No. 609,270. Patented Aug. 16, 1898.

J. F. FLAHERTY.

DEVICE FOR MIXING LIQUIDS, &c.

(Application filed June 22, 1897.)

(No Model.) 3 Sheets—Sheet 1.

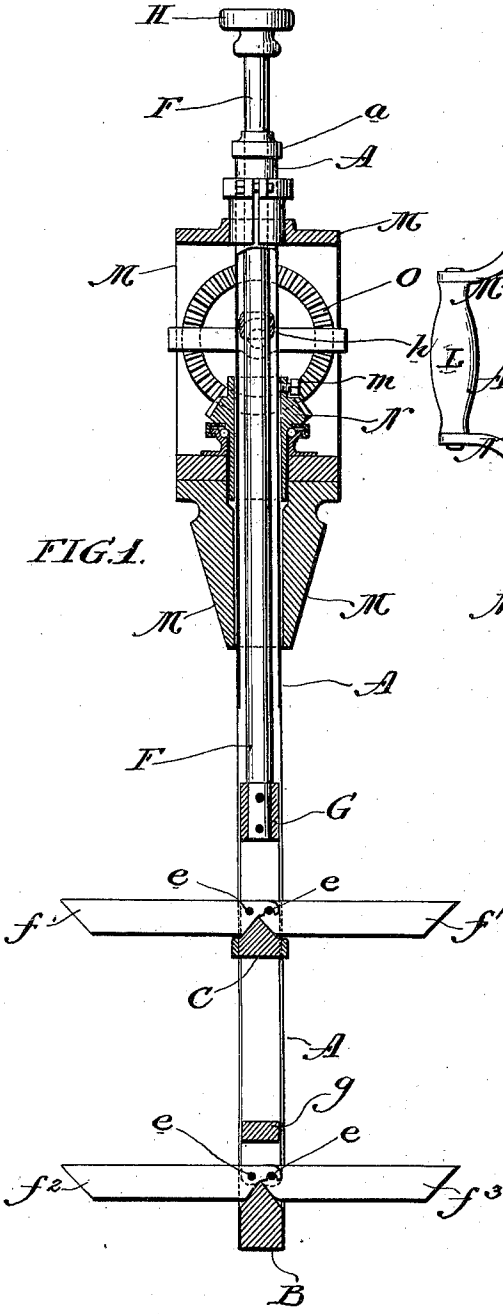


FIG. 1.

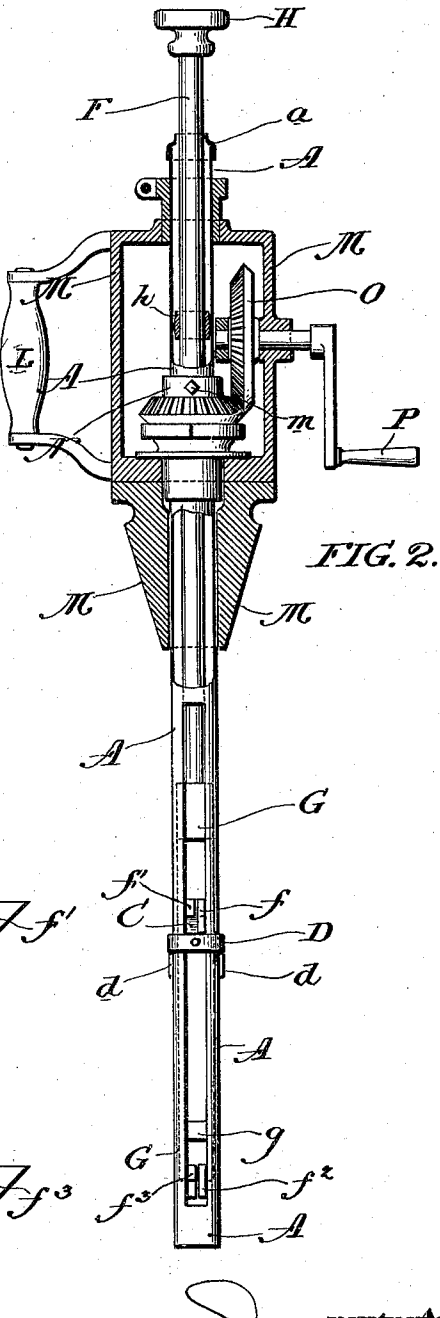


FIG. 2.

WITNESSES:
Joseph Flaherty
Frank P. Martin

INVENTOR
James F. Flaherty
by his atty
Thos. P. Martin Jr.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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FIG. 3

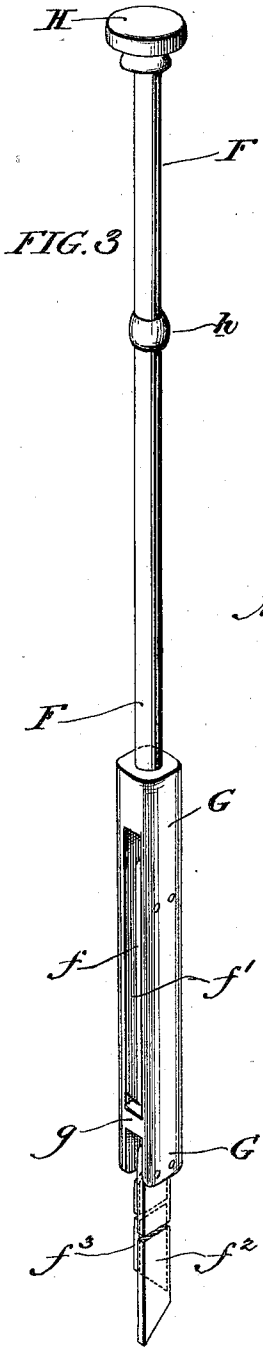


FIG. 4.

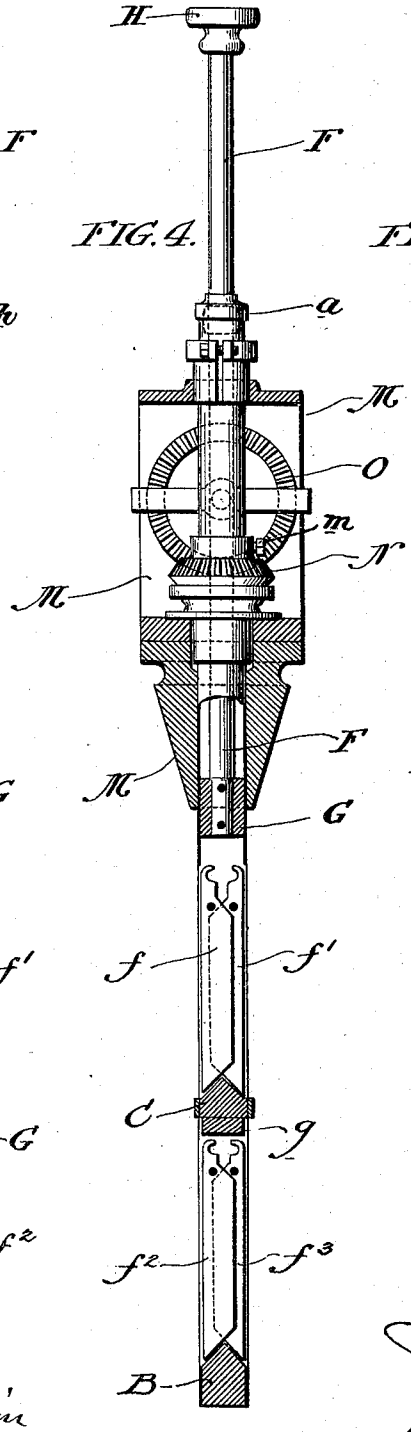
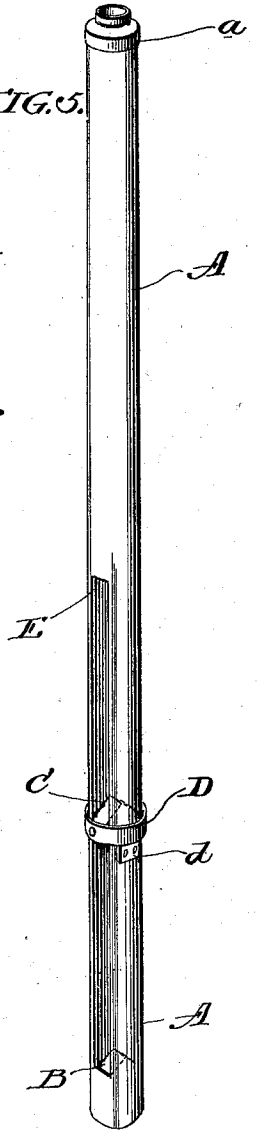


FIG. 5.



WITNESSES:
Joseph Flaherty
Frank P. Martin

INVENTOR
James F. Flaherty
by his atty
Thos. J. Martin Jr.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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FIG. 6.

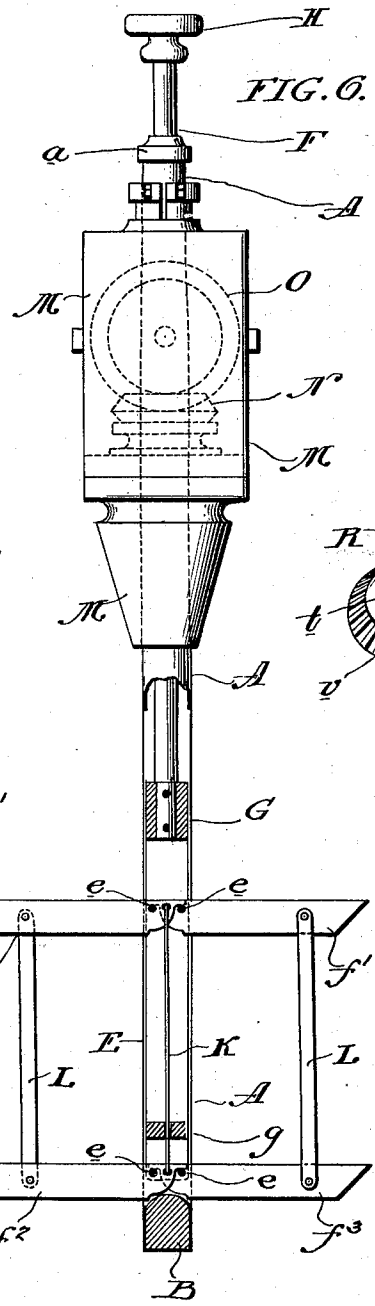


FIG. 7.

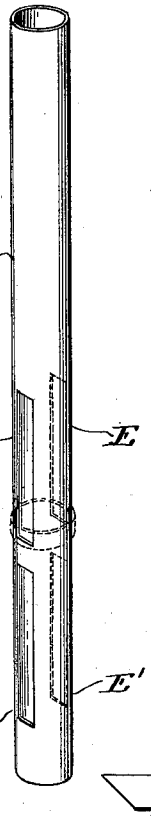
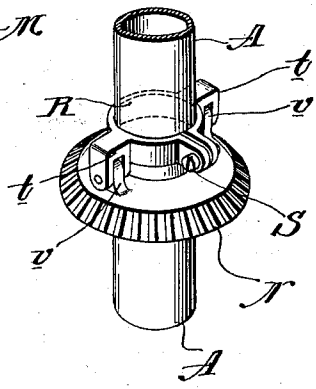


FIG. 8.



WITNESSES:
Joseph Flaherty
Frank P. Martin

INVENTOR
James F. Flaherty
by his atty
Thos. J. Martin Jr.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JAMES F. FLAHERTY, OF PHILADELPHIA, PENNSYLVANIA.

DEVICE FOR MIXING LIQUIDS, &c.

SPECIFICATION forming part of Letters Patent No. 609,270, dated August 16, 1898.

Application filed June 22, 1897. Serial No. 641,761. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. FLAHERTY, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Device for Mixing Liquids or Semi-liquids, of which the following is a specification.

My invention is a device intended to be applied to any receptacle containing the matter to be mixed—such as alcohol and water, molasses and glucose, water and sugar, &c., contained in a barrel, hogshead, or other vessel—and is inserted therein and brought into contact with the contents thereof through the bung-hole or other aperture.

It consists of the following parts: first, a hollow rod or tube to be inserted through the bung-hole, containing at its lower extremity (within the vessel) wings or arms hung pivotally therein and in a vertical direction, but which when in operation are extended at any desired angle to said tube, more or less approaching the horizontal, by means of one or more wedges within said tube and operated from the upper extremity (without the vessel) by a longitudinally-moving rod, and, second, actuating mechanism having centrally throughout a perpendicular opening or cavity, through which the hollow rod or tube passes, and provided centrally on its under side with a conical or pyramidal plug or bung intended to be forced into the aperture and there firmly wedged during the operation, said mechanism to consist of a pair of bevel-gears, one provided with a crank and the other centered upon said hollow rod or tube as an axis, on which it rotates upon power being applied to said crank.

In the drawings, Figure 1 is a vertical section of the entire machine, showing the operating-rod lowered and the arms extended. Fig. 2 is a vertical section of the entire machine looking endwise. Fig. 3 is a detailed perspective view of the operating-rod and attachments. Fig. 4 is a vertical section of the entire machine similar to Fig. 1, but with rod drawn up and arms inclosed. Fig. 5 is a detailed perspective view of the hollow tube with the operating-rod and attachments taken out. Fig. 6 is a detailed section view of a modification, showing arms connected. Fig. 7 is a detailed view of the hollow tube with an independent opening for each arm. Fig. 8 is a detailed view of a means of connecting the tube with the actuating mechanism.

Similar letters refer to similar parts throughout the several views.

The hollow tube A, which from the tapering plug-like end of the frame M is inserted within the barrel or other vessel containing the substance to be mixed, is provided at its lower extremity with a wedge-shaped plug B, which is immovable, and also with the similar, but movable, wedge-shaped plug C, fastened to the ring D, which encircles the tube A, and when down rests upon the supports *d d*, but which is susceptible of being moved freely up and down the tube A, the plug C being within and the ring D without tube A.

At opposite sides of the tube A are the openings E E to permit of the opening and closing of the arms $f f' f^2 f^3$.

The rod F is fastened to the sliding frame G and both are inclosed loosely, but snugly, within the tube A, said rod F being finished with the cap or handle H.

Within the frame G is the cross-piece or connecting part *g*, which upon being drawn up elevates the sliding plug C; also, within the frame G are pivoted and loosely hung at *e e e e* the arms $f f' f^2 f^3$, beveled at their lower extremities and so devised at their upper ends that when extended horizontally the hook-like part of one locks over the pivot *e* of the other.

On the rod F a rubber ring *h* is so fastened that its periphery is in contact with the inner side of the tube A for the purposes of steadying and holding the rod and acting as a stop by coming into contact with the cap *a* on the tube A when the rod is raised.

The frame M is conical or pyramidal on its under side and has throughout a circular perpendicular opening, through which the tube A passes. It is provided with the bevel gear-wheel N, through which also the tube A passes centrally. The wheel N is geared into the bevel gear-wheel O, also hung in the frame M and centered on the shaft of the crank P. The gear N is shown set on ball-bearings in Fig. 1, which construction is preferable to the ordinary method, but is not at all essential. The gear N is adjusted and fastened to

the tube A, which it rotates upon power being applied to the crank P. This is accomplished either by tightening the set-screw in Figs. 1, 2, and 4 or, as shown in Fig. 8, by employing the slightly flexible split clamping-collar R, closed in by means of the screw S. This collar R has the wings *t t*, which are loosely pinned to the lugs *v v*, cast in the gear N. The frame M is provided with the handle L, Fig. 2, to be held during the operation as an additional means of steadying the whole device.

The operation of my device is as follows: The tube A is inserted through the bung-hole or aperture of the vessel into the liquids within the tapering part of the frame M, being forced tightly into said bung-hole or aperture, to hold the device in place, in conjunction with the handle L. The rod F is then pushed down, taking with it the frame G and the arms $f f' f^2 f^3$. The beveled ends of f^2 and f^3, coming into contact with the wedge B, are forced apart, and the arms f and f', coming into contact with the wedge C, which is held by the ring D resting upon the supports *d d*, are likewise forced apart, until all four arms are raised to a horizontal position, their upper or inner ends locking over the pivots *e e e e*, respectively, and firmly held between said pivots and said wedges, the rubber *h* in contact with the inside of the tube A holding the rod down. Power then being applied to the crank P is imparted through the gears O and N to the tube A, which in revolving carries with it the rod F, the frame G, and the arms $f f' f^2 f^3$. The arms $f f' f^2 f^3$ being immersed in the liquids agitate and mix or blend the same. Before removal after the operation the rod F is drawn up, closing in the arms $f f' f^2 f^3$, and the cross-piece *g* upon reaching the plug C raises the same out of the way, permitting the lower arms *f f* to be drawn into the tube A. When the arms are completely closed in, the rubber *h* has reached the top *a*, preventing further movement of the rod F and holding same in position. The frame M is then withdrawn from the bung-hole or aperture.

The tube A may be provided with separate relatively short slots, one for each arm, as shown in Fig. 7, instead of the one long slot E shown in the other views. In this form the intermediate sections of tubing between the upper and lower slots acting as a stop and rest for the wedge C, fastened to ring D, the supports *d d* are dispensed with as superfluous.

When desired, the arms f and f^2 on the same side and f' and f^3 are joined by the connecting-rods K K, Fig. 6, within the tube or by the connecting-strips L L outside of the tube during operation. When this form is employed, the single opening E on each side of the tube A, Fig. 5, must be used and not the method shown in Fig. 7. The wedge C and ring D are also dispensed with, as they would interfere with the action of the rods *k k* or strips L L. Their purpose, however, is supplied by the wedge B acting on the arms f^2 and f^3, the movements of which are imparted to the arms f and f' by means of the connecting-rods K K or strips L L.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. In a mixing device, a tube provided with longitudinal slots and having within one or more wedge-shaped plugs, a rod adapted for longitudinal movement, provided with a friction washer or ring, a frame connected to said rod, and arms so hung in said frame as to engage with said wedge-shaped plugs and be radiated from said tube, by action of said rod.

2. In a mixing device, a tube provided with longitudinal slots, and having within a wedge-shaped plug, a rod adapted for longitudinal movement provided with a friction washer or ring, a frame connected to said rod, and series of arms joined by connecting-rods, and so hung in said frame that one arm of each series shall engage with said plug and be radiated from said tube by action of said rod.

3. A mixing device combining, a tube provided with longitudinal slots, and having within one or more wedge-shaped plugs, a rod adapted for longitudinal movement, provided with a friction washer or ring, a frame connected to said rod, and arms so hung in said frame as to engage with said wedge-shaped plugs and be radiated from said tube, by action of said rod, mechanism for rotating said tube and its contents.

4. A mixing device combining, a tube provided with longitudinal slots, and having within a wedge-shaped plug, a rod provided with a friction washer or ring, a frame connected to said rod adapted for longitudinal movement, and series of arms joined by connecting-rods, and so hung in said frame that one of each series shall engage with said plug and be radiated from said tube by action of said rod, mechanism for rotating said tube and its contents.

5. A mixing device combining, a tube provided with longitudinal slots and having within one or more wedge-shaped plugs, a rod adapted for longitudinal movement, provided with a friction washer or ring, a frame connected to said rod, and arms so hung in said frame as to engage with said wedge-shaped plugs and be radiated from said tube, by action of said rod, a case or frame, provided with a tapering base, and containing two bevel gear-wheels engaged, one centered on said tube and adjusted and held thereto by a set-screw or split collar, the other provided with a crank for operating.

6. A mixing device combining, a tube provided with longitudinal slots, and having within a wedge-shaped plug, a rod adapted for longitudinal movement provided with a friction washer or ring, a frame connected to said rod, series of arms joined by connecting-rods, and so hung in said frame that one arm

of each series shall engage with said plug and be radiated from said tube by action of said rod, and a case or frame, provided with a tapering base and containing two bevel gear-wheels engaged, one centered on said tube and adjusted and held thereto by a set-screw or split collar, the other provided with a crank for operating.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES F. FLAHERTY.

Witnesses:
EDWD. C. REGN,
FRANK P. MARTIN.