

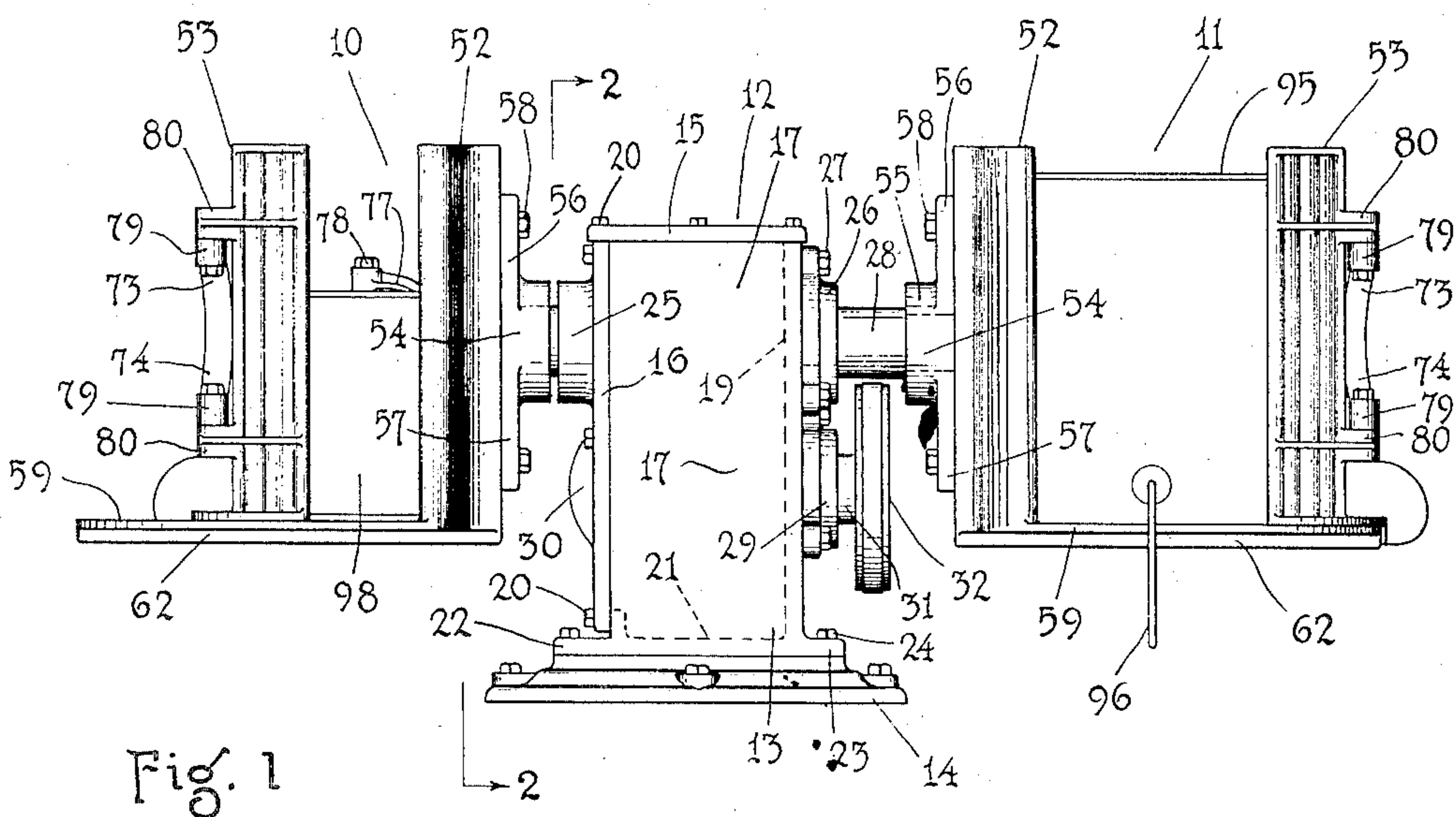
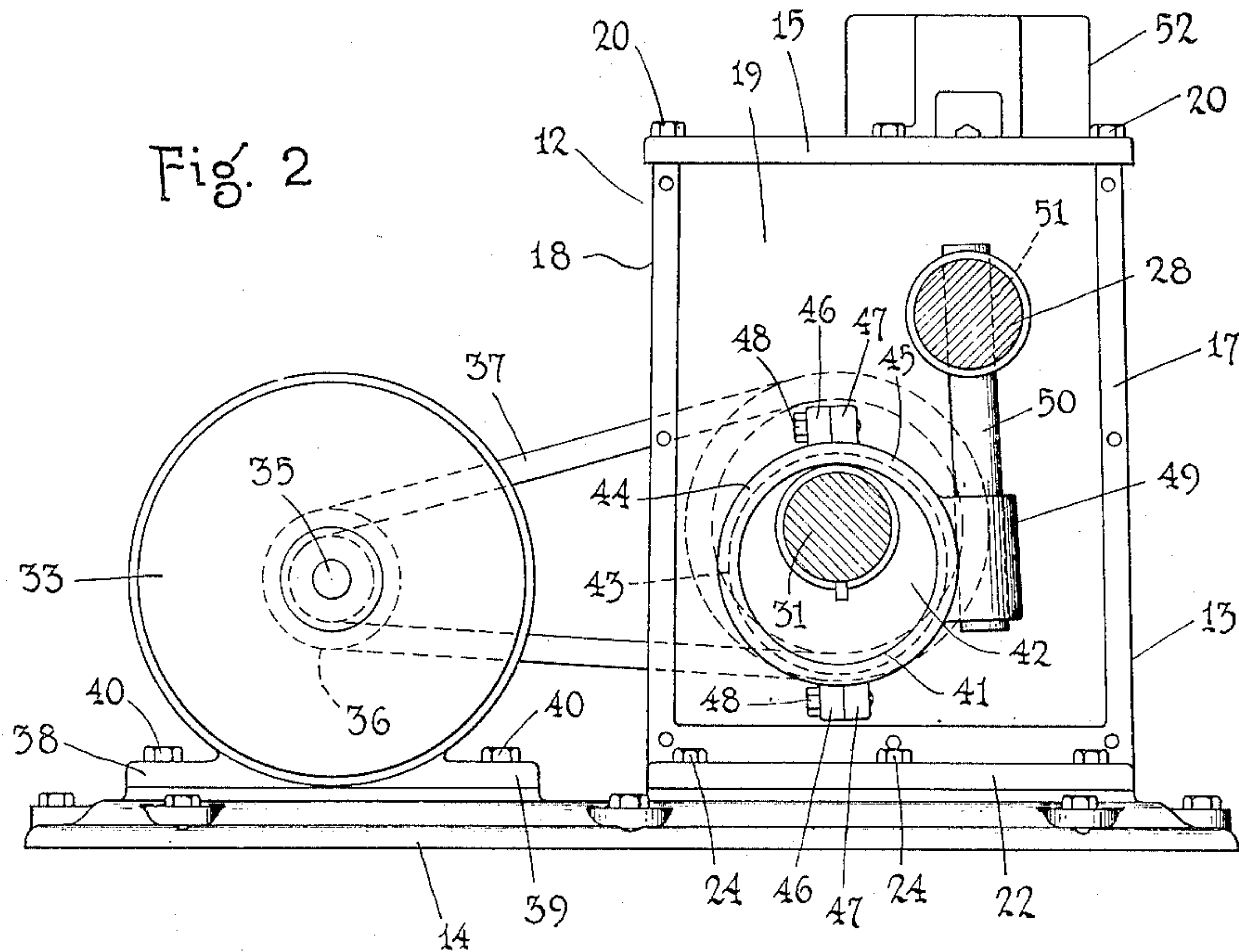
Nov. 26, 1935.

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2,022,526

MIXING MACHINE

Original Filed Feb. 2, 1933 2 Sheets-Sheet 1



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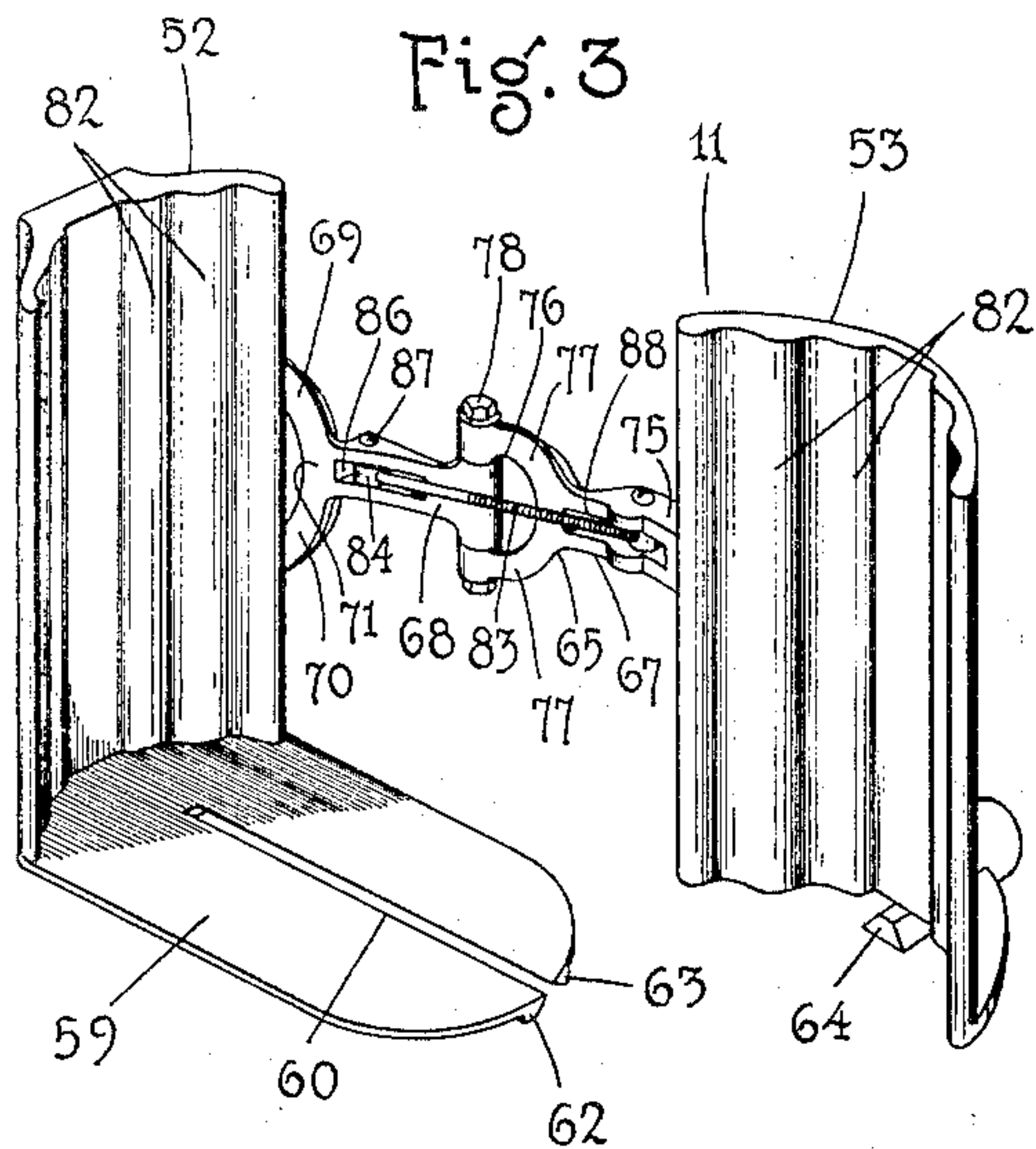


Fig. 3

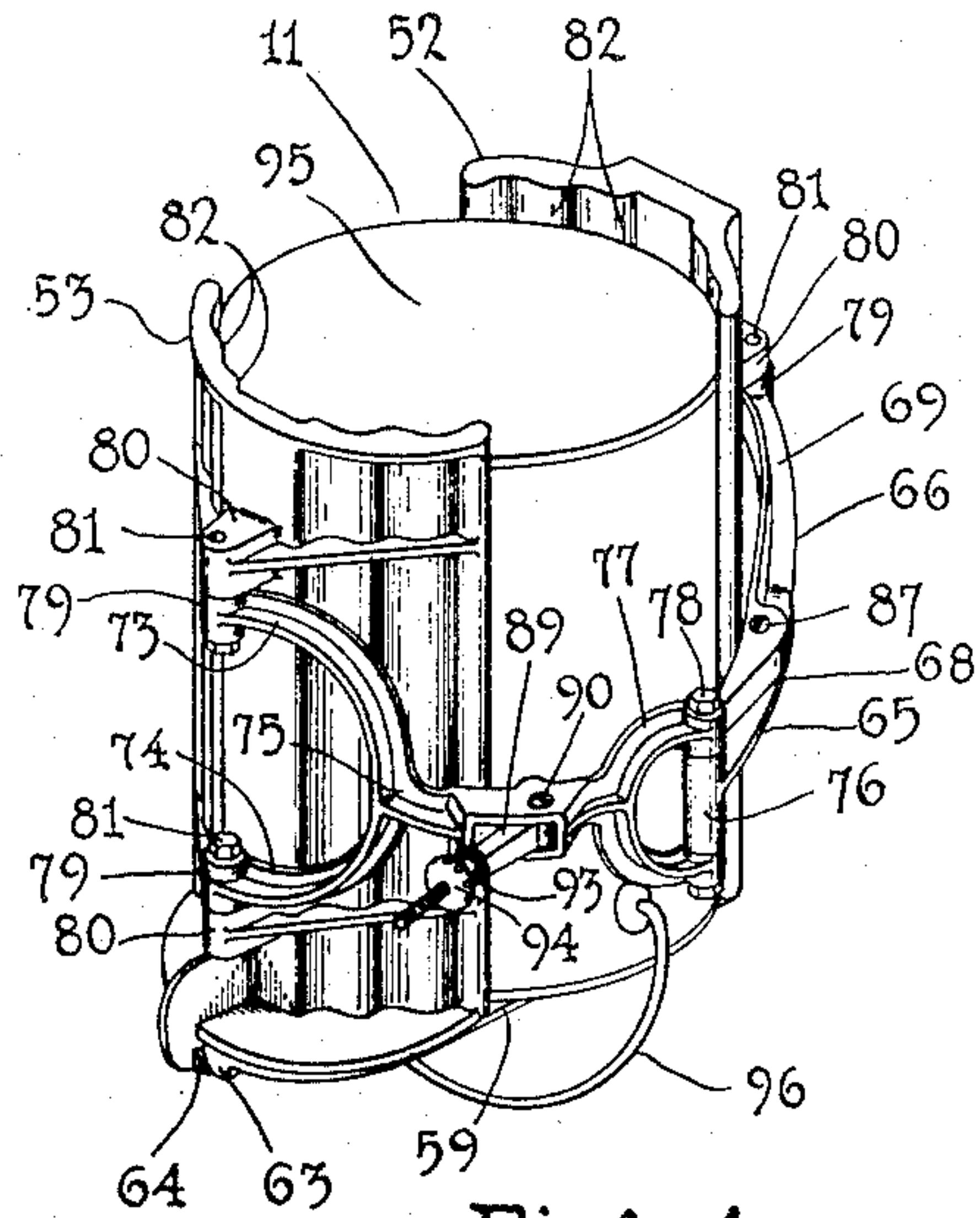


Fig. 4

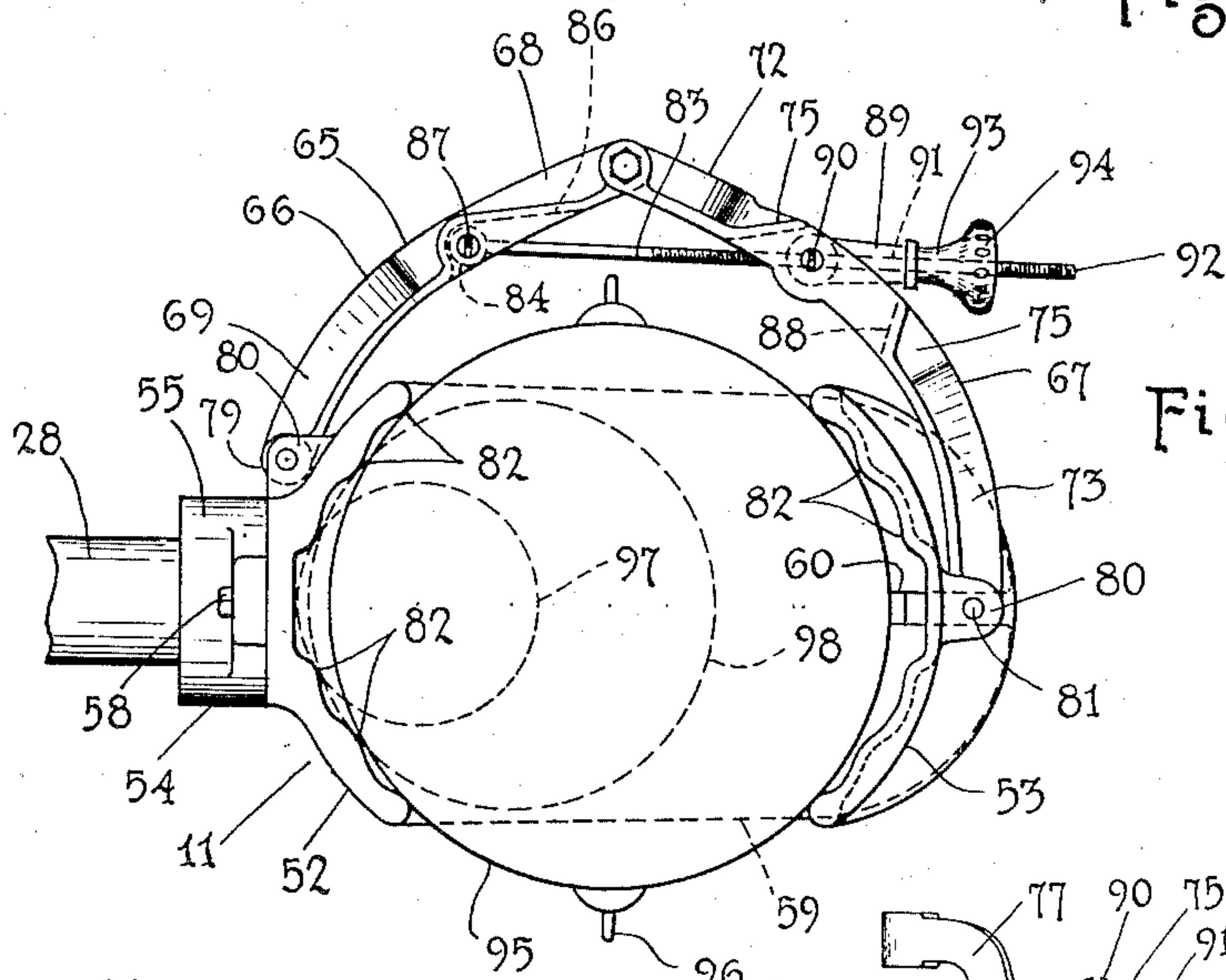


Fig. 5

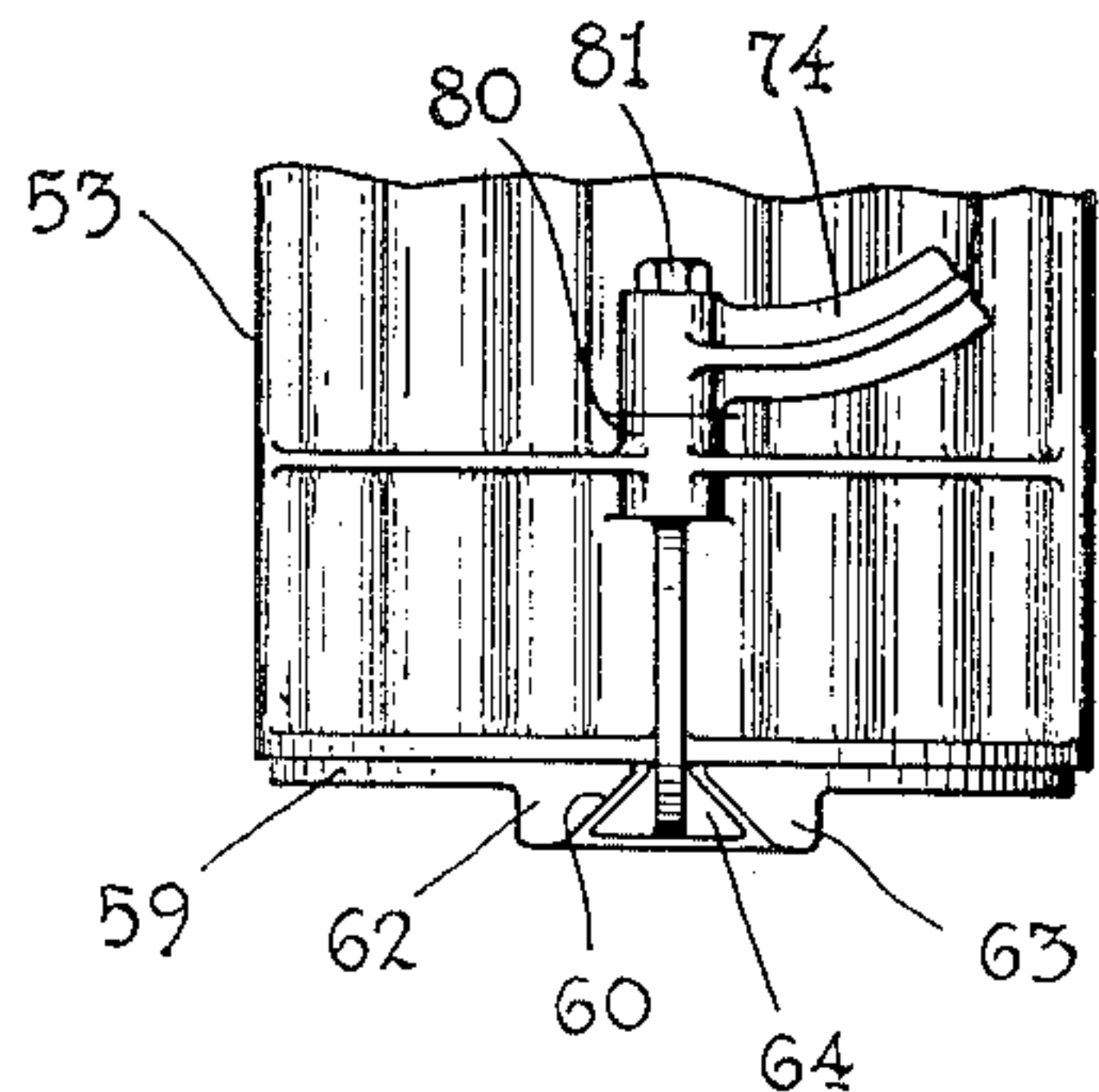


Fig. 6

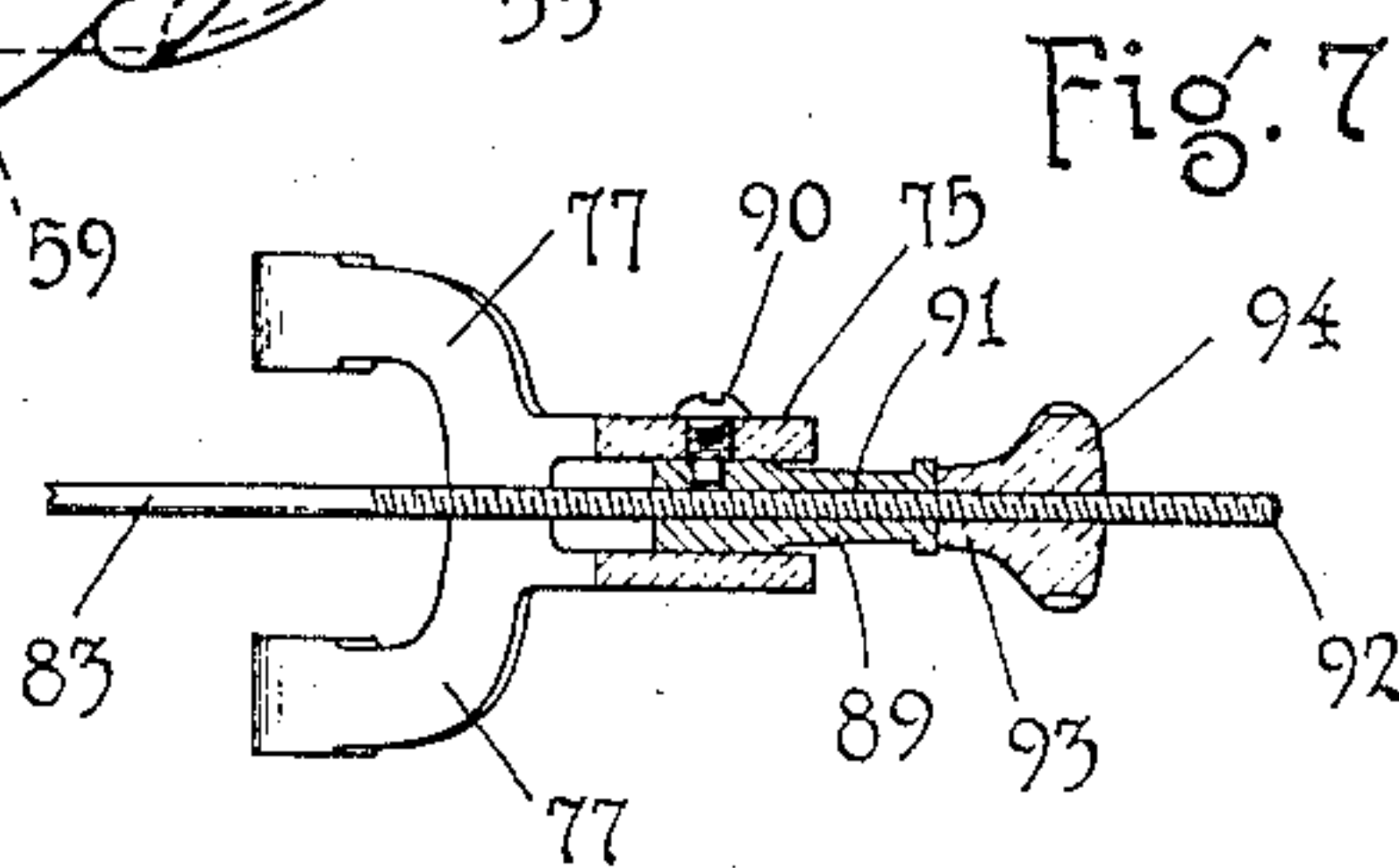


Fig. 7

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UNITED STATES PATENT OFFICE

2,022,526

MIXING MACHINE

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Application February 2, 1933, Serial No. 654,874

Renewed June 28, 1935

9 Claims. (Cl. 259—75)

My invention relates to mixing machines and has for its object to provide a device which will function in a highly efficient and effective manner to mix substances such as paint and the like while contained in cans or similar receptacles.

Another object of the invention resides in providing a paint mixing device in which a rocking motion is imparted to the receptacle, which motion is more rapid when the receptacle is rocked in one direction than in the other direction.

A feature of the invention resides in the specific construction by means of which an irregular rocking motion is imparted to the receptacle.

Another object of the invention resides in providing a holding device which will function in a highly effective and efficient manner to support cans containing various substances to be mixed during the mixing thereof.

An object of the invention resides in providing a mixing machine in which the weight of the holding device is relatively small and in which the parts are so arranged as to reduce the power required and to reduce the vibration of the machine in the operation thereof.

Another object of the invention resides in providing a mixing machine by means of which cans having bails may be readily and conveniently handled.

An object of the invention resides in providing a mixing machine in which two arcuate jaws are employed, one of which is adapted to be swung outwardly from the other to completely clear the same and permit of readily inserting the can containing the substance to be mixed between the said jaws.

Another object of the invention resides in utilizing one of said jaws as a supporting jaw for carrying the can and for supporting the other jaw and in providing means for supporting the complementary jaw from said supporting jaw.

An object of the invention resides in constructing the supporting jaw with a supporting member or shelf issuing outwardly from the lower edge thereof and on which the can may rest when placed within the supporting device.

A still further object of the invention resides in constructing said shelf with a slot forming a guideway and in further constructing the complementary jaw with a lug movable within said slot to guide the complementary jaw for rectilinear movement toward and from the supporting jaw.

Another object of the invention resides in forming said guideway or slot open at its outer end to permit of complete disengagement of the complementary jaw from the supporting member.

An object of the invention resides in providing a double action hinge for connecting said jaws together by means of which the complementary jaw may be moved toward and from the supporting jaw and whereby said complementary jaw may be supported when disengaged from the supporting member.

Another object of the invention resides in constructing said double action hinge with two arms, each arm being preferably forked and formed with a trunk, spaced legs and a connecting portion and in pivoting said legs to the jaws and said trunks together.

An object of the invention resides in providing a threaded rod acting between said arms at the connecting portions thereof, one end of said rod being pivoted to one arm and the other end of said rod being slidable in said second arm and in further providing a nut threaded upon the threaded end of said rod for engagement with the second arm to bring said arms together to urge the complementary jaw toward the supporting jaw.

Another object of the invention resides in constructing the jaws of the holding device arcuate and in providing ridges extending longitudinally thereof for engagement with various types and sizes of cans to hold the same in proper position within the holding device.

Other objects of the invention reside in the novel combination and arrangement of parts and in the details of construction hereinafter illustrated and/or described.

In the drawings:

Fig. 1 is a side elevational view of a mixing machine illustrating an embodiment of my invention.

Fig. 2 is an elevational sectional view of the structure shown in Fig. 1 with one of the end plates of the case removed and taken on line 2—2 of Fig. 1.

Fig. 3 is a perspective view of the holding device viewed from one angle and illustrating the jaws in open position.

Fig. 4 is a perspective view similar to Fig. 3 taken from another angle and showing the holding jaws closed.

Fig. 5 is a plan view of the holding device showing a can supported thereon.

Fig. 6 is a fragmentary end elevational view of the structure shown in Fig. 5.

Fig. 7 is a sectional detail view of the clamping mechanism of the holding device.

The illustrated form of my invention consists of two mixing devices 10 and 11 simultaneously

operable through a transmission mechanism indicated in its entirety at 12 which includes certain mechanical movements for imparting an oscillatory movement to the mixing devices 10 and 11.

5 These parts will now be described in detail.

The mechanism 12 comprises a case 13 which is mounted upon a base 14 by means of which the mixing machine may be attached to a counter, table or other suitable support. This case includes sides 17 and 18, an end 19 and a bottom 21. The case 13 is open at the top and one end, and is closed through a cover 15 and an end plate 16. These parts may be bolted in place through bolts or cap screws 20 in the usual manner. In continuation of the bottom 21 of the case are formed two flanges 22 and 23 which project outwardly from the ends of the case and which rest upon the base 14. The case 13 is secured to base 14 by means of cap screws 24 which pass through said flanges and are threaded into the base.

On the exterior of the end plate 16 is formed a bearing 25. A similar bearing 26 detachable from the case is bolted to the end wall 19 thereof through bolts 27 as best shown in Fig. 1. These two bearings are in alignment and journal a rock shaft 28 which carries the two mixing devices 10 and 11. Secured to the end wall 19 is another bearing 29 and formed upon the interior of the end plate 16 is a bearing 30 disposed in alignment with the bearing 29. These bearings journal an eccentric shaft 31 which is parallel to shaft 28. Shaft 31 projects outwardly through the case and has attached to its free end a pulley 32. An electric motor 33 constructed with flanges 38 and 39 and forming a base therefor is mounted on the base 14 by means of bolts or cap screws 40 which pass through these flanges. This motor has attached to its armature shaft 35 a pulley 36. A belt 37 passes about both the pulleys 36 and 32 and drives the eccentric shaft 31 from the motor 33.

Within the interior of case 13 and upon the shaft 31 is mounted an eccentric indicated in its entirety by the reference numeral 41. This eccentric includes an eccentric disk 42 which is keyed to the shaft 31. An eccentric strap 43 encircles this disk. This strap is formed in two parts 44 and 45 having flanges 46 and 47 adapted to be bolted together through bolts 48. The part 45 of eccentric strap 43 is formed with an elongated boss 49 providing a bearing which slidably receives an eccentric rod 50 secured to and projecting radially from the shaft 28. By means of this construction the shaft 28 is rocked through the action of eccentric 41 as the shaft 31 is rotated, the rocking or oscillating movement of said shaft 28 being relatively fast in one direction, whereby a rapid "throw" followed by a relatively slow return motion is imparted to the cans in the holders 10, 11. Such motion, I have found, affords excellent results in the mixing of paints at relatively few cycles of operation per minute and is much more effective than the regular oscillatory motions in the ordinary machines operating at higher speeds.

Inasmuch as the two mixing devices 10 and 11 are identical in construction, only the device 11 will be described in detail. This device comprises primarily a holding device in which the cans are supported while the contents are being mixed. The holding device is best shown in Figs. 1, 4 and 5 and comprises two arcuate jaws 52 and 53 which are supported as will now be described in detail. Upon the protruding end of shaft 28 is secured a mounting 54 which consists of a boss

55 keyed to said shaft. This mounting further includes two ears 56 and 57 which extend upwardly and downwardly. Bolts or cap screws 58 pass through the ears 56 and 57 and are threaded into the jaw 52 which serves as a supporting jaw for supporting the other jaw 53 and the can whose contents are to be mixed. At the lower portion of the body 52 is formed a shelf 59 which projects outwardly therefrom. The shelf 59 serves as a support on which the can is placed and further serves to hold the other jaw in proper position with respect to the can when the same is brought into clamping action.

In the shelf 59 is formed a longitudinally disposed slot 60 which extends through the outer end of shelf 59. This slot is preferably dovetailed in form and the structure of the shelf adjoining said slot is reinforced through two longitudinally extending ribs 62 and 63 which also give greater depth to the slot. The lowermost portion of jaw 53 as shown in Figs. 3 and 6 is formed with a dovetailed lug or member 64 which is integrally connected therewith and which slides in the slot 60. The slot 60 serves as a guideway along which the member 64 may slide guiding the jaw 53 for rectilinear movement toward and from the jaw 52. When the member 64 has been completely withdrawn from engagement with slot 60 as shown in Fig. 3, the jaw 53 is free from the jaw 52 so that a can may be readily placed upon the shelf 59.

For the purpose of supporting jaw 53 from jaw 52, a double action hinge is employed which is indicated in its entirety by the reference numeral 65. This hinge consists of two arms 66 and 67. The arm 66 comprises a trunk portion 68 and two legs 69 and 70 connected together and to said trunk portion through a connecting portion 71. The arm 67 similarly comprises a trunk portion 72, two spaced legs 73 and 74 and a connecting portion 75. The trunk portion 68 is constructed at its extreme end with a boss 76 while the trunk portion 72 is bifurcated and formed with spaced arms 77 which straddle the boss 76. A bolt 78 passes jointly through these parts and pivotally connects the two arms together. The various legs of the several arms are all formed with bosses 79 which are disposed adjacent lugs 80 on the two jaws 52 and 53. Bolts 81 pass jointly through the corresponding bosses and ears, whereby the arms are pivoted at their outer ends to the two jaws 52 and 53. By means of this construction the jaw 53 may be moved toward and from the jaw 52 with the member 64 sliding in the slot 60 and when said member is entirely disengaged from the slot as shown in Fig. 3, the jaw 53 is free to move laterally as well as toward and from the supporting jaw. Hinge 65 serves to support the jaw 53 in all of its positions.

The two jaws 52 and 53 are preferably constructed arcuate in form so as to grip the cans upon the cylindrical surfaces thereof when placed upon the shelf 59 and to firmly hold the same in position during the oscillation of the rock shaft. To accommodate different sizes of cans the inner surfaces of said jaws are formed with pairs of elongated ridges 82 which function in the manner of a V-block to center and hold cans of various sizes securely in proper position as best shown in Fig. 5.

For the purpose of bringing the jaw 53 toward the jaw 52 a clamp rod 83 is employed which is best shown in Fig. 5. This clamp rod is formed at one end with an eye 84 which fits into a slot

86 in the arms 65 in close proximity to the connecting portion 71 thereof. A screw 87 extends through the arm proper and through said eye and forms a pintle for the rod 83 upon which said rod may oscillate. In the arm 67 in proximity to the connecting portion 75 is formed another slot 88 similar to the slot 86. A sleeve 89 is disposed in this slot and is pivoted to the arm proper through a screw 90 which extends partly into said sleeve. This sleeve is formed with a bore 91 through which the rod 83 may slide. The outer end 92 of the rod 83 is threaded to receive a nut 93 which is formed with a fluted knob 94 by means of which the same may be rotated. When the nut 93 is rotated in a clockwise direction the two arms 65 and 67 are drawn together.

The manner of using my invention is very simple. Assume that the contents of a large can such as indicated at 95 in Fig. 4 and having a bail 96 were to be mixed: Nut 93 would be first loosened and screwed out upon the far end of the threaded portion 92 of rod 83. The jaw 53 could then be slid along slot 60 until the member 64 became disengaged therefrom. After disengagement said jaw could be moved to occupy the position shown in Fig. 3. The can would then be placed upon the shelf or support 59 in inverted position with the bail encircling said shelf as shown in Fig. 4. Jaw 53 would then be reapplied, the member 64 being inserted back into the slot 60. Nut 93 would then be tightened until the can became firmly held in position as shown in Fig. 4. Starting motor 33 would cause the eccentric shaft 31 to rotate. This would move the eccentric's strap 43 laterally which would swing the eccentric rod 50 causing the shaft 28 to oscillate. As the eccentric rotates the eccentric rod 50 slides in the boss 49 on the eccentric proper. This causes an oscillation of shaft 28 and a shaking of the can 95 which results in mixing of the contents thereof.

In the description and explanation of the operation of the invention, reference has only been made to the mixing device 11. It can, however, be readily comprehended that cans can be placed in both the holding devices of the mixing machine and simultaneously operated. Where the contents of smaller cans are to be mixed, said cans are placed in the position shown in dotted lines at 97 and 98. It will be noted that cans of such size engage different ridges 82 on the two jaws 52 and 53 which serve to center the cans and by means of which the said cans are held rigidly in place within the holding device. Where cans of less height are employed, several cans may be stacked one upon the other. I have found that where the upper end of the holding device is free that the cans may be held supported in the holding device in a manner to project outwardly therefrom. With the cans so positioned considerably more agitation is had within the can when the mixing device is oscillated so that more thorough mixing occurs and less time is consumed.

My invention is highly advantageous in that an extremely simple and practical device is provided, whereby commodities contained in cans can be quickly and effectively mixed. The various parts of the machine are constructed so as to maintain the weight of the holding device as closely as possible to the center of the rock shaft. Cans with bails as well as those without bails are readily accommodated in my improved holder in inverted position, in which position the mixing process is expedited, particularly when the con-

tents of the cans has tended to thicken or solidify at the bottom. My invention will accommodate all sizes of cans within certain limits and each holder may be used to mix a number of cans at one time. The device is extremely convenient and when the complementary jaw is moved outwardly the space between the jaws is readily accessible. The cans can be mounted in the machine very quickly and when the nut controlling the clamp screw is tightened, said cans are held firmly in position. My invention is extremely compact and neat in appearance. The rock shaft with my invention may be run at an exceedingly high rate of speed so as to produce rapid mixing. With my invention very little vibration occurs. My improved mixing machine is so designed as to be extremely rigid and substantial and will not readily get out of order.

Changes in the specific form of my invention, as herein disclosed, may be made within the scope of what is claimed without departing from the spirit of my invention.

Having described my invention, what I claim as new and desire to protect by Letters Patent is:

1. In a mixing machine, a holding device comprising a pair of jaws, a forked arm having a trunk, legs and a connecting portion, said arm being pivoted through its legs to one of said jaws, a second arm having a trunk, legs and a connecting portion, the legs of said second arm being pivoted to the other jaw, means for pivoting the trunks of both of said arms together, and means operating between the connecting portions thereof for urging one of said jaws toward the other.

2. In a mixing machine, a holding device comprising a pair of jaws, a forked arm having a trunk, legs and a connecting portion, said arm being pivoted through its legs to one of said jaws, a second arm having a trunk, legs and a connecting portion, the legs of said second arm being pivoted to the other jaw, means for pivoting the trunks of both of said arms together, and a threaded rod pivoted to one of said arms at its connecting portion and being slidable along the other of said arms at its connecting portion, and means threaded on said rod for engagement with the second named arm for urging one of said jaws toward the other.

3. In a mixing machine, a holder including a supporting jaw mounted movably about an axis perpendicularly and substantially centrally of the face thereof, a shelf projecting outwardly from the lower end of said jaw, a complementary jaw, a hinged support therefor comprising two arms hinged together, one arm being hinged to the supporting jaw and the complementary jaw being hinged to the other arm, said support maintaining the complementary jaw in parallelism with said supporting jaw, the arms of the support being foldable in a plane intersecting said axis, the complementary jaw being swingable above and along said shelf and away therefrom into a position clear of its outer end, the shelf serving to support a can in inverted position with the bail thereof receiving said shelf and hanging therebeneath, said shelf being formed with a guideway open-ended at the outer end of said shelf, said complementary jaw having a guide adapted to enter the open end of said guideway and cooperate therewith to keep the complementary jaw in facing relation with respect to the supporting jaw, and clamping means carried by and serving to effect a relative movement between the hinged arms of the support, whereby the complementary jaw may be urged against a can on said shelf and the

can, in turn, urged against said supporting jaw.

4. In a mixing machine, a horizontally disposed power driven rock shaft, an elongated holder including a supporting jaw secured at the back thereof and between its ends to the end of said rock-shaft in a substantially upright position, a shelf projecting outwardly from the lower end of said jaw, a complementary jaw, a hinged support therefor comprising two arms hinged together, one arm being hinged to the supporting jaw and the complementary jaw being hinged to the other arm, the complementary jaw being swingable above and along said shelf and away therefrom into a position clear of its outer end, the shelf serving to support a cam in inverted position with the bail thereof receiving said shelf and hanging therebeneath, said shelf being formed with a guideway open-ended at the outer end of said shelf, said complementary jaw having a guide adapted to enter the open end of said guideway and cooperate therewith to keep the complementary jaw in facing relation with respect to the supporting jaw in positions of said complementary jaw above said shelf, and means for urging the complementary jaw toward the supporting jaw to clamp a can on said shelf between said jaws.

5. In a mixing machine, a horizontally disposed power driven rock shaft, an elongated holder including a supporting jaw secured at the back thereof and between its ends to the end of said rock shaft in a substantially upright position, a shelf projecting outwardly from the face of said jaw at its lower end, a complementary jaw, a double acting hinge mounted on the supporting jaw and carrying said complementary jaw for swinging movement along said shelf and away therefrom into a position clear of the outer end of the shelf, said shelf serving to support a can in inverted position with the bail thereof receiving said shelf and hanging therebeneath, said complementary jaw having means cooperating with the shelf to cause said jaw to move rectilinearly along the shelf and also to keep said jaw in facing relation with respect to the supporting jaw in all positions of the complementary jaw above said shelf, and clamping means for urging the complementary jaw toward the supporting jaw to clamp a can on said shelf between said jaws.

6. In a mixing machine, a horizontally disposed power driven rock shaft, a holder including a supporting jaw secured at the back thereof and between its ends to the end of said rock shaft in a substantially upright position, a shelf projecting outwardly from the face of said supporting jaw at the lower end thereof, a complementary jaw, a double acting hinge mounted on the supporting jaw and carrying the complementary jaw, said complementary jaw being swingable above and along the shelf and having means cooperating with said shelf to cause said jaw to move rectilinearly along the shelf and also to keep said jaw in facing relation with respect to the supporting jaw, and means carried by and acting upon the hinge to urge the complementary jaw toward the supporting jaw for clamping a can on said shelf between said jaws.

7. In a mixing machine, a horizontally disposed power driven rock shaft, a holder including an elongated supporting jaw secured medially at the back thereof and between its ends to the end of said rock shaft in a substantially upright position, a shelf projecting outwardly from the face of said jaw at the lower end thereof and providing a support for cylindrical cans on end, said face being transversely concave and formed with longitudinal ribs symmetrically disposed at opposite sides of a longitudinal line medially of said face, the various corresponding ribs presenting paired abutment surfaces for cans of different diameters, such surfaces of paired ribs coinciding with the same circle struck from a point in a plane coinciding with the axis of said rock shaft and with the said longitudinal medial line of said face, a complementary jaw similar to said supporting jaw, and means carried by said latter jaw for supporting the complementary jaw and actuating the same to clamp a can on said shelf between said jaws.

8. In a mixing machine, a horizontally disposed power driven rock shaft, a holder including an elongated supporting jaw secured medially at the back thereof and between its ends to the end of said rock shaft in a substantially upright position, a shelf projecting outwardly from the face of said jaw at the lower end thereof and providing a support for cylindrical cans on end, a complementary jaw, a double acting hinged support carried by said first jaw for supporting the complementary jaws, means carried by said support for actuating the same to clamp a can on said shelf between said jaws, said shelf being formed with a guideway therein, said complementary jaw having a guide fitting said guideway and cooperating therewith to keep the complementary jaw in facing relation with respect to the supporting jaw, said guideway and guide being dove-tailed to afford a connection between the shelf and complementary jaw for relieving said jaw support from certain strains which otherwise would be imparted thereto by said complementary jaw.

9. In a mixing machine, a horizontally disposed power driven rock shaft, a holder for cylindrical cans of the type having bail ears at the sides and a bail hooked in said ears, said holder including an elongated supporting jaw secured medially at the back thereof and between its ends to the end of said rock shaft in a substantially upright position, said jaw having a transversely concave gripping face less than semi-circular in extent from edge to edge of the jaw, a shelf projecting outwardly from the face of said jaw at the lower end thereof and adapted to be received by the bail of a can invertedly supported thereon, a second jaw similar to and complementing said first jaw, and means carried by said first jaw for movably supporting the complementary jaw in facing relation with respect to said first jaw, said means carrying other means for moving said complementary jaw to clamp a can on said shelf between the two jaws, said jaws in can clamping relation clearing the bail and bail ears of the clamped can.

FRED A. SCHLETZ.

CERTIFICATE OF CORRECTION

Patent No. 2,022,526.

November 26, 1935.

FRED A. SCHLETZ.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 4, first column, line 3, claim 4, and line 28, claim 5, for "an elongated" read a; line 4, claim 4, and line 29, claim 5, for "a" read an elongated; and line 15, claim 4, for "can" read can; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 14th day of January, A. D. 1936.

(Seal)

Leslie Frazer
Acting Commissioner of Patents.