

July 27, 1965

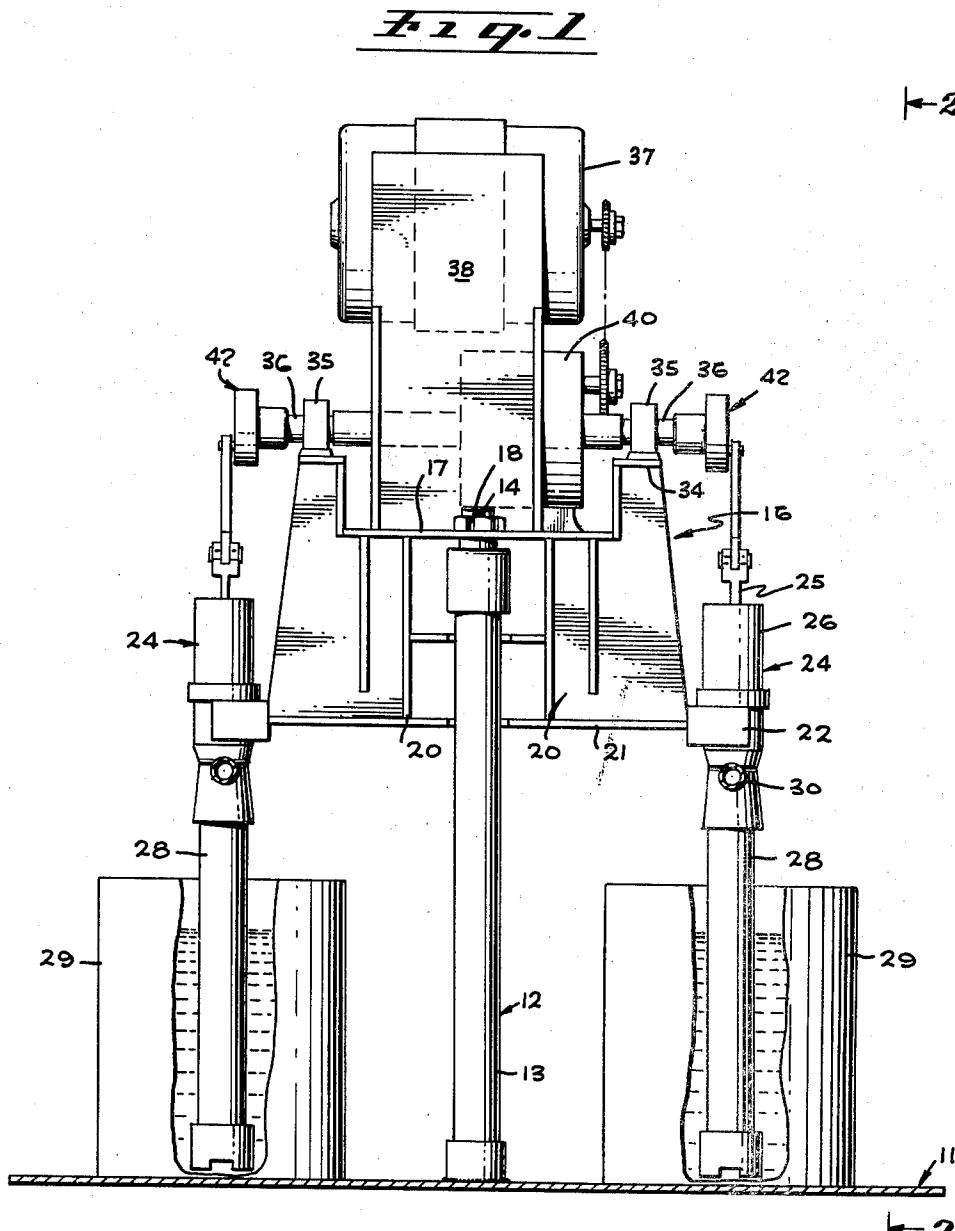
F. M. MATHENY

3,196,802

PROPORTIONING PUMP

Filed May 21, 1963

2 Sheets-Sheet 1



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Fig. 3

Fig. 2

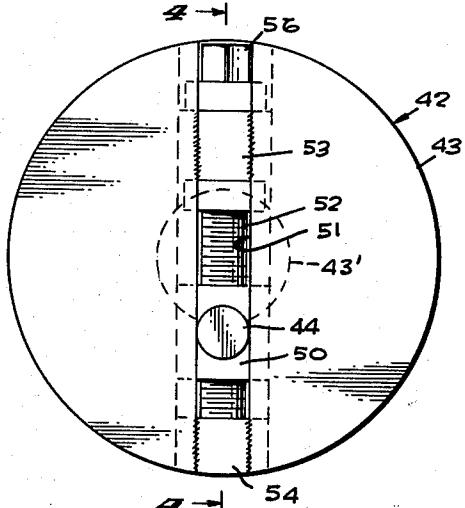
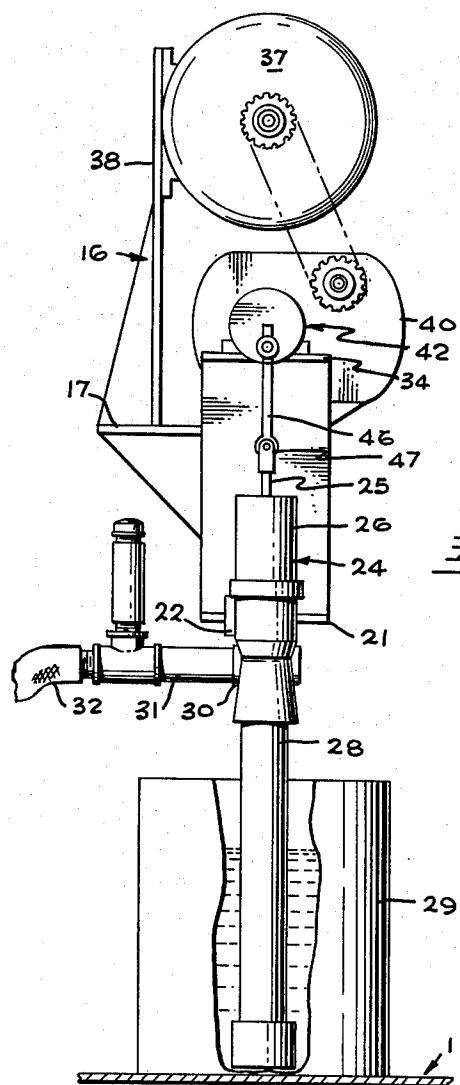


Fig. 4

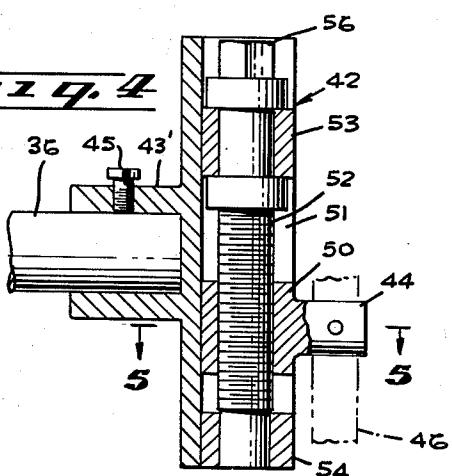
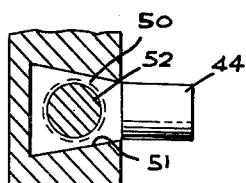


Fig. 5



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PROPORTIONING PUMP

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2 Claims. (Cl. 103—218)

This invention has to do generally with means for proportioning materials as where two substances to be blended are pumped from separate supply containers, and more particularly with means for pumping two materials from separate sources at various rates of flow and in predetermined proportions irrespective of the rate of flow.

An object of the invention is to provide a novel pumping unit for delivery of fluids from two sources in predetermined proportions but at various rates.

Another object is to provide such a pumping unit wherein the proportions of materials pumped can be adjustably varied.

A further object is to provide a pumping unit embodying positive displacement piston-type pumps which includes novel means for adjusting the length of the stroke of the piston of at least one of the pumps.

Another object of the invention is to provide an adjustable crankpin assembly or mounting.

Still another object is to provide a novel pump unit mounted on a base wherein the pump unit can be raised and lowered to accommodate the removal and replacement of supply containers.

These and other objects will be apparent from the drawings and the following description. Referring to the drawings:

FIG. 1 is an elevational view of apparatus embodying the invention;

FIG. 2 is an elevational view of the apparatus of FIG. 1 taken as viewed from the line 2—2 on FIG. 1;

FIG. 3 is an enlarged elevational view on line 3—3 of FIG. 1;

FIG. 4 is a sectional view on line 4—4 of FIG. 3; and FIG. 5 is a sectional view on line 5—5 of FIG. 4.

More particularly describing the invention, numeral 11 generally designates a base which is shown to be in the form of a metal plate although it might be of other material. This supports an upright fluid jack 12 which comprises a cylinder 13 mounted on the plate and a piston (not shown) having a projecting piston rod 14. Mounted on the rod is a frame designated generally by 16. The latter includes a central plate 17 which is apertured to receive the threaded end of the piston rod 14. The frame is secured by a nut 18.

Frame 16 includes a pair of upright wing plates 20 which extend between plate 17 and a bottom plate 21. The latter carries partially round sections 22 at each side in which are mounted standard, positive displacement, piston-type pumps 24. A piston rod 25 is shown extending upwardly from the piston (not shown) of each pump in the cylinder 26.

Each pump is provided with a depending inlet tube 28, and this is adapted to extend into a container 29 shown resting upon the base 11. The pump outlets 30 are connected by pipes 31 to a suitable discharge hose 32 which may lead to a blender or other desired point.

With the construction thus far outlined it will be apparent that when the fluid jack 12 is contracted, as shown in the FIGS. 1 and 2, the pump intake tubes 28 reach to the bottom of the containers 29. In order to remove and replace the containers it is only necessary to actuate the jack by pressure fluid from any suitable source to expand

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it, thereby raising the frame 16 and pumps 24 to a level such that the lower ends of the intake tubes are above the containers.

Upper plates 34 forming part of the frame 16 support pillow blocks 35 which serve to journal a shaft 36. The shaft is driven by a motor 37 mounted on an upright plate 38 of the frame through a gear reduction unit 40 supported on plate 17.

At each end of the shaft 36 I provide a crankpin assembly or unit designated generally by numeral 42. In general this comprises a body 43 which is mounted on the end of the shaft and a crankpin 44 projecting therefrom. The body may be secured to the shaft by setscrew 45 in a hub 43' of the body. A connecting rod 46 is pivotally mounted on the crankpin at one end and pivotally connected to a clevis joint 47 on the end of the piston rod 25.

It is a feature of the invention that the throw of the crankpin can be adjusted to thereby adjust the stroke of the associated pump. Thus the crankpin 44 is mounted integral with a nut 50 which is slideably received in a dovetail channel or slot 51 in the body 43. The nut in turn receives a screw 52 which is journaled in bushings 53 and 54 fixed in the slot 51. This slot or channel itself extends radially or diametrically of the body with respect to the axis of rotation thereof when on the shaft.

It will be apparent that by turning screw 52, the end portion 56 of which is shaped to receive a tool, the position and hence the throw of the crankpin 44 can be adjusted. This in turn regulates the stroke of the associated piston. Consequently, regardless of the speed of the shaft and the rate of flow of the pumps, the proportional amount of the total liquid delivered by the pumps will remain constant at the selected ratio.

Although I have shown and described preferred forms of my invention, I contemplate that various changes and modifications can be made therein without departing from the invention, the scope of which is indicated by the following claims.

I claim:

1. A proportioning pump unit, comprising a base plate adapted to provide a supporting surface for a pair of supply containers, an upright fluid jack mounted on said plate, a frame carried on said jack and extending laterally thereof to provide two end portions, a pump mounted on each end portion of said frame and having a depending inlet pipe to extend into a container, said jack being expandable to raise said frame and the pumps and permit removal and replacement of the containers, a shaft journaled in the frame above said pumps, means operatively connecting each pump to the shaft, a motor carried by the frame on a portion thereof above said shaft, and a driving connection between the motor and the shaft.

2. The proportioning pump unit set forth in claim 1 in which said frame is detachably mounted on said jack.

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