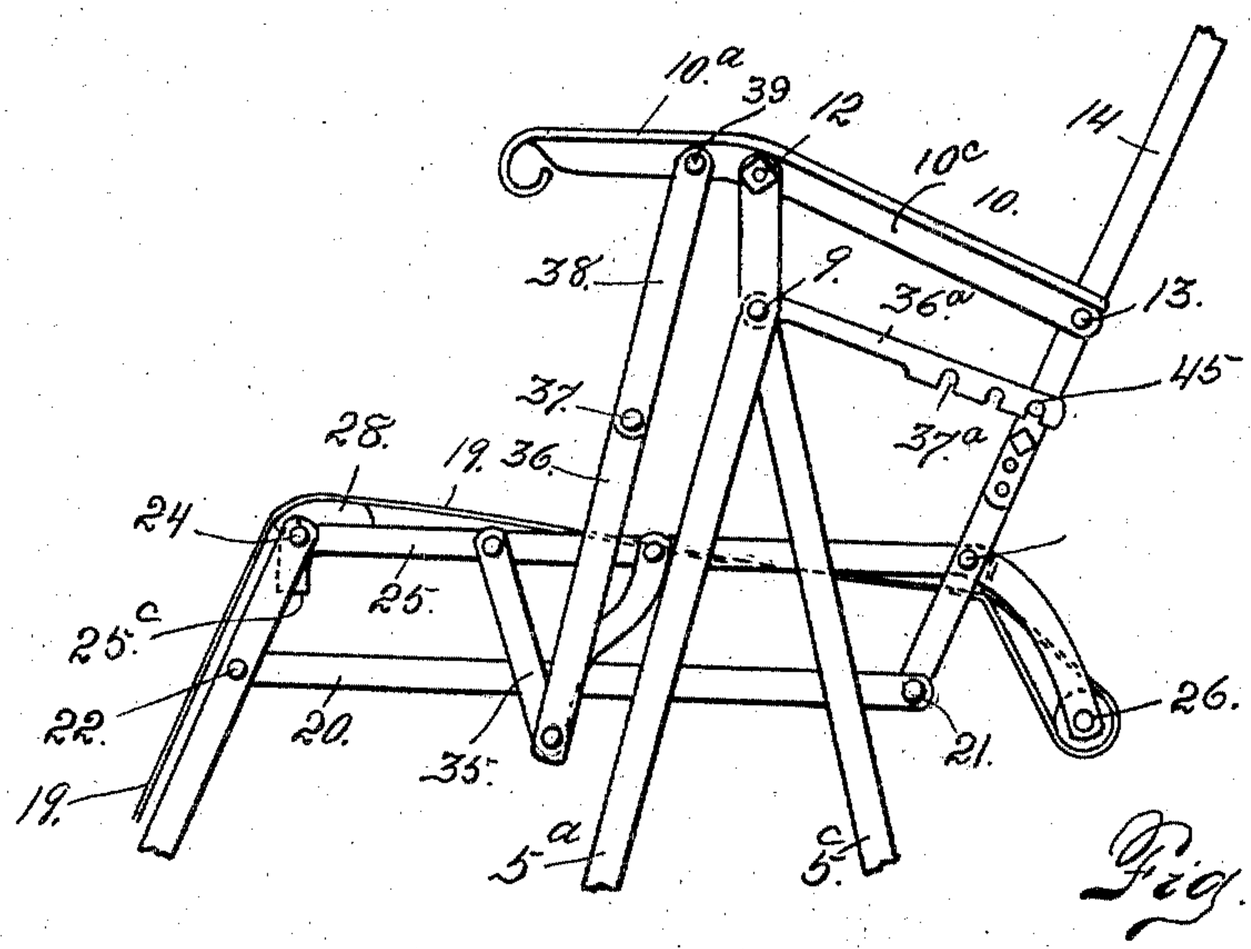

Fig. 13.

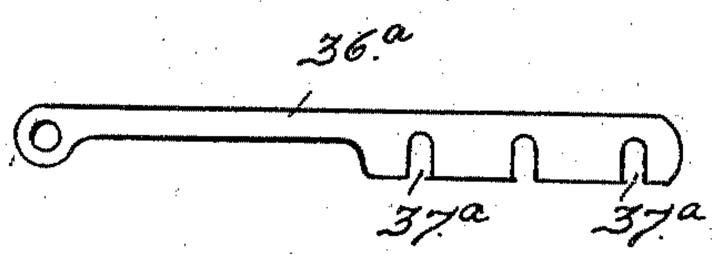

Fig. 14.

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No. 766,836. Patented August 9, 1904.

UNITED STATES PATENT OFFICE.

CONRAD MILLER AND WESLEY D. URICH, OF DENVER, COLORADO.

FOLDING CHAIR.

SPECIFICATION forming part of Letters Patent No. 766,836, dated August 9, 1904.

Application filed March 9, 1903. Serial No. 146,933. (No model.)

To all whom it may concern:

Be it known that we, CONRAD MILLER and WESLEY D. URICH, citizens of the United States of America, residing in the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Folding Chairs; and we do 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

Our invention relates to improvements in swinging chairs which are adjustable whereby the user may occupy any position between the upright sitting posture and the extreme reclining position. The chair is also collapsible or capable of being folded into small compass. All of the important parts are connected by movable joints whereby every degree of adjustability is permitted. The chair proper is suspended between two standards or supports whose upper extremities are connected with the arms of the chair by stud-bolts. The said arms are flanged, and the flanges overlap the tops of the standards and bear thereon, whereby the pivot-bolts are relieved from the wear incident to the use of the chair. The back part and the lower front part of the chair are provided with canvas passed around adjustable rollers at the top and bottom whereby the canvas may be kept taut. The chair is also provided with an adjustable foot-rest whereby the center of gravity of the body may be kept in line with the plane of support. Each of the side bars composing the seat portion of the chair is provided with a stop to prevent these bars from folding beyond the desired or proper degree. Each of the side bars composing the back of the chair is also provided with a stop adapted to engage the standard, whereby the back is prevented from moving downwardly too far.

Having briefly outlined some of the more important features of our improved chair, we will proceed to describe the same in detail, reference being made to the accompanying drawings, in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a side elevation of the chair adapted to conform to or harmonize with the ordinary sitting posture of the user. Fig. 2 is a side view showing the parts adjusted to accommodate the user in the extreme reclining position. Fig. 3 is a side view showing the chair collapsed or folded into small compass, being the position which it is capable of occupying when not in use. Fig. 4 is a rear elevation of the chair. Fig. 5 is a side view, in detail and on a larger scale, illustrating the connection between the side arm and the standard and also showing the manner in which the flanges of the side arms support the weight and relieve the stud-bolts from strain and wear. Fig. 6 is a section taken through the same on the line 6 6, Fig. 5. Fig. 7 is a detail view illustrating the adjustable foot-rest connected with the lower arms of the chair. Fig. 8 is a section taken on the line 8 8, Fig. 7. Fig. 9 is a view of the upper adjustable canvas-holding roller, shown partly in section and on a larger scale than in the general views. Fig. 10 is a side elevation of the same. Fig. 11 is a fragmentary detail view of the lower adjustable roller, shown on a larger scale than in the general views. Figs. 12 and 13 are fragmentary views illustrating the chair in two positions and showing the locking-arm for locking the chair against swinging and also for locking it in any desired position of folding adjustment. Fig. 14 shows the locking-arm in detail and on a larger scale.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate the two side supporting-standards, each of which is composed of two parts 5^a and 5^c, which are connected near the bottom by links 6 and 7 and at the top by a pivot 9. The links 6 and 7 are pivoted at 8, whereby the parts 5^a and 5^c may be folded or moved toward each other, as shown in Fig. 3. The pivot 9 passes through the upper extremity of the part 5^c and connects it with the part 5^a. The latter, however, projects upwardly beyond the pivot, as

shown at 5^d, and is connected with the side arm 10 by a bolt 12. The upper extremity of the part 5^d projects slightly above the bolt and is rounded to form a bearing for the flange 10^a. The arm 10 is composed of angle-iron, and the bolt passes through the vertical flange 10^c of the arm. This bolt forms a connection between the parts; but the weight is supported by the flanges 10^a of the arms 10, one on each side of the chain. By this construction and arrangement there is no wear on the bolt, and the latter will last indefinitely.

The rear extremity of each arm 10 is pivotally connected, as shown at 13, with a side bar 14, the bars 14, together with the top rollers 15, forming the frame of the back of the chair. Each end of the roller 15 is provided with a metal disk 16, having an outwardly-projecting toothed flange 16^a and an inwardly-projecting female screw 16^c, adapted to receive the male thumb-screw 17, which passes through a plain or unthreaded opening formed in the ratchet-disk 18, whose teeth interlock with the teeth of the disk 16 when the parts are assembled. The disk 18 is provided with an opening 18^a to receive the upper extremity of a bar 14, which is provided with an opening registering with the openings of the disks 16 and 18, whereby the parts when assembled may be securely connected.

The canvas 19, forming the back of the chair between the arms or bars 14, is connected with the roller, and its tension may be regulated by loosening the thumb-screws until the teeth of the two disks 16 and 18 at each end of the roller may be disengaged, when the roller may be turned at will for the purpose stated.

The lower extremity of each bar 14 is pivotally connected, as shown at 21, with the rear extremity of a bar 20, whose forward extremity is pivoted at 22 to a downwardly-extending front bar 23. The upper extremity of the bar 23 is pivotally connected, as shown at 24, with the forward extremity of a bar 25, located above and parallel with the bar 20. The rear portion of the bar 25 is pivotally connected, as shown at 26, with the bar 14 at a suitable point above its lower extremity. The bar 25 is only parallel with the bar 20 between the pivots 24 and 26. From the pivot 24 the bar 25 extends rearwardly and is curved downwardly, as shown at 25^a, and between the rear extremities of these bars is mounted a cylindrical bar 26, which for the purpose of this specification may be termed a "roller," though it is not necessary that it should have any movement, and in practice it may be fixed. Around this roller 26 is passed the canvas 19, and forward of the roller 26 the canvas is brought together to form a loop or pocket and stitched, as shown at 27, whereby the seat and back members of the canvas are held in their proper relative positions.

Between the forward extremities of the two arms 25 are located a cross-bar 28, over which the canvas passes. Between the roller extremities of the two bars 23 is mounted a roller 29, around which the canvas may be wound in the same manner as around the roller 15 at the top of the chair. This roller 29 is of the same construction as the roller 15 and is adjusted in the same manner by means of a thumb-screw 30 and ratchet-disks 31 and 32. Each disk 32 is slotted to receive the lower extremity of a bar 23, the latter being held in place by the thumb-screw 30, which passes through registering openings formed in the bar 23 and in the two ratchet-disks.

Adjustably mounted on the bars 23 are two spring-arms 33, whose lower extremities are connected by a foot-rest 34. The upper extremities of the arms 33 are formed into clips 33^a, which embrace the bar on the outside and its two opposite edges. Each clip is provided with a stud 33^c, adapted to engage openings 23^a, formed in the parts 23. The spring-arms 33 are so constructed that they may be sprung outwardly sufficiently to release their studs from the openings in the bars, whereby they may be moved up or down on the said arms, according as it is desired to raise or lower the foot-rest. The adjustability of this foot-rest is very important, since by reason of it the chair may be regulated to accommodate persons having limbs of varying length, thus keeping the weight of the chair and the person using it perfectly balanced on the supporting-standards. These two standards are connected in the front and rear by bars 40. One of these bars connects the arms 5^c on the two standards, while the other connects the arms 5^a of the standards. The standards are further connected by a brace-bar 41, which is connected with the bar 40 at the top and with the two standard-bars at the bottom. (See Fig. 4 of the drawings.)

In order to keep the two bars 20 and 25 of the chair from approaching each other farther than is desirable when the chair is in use, the forward extremity of each bar 25 is formed with a downwardly-turned lug or projection 25^c, which lies in the path of the arm 20 as the two arms approach each other and is adapted to perform the aforesaid function.

Connected with each side bar 25 is a depending V-shaped bracket 35, to whose lower extremity is pivotally connected a link 36, the upper extremity of the latter being pivotally connected, as shown at 37, with the lower extremity of a link 38, whose upper extremity is pivoted at 39 to the side rail or bar 10 forward of the bolt 12.

From the foregoing description it is believed that the use and operation of our improved chair will be readily understood. If the canvas becomes loose for any reason, it is only necessary to loosen the set-screws of the upper and lower rollers 15 and 29, respec-

tively, when the said rollers may be adjusted to take up the slack and give the canvas the desired tension. A person sitting in the chair may by leaning backward adjust the parts from the position shown in Fig. 1 to that shown in Fig. 2, as will be readily understood.

Each side bar of the chair-back is provided with a suitable stop 45, adapted to engage the bar 5^c of the standard on each side of the device, as shown in the drawings, this stop consisting of an angle-plate one member of which projects outwardly into the path of the member 5^c of the standard for the purpose set forth.

The novel feature in Figs. 12, 13, and 14 consists of an arm 36^a, pivoted at 9 and provided with notches 37^a, engaging the stop 45. In these figures the stop is shown circular in cross-section. It will be readily understood that this arm will lock the chair from swinging in either direction, also that it will lock it in any desired position of folding adjustment. An arm 36^a is preferably used on each side of the chair. The drawings, however, do not disclose the two arms, since these arms are exactly alike and the disclosure of one is sufficient.

Having thus described our invention, what we claim is—

1. In a chair of the class described, the combination with upright supports, of the chair proper provided with side arms pivotally connected with the standards, the said side arms having flanges bearing on the upper extremities of the respective standards and supporting the weight whereby the pivots are relieved from strain and wear.

2. The combination with two standards one on each side, of a chair having side arms composed of angle-iron, the vertical flange being bored to register with an opening in the upper extremity of the standard, and a bolt passed through said opening, the arrangement being such that the upper or horizontal flanges of the side arms press upon the tops of the standards and support the weight whereby the pivot-bolts are relieved from wear and strain.

3. In a chair of the class described, the combination of two relatively stationary parallel side bars pivotally connected at their extremities, the bar of each chair being provided with a stop formed by turning its forward extremity toward the other bar, to limit the movement of the two arms as they approach each other.

4. The combination with a swinging chair, of two standards one on each side, each standard being composed of two parts normally spread apart at the bottom and pivotally connected at the top, one of the said bars extending above the pivot and pivotally connected with a part of the chair, the said chair part having a horizontal plate or flange resting on the top of the upward extension of the long bar whereby the pivots are relieved from strain.

In testimony whereof we affix our signatures in presence of two witnesses.

CONRAD MILLER.
WESLEY D. URICH

Witnesses:
A. J. O'BRIEN,
DENA NELSON.