

Jan. 27, 1953

J. F. CHAMBERLIN  
COLLAPSIBLE GOLF CART

2,626,815

Filed May 16, 1947

6 Sheets-Sheet 1

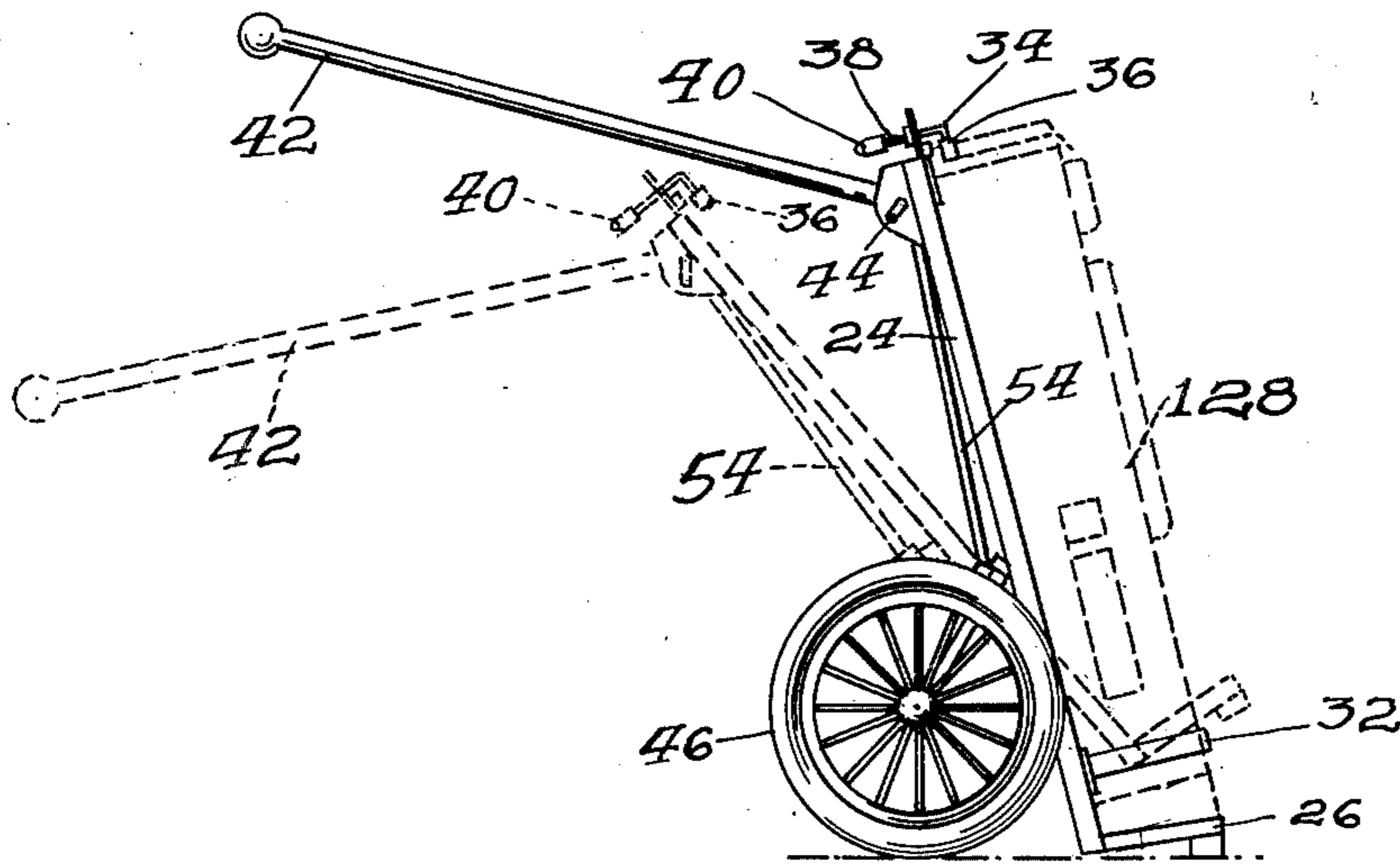


Fig. 1.

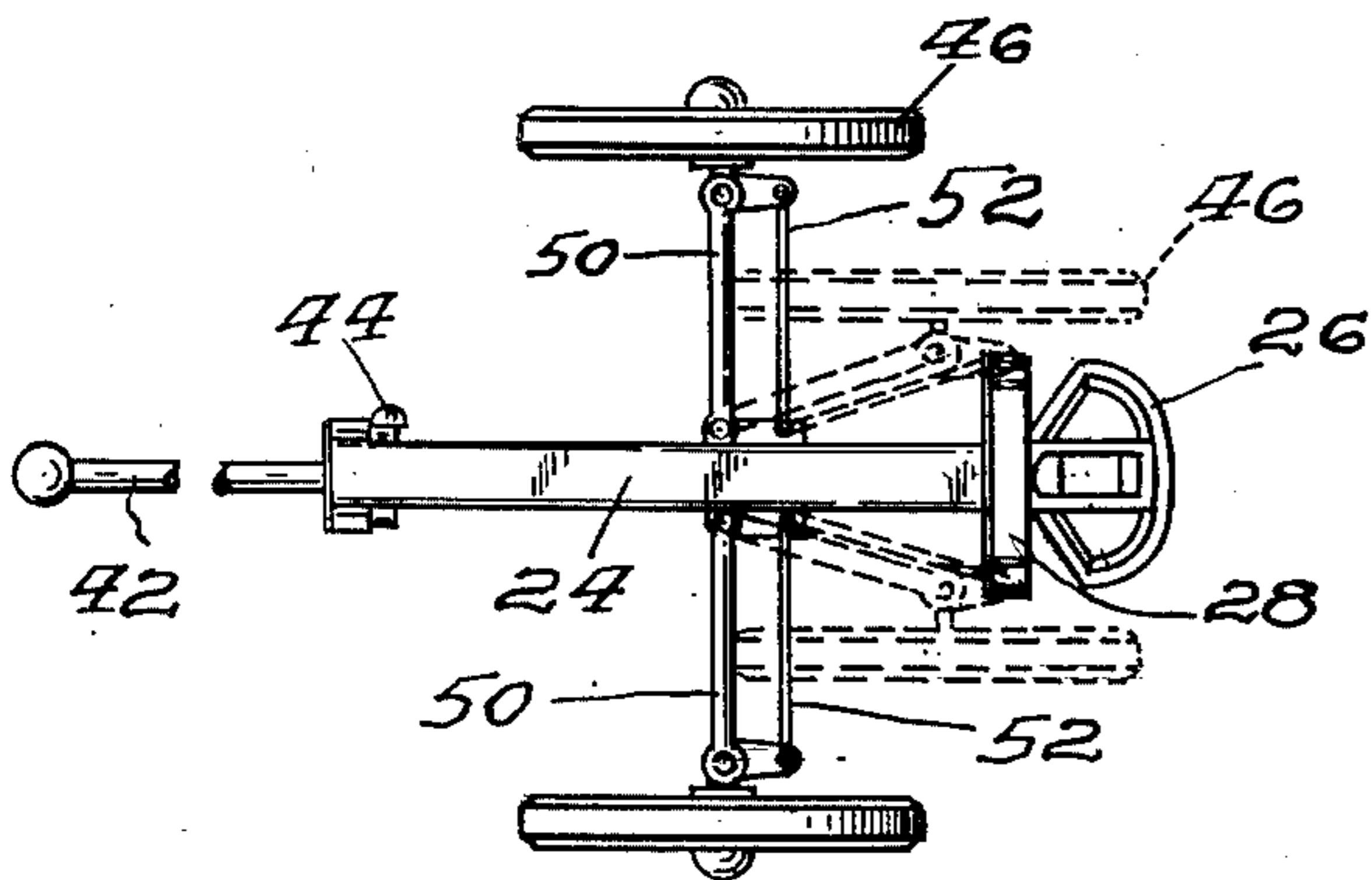


Fig. 2.

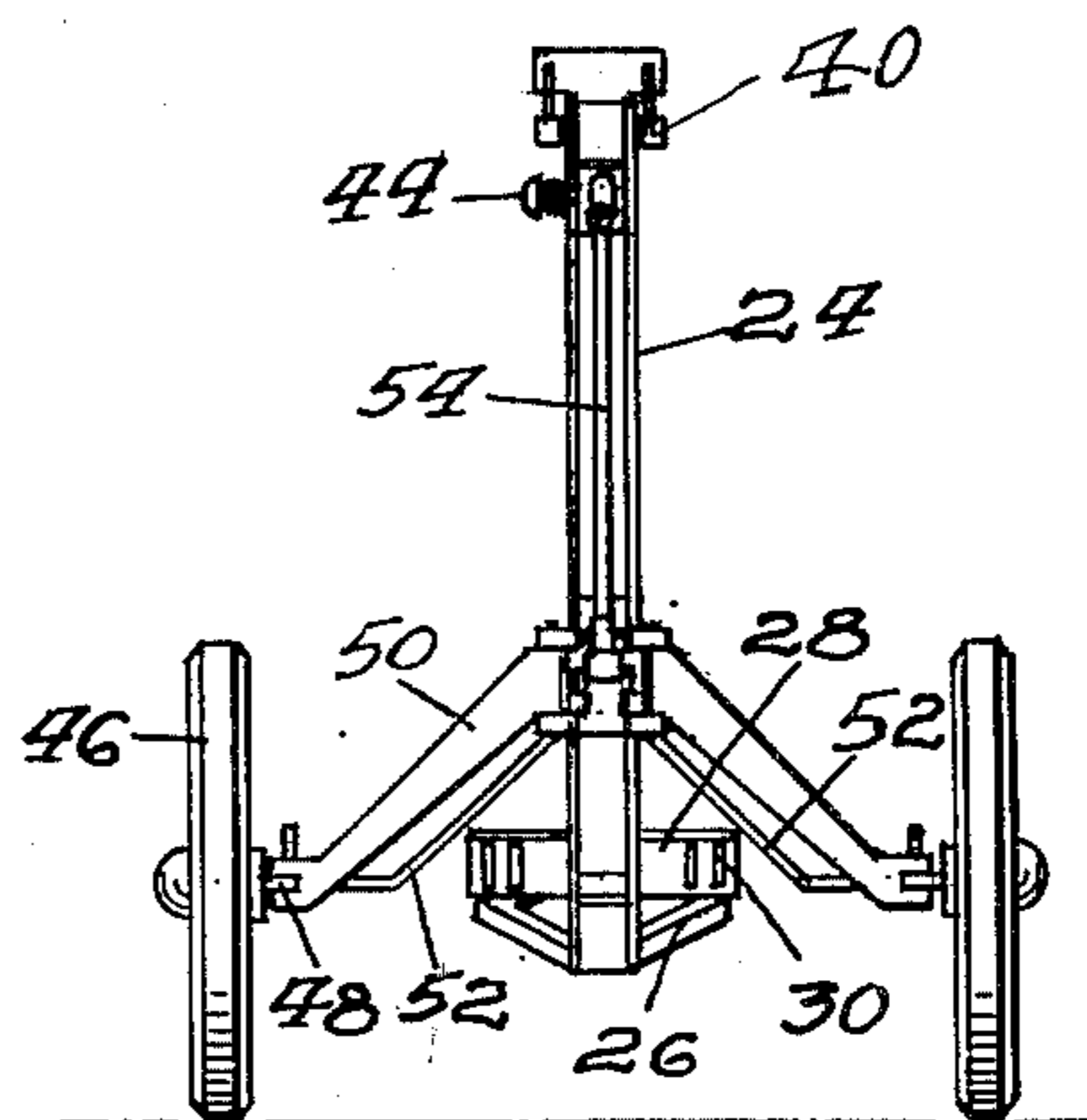


Fig. 3.

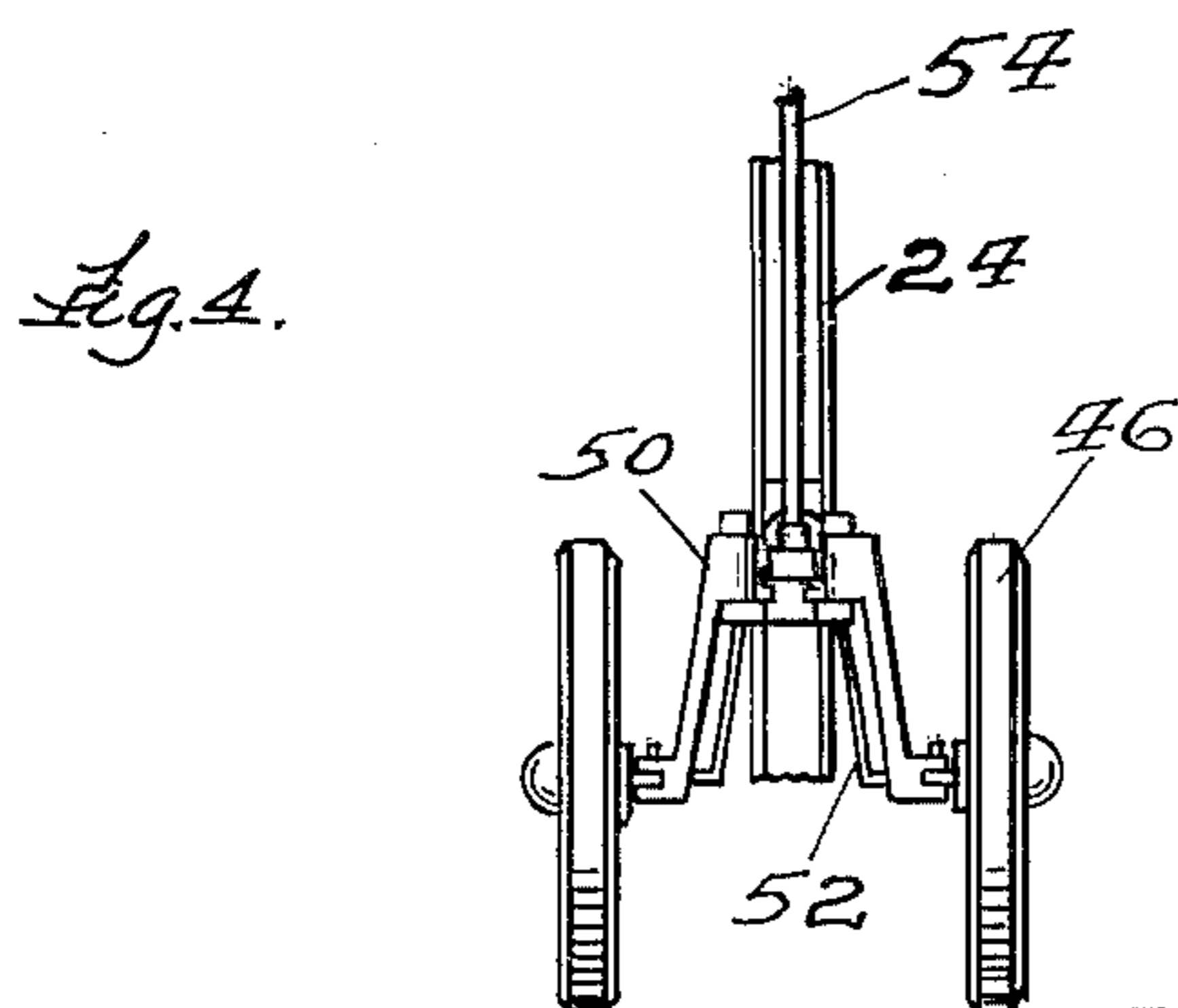


Fig. 4.

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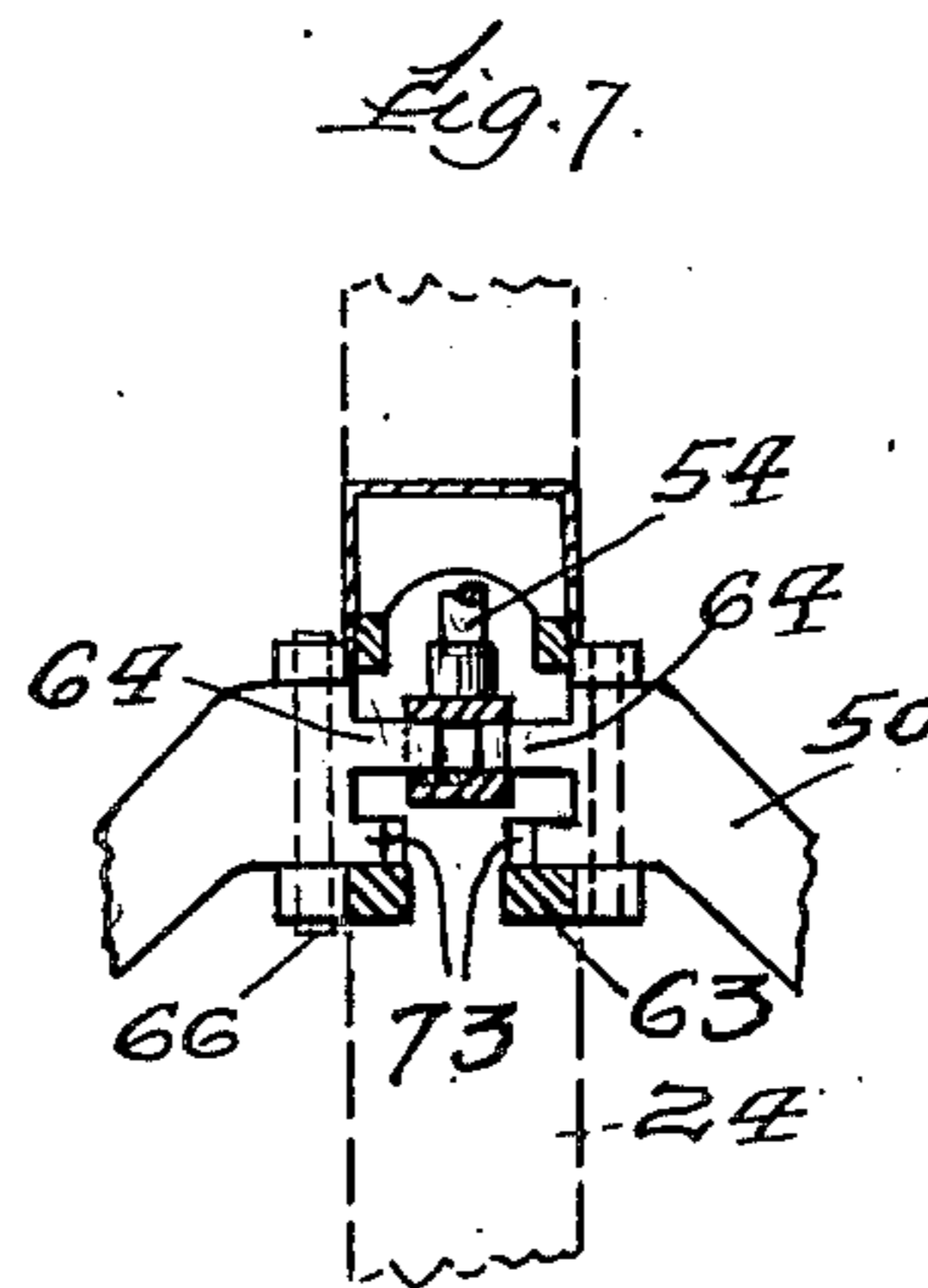
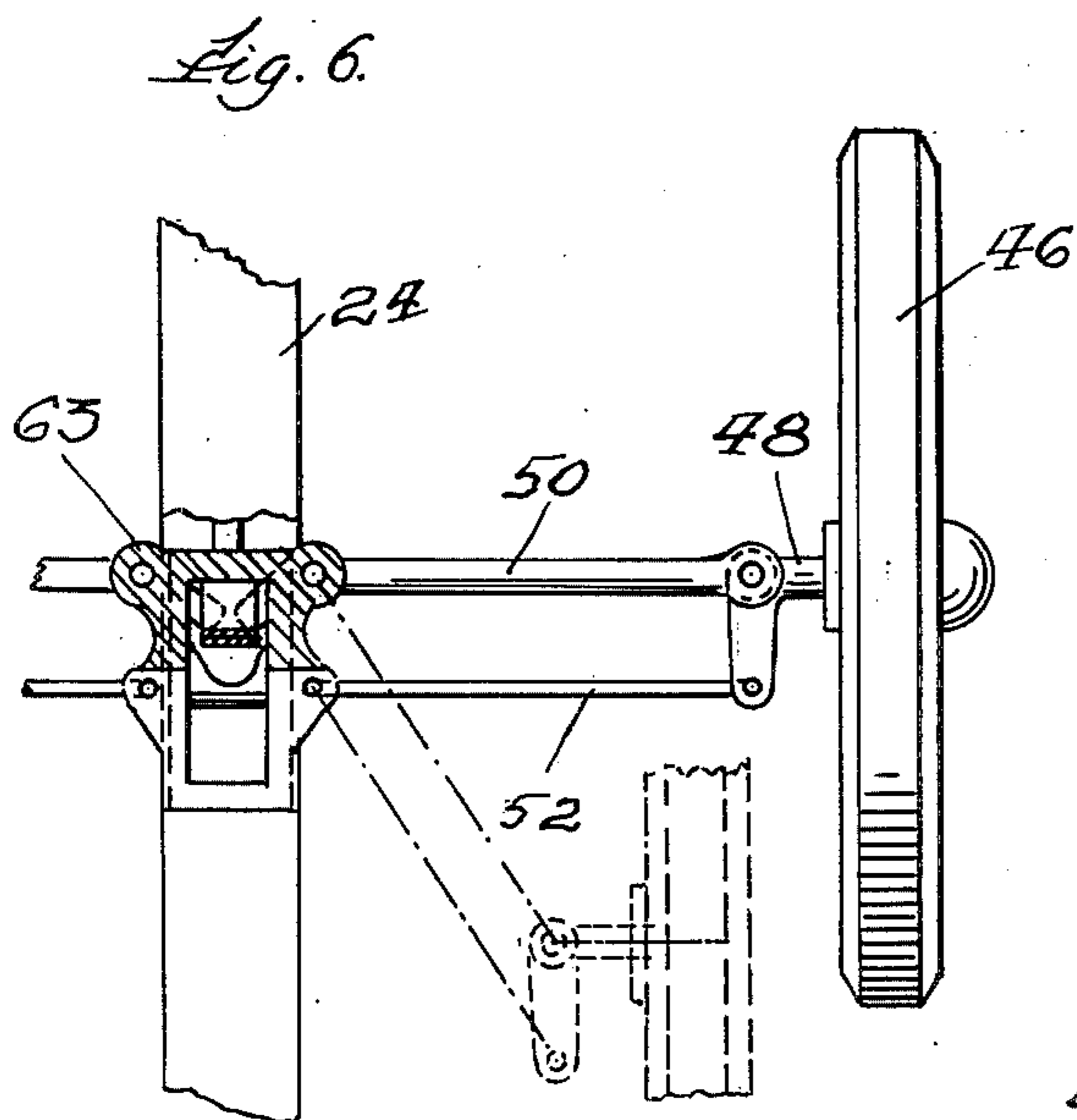
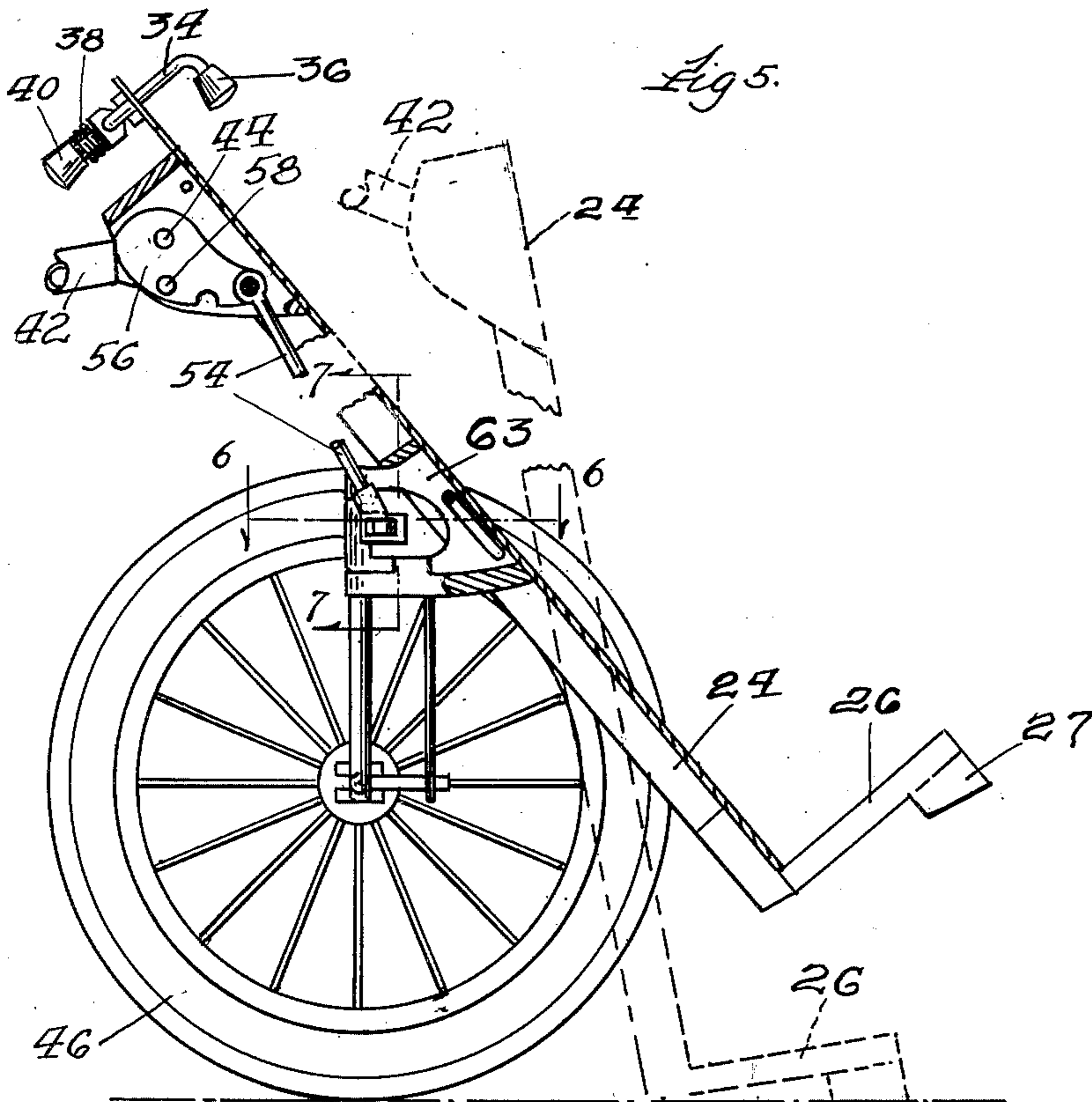
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6 Sheets-Sheet 2.



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6 Sheets-Sheet 3

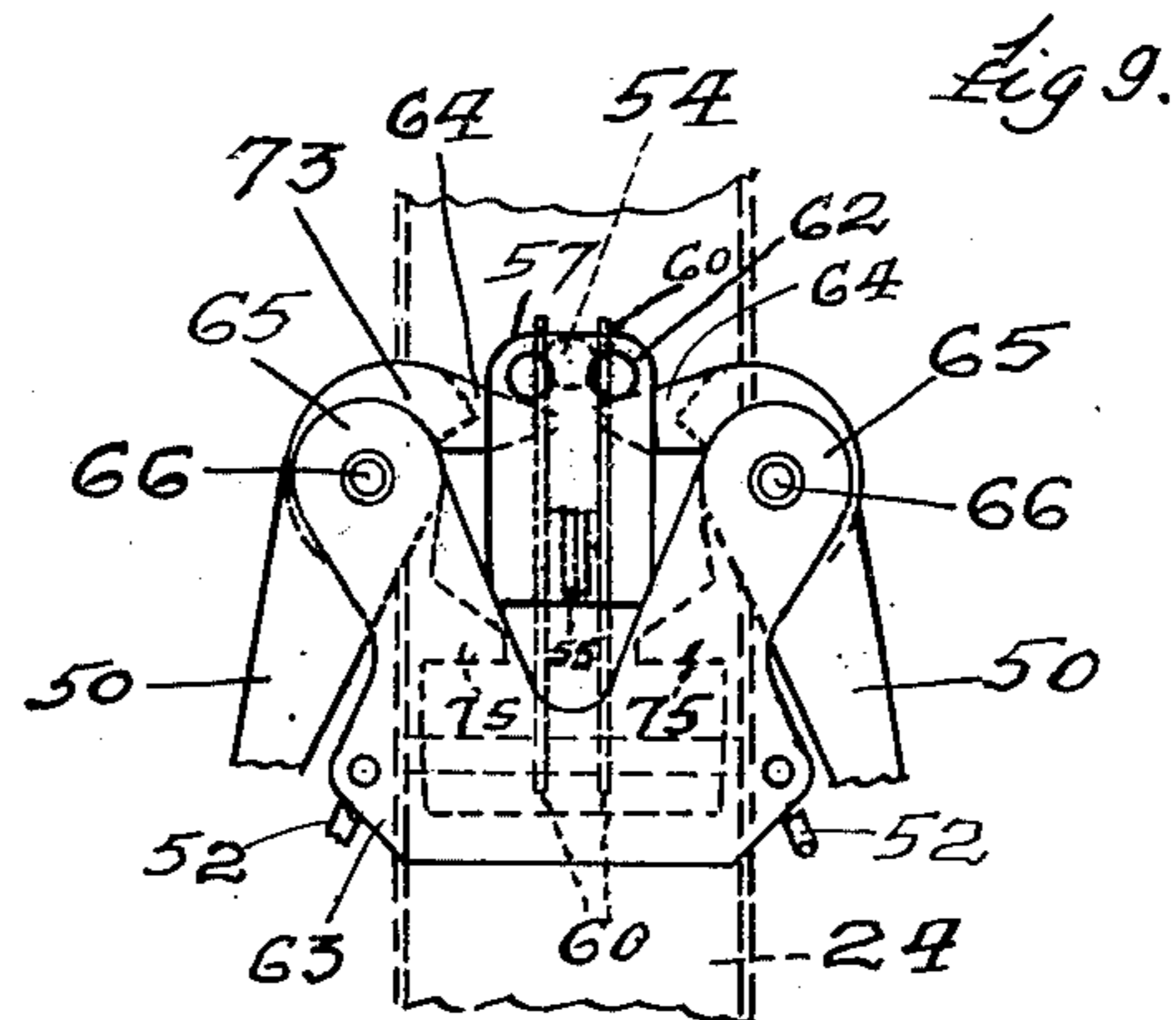
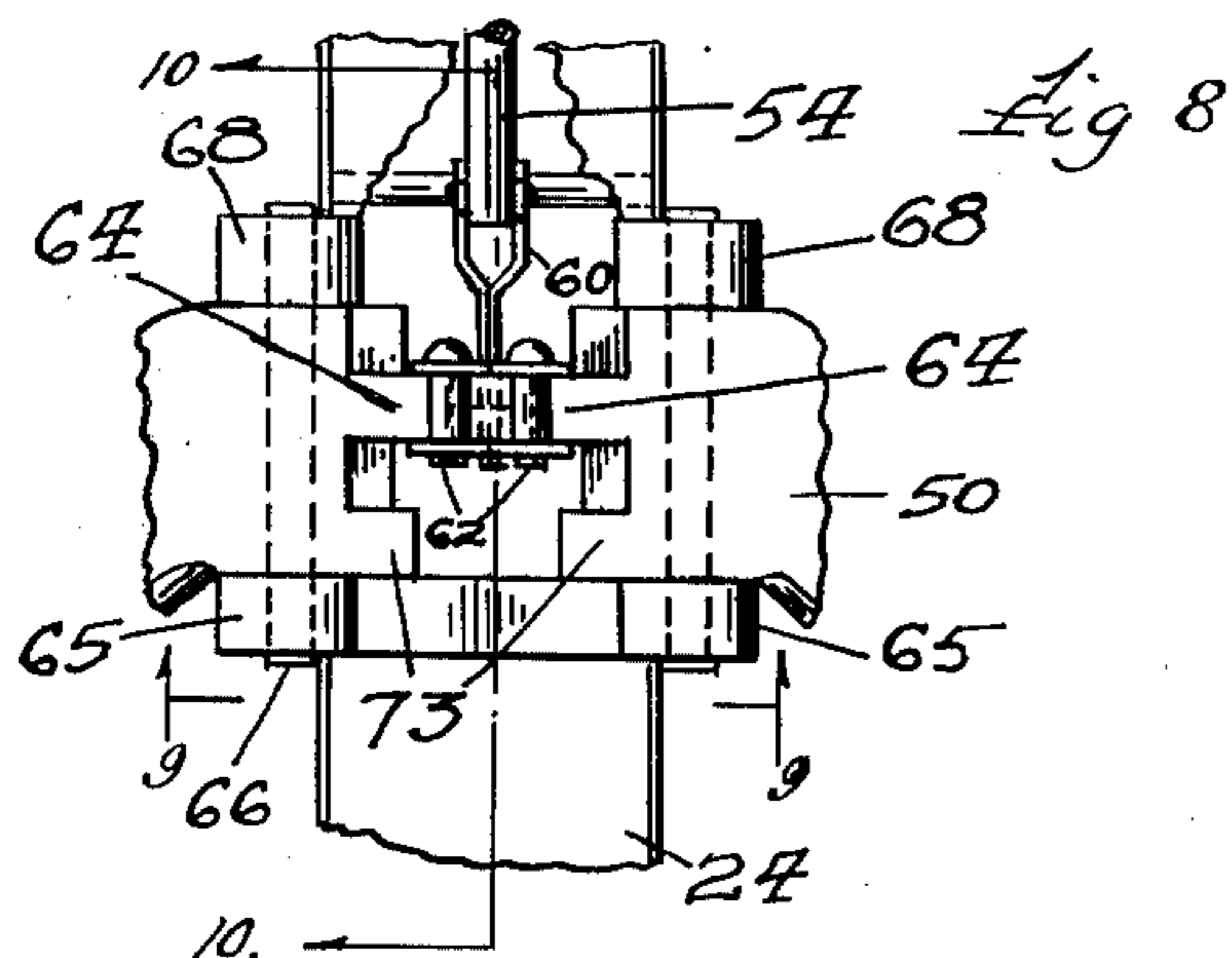


Fig. 10.

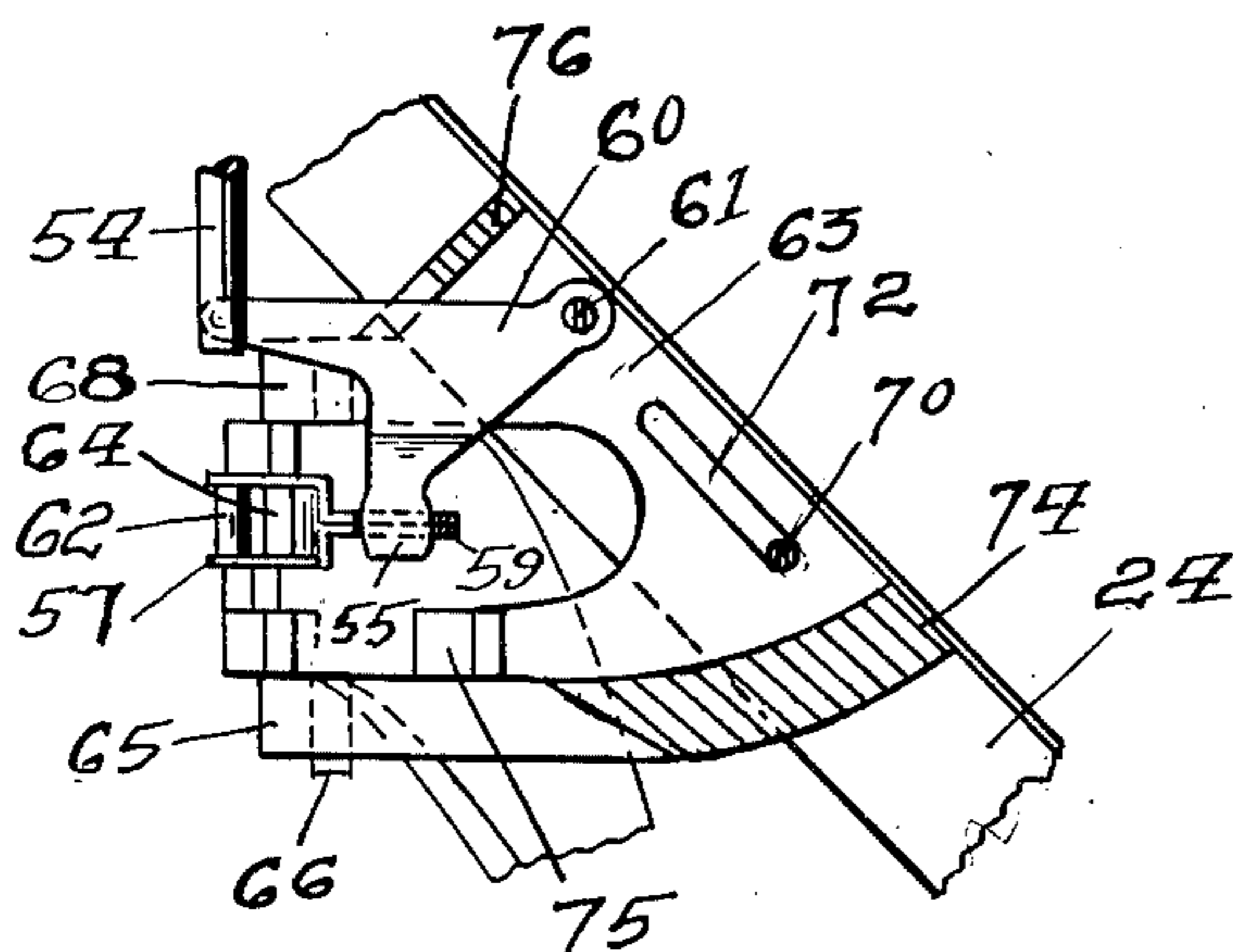
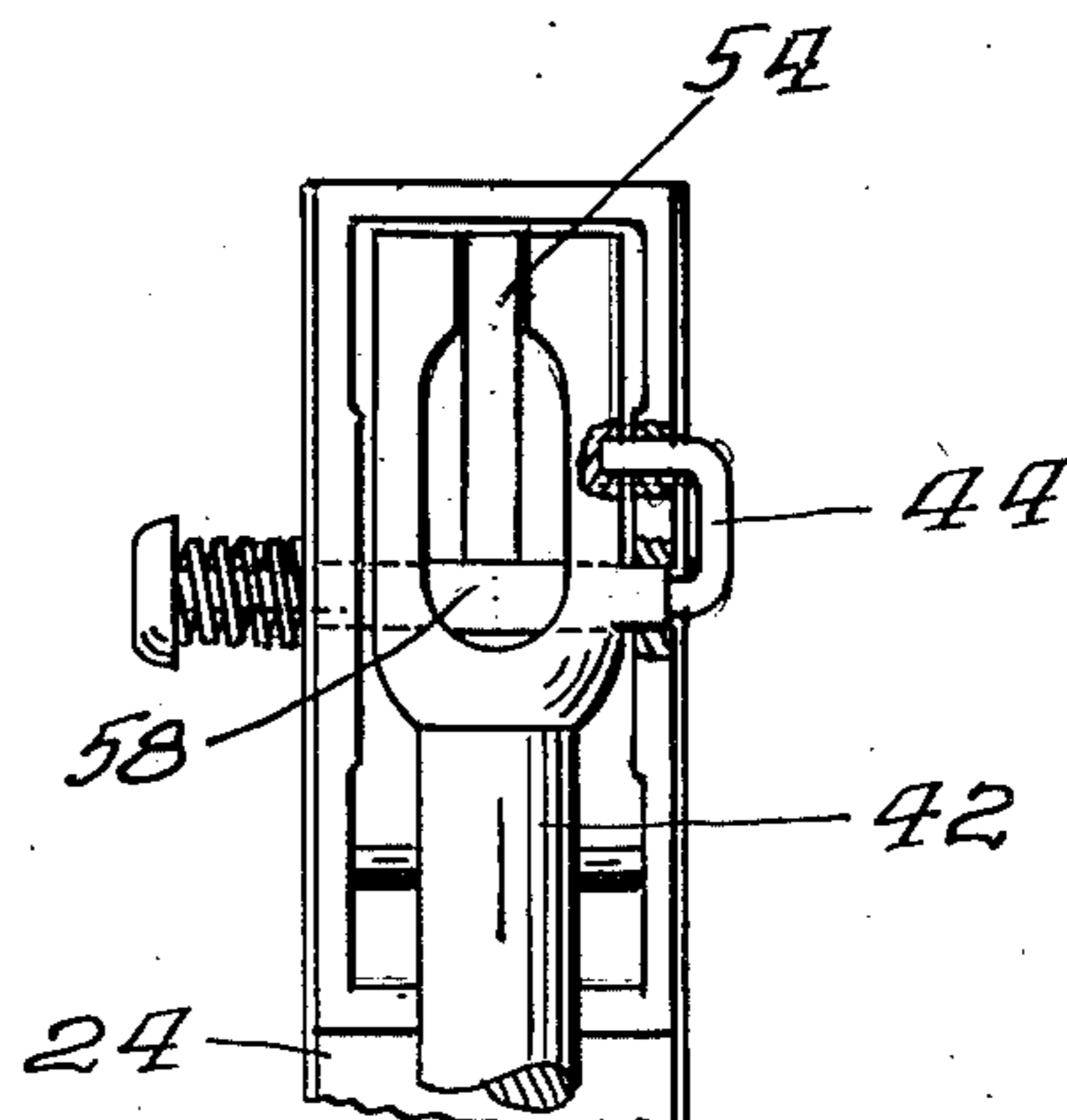


Fig. 11.



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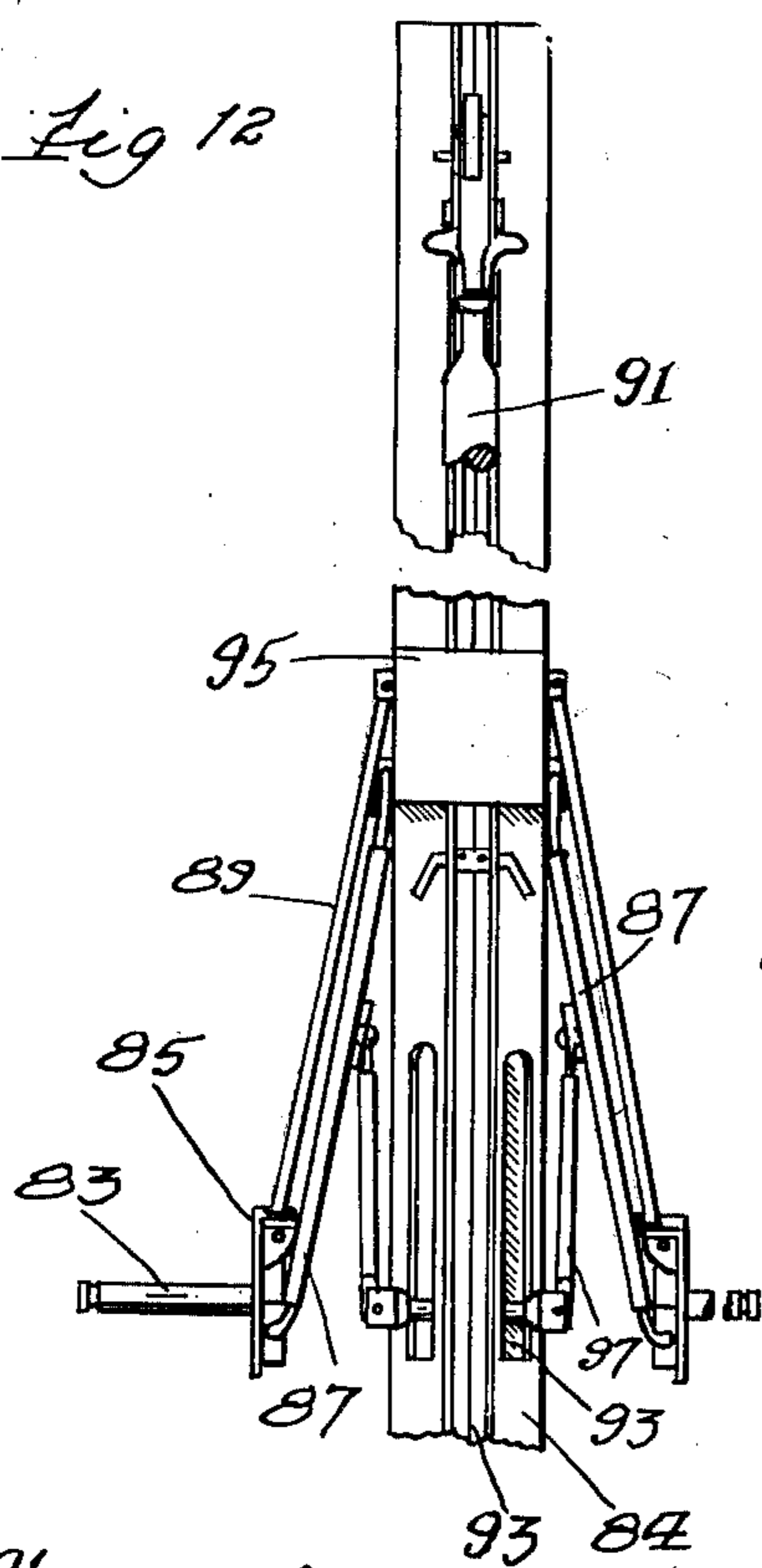
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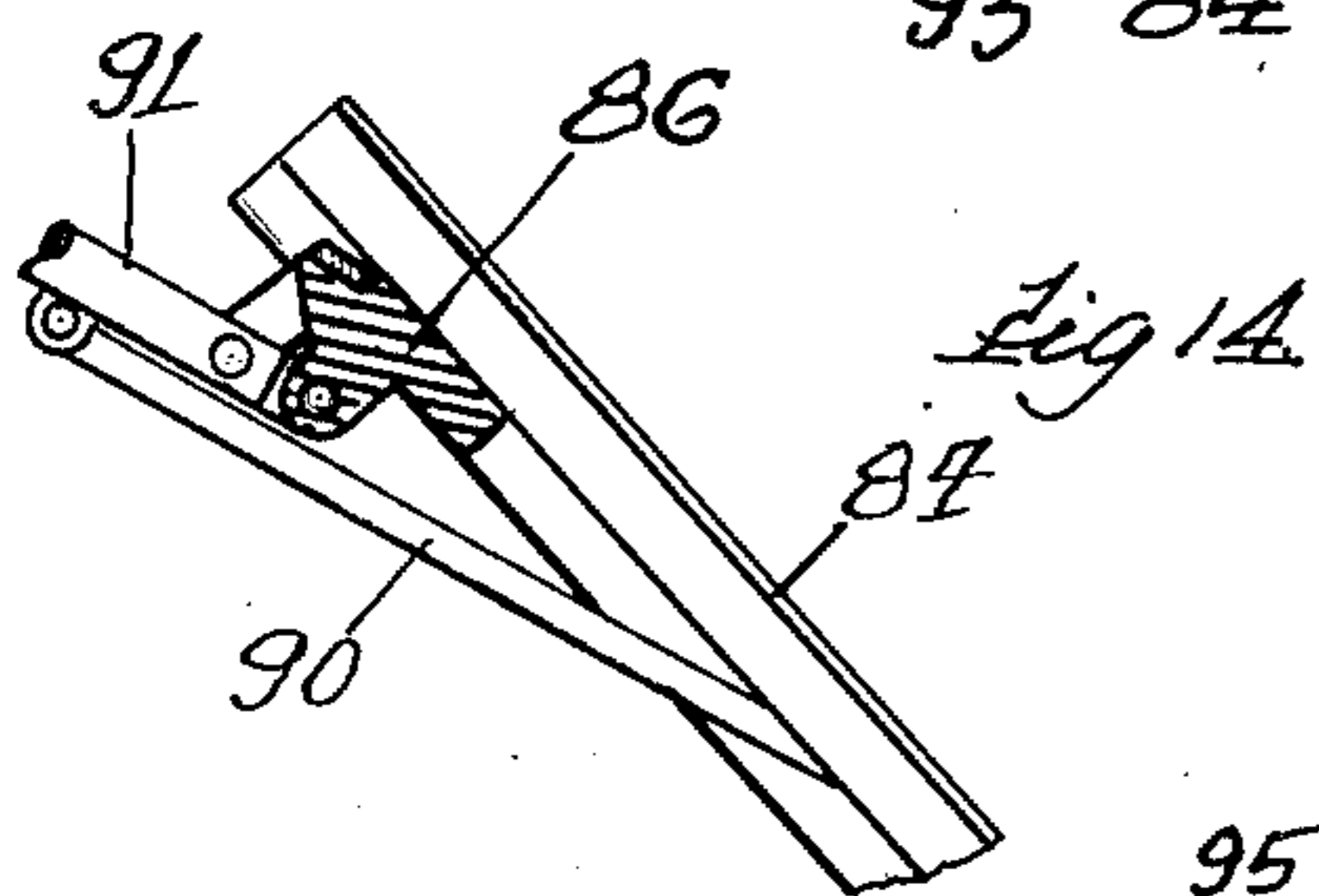
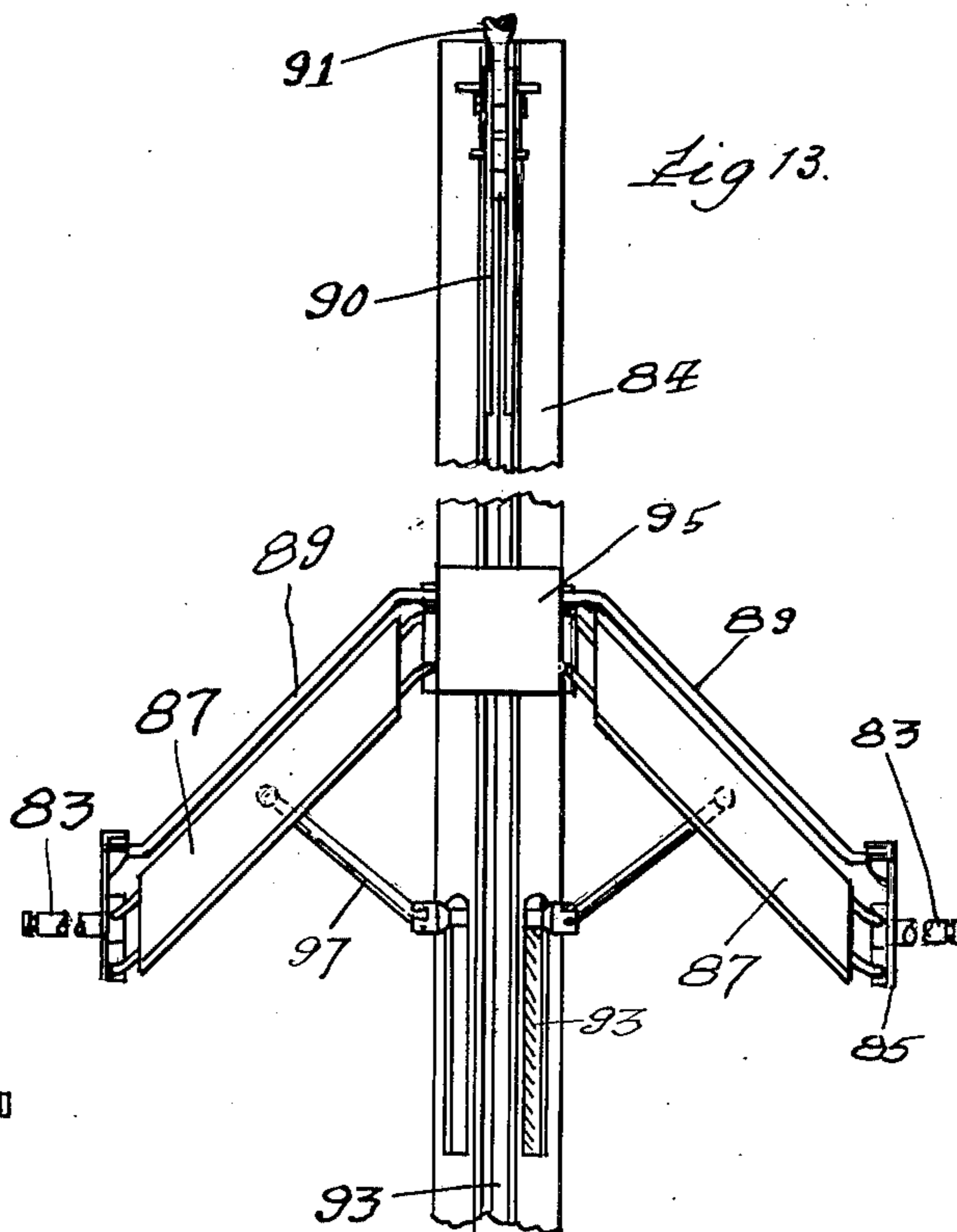
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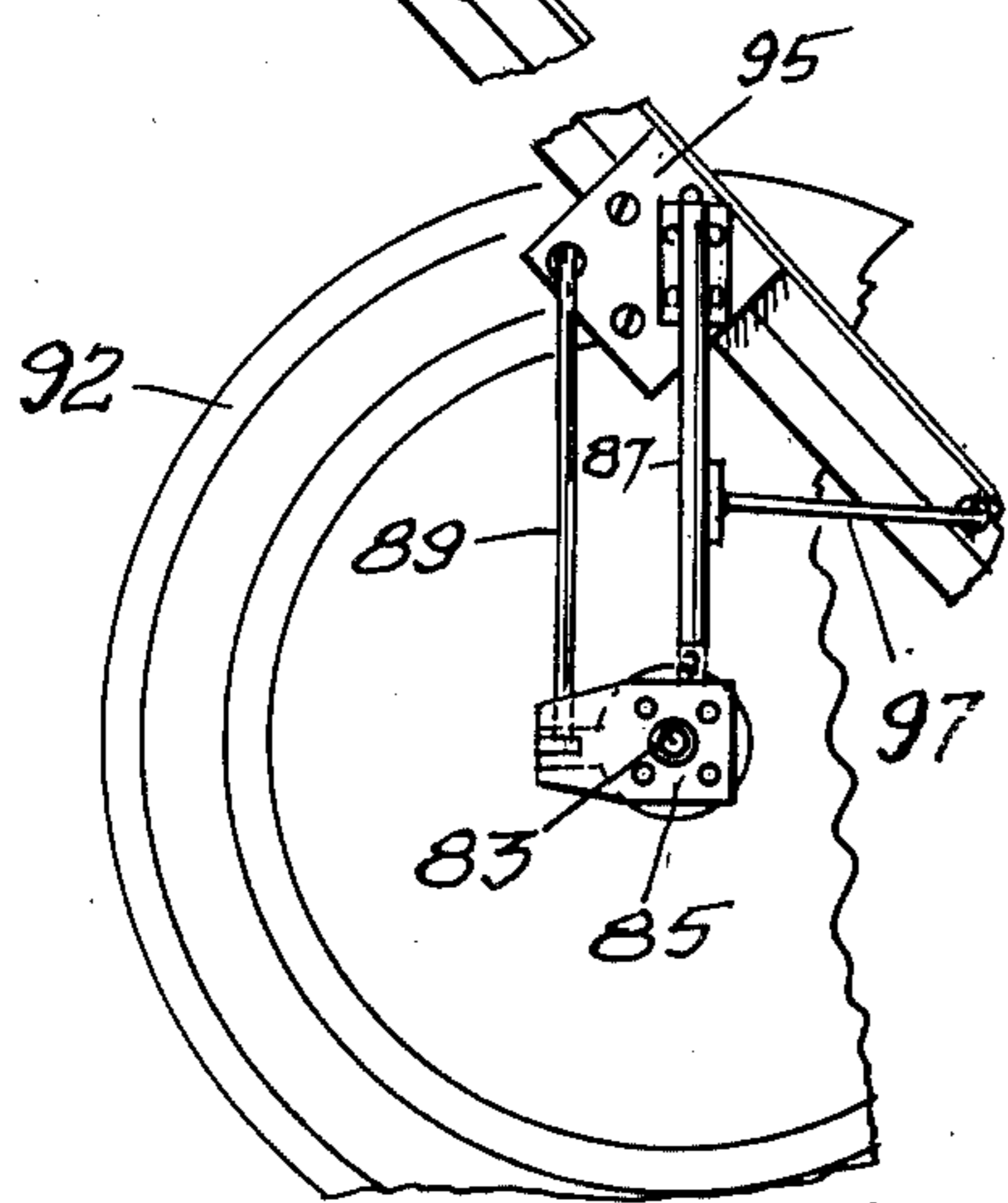
*Fig 12*



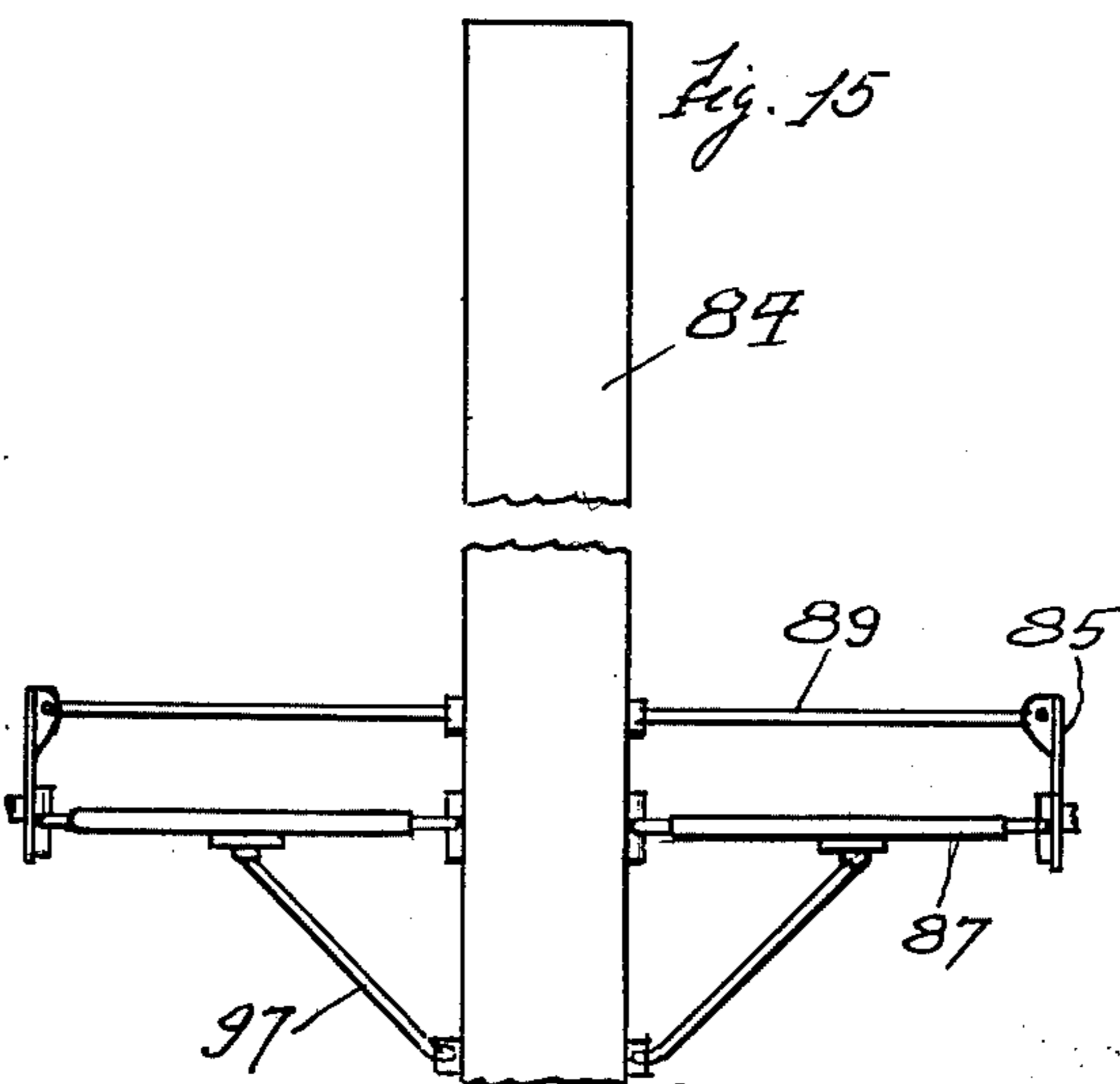
*Fig 13*



*Fig 14*



*Fig 15*



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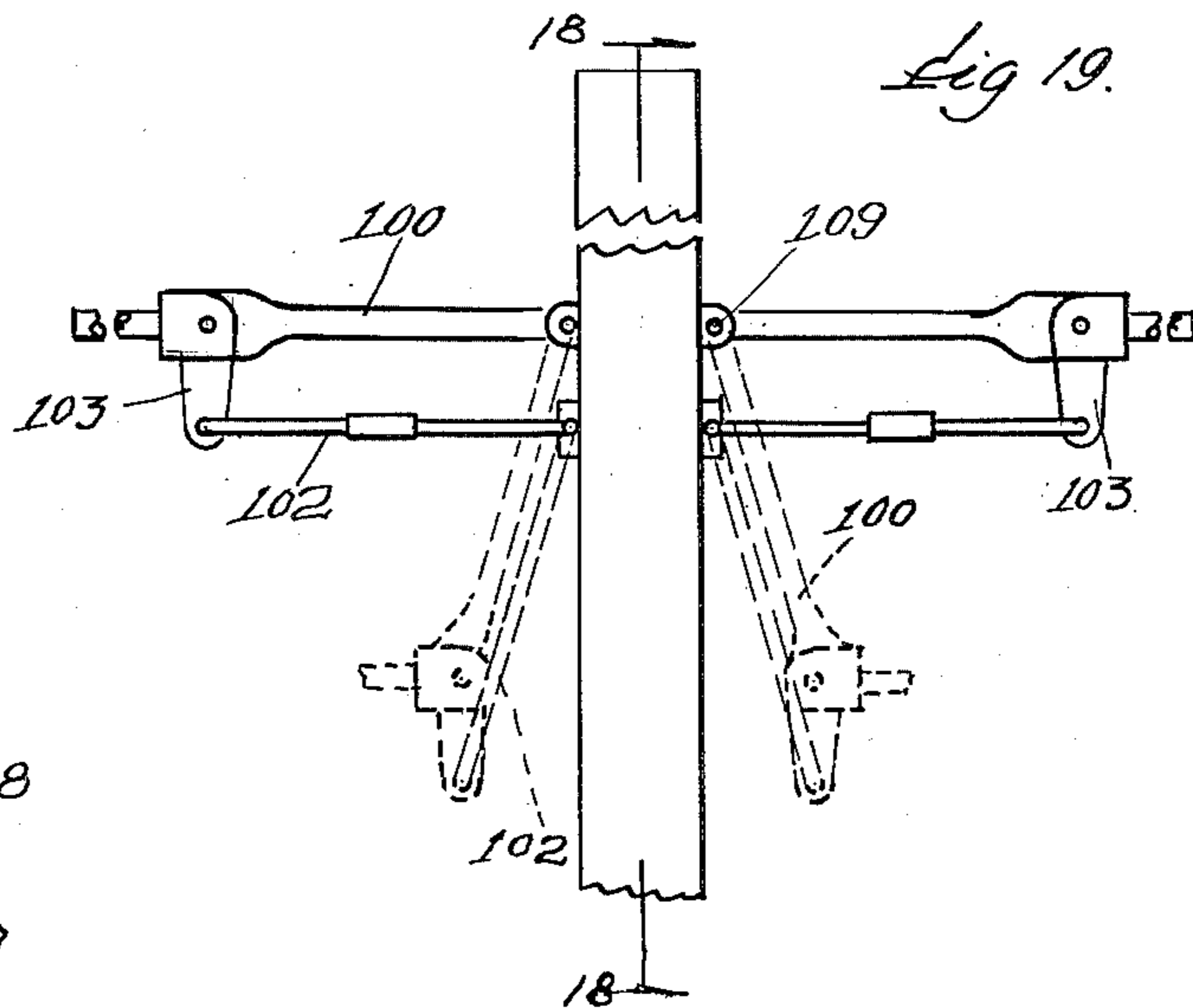
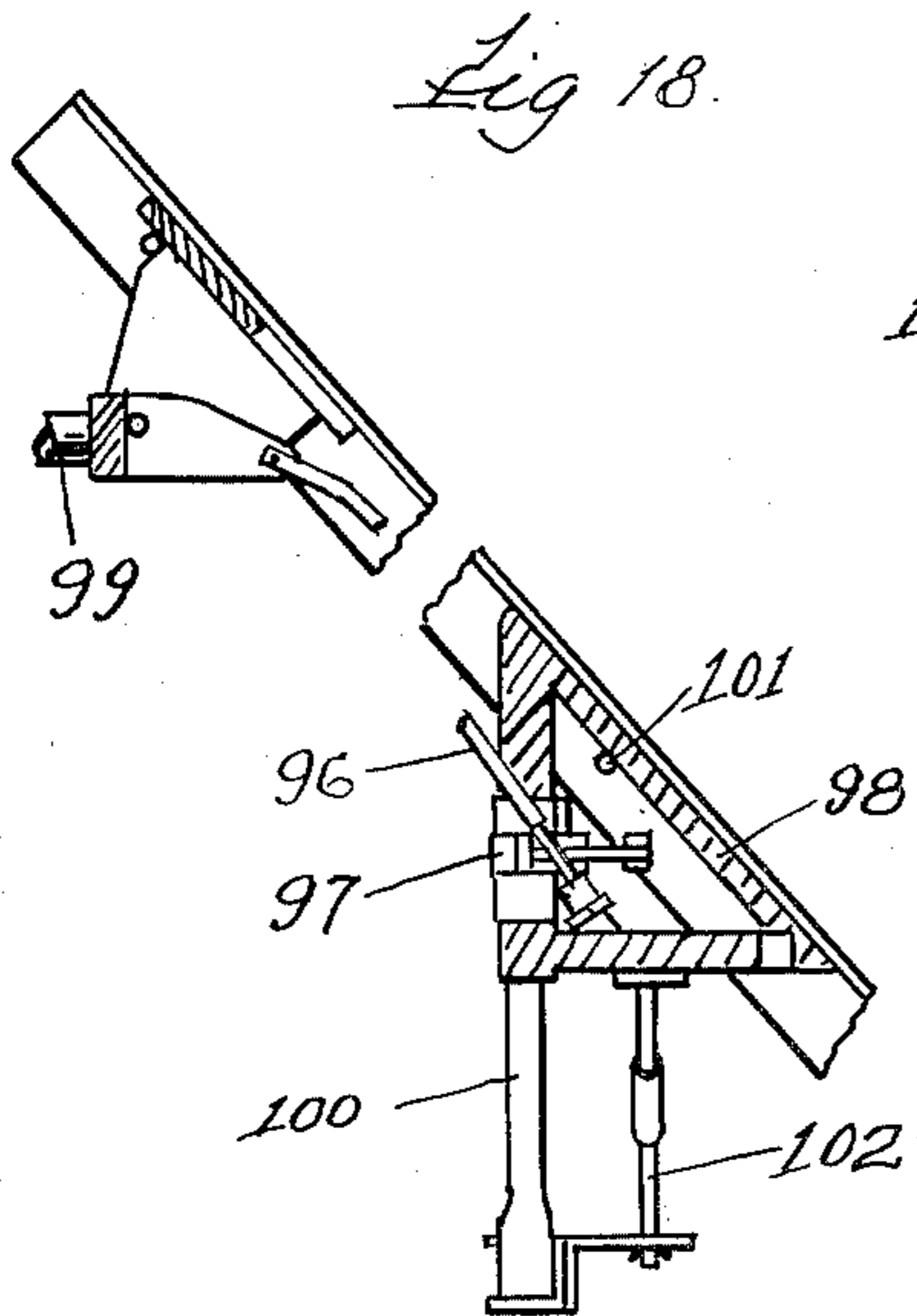
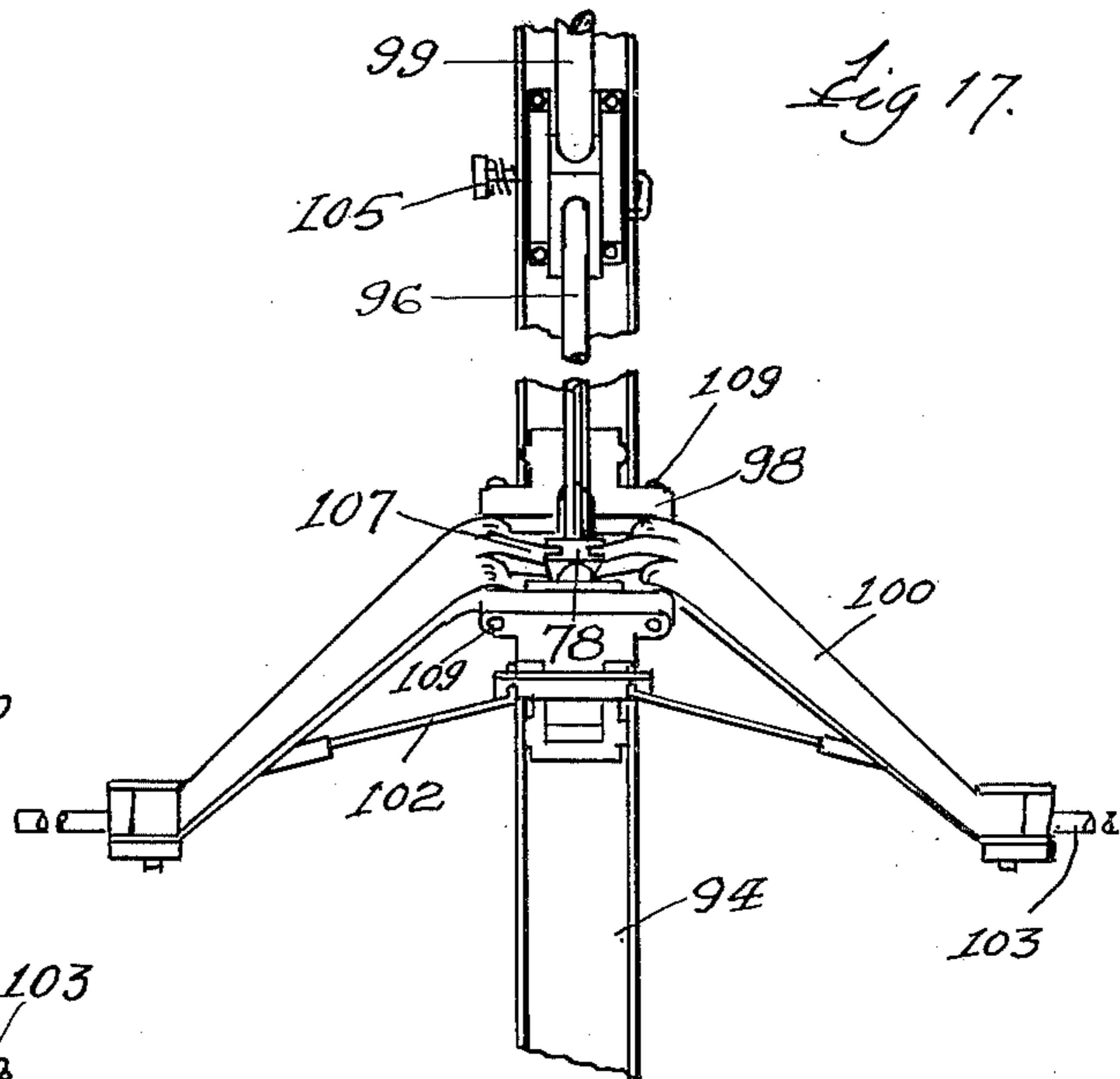
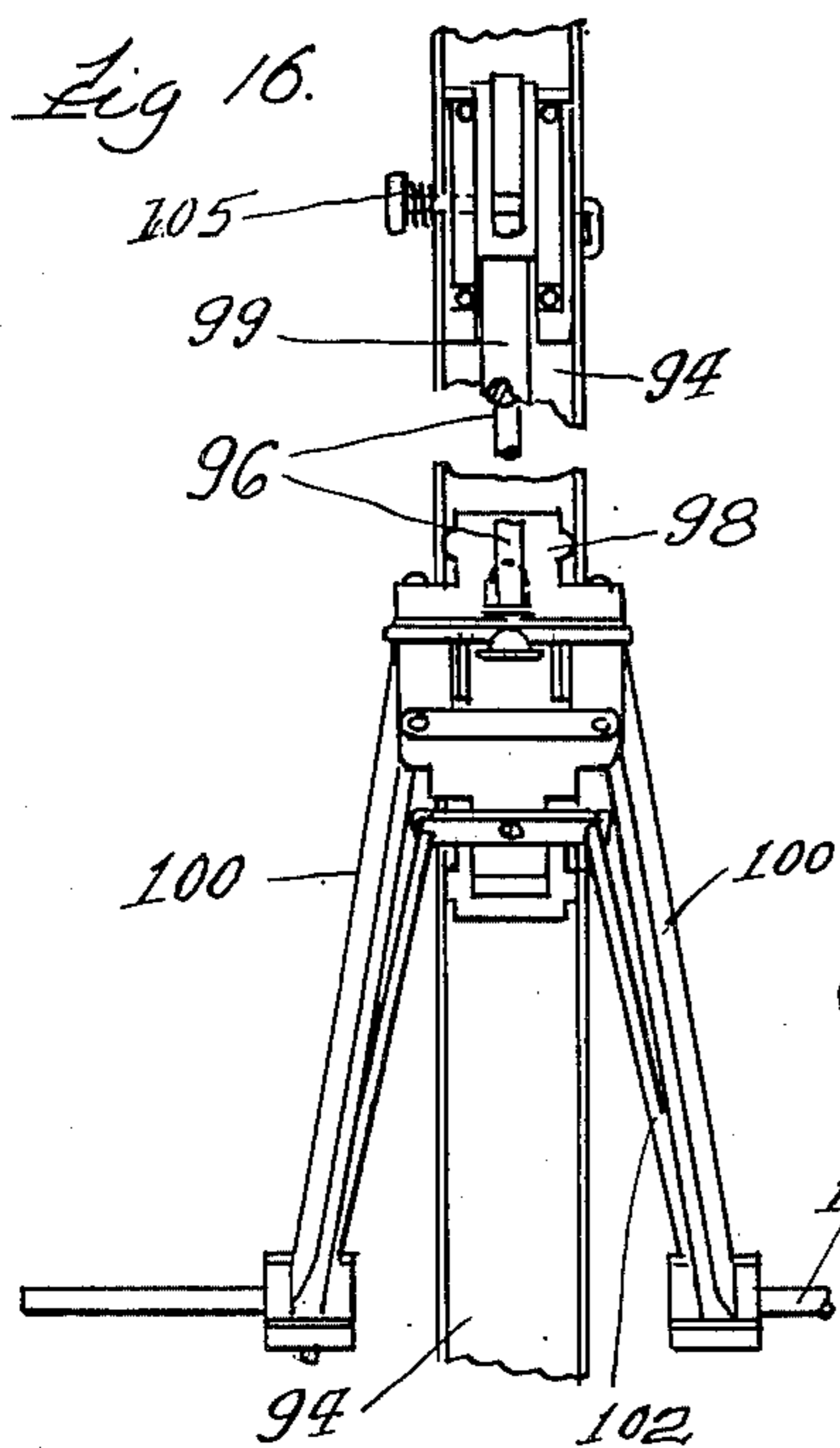
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6 Sheets-Sheet 5



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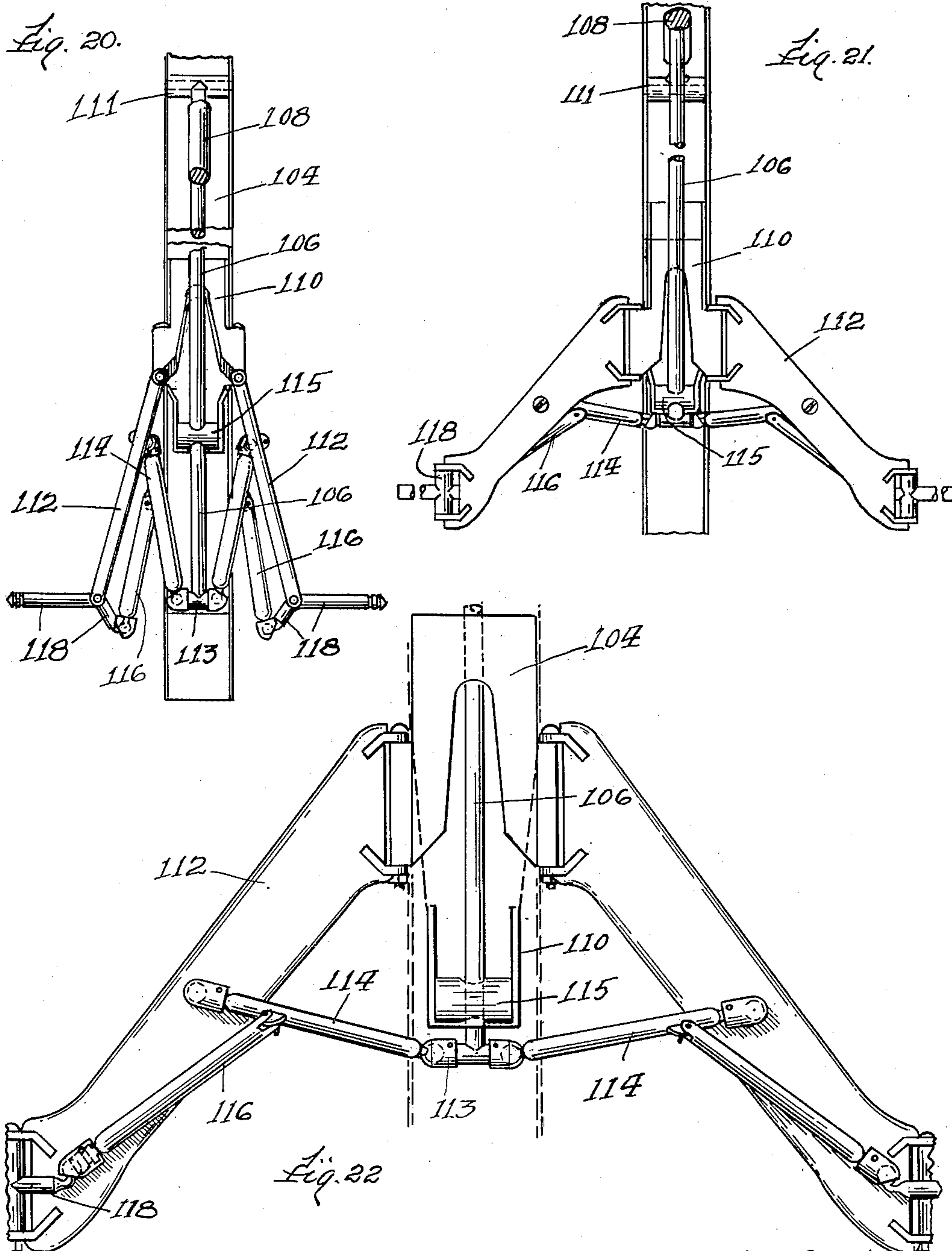
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6 Sheets-Sheet 6



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## UNITED STATES PATENT OFFICE

2,626,815

## COLLAPSIBLE GOLF CART

Joseph F. Chamberlin, Chicago, Ill.

Application May 16, 1947, Serial No. 748,525

7 Claims. (Cl. 280—42)

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This invention relates to an improved golf cart and has for one of its principal objects the provision of a collapsible cart for carrying golf bags, golf clubs and similar appurtenances, and which cart will include principally a body portion, a pair of supporting wheels foldably mounted thereon, and a propelling handle also foldably mounted on the body.

One of the principal objects of this invention is to provide a golf cart which will enable the ready and convenient transportation of a set of golf clubs, either with or without a containing bag, over a golf course without the danger of upsetting and with a minimum expenditure of effort on the part of the player or other person using the cart.

Another important object of this invention is to provide a golf club carrying cart which can be readily and practically automatically folded into a small compass when not in use, so that it can be conveniently carried in an automobile or other means of transportation, or can be as conveniently stored without taking up a great deal of space. This last is of particular advantage when the carts are used in large numbers at golf courses or clubs.

Another and further important object of the invention resides in the provision of a golf cart which in addition to being collapsible, will have a flexible body which will absorb shocks and bumps when the cart is pulled or pushed over rough terrain.

Another object is to provide a golf cart which shall be sufficiently strong to withstand the roughest usage, yet light enough to enable its use by practically anyone, even women or children.

Other and further important objects will be apparent from the disclosures in the accompanying drawings and following specification.

In the drawings:

Figure 1 is a side elevation of the improved collapsible golf cart of this invention, illustrating a preferred form and indicating a supported golf bag in dotted lines.

Figure 2 is a top plan view of the cart illustrated in Figure 1, with the golf bag removed, and showing the collapsed or folded position of the wheels in dotted lines.

Figure 3 is a rear elevation of the cart shown in Figures 1 and 2, the handle being removed.

Figure 4 is a rear view somewhat similar to that of Figure 3, but showing the wheels in collapsed position.

Figure 5 is an enlarged detail view of the

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cart, part of the body broken away to fore-shorten the figure.

Figure 6 is a detail view, partly in section, taken on the line 6—6 of Figure 5, looking in the direction indicated by the arrows, and illustrating diagrammatically the folding action of the wheels.

Figure 7 is a detailed section taken on the line 7—7 of Figure 5, looking in the direction indicated.

Figure 8 illustrates a portion of the structure which enables folding of the wheels.

Figure 9 is a detail view taken on the line 9—9 of Figure 8.

Figure 10 is a detail view, partly in section, on the line 10—10 of Figure 8.

Figure 11 is a detail view of the manually operated latch for the operating arm, showing a preferred form.

Figure 12 illustrates a modification of the collapsible wheel supporting structure, and shows the same in folded position.

Figure 13 is a view similar to Figure 12, but showing the wheel supporting structure in open position.

Figure 14 is a side elevation of the modified construction shown in Figure 13.

Figure 15 is a top view of the structure of Figures 12 to 14 inclusive, looking down on the hinged arrangement.

Figure 16 illustrates a third modification of the collapsible frame for the golf cart of this invention, and shows the same in closed position.

Figure 17 is a view similar to Figure 16, but showing the structure in open position.

Figure 18 is a sectional view taken on the line 18—18 of Figure 19.

Figure 19 is a view of the structure of Figures 16 and 17, looking down from the top and showing the collapsed position of the wheel supports in dotted lines.

Figure 20 illustrates a still further modification of the collapsible wheel supporting structure for golf carts of this invention and shows the same in folded relationship.

Figure 21 is a view similar to Figure 20, but showing the structure in open position.

Figure 22 is an enlarged view of the structure of Figure 21, viewing the same from the reverse side and in more detail.

As shown in the drawings:

The reference numeral 24 indicates generally the body of the improved collapsible golf cart of this invention, the same being preferably a rather long narrow channel, as best shown in Figures 2

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and 3, and this body, as well as most of the other parts of the structure, is constructed of some suitable material, of which a high grade aluminum alloy is an example.

Extending outwardly and forwardly from the bottom of the body portion 24, is a shelf or support 26, this being adapted to position a golf bag 128 thereon. The shelf or support 26, can be of any suitable contour and can be fastened to the lower end of the channel or body 24 in any desired manner.

Just above the support 26 and extending transversely of the channel 24, is a cross piece 28 having a pair of slots 30 adjacent each end. These slots are for the reception of the ends of a retaining strap or band 32 which is adapted to surround the golf bag 128 at its lower end for securely positioning the same upon the golf cart.

A spring pressed manually operable clamping or gripping element 34, is mounted in the top of the body portion 24, this having a downward cushion-like extension 36 which fits inside the upper rim of the golf bag 128, and the spring normally impels the extension 36 into gripping relationship with the upper edge of the golf bag whereby the same is securely positioned at both ends. A handle 40 is provided for manual operation of this gripping element. The spring is indicated at 38.

Pivoted adjacent the upper end of the channel-like body 24 is a rearwardly extending handle 42 whereby the cart is propelled either by pushing or pulling, and a retractable spring-pressed latch 44 is provided whereby the handle 42 can be locked in extended position as shown in Figure 1, or easily released for a downward folding movement when the cart is to be collapsed.

A pair of supporting wheels 46 is mounted adjacent the lower end of the body and this mounting includes swingable axles 48 and supporting arms 50 together with operating links 52, whereby the wheels are automatically brought together in cart collapsed relationship when the handle 42 is brought downwardly.

The operating means for accomplishing this folding movement of the wheels includes a link or bar 54 connected at its upper end to a plate 56 (Figure 5) which is pivotally mounted at 58 upon a transverse shaft, which is fixed in the top of the body channel 24.

The lower end of this link rod 54 terminates in a pair of pivoted plates best shown at 60 in Figure 10, and which operate as a unit. These plates are pivoted at 61 on a pin fixed in a casting 63 slidably mounted in the channel 24.

One end of this double plate 60 comprises a projection 55 which operates in an opening in a yoke structure, which is composed of a pair of plates 57 spaced apart at one end and joined into close proximity at the other end as shown at 59. A pair of pins 62 are fitted into the ends of the spaced-apart sections 57 of this yoke element.

Projections 64 integral with the wheel axle supporting arms 50, are fitted into the spaces between the pins 62 and the L shaped offset portions of the plates 57 and 59 whereby a movement of the yoke by the plate 60 will cause a pivoting of the arms 50 about their supporting pins 66, which pins are mounted in opposed projections 65 and 68 of a casting 63, which casting is slidably mounted in the body channel 24 and maintained therein by means of a pin 70.

This pin 70 is fitted into the opposed sides of the body channel and is mounted in slots 72 formed in opposed portions of the casting 63 whereby the casting with its supported arms 50,

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52 and other appurtenances can move up and down in the channel 24 for a restricted predetermined distance.

The links or arms 52, which co-operate with the arms 50 have one end of each fixed in the casting 63 in a suitable opening provided therefor, and the other end is attached to the projecting end of an arm which forms part of the bell-crank 48, the other arm of which comprises the wheel supporting axle.

Adjacent the projections 64 of the axle arms 50, is another pair of projections 73 which act as stops when the operating handle 42 is moved to its uppermost position as shown in Figure 1, and which position results in a distending or separation of the wheels 46 into operative cart supporting position. These stops 73 act against integral projections 75, which form part of the casting 63.

When the handle 42 is pushed downwardly about its pivot 58 following the release of the latch 44, the rod 54 moves upwardly pivoting the dual plate 60 about its supporting pin 61 (Figure 10). The lower end 55 of this plate 60 is accordingly moved outwardly through an arc about the point 61 and this forces the yoke 57—59 outwardly. As the projections 64 of the arms 50 extend into this yoke adjacent the pins 62, the outward movement of the yoke swings the arms inwardly about their pivot pins 66, thereby bringing the wheels 46 into closer and folded relationship. The action of the supplemental arms or links 52 maintains the wheels in substantially parallel relationship while this folding action is taking place and after the arms 50 have been moved to their innermost limits, the casting 63 is then pulled upwardly by continued downward movement of the handle 42, raising the wheels slightly so that the cart is then supported on the end of the body 24 or its bag supporting projection 26 and is in compact folded relationship as shown in Figure 4, whereupon it can be readily stored in a relatively small space or easily transported from place to place.

An extension 27 can be mounted under the support 26 so that the cart can be more readily raised off the wheels for a collapsing operation.

Figures 12 to 15 inclusive illustrate a modified form of the invention, in which wheel supporting axles 83 are mounted on plates 85 which plates are supported by arms 87 similar to the arms 50 of the preferred form. Links 89 cooperate with the arms 87 to keep the wheels in parallel relationship when they are extended or folded.

The body 24 is in a substantially closed channel-like form, and a block 86 is fixed in the upper end of the body, to which a handle 91 is pivoted. A link 90 connects the handle 91 to a slide 93 which moves in the channel 24 and a block 95 is fixed on the channel adjacent its middle portion for supporting the arms 87 and the links 89. The slide 93 is connected to the arms 87 by means of additional links 97, so that when the slide 93 is moved up or down in the channel 24, the links 97 will operate to move the arms 87 and wheels 82 into and out of wheel extended cart supporting position.

Figures 16 to 19, inclusive, disclose a further modification of the invention in which the body comprises an open channel 94 with a handle 99 pivotally mounted adjacent its upper end. A link 96 connects the handle to a casting 98 slidably mounted in the channel 94 and this casting pivotally supports arms 100 and links 102 which are quite similar in construction and operation to arms 50 and links 52 previously described in connection with Figures 1 to 6 inclusive. The cast-

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ing 98 is slidably supported in the body channel 94 by means of a transverse pin 101, and the casting 98 is in the form of an open triangle in cross-section, so that the pin fitted in this open space, maintains the casting in the desired position in the channel for proper operation.

The wheel supporting axles 103 are in the form of bell-crank levers similar to the wheel supporting axles 48 of Figures 1 to 6. When the handle 99 is raised after release of the latch 105, the casting 98 is first moved downwardly to its lowermost position, after which further upward movement of the handle operates to spread the wheels apart while at the same time maintaining them in parallel relationship. The lower end of the link or rod 96 is connected to bifurcated projections 107 integral with the arms 100 whereby the arms are pivoted about supporting pins 109 fixed in the casting 98. This connection includes a plate 78.

In the third modification, illustrated in Figures 20 to 22 inclusive, the body is in the form of an open channel as shown at 104 and an operating handle 108 is pivotally mounted adjacent the top of the body at 111. A rod 106 connects the handle 108 to a movable cross bar 113 positioned below a support 110 which is fixedly mounted in the body channel 104. Links 114 are connected to the end of the bar 113 and these links operate wheel supporting arms 112 which are pivotally mounted in the support 110. Additional links 116 have their ends connected intermediate the links 114, and the ends of these links 116 operate the bell-cranks 118 which comprise the wheel supporting axles.

The operating rod 106 passes through an opening in a cross-bar 115 fixed in the lower end of the support 110 which assists in maintaining the operating rod in desired alignment and position with respect to the handle and the link 114.

In this modification the casting 110 is fixed in the channel 104 and the entire operation of the wheel supporting arms is accomplished by movement of the handle 108 and corresponding movement of the link rod 106 which operates the arms 112 through links 114 and 116.

In this structure, as in all the others, the channel-like body is retained, as this comprises a very important feature of the invention, in that a certain amount of flexibility and spring action can take place, due to the fact that the body itself can be twisted through quite an arc without permanently deforming the same. This allows of a free action of the wheels when traveling over rough terrain, while at the same time eliminating undesirable jolts due to bumps from being transmitted through the body, the handle and thence to the operator.

It will be evident that, herein is provided, in all its modifications, a golf-bag carrying cart which is readily collapsible or foldable into a relatively small space and in a minimum of time. The flexible channel-like body performs somewhat like a spring with controlled action, and this action extends from the wheels to the tip of the handle. The entire cart therefore acts as a unit to provide a smooth and easy propelling action. This performance maintains itself over even the roughest fairways, smoothly absorbing all shocks and eliminating bumping and jerking of the handle and supported golf clubs. The natural resistance to torque in the upright channel-like body member provides this very desirable action.

A further feature resides in the perfectly balanced arrangement of the cart, particularly with

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a supported bag thereon and which is clearly illustrated in Figure 1. When being propelled, the handle is almost parallel to the ground, placing practically all of the weight just above the wheels, and providing a very low center of gravity, approximately close to the axle mounting. Dropping of the handle closes the entire device almost instantaneously, and lifting of the handle opens the same in as short a time. When the cart is at rest with the handle raised and the wheels extended, the weight of the clubs is over the axle and the resilient wide wheel base guards against overturning of the cart even when it is on the side of a hill or some other uneven support.

I am aware that many changes may be made and numerous details of construction varied throughout a wide range without departing from the principles of this invention, and I therefore, do not purpose limiting the patent granted hereon otherwise than as necessitated by the prior art.

I claim as my invention:

1. A collapsible golf cart including a channelled body portion, a pair of folding wheels for supporting the body, a propelling handle pivotally mounted on the body for folding relationship therewith, means for automatically moving the wheels into folded relationship when the handle is folded, said means including pivoted axle supporting arms, a link connecting the arms to the handle, and a support for the pivoted axle supporting arms, said support slidably mounted in the body channel.

2. A collapsible golf cart including a channelled body portion, a pair of wheels swingably mounted on the lower end of the body for supporting the same, a propelling handle pivotally mounted on the upper end of the body for folding relationship therewith, means for automatically swinging the wheels into closer relationship with each other when the handle is folded, said means including pivoted axle supporting arms and a link connecting the arms to the handle, a support for the pivoted axle supporting arms slidably mounted in the body channel, the wheel axles comprising bell-cranks and links connecting the bell-cranks to the support.

3. A collapsible golf cart including a body portion, a pair of wheels swingably mounted on the body for supporting the same, a propelling handle pivotally mounted on the body for folding relationship therewith, means for automatically moving the wheels into closer relationship when the handle is folded, said means including pivoted axle supporting arms and a link connecting the arms to the handle, a support for the pivoted axle supporting arms, said support slidably mounted in the body, means connecting the support to the lower end of the handle operated link, means for supporting the entire cart adjacent the lower end of the body with the wheels off the ground for wheel and handle folding movement, said means including an extending shelf mounted on the lower end of the body, said shelf also adapted to support a golf bag, means adjacent the shelf for fixing the golf bag in supported position, means adjacent the upper end of the body for releasably fastening the upper end of the golf bag to the body, said wheel axles being in the form of bell-cranks and links connecting the ends of the bell-cranks to the support for the pivoted axle supporting arms.

4. A collapsible golf cart including a body portion, a pair of wheels swingably mounted on the body for supporting the same, bell-crank ax-

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les for the wheels, a propelling handle pivotally mounted on the body for folding relationship therewith, means for automatically moving the wheels into closer relationship and maintaining them in parallel planes when the handle is folded, said means including pivoted wheel axle supporting arms and a link connecting the arms to the handle, a support for the pivoted axle supporting arms slidably mounted in the body, means connecting the support to the lower end of the handle operated link, means for supporting the entire cart on the lower end of the body with the wheels off the ground, for wheel and handle folding movement, said means including an extending shelf mounted on the lower end of the body, said shelf also adapted to support a golf bag, means adjacent the shelf for fixing the golf bag in supported position, and means adjacent the upper end of the body for fastening the upper end of a golf bag to the body.

5. A golf bag carrying cart including a body portion, supporting wheels foldably mounted on the body portion, an operating handle also foldably mounted on the body portion, said body portion comprising a channel, an axle support slidably mounted in the channel, link and lever connections between the handle and the wheels for automatically folding the wheels upon a folding movement of the handle, said connections including pivoted arms for the wheel axles, said wheel axles being in the form of bell-cranks, and links connecting the ends of the bell-cranks to the axle support mounting.

6. A collapsible cart including an elongated twistable body, a handle pivotally mounted at one end of the body, a pair of supporting wheels foldably mounted at the other end of the body, means operated by the handle for bringing the wheels into closer relationship with each other and with the body while maintaining them in parallel planes, said means including a pair of wheel supporting arms pivoted with respect to the body and links connecting the arms to the handle, the support for the arms including a frame slidably mounted in the body.

7. A collapsible golf cart including an elon-

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gated body portion, a pair of foldably mounted wheels supporting the body, a pair of parallelogram linkages pivotally connected to the body at one end and to the wheels at the other end to maintain the wheels in parallel relationship in both folded and extended position, said parallel linkages, when in cart supporting position, extending downwardly and rearwardly from their point of connection to the body and in their folded position supporting the wheels partly forwardly of the body, a propelling handle pivotally mounted on the body for folding relationship therewith, a link between the handle and the wheel supporting structure, means connecting the upper end of the link to the handle, means connecting the lower end of the link to the inner ends of the parallelogram linkages for the wheels, and a shelf at the lower end of the body for supporting a golf bag and also for supporting the cart with the wheels off the ground for a wheel folding operation.

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