H. H. MACOMBER.

WINDMILL LUBRICATOR.

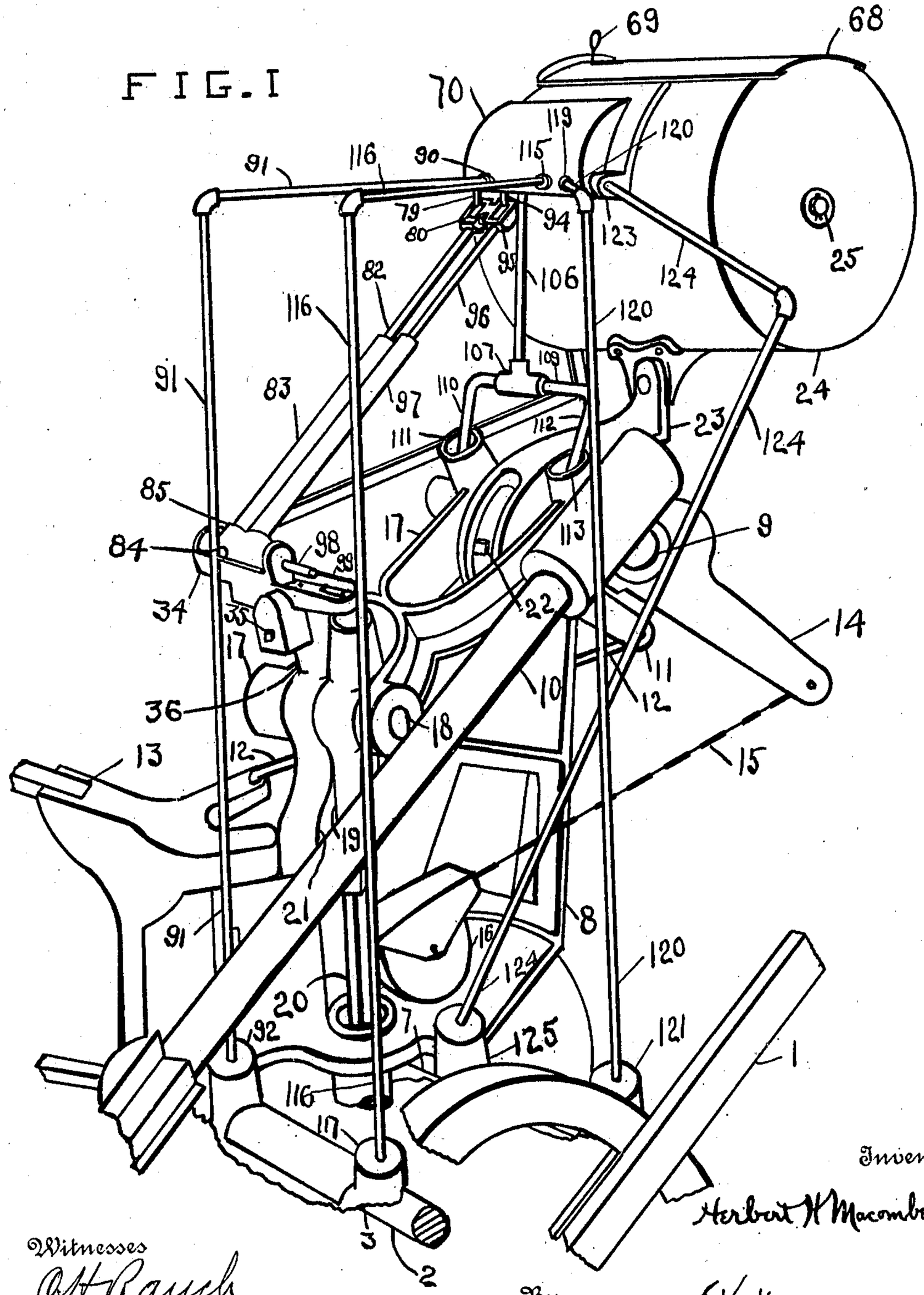
APPLICATION FILED SEPT. 25, 1909.

982,840.

Patented Jan. 31, 1911.

4 SHEETS—SHEET 1.

FIG. 1



Witnesses

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4 SHEETS—SHEET 2.

FIG. 2

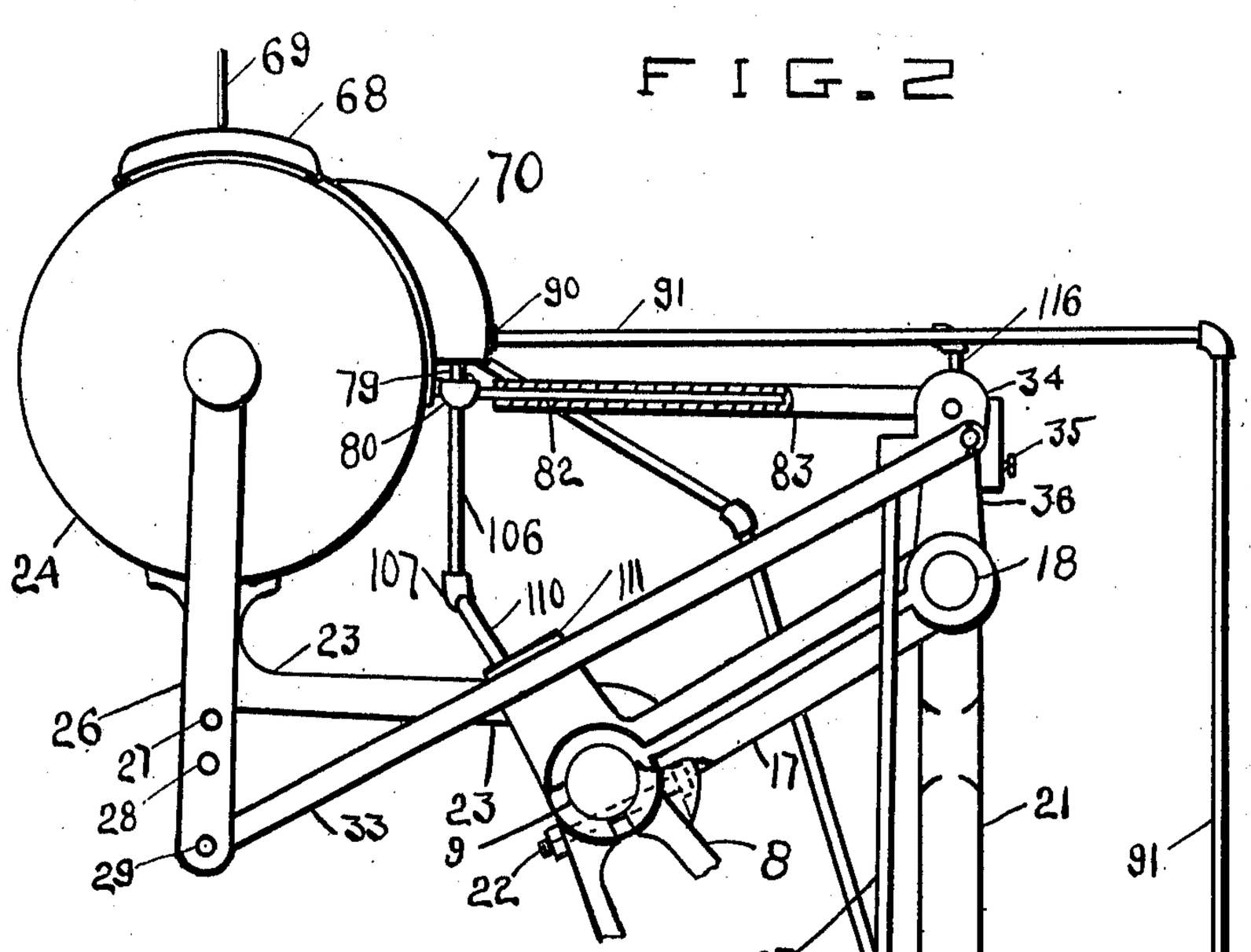

FIG. 3

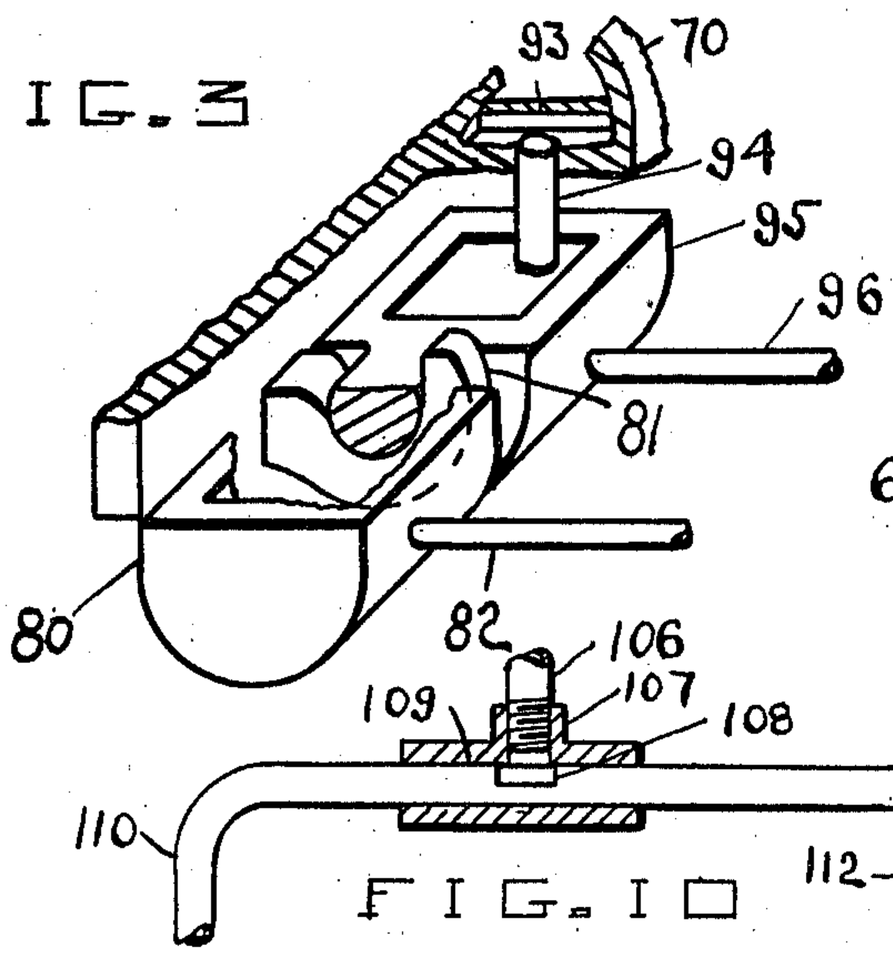

FIG. 10

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4 SHEETS—SHEET 3.

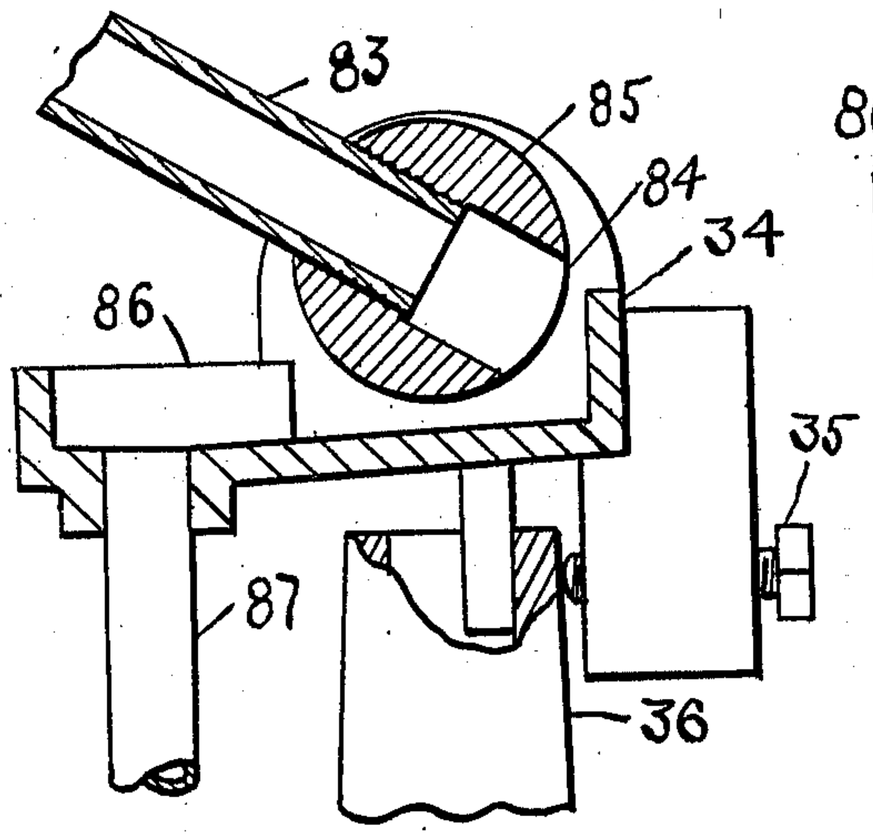


FIG. 4

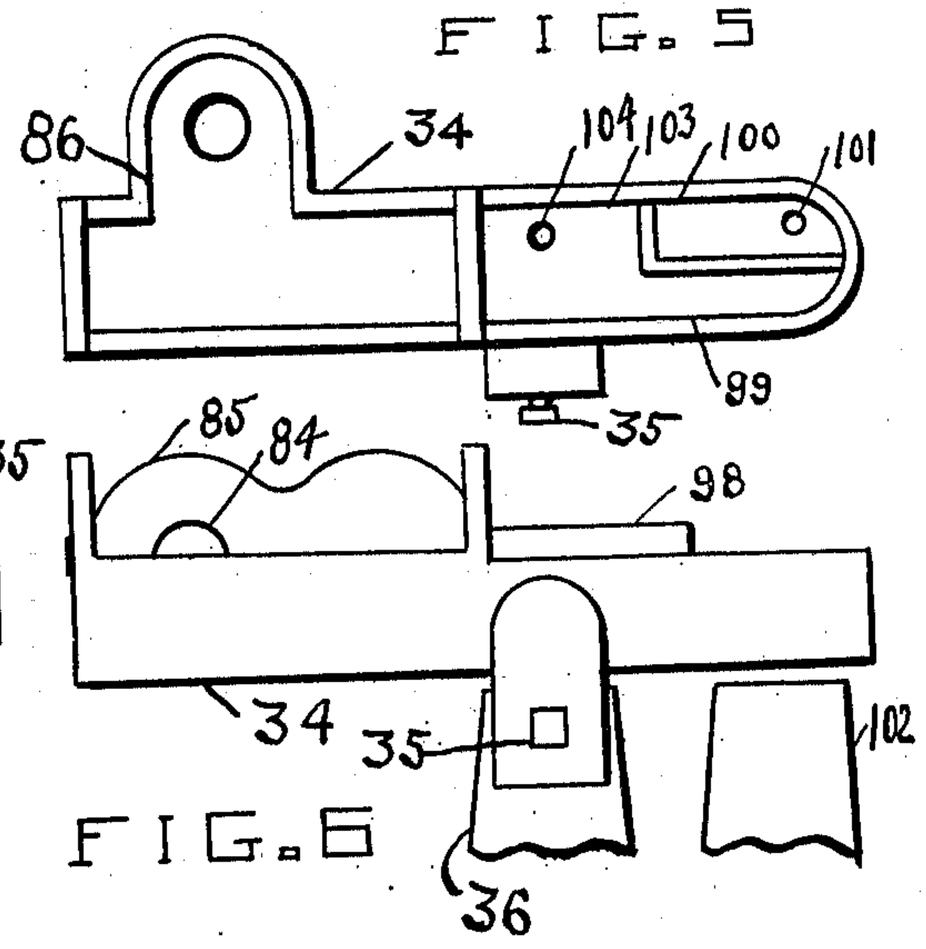
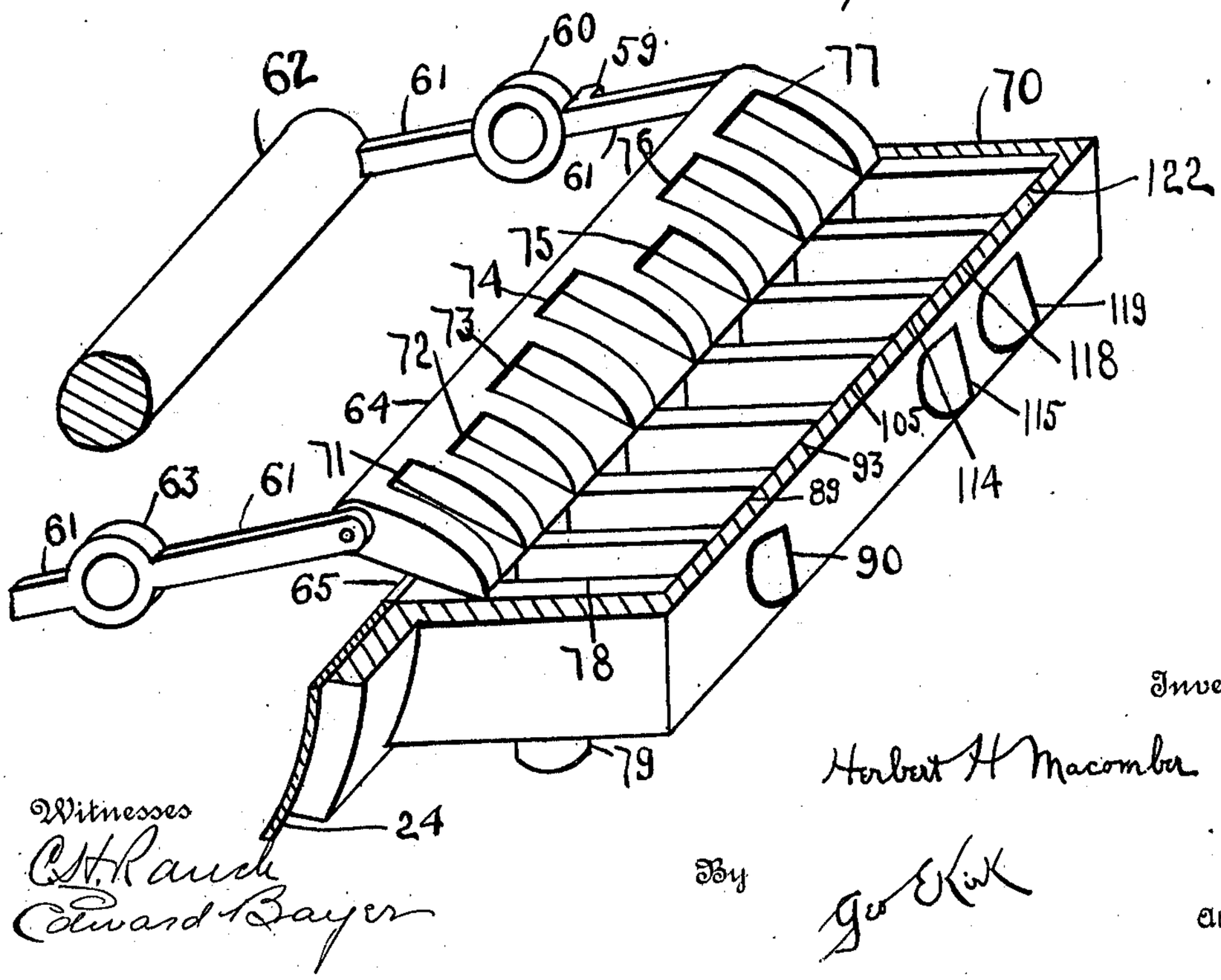


FIG. 5

FIG. 6

FIG. 7



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4 SHEETS—SHEET 4.

FIG. 8

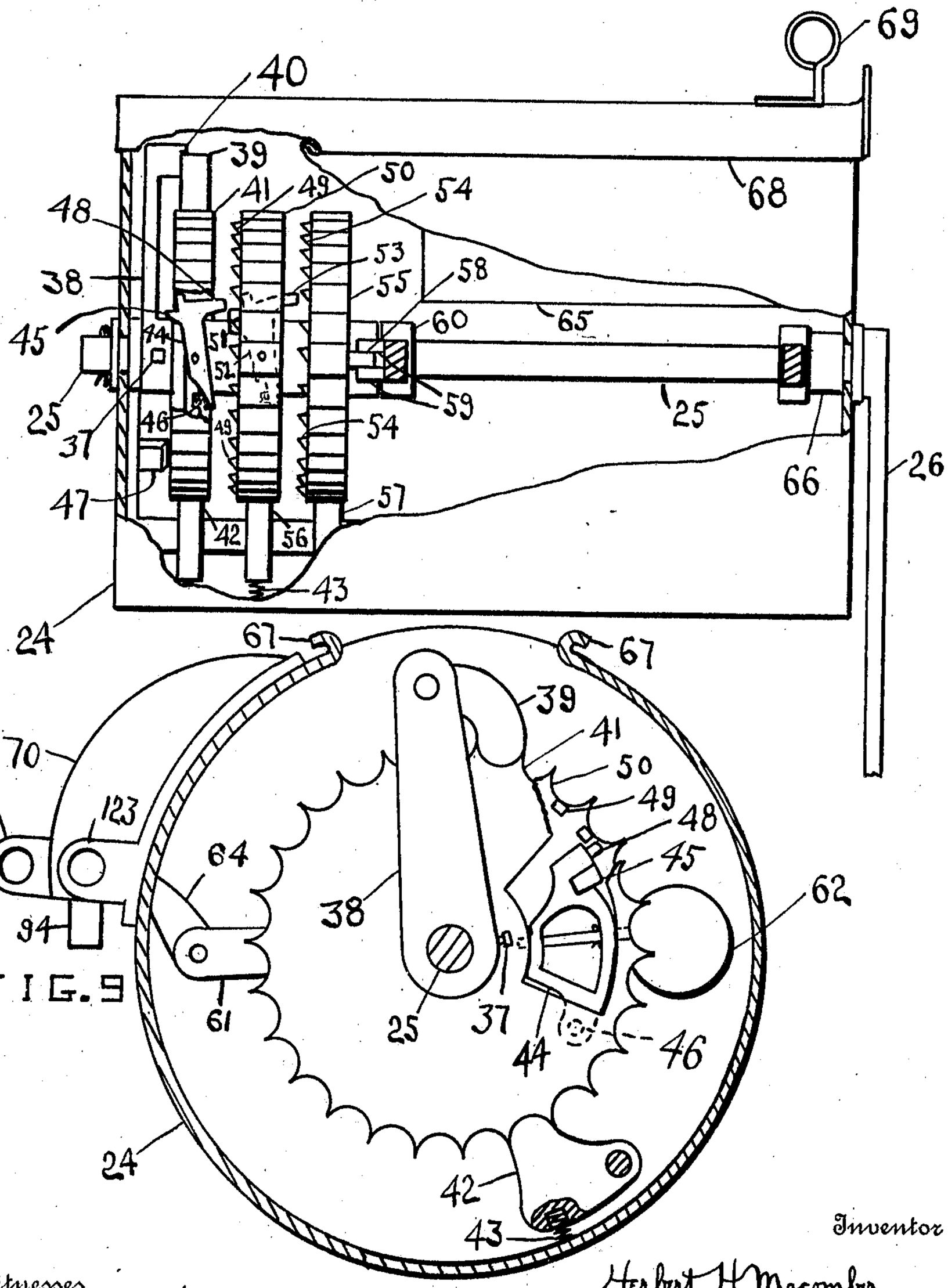

FIG. 9

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UNITED STATES PATENT OFFICE.

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WINDMILL-LUBRICATOR.

982,840. Specification of Letters Patent. **Patented Jan. 31, 1911.**

Application filed September 25, 1909. Serial No. 519,602.

To all whom it may concern:

Be it known that I, HERBERT H. MACOMBER, a citizen of the United States, residing at Kendallville, Noble county, Indiana, have invented a new and useful Windmill-Lubricator, of which the following is a specification.

This invention relates to a distributing device, more particularly for supplying lubricant from a reservoir to a plurality of bearings, some of which bearings are movable relatively to the reservoir.

This invention has utility when adapted as a windmill oiler or lubricator.

Referring to the drawings: Figure 1 is a perspective view, with parts broken away, showing adaptation of invention for use as a lubricator of windmills of type shown in applicant's Reissue Patent No. 12,804, June 2, 1908; Fig. 2 is a fragmentary side elevation of the lubricator showing certain of the operative connections thereof to a windmill; Fig. 3 is an enlarged detail view in perspective of the rocking or oscillating discharge receiving and duct supplying member; Fig. 4 is a sectional view of a portion of one of the ducts on an enlarged scale, showing the mounting thereof on the oil cup; Fig. 5 is a plan view of a distributing section mounted on the oil cup; Fig. 6 is a side elevation of the distributing section shown in Fig. 5; Fig. 7 is a perspective view, with parts broken away, of the dipper member; Fig. 8 is a side elevation of the reservoir, with parts broken away to show the speed reducing mechanism therein for operating the dipper member; Fig. 9 is a cross section of the reservoir showing an end elevation of the speed reducing mechanism; and Fig. 10 is a detail view showing in section the structure of one of the rocking duct sections.

The windwheel 1 (Fig. 1) is mounted on the main shaft 2 (Figs. 1 and 2) in bearing 3. Fixed on this shaft 2 is the pinion 4 in mesh with the gear wheel 5 on the back gear shaft 6, parallel with shaft 2, in bearing 7. Mounted on the frame of these bearings is the upwardly extending frame member 8, carrying the fulcrum pin 9, on which is mounted the weighted governor arm 10. Mounted to rock with the governor arm 10, is the arm 11, connected by link 12 to the rudder 13. Also connected to the weighted governor arm 10 is the arm 14, operated by chain 15 passing over guide pulley 16, this chain serving to throw the windmill in and out of gear.

Mounted on the pin 9 is the walking beam 17 having the bearings for the pin 18 at the end of the beam 17 remote from the pin 9. Between the walking beam bearings for the pin 18 is a bearing for the pump rod connection 19 to which is connected the pump rod 20, and also a bearing for the pitman or crank link 21.

The frame 8 has normally a bolt 22 for locking the pin 9 in position. The lubricator of this disclosure is adapted to be mounted on this windmill without any alteration in such mill, the reservoir being mounted in position by the bracket 23 engaged by the bolt 22. This reservoir or primary distributer 24 has centrally disposed therein the shaft 25 having fixed on one end thereof the arm 26 provided with pin connecting means 27, 28, 29. The gear 5 is provided with wrist pin openings 30, 31, 32, permitting adjustment of throw of pitman 21 for various stroke distances of pump rod 20. Link 33 extending from arm 26 engages the secondary distributer member 34 mounted by set screw 35 on the oil cup 36 of the pitman 21. Pitman travel accordingly causes link 33 to rock arm 26. The adjustments provided on arm 26 may be so connected up with link 33 that with link 33 connected at adjustment 27 and pitman 21 at wrist pin opening 30, the rocking of arm 26 is the same as with link 33 connected at adjustment 29 and crank 32, or with link at point 28 and crank 31. While variation from such adjustments will result in change in the rocking of arm 26 as to movement of pitman 21.

Fastened on the rock shaft 25 by the set screw 37 is the arm 38 carrying the gravity pawl 39 (Figs. 8, 9). Stop 40 on the arm 38 prevents the pawl from swinging clear over and precludes assembling improperly of the pawl 39 on the arm. Rocking of the arm 38 causes the pawl 39 to engage to intermittently rotate the ratchet wheel 41, which ratchet wheel 41 is held from reverse travel by the dog 42 yieldably held in engagement therewith by the spring 43.

Pivotally mounted in the ratchet wheel 41 is the member 44 having a tooth or lug 45 projecting outward from the face of the wheel 41 on the side thereof toward the arm

38, which lug is normally held so projecting by the spring 46 at the opposite extremity of the member 44. In rotation of wheel 41, the lug 45 engages the opposing lug 47 sufficiently in passing to move the member 44 on its pivot and thus throw lug 48 toward the crown teeth 49 on the wheel 50 mounted adjacent the wheel 41. Thus each complete rotation of wheel 41 will result in lug 48 setting ahead wheel 50 one tooth 49, the wheel 50 being held by spring dog in a similar manner as wheel 41. When wheel 50 has been rotated to bring lug 51 of the pivoted member 52 therein, to position adjacent the similar member 44 in wheel 41, lug 48 contacting lug 51 rocks member 52 to throw the tooth 53 on the opposite side of wheel 50 into engagement with the crown teeth 54 on wheel 55 adjacent the wheel 50. While dog 42 serves to hold the wheel 41, similar dogs 56 and 57 hold respectively the wheels 50 and 55.

Projection 58 on the hub of wheel 55 serves to transmit motion from these three loose wheels on rock shaft 25, through the engaging fork 59 to the hub 60 of the rotary frame having the arms 61 carrying on one side the counterweight 62. The arms 61 at the end of the frame remote from hub 60 extend toward each other to the hub 63 (Fig. 7). Opposite to the counterweight 62 the rotary frame carries pivotally the dipper member 64, which in its travel about the reservoir 24, in passing up through the lubricant therein, is filled, and on reaching the opening 65, slightly above the center of the horizontally disposed cylindrical reservoir 24, discharges the lubricant through said opening. This speed reducing mechanism from the driving member 26 so operates that feeding of lubricant only occurs while the machine is running, and then only at such spaced intervals and in such graduated quantities as to effect a distribution of lubricant closely approximating the requirements for maintaining the mill in first class condition.

Loose collar 66 on rock shaft remote from the speed reducing mechanism 39, 41, 50, etc., permits of ready assemblage of the parts on the rock shaft, and then movement of the frame into position to be rotated by the fork 59 engaging lug 58 on wheel 55. The upper portion of the reservoir 24 is provided with a charging opening having sides turned back to form the flanges 67 which may be engaged by the slidable closure 68 having the handle ring 69.

Covering the lateral opening 65 in the reservoir 24 is the housing 70. The dipper member 64 is divided into a plurality of dippers. The dipper section 71 (Fig. 7) discharges into its particular division of housing 70, as do the succeeding divisions or dippers 72, 73, 74, 75, 76, 77, of such different sizes as to proportionally deliver oil to the bearings which have varying wear thereon.

Dipper 71 discharges into housing chamber 78, having outlet duct 79 supplying the oscillating receiving member 80, mounted on hook 81 and having rigid duct section 82 telescoping into duct section 83 discharging through opening 84 in rocking member 85 in the distributing member 34. The lubricant from opening 84 runs into extension 86 and through duct 87 to the oil cup 88 of the wrist pin.

Dipper 72 discharges into chamber 89 having outlet 90 connected by duct 91 to supply oil cup 92 of bearing 3 for shaft 2 adjacent the pinion 4.

Dipper 73 discharges into chamber 93 having outlet 94 into oscillating member 95 rigid with the member 80. Leading from receiving section 95 is duct 96 telescoping with duct 97 extending to rocking member 85, from which discharge duct 98 leads above section 99. In the rocking of member 34 due to the pitman 21, the duct 98 has its drippings partially fall in section 100 to pass by opening 101 to oil cup for pump rod connection 19, while other portions of the drippings of lubricant from duct 98 fall in section 103 and pass through opening 104 into pitman oil cup 36. The telescopic sections leading from the reservoir 24 are elements of the extensible ducts.

Dipper 74 discharges into chamber 105 having outlet duct 106 extending into T-fitting 107 to supply through opening 108 the rock duct 109. The opening 108 is of such size that lubricant from duct 106 runs into the duct 109, the portion 110 of which engages in the rocking oil cup 111 of the walking beam, while the opposite portion 112 engages in the other rocking oil cup 113 of the walking beam. The portions 110, 112, are sufficiently long to be engaged and rocked by the oil cups 111, 113, and thus deliver full supply of lubricant thereto.

Dipper 75 discharges into chamber 114 having outlet 115 connected to duct 116 supplying oil cup 117 for bearing 3 of shaft 2 adjacent the windwheel 1.

Dipper 76 discharges into chamber 118 having outlet 119 connected by duct 120 with oil cup 121 of bearing 7 for shaft 6.

Dipper 77 discharges into chamber 122 having outlet 123 connected by duct 124 with oil cup 125 of bearing 7 for back gear shaft 6.

The bearings for the shafts 2, 6, are relatively stationary as to the reservoir 24, the cups 111, 113, rock relatively to said reservoir, while the bearings at wrist pin and walking beam pin 18 have movement relatively to the reservoir. The distributers or ducts leading from the reservoir are made up of rigid sections positively conducting lubricant to the several working bearings,

and due to the graduation in size of the dippers, the supply is proportional to the requirement of each bearing.

The connecting up of the device for automatic operation with the windmill by the speed reduction mechanism results in intermittent supply to the bearings at such remote intervals as to keep the bearings in proper condition and not waste lubricant, features of economy in operation.

What is claimed and it is desired to secure by Letters Patent is:

1. In a windmill the combination with a reservoir of a walking beam having a bearing movable relatively to the reservoir, oil cups for said bearing, and a connection between said reservoir and one of the cups comprising an extensible duct and a member by which the duct is movably engaged, said member mounted on one of the cups and having distributing passages to deliver from the duct to the cups.

2. In a windmill the combination with a reservoir of a pump rod having a bearing, a crank link having a bearing, said bearings movable relatively to the reservoir, oil cups for said bearings, and a positive connection between said reservoir and one of the cups comprising a jointed duct and a rigid member, said member having passages to supply each cup.

3. The combination with a windmill comprising a frame, a pump rod reciprocable in said frame and provided with a bearing member, a lubricant reservoir mounted on the frame, and as to which reservoir the member is movable, and a positive connection between the reservoir and bearing member comprising a duct having rigid sections and a member having distributing passages supplied by said duct there being dipper means to supply said duct from said reservoir.

4. A multiple discharge lubricator comprising a reservoir and a rotary carrier therein embodying normally self emptying dippers, said reservoir having a lateral wall providing a discharge opening and a dipper guide thereto, and passages from said reservoir comprising discharge ducts supplied by each dipper.

5. A multiple discharge lubricator embodying a reservoir, a rotary carrier therein having a plurality of different capacity dippers, said reservoir having a longitudinally extending dipper discharge opening above the axis of the carrier, passages extending from said reservoir comprising a discharge duct supplied by each dipper, and driving mechanism embodying elements intermittently connected to actuate the carrier.

6. The combination with a reservoir and a plurality of elements having relatively movable and relatively stationary bearings, of passages extending from the reservoir to the bearings, said passages comprising ducts having rigid interengaging relatively movable sections, there being dipper means to supply said passages from said reservoir.

7. The combination with a reservoir and a plurality of relatively movable bearings, of separate passages from said reservoir to said bearings comprising supply ducts having rigid interengaging relatively movable sections, there being dipper means to supply said passages from said reservoir.

8. The combination with a windmill having a walking beam bearing, of a reservoir relatively to which said bearing is movable, dipper means in said reservoir, a connection from said reservoir to the bearing comprising a telescopic duct and driving mechanism intermittently connected to actuate the dipper means to supply lubricant from the reservoir to the bearing.

9. The combination with a windmill having a crank link, and a bearing therefor, of a reservoir relatively to which said link is movable, a distributer mounted on the link to supply the bearing, and a connection from the reservoir to the distributer comprising rigid interengaging relatively movable sections.

10. The combination with a windmill having an oil cup, of a reservoir relatively to which said oil cup is movable, and a connection from said reservoir to said cup comprising a supply duct having a first sustaining section rigid with said reservoir and a second rigid relatively movable section sustained by the first section and directly engaged to be rocked by said cup.

11. The combination with a windmill having oil cups, of a reservoir relatively to which said oil cups are movable, and connections from said reservoir to said cups comprising a plurality of supply ducts having relatively movable rigid sections, there being dipper means to supply said ducts from said reservoir.

12. The combination with a windmill having a plurality of bearings, of a supply reservoir and connections between said reservoir and bearings comprising a relatively rockable duct discharge receiving member, a duct interengaging with said reservoir and member, and a plurality of distributers supplied by said member to provide passage of lubricant to the bearings.

13. The combination with a windmill having a movable bearing, of a lubricator having a reservoir as to which said bearing is movable, and a supply device interengaging with said reservoir and the bearing embodying a telescopic duct, a lubricant receiving member rockable relative to said reservoir, and distributing passages from said member.

14. A windmill lubricator comprising

relatively movable primary and secondary lubricant distributers, a mounting maintaining said secondary distributer against rotation, communication therebetween comprising ducts, and a plurality of tubes forming ducts leading from each distributer to different points.

15. A windmill lubricator comprising a primary lubricant distributer, a relatively movable secondary lubricant distributer, a mounting maintaining said secondary distributer against rotation, communication therebetween comprising ducts, and ducts leading from the secondary distributer.

In testimony whereof I hereunto set my hand in the presence of two witnesses.

HERBERT H. MACOMBER.

Witnesses:

FRANK B. PARK,

CLOYCE D. DUFFIELD.