

No. 837,525.

PATENTED DEC. 4, 1906.

W. D. WHITNEY.  
WASHING MACHINE.  
APPLICATION FILED OCT. 17, 1905.

5 SHEETS-SHEET 1.

Fig. 1.

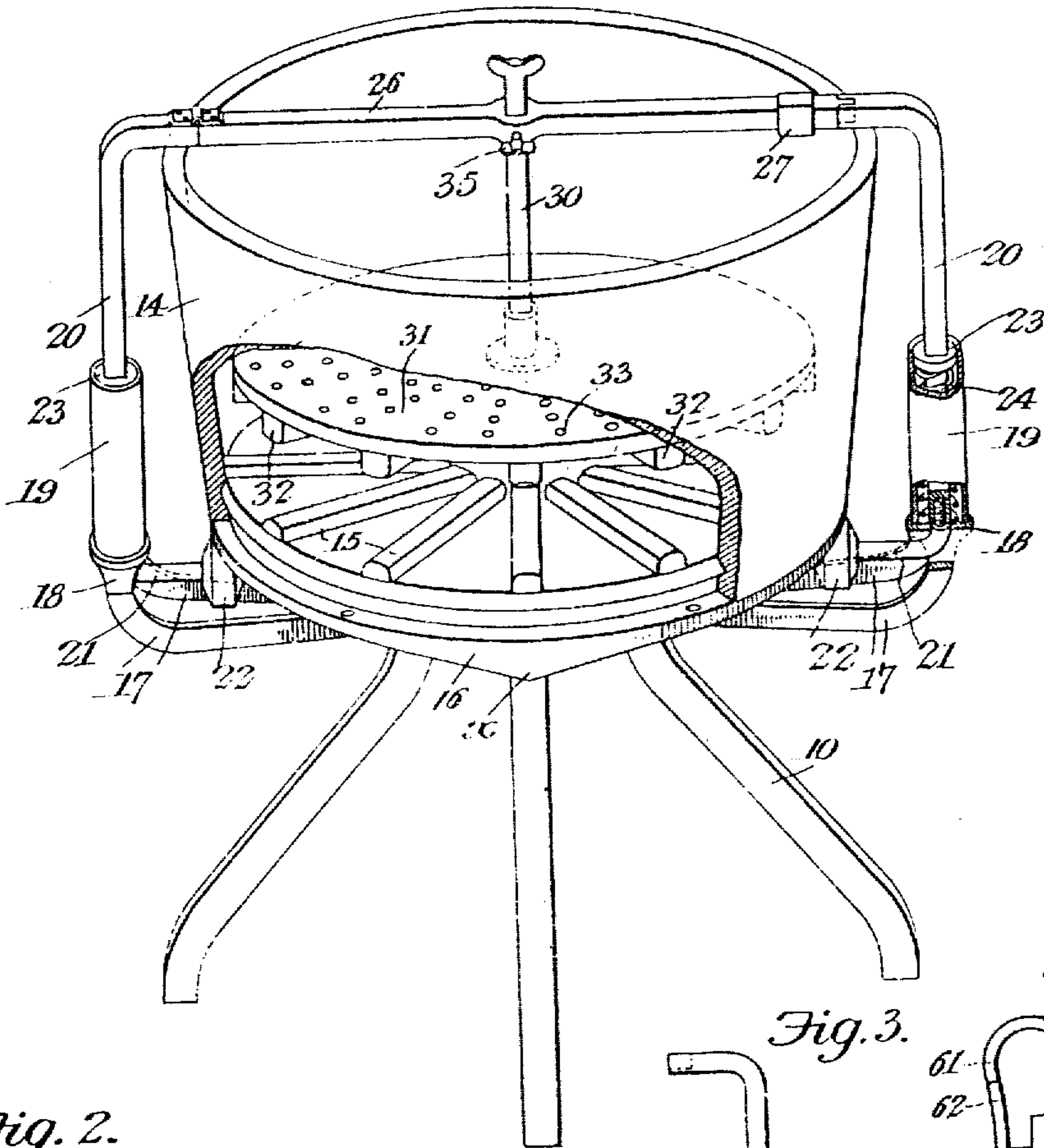
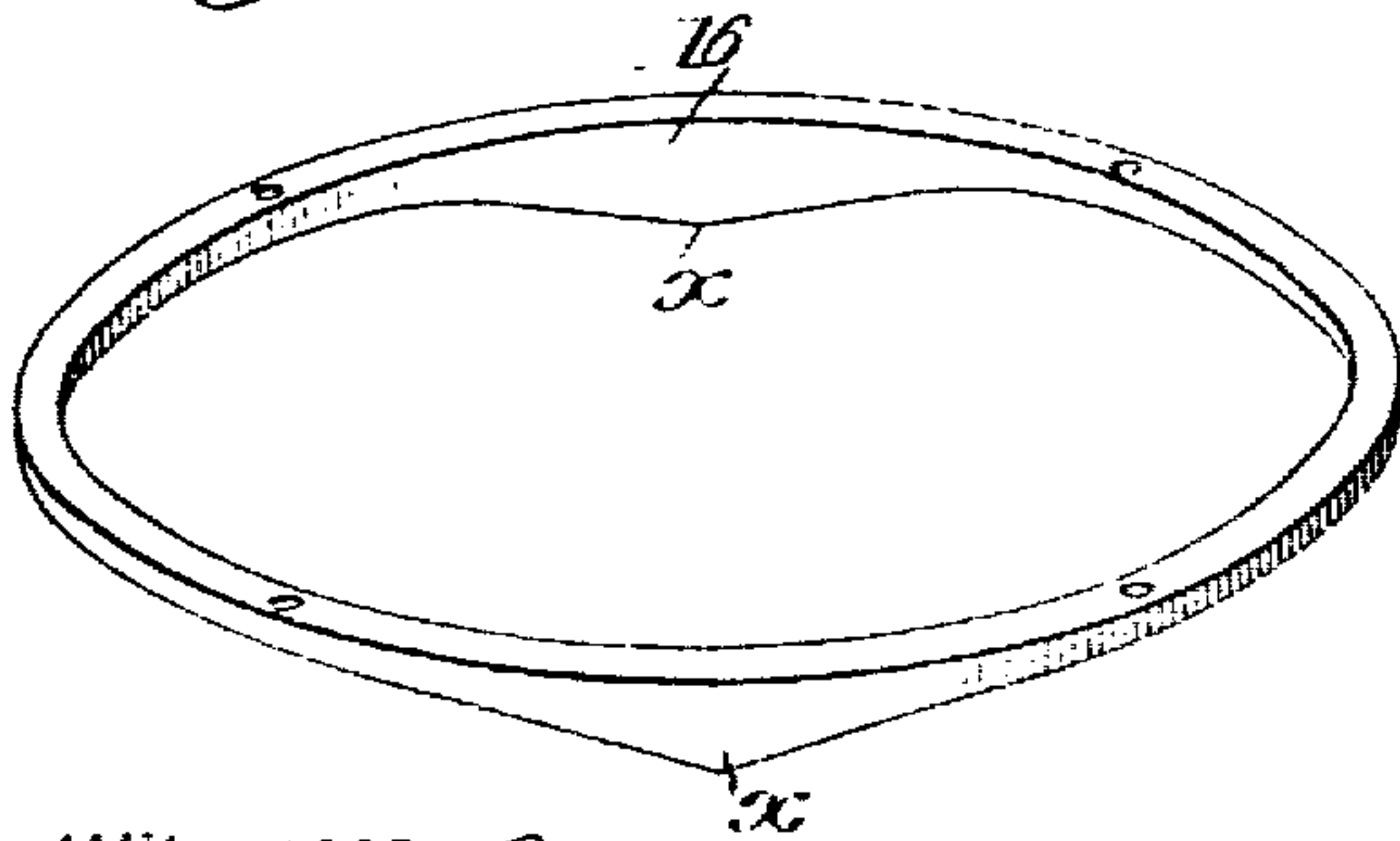


Fig. 2.



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Fig. 3.

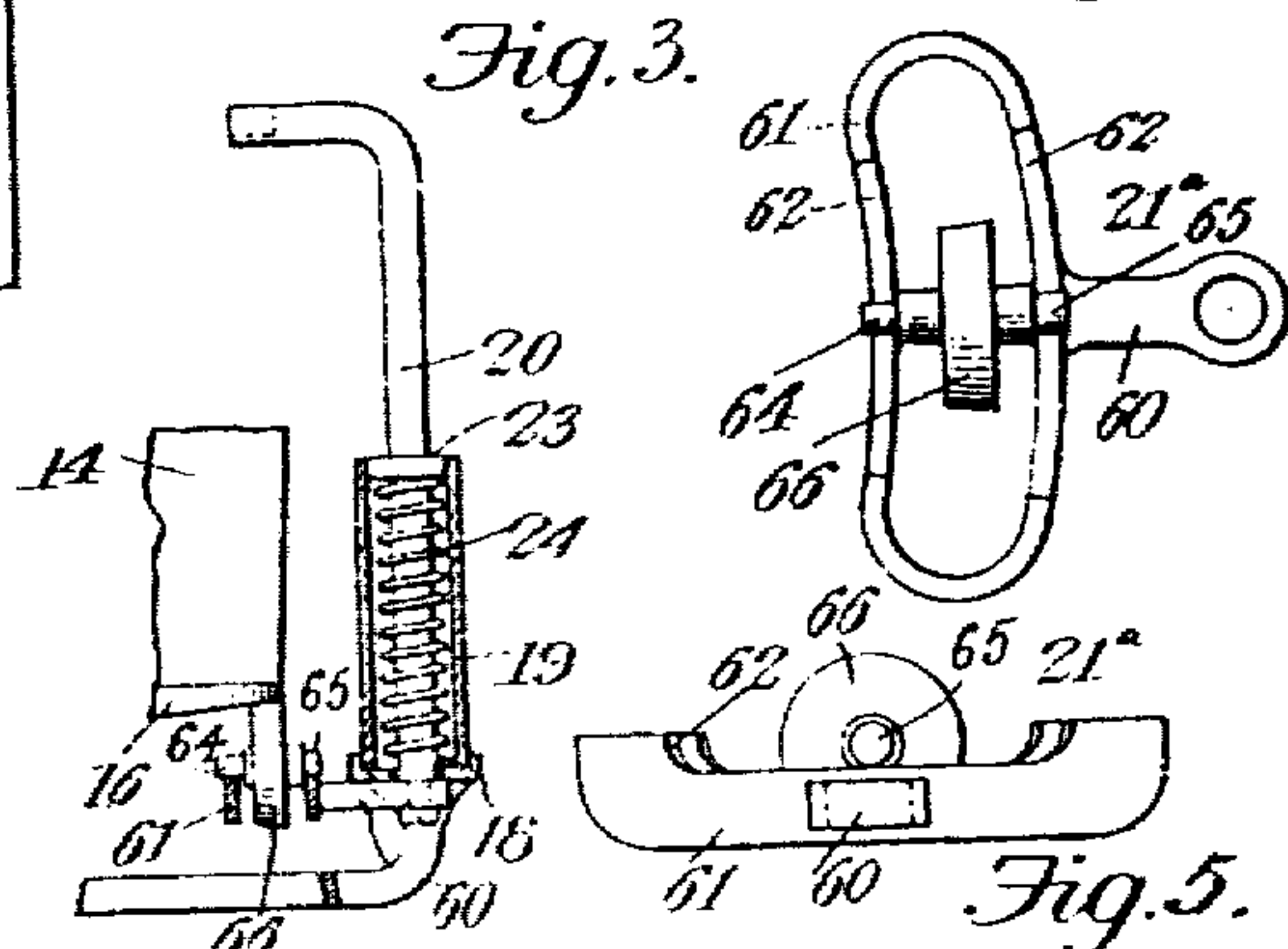


Fig. 4.

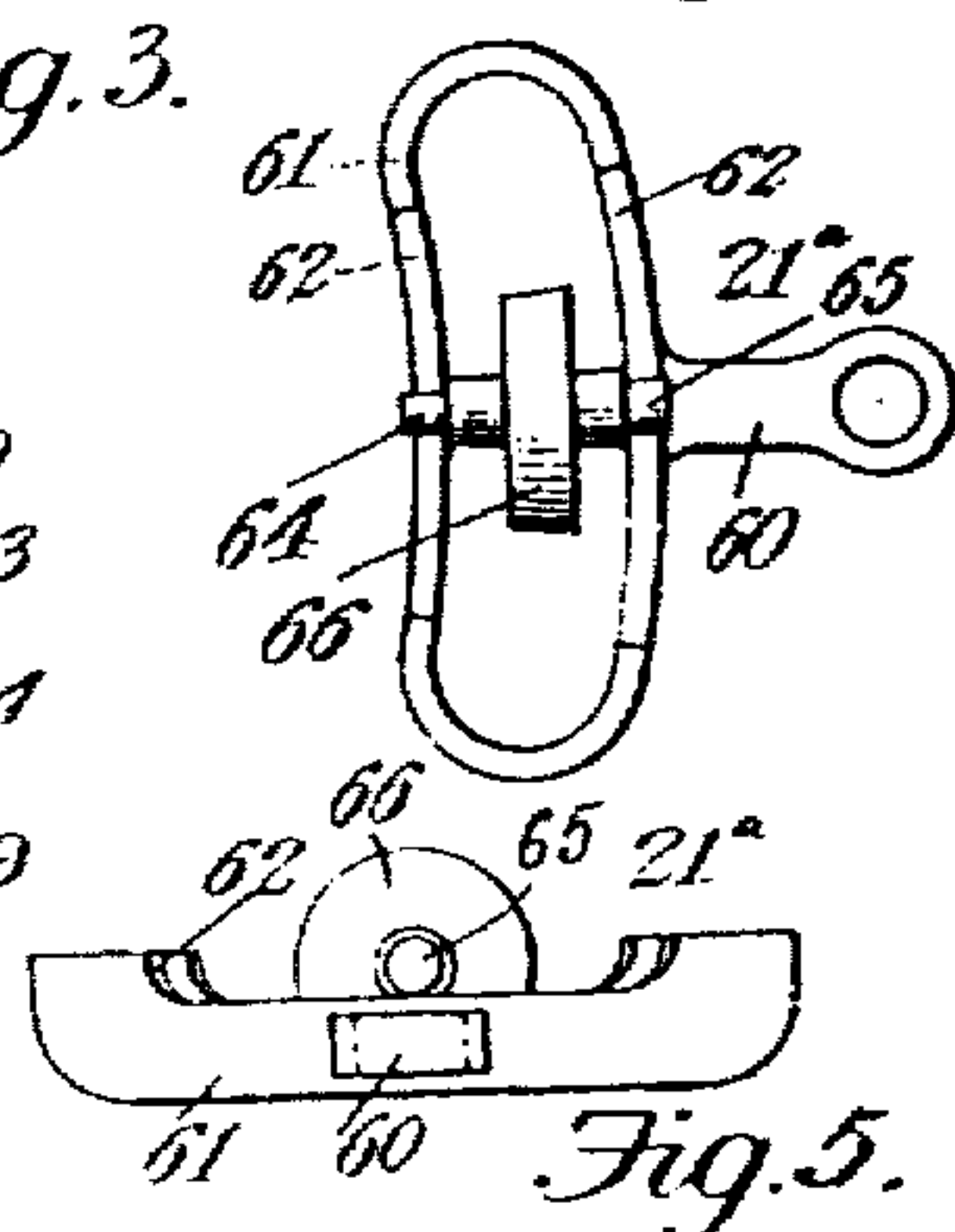


Fig. 5.

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6 SHEETS—SHEET 2.

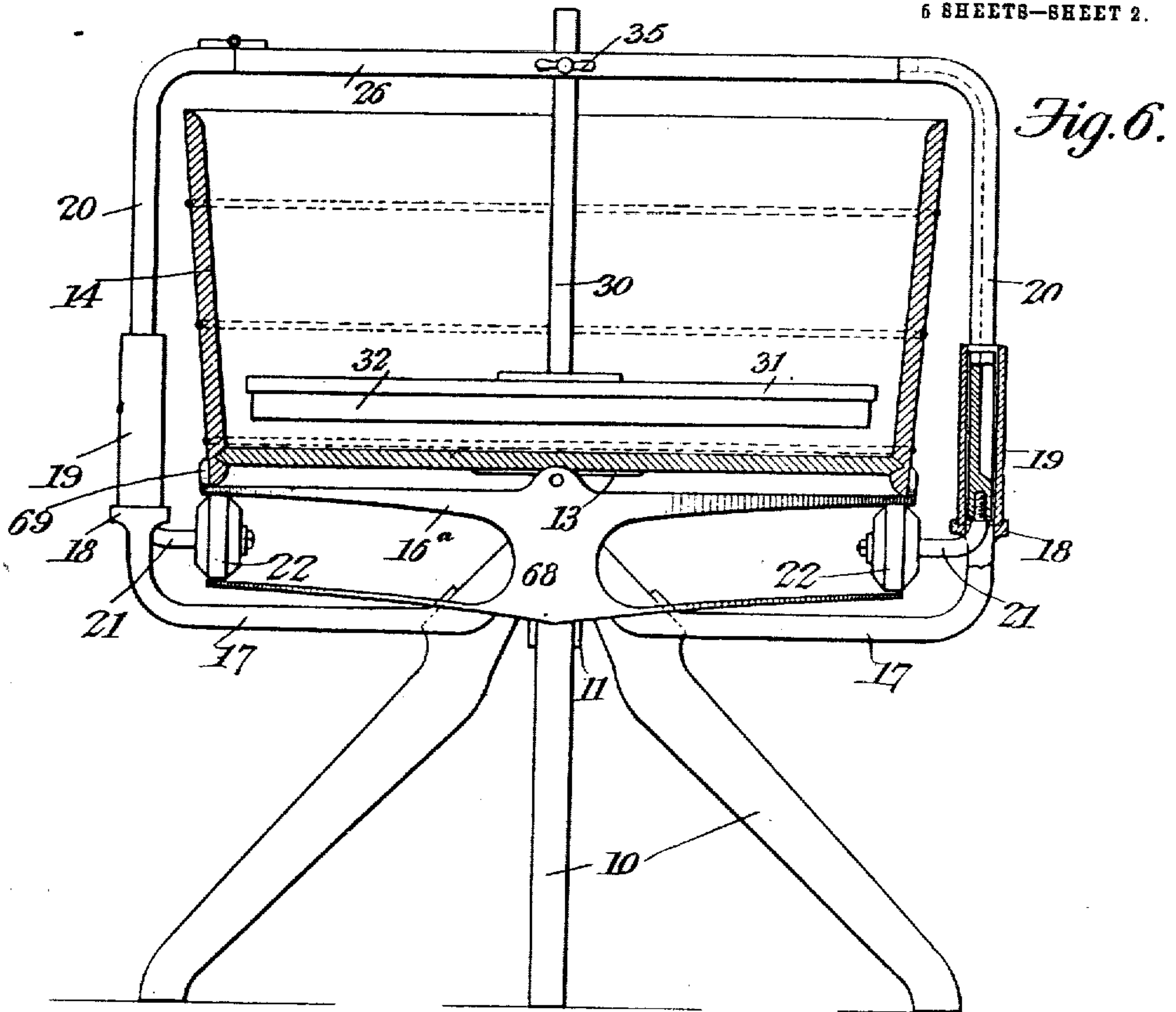
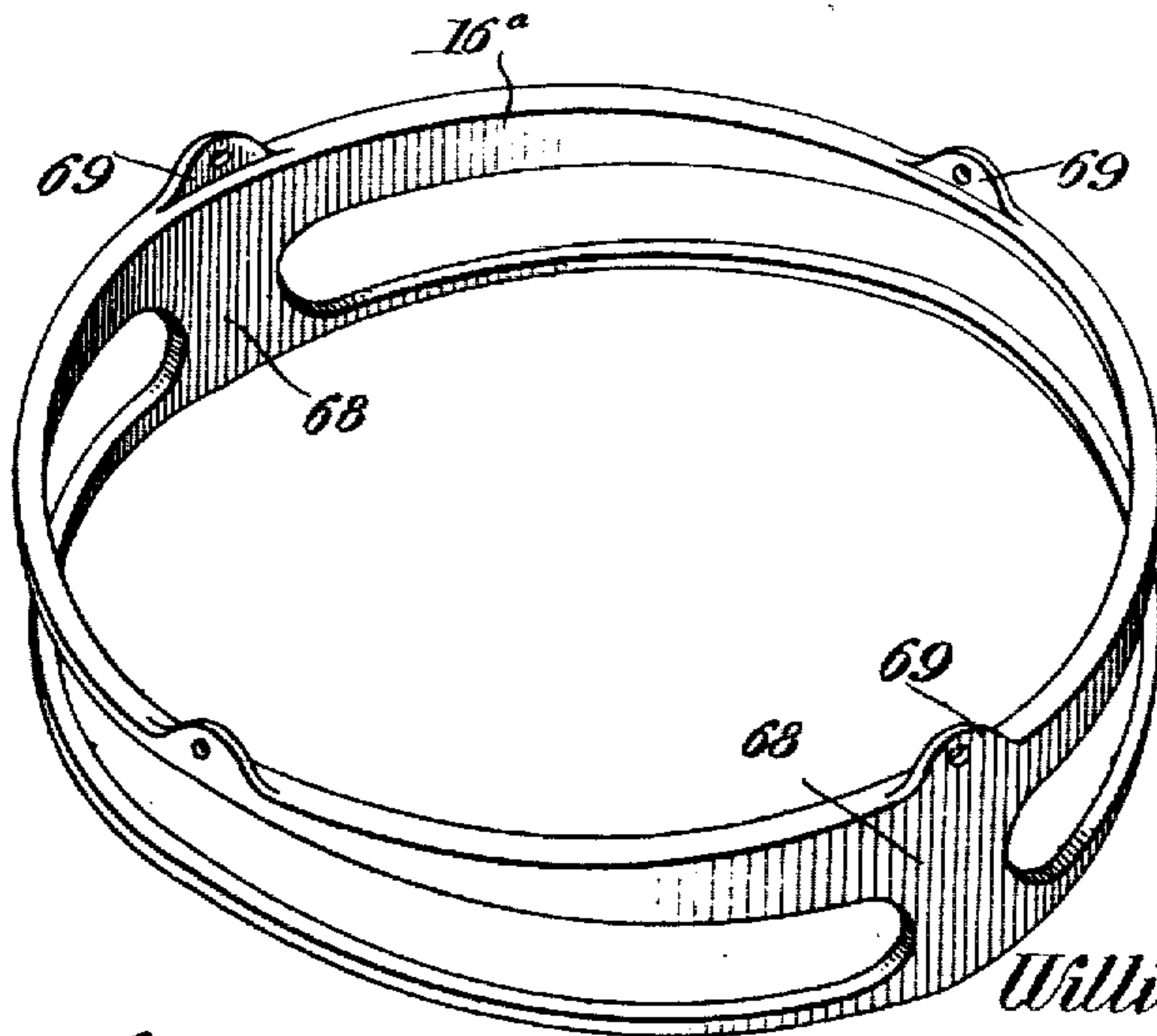


Fig. 7.



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6 SHEETS—SHEET 3.

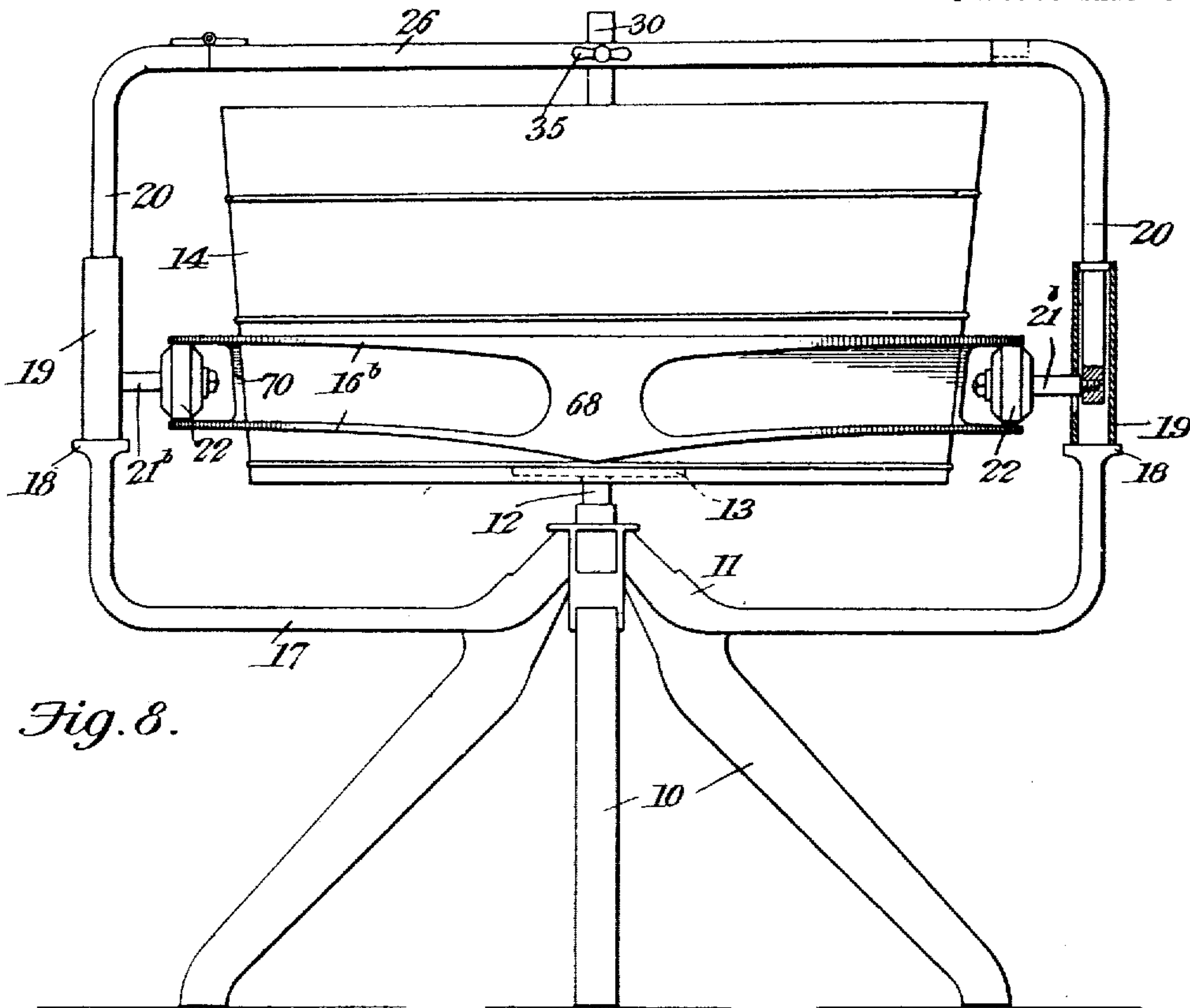
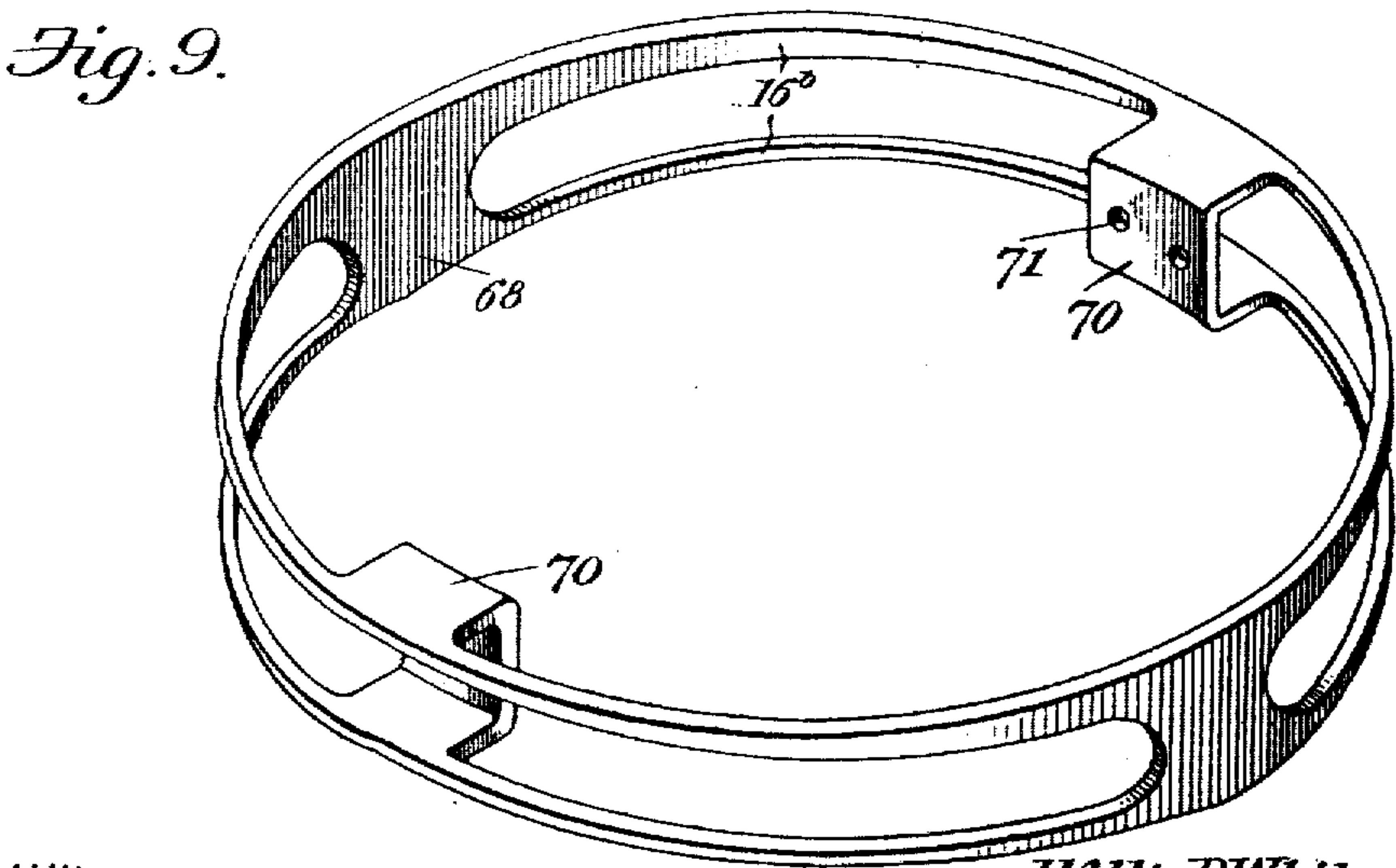


Fig. 8.



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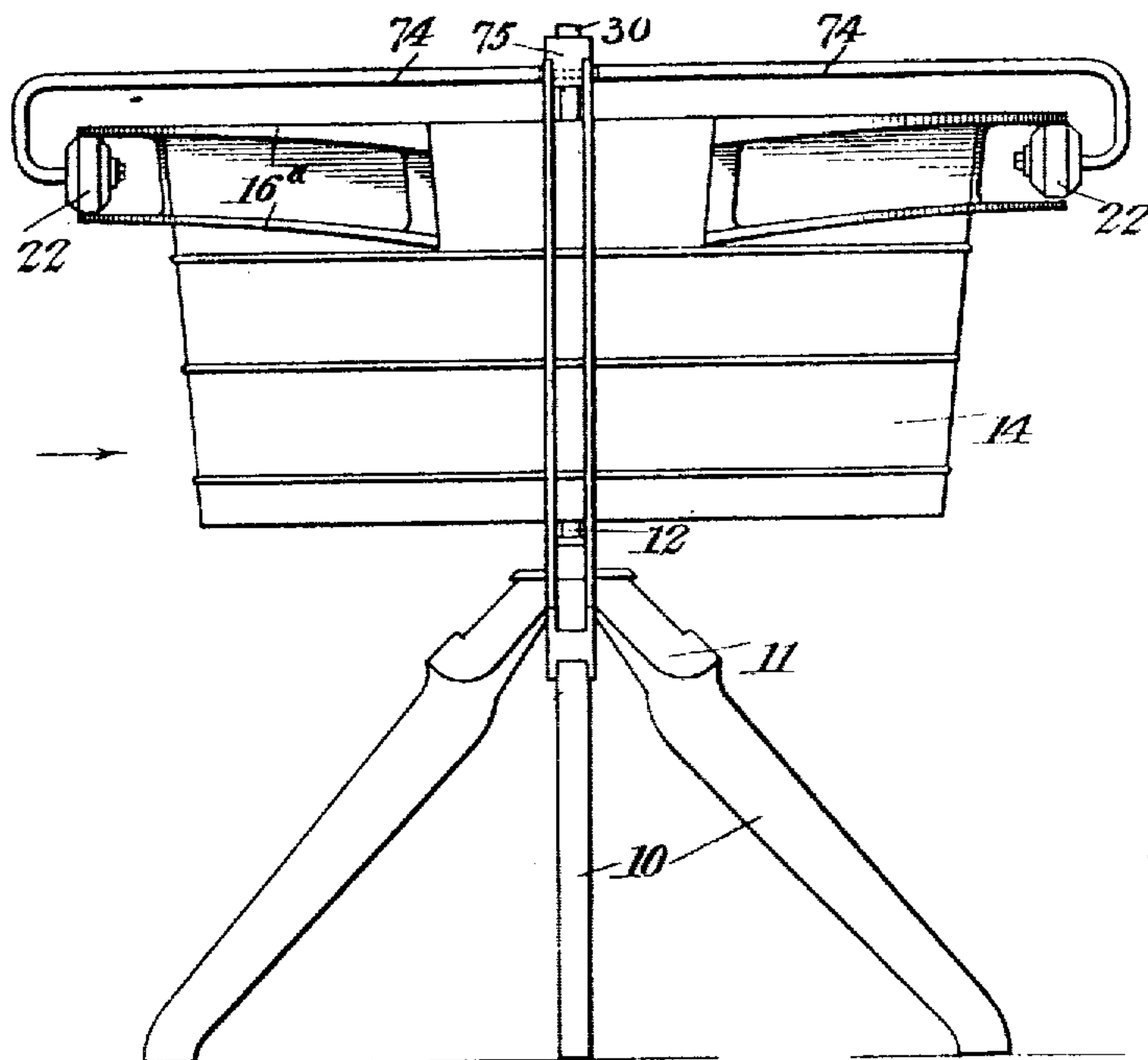


Fig. 10.

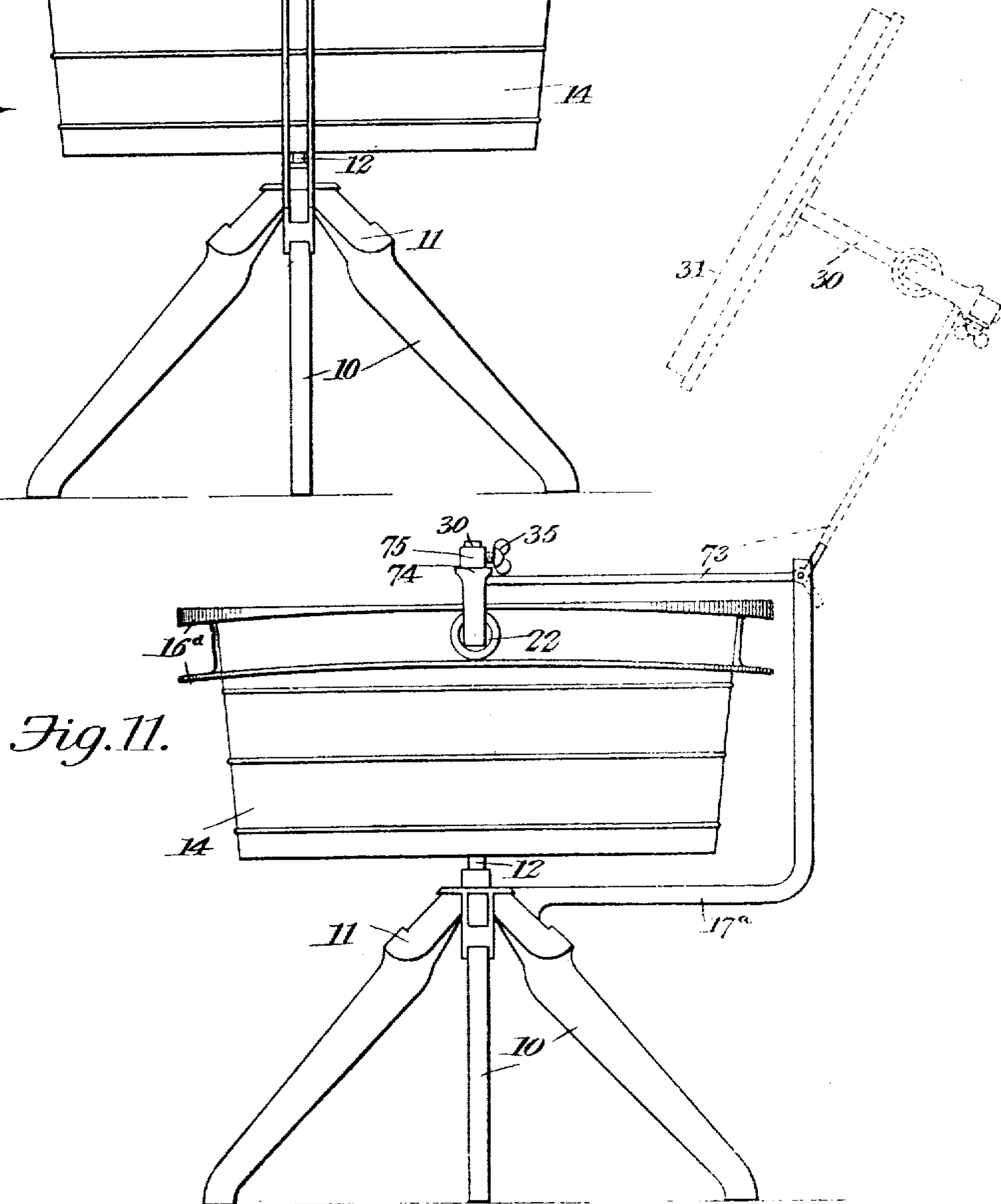


Fig. 11.

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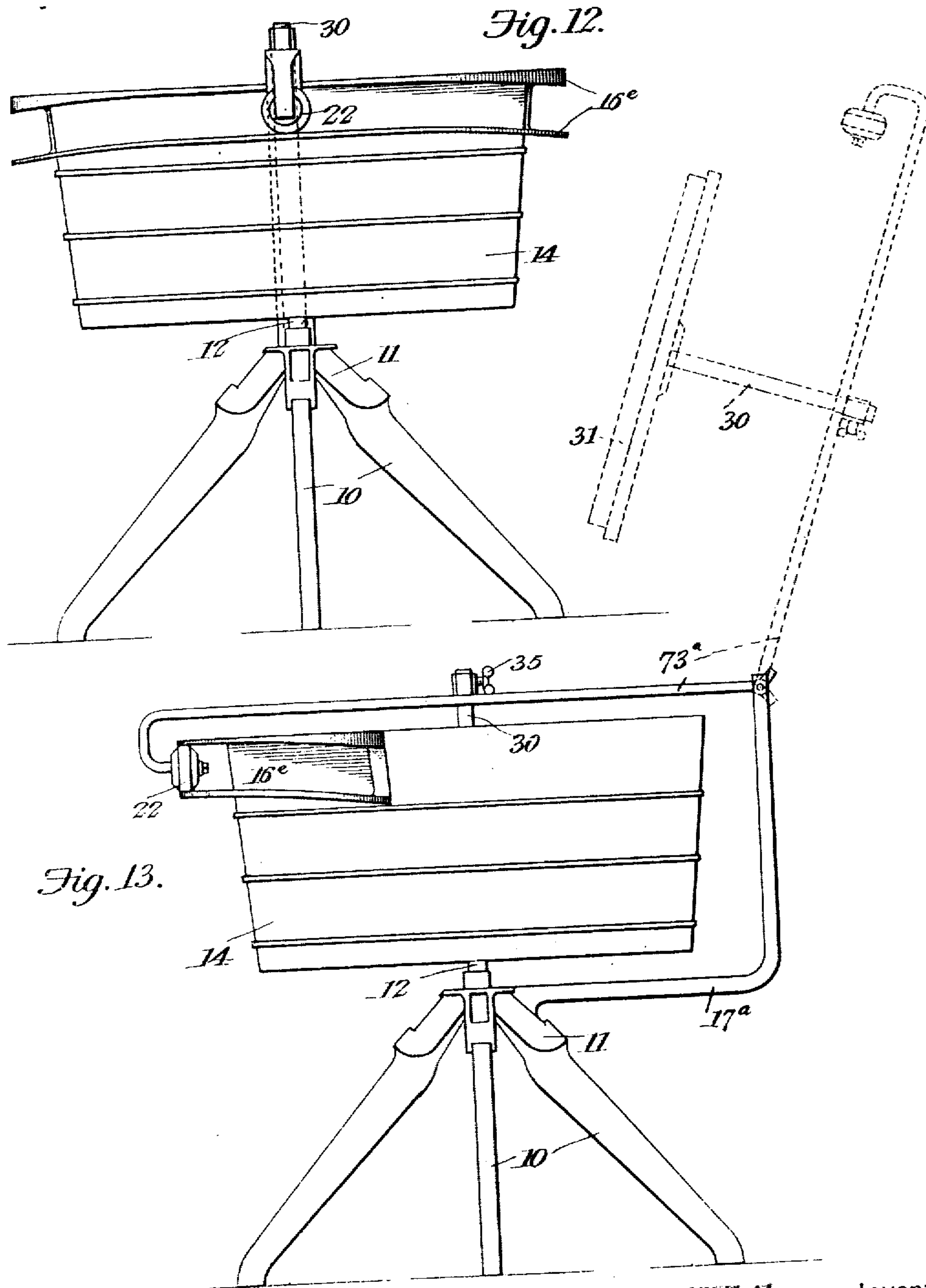
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6 SHEETS—SHEET 6.



Witnesses

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# UNITED STATES PATENT OFFICE.

WILLIE D. WHITNEY, OF HOLLEY, NEW YORK, ASSIGNOR TO THE  
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## WASHING-MACHINE.

No. 837,525.

Specification of Letters Patent.

Patented Dec. 4, 1906.

Application filed October 17, 1905. Serial No. 283,166.

*To all whom it may concern:*

Be it known that I, WILLIE D. WHITNEY, a citizen of the United States, residing at Holley, in the county of Orleans and State of New York, have invented a new and useful Washing-Machine, of which the following is a specification.

This invention relates to washing-machines of that class in which the clothes are subjected to a combined rubbing and squeezing action with a view of removing dirt in a thorough and expeditious manner.

The principal object of the invention is to provide a machine of this type in which the clothes to be washed are placed in a container, usually in the form of a tub, that receives oscillatory movement in a horizontal plane, this movement being transmitted in the form of vertical reciprocatory movement to an auxiliary rubbing member arranged within the tub.

A further object of the invention is to provide a washing-machine in which the upper rubbing and compressing disk receives a positive vertical movement to an extent proportionate to the arc through which the tub oscillates.

A still further object of the invention is to provide a machine of this character in which the upper rubbing-disk may be readily removed to permit the insertion and removal of the clothes.

A still further object of the invention is to provide a machine of this type in which the disk-actuating cam is carried by the tub and the latter is held at a constant level during its oscillatory movement, so that the operation of the machine is rendered less laborious than in machines where it is necessary for the operator to move both the tub and its contents vertically.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is

a perspective view of a washing-machine constructed in accordance with the invention. Fig. 2 is a detail perspective view of the tub-carried cam for actuating the upper rubbing-disk. Figs. 3, 4, and 5 are detail views, hereinafter referred to, of a modified construction of the mechanism for transmitting movement from the cam to the upper rubbing-disk. Fig. 6 is a sectional elevation of a washing-machine, illustrating a slight modification in which the tub-carried cam is arranged to impart positive movement to the upper disk in both directions. Fig. 7 is a detail perspective view of the cam shown in Fig. 6. Fig. 8 is an elevation, partly in section, illustrating a further modification in which the cam is arranged slightly above the bottom of the tub. Fig. 9 is a detail perspective view of the cam shown in Fig. 8. Fig. 10 is an elevation of a washing-machine, illustrating a still further modification of the invention in which two separate cams are employed at or near the upper edge of the tub, the ends of the cams being spaced to permit the rollers to readily pass from contact therewith when the upper rubbing-disk is to be raised. Fig. 11 is a side elevation looking from the direction indicated at the arrow in Fig. 10. Fig. 12 is a front elevation of a machine in which a single cam is employed for actuating a pivotally-mounted rubbing-disk. Fig. 13 is a side elevation of the structure shown in Fig. 12. Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The base of the machine is formed of a plurality of legs or standards 10, that are connected at their upper ends by a metallic spider-frame 11, said frame having a central opening for the reception of a vertical spindle 12, carrying a disk or spider 13, that is firmly secured to the bottom of the clothes-container or tub 14, the tub being so mounted as to permit free oscillatory movement in a horizontal plane, and to accomplish this the operator may grasp the edge of the tub. The tub may be of any ordinary construction, and its bottom is preferably provided with rubbing bars or members 15, which may be arranged radially, as shown.

To the tub is secured a cam 16, and said cam may be a single or a double cam and may be secured to the bottom of the tub or



at any point between the lower and upper edges thereof.

Extending from the central spider 11 are two pairs of diametrically-opposed arms 17, these being connected at their outer ends by a cross-bar 18, that is arranged for the reception and support of a spring-containing casing 19. Extending within the casing are two vertical arms 20, which pass through openings in the bars 18 and at their lower ends are provided with inwardly-extending brackets 21, on the inner ends of which are mounted antifriction-rollers 22, that bear against the lower face of the cam. Each of these arms 20 is provided with a collar 23, between which and the upper face of the bar 18 is arranged a helical compression-spring 24, that tends to elevate the arm 20.

The upper ends of the arm 20 are bent inward, and to the end of one of them is hinged a cross-bar 26, that is adapted to engage with the intumed end of the other arm, any suitable locking device, such as a slidable sleeve 27, being arranged to inclose the interlapping ends of the arm and bar for the purpose of preventing upward movement of said bar. At the central portion of the bar 26 is arranged a non-circular opening for the passage of a non-circular bar 30, which carries at its lower end a rubbing and squeezing disk 31, the lower face of which is preferably provided with a rubbing-bar 32, and in this disk are formed perforations 33 for the passage of the water.

The disk 31 may be vertically adjustable in accordance with the quantity of clothes to be washed and when so adjusted may be locked by means of a suitable set-screw 35, extending through a threaded opening formed in the cross-bar 26.

In the construction illustrated in Fig. 1 the cam-ring 16 is firmly secured to the lower edge of the tub, and said cam-ring has its lower face divided into two active cams the meeting points of which are indicated at *x*. The rollers 22 are held against these cam-faces by the springs 24, the construction being such that the rollers in moving upward will tend naturally to assume a position midway between the points *x* of the cams.

The clothes to be washed, a quantity of water, and a suitable detergent are placed in the tub, and disk 31 is adjusted down on top of the clothes and then locked in place by the screw 35. The operator then proceeds to impart an oscillatory movement in a horizontal plane to said tub. As the points *x* of the cam move around in the direction of the rollers 22 said rollers will be moved down, and this movement will be imparted against the resistance offered by the springs 24 to the arms 20 and the upper rubbing-disk 31, said disk being moved down to an extent proportioned to the arc of oscillation of the tub, and as this arc is wholly under the control of the

operator the degree of pressure exerted on the clothes may be increased or diminished at will.

The operation is not laborious, owing to the fact that as the higher or, rather, lower points of the cam near the rollers 22 the springs are placed under stress and in expanding to reassume their initial position will tend to turn the tub in the reverse direction, so that the tub receives an initial start and the movement may be completed by hand. It is found in practice that if the disk 31 is not lowered to such an extent as to press very forcibly on the clothes the tub may be started into motion and will oscillate back and forth a number of times without the exertion of further force, so that the work of the operator is comparatively light.

In some instances it may be preferred to employ a live roller, and in this case the bracket 21<sup>a</sup> is substituted for the bracket 21, as shown in Figs. 3, 4, and 5. This bracket 21<sup>a</sup> comprises an arm 60, that extends under the edge of the tub and carries at its inner end an elongated arcuate loop 61, arranged to form a pair of parallel rails or flanges 62, that are disposed on curved lines struck from the axis of movement of the tub. These rails or flanges receive the journals 64 65 of a live roller 66, that bears against the lower face of the cam, and the peripheries of the roller and journals are arranged on lines that radiate from the vertical axis of the tub, so that the movement of the tub over the roller may be accomplished without undue friction, the rollers riding freely against the cam and their journals moving freely on the rails or flanges 62.

In the construction illustrated in Figs. 6 and 7 the cam 16<sup>a</sup> is a double cam—that is to say, it has two faces that bear against opposite sides of the roller, so that the movement imparted thereto will be positive in both directions instead of being positive in one direction and spring-actuated in the other, as in Fig. 1. In this case the upper and lower rings which form the cam are connected together by webs 68, that are formed integral with the cam-rings, and from the upper ring project lugs 69. The construction otherwise remains the same as that shown in Fig. 1, with the exception that the tubular members 19 merely form guides for the arms 20.

In the construction shown in Figs. 8 and 9 the cam 16<sup>b</sup> is formed of upper and lower rings, connected at their ends by webs 68, and said cams are further connected by inwardly-extending yoke-shaped plates 70, that are provided with suitable openings for the passage of screws or other fastening devices by which the cam-ring is secured to the tub. These plates 70 are extended inward in order to avoid interference with the rollers 22 or their spindles, and in this case



the spindles or carrying-arms 21<sup>b</sup> of the rollers are in the form of straight bars, threaded at their outer ends and extending through vertical slots formed in the guiding-casings 5 19, the threaded portion of the arm being screwed in suitable openings formed at the lower ends of the vertically-movable arms 20.

In Figs. 10 and 11 is illustrated a still further modification of the invention, in which 10 the cams are arranged close to the upper edge of the frame. In this instance the cams 16<sup>d</sup> are double cams and are separated from each other at their ends, so that by turning the tub beyond the normal limit of 15 oscillatory movement the cams may be moved beyond the rollers, and the latter being then free will permit the raising of the upper rubbing-disk in its carrying-frame. In this construction the main-frame spider is 20 provided with a laterally-extended arm 17<sup>a</sup>, which at a point beyond the side of the tub is bent upward in a vertical plane, and to its upper end is pivoted an arm 73. This arm 73 extends inward to about the plane of the 25 vertical axis of the tub and at that point is provided with a pair of arms 74, Fig. 10, that extend at right angles to the arm 73, all of said arms 73 and 74 radiating from a centrally-disposed hub member 75, that is provided with a central opening for the passage 30 of the bar 30, which supports the upper rubbing-disk 31. The outer ends of the arms 74 are bent downward and inward and carry the antifriction-rollers 22, the latter extending 35 between the rings of the double cam 16<sup>d</sup>, as shown. In this construction the tub may be oscillated in the usual manner, and the movement is transmitted to the upper rubbing-disk through the rollers 22 and arms 74, the 40 upper disk, however, moving in the arc of a circle the center of which is at the fulcrum-point of the arm 73. When it is desired to raise the upper rubbing-disk in order to remove the clothes from the tub, the 45 latter is moved beyond its normal limit or until the rollers are free from the ends of the cams, after which the free arms 74 and 73 may be swung upward, carrying with them the upper rubbing-disk to the position shown 50 in dotted lines in Fig. 11.

In the construction shown in Figs. 12 and 13 a single cam 16<sup>e</sup> is employed, while the arm 17<sup>a</sup> (shown in Figs. 10 and 11) is retained. To the upper end of this arm 17<sup>a</sup> is pivoted an 55 arm 73<sup>a</sup>, that extends diametrically across the plane of the tub, its free end being bent downward and inward and carrying a single antifriction-roller 22, which enters between the two rings of the actuating-cam 16<sup>e</sup>. In this 60 case the single cam may be effectively employed for imparting movement in a vertical plane to the upper rubbing-disk, and when the tub is moved beyond its normal limit of oscillatory movement the cam passes beyond 65 the roller, leaving the latter free, so that the

arm 73<sup>a</sup>, together with the upper rubbing-disk, may be swung upward to the dotted-line position illustrated in Fig. 13.

Having thus described the invention, what is claimed is—

1. In a washing-machine, the combination 70 with a frame, of a tub mounted for oscillatory movement in a horizontal plane, a cam carried by the tub, a rubbing-disk arranged within the tub, and means operable by the cam for effecting vertical movement of said disk. 75

2. The combination in a washing-machine, of a tub mounted for oscillatory movement, a cam carried by the tub, a disk arranged within the tub and coacting therewith in the 80 rubbing and squeezing of the clothes, a carrier for the disk, and an antifriction-roller connected to the carrier and bearing against the cam.

3. The combination in a washing-machine, 85 of a tub mounted for oscillatory movement, a cam carried by the tub, a disk arranged within the tub and coacting therewith in the rubbing and squeezing of the clothes, a disk-carrier, means for adjustably securing the 90 disk to its carrier, and an antifriction-roller extending from the carrier and in contact with the cam.

4. The combination in a washing-machine, of a tub mounted for oscillatory movement, a 95 disk arranged within the tub and coacting therewith in the rubbing and squeezing of the clothes, a cam carried by the tub, and a disk-carrier having a member arranged to enter said cam, whereby oscillatory movement of 100 the tub in a horizontal plane will impart vertical movement to the disk.

5. The combination in a washing-machine, of a tub mounted for oscillatory movement in 105 a horizontal plane, a cam carried by the tub, a disk arranged within the tub and coacting with the latter in rubbing and squeezing the clothes, and a pivotally-mounted disk-carrier arranged to receive vertical movement from 110 the cam.

6. The combination in a washing-machine, of a tub mounted for oscillatory movement in 115 a horizontal plane, a cam carried by the tub, a disk arranged within the tub and coacting with the latter in rubbing and squeezing the clothes, a frame, and a disk-carrying frame having one end pivoted to the frame and arranged at its opposite end to engage the cam.

7. The combination in a washing-machine, of a tub mounted for oscillatory movement, a 120 cam carried by the tub, a disk arranged within the tub and coacting with the latter in rubbing and squeezing the clothes, a pivotally-mounted arm forming a disk-carrier, and an antifriction-roller arranged at one end of 125 the arm and engaging the cam.

8. The combination in a washing-machine, of a tub mounted for oscillatory movement, a cam carried by the tub, a disk arranged 130 within the tub and coacting therewith in the



rubbing and squeezing of the clothes, a frame member, an arm pivoted at one end to said frame member and extending across the top of the tub, means for connecting the arm to the disk, and an antifriction-roller arranged at the free end of the roller and engaging said cam.

9. The combination in a washing-machine, of a tub mounted for oscillatory movement, a double cam carried by the tub and open at one end, a disk arranged within the tub, a pivotally-mounted disk-carrier, and an antifriction-roller supported by the disk-carrier and engaging the cam, the latter being free to pass beyond the roller and free the carrier and disk.

10. The combination in a washing-machine, of a tub mounted for oscillatory movement, a double cam carried by the tub and open at its opposite ends, a frame member, an arm pivoted to said frame member and extending

across the top of the tub, an antifriction-roller carried by the arm and arranged to enter the cam, the latter being movable beyond the roller to free the latter and the arm, a disk arranged within the tub, and a disk-stem adjustably secured to said arm.

11. In a washing-machine, the combination with a tub mounted for oscillatory movement, of a disk arranged within the tub, a frame, an arm pivoted to said frame and carrying the disk, and connecting means between the tub and the free end of the arm, whereby oscillatory movement of the tub will transmit vertical movement to the arm.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WILLIE D. WHITNEY.

Witnesses:

THOMAS J. WINANS,  
DOANE CAFFERT.