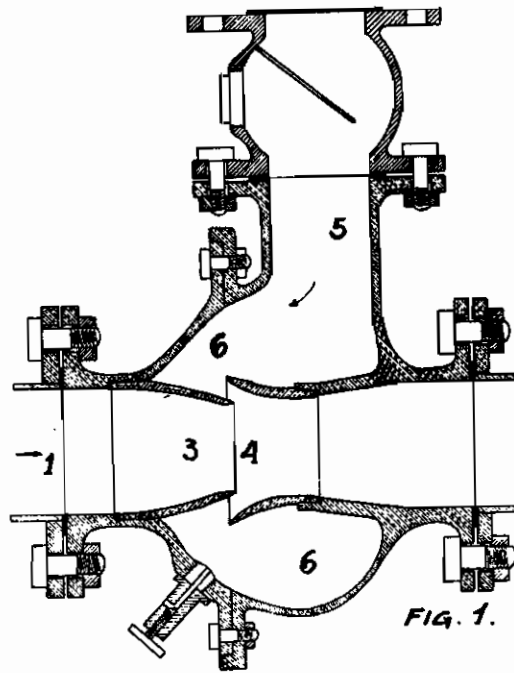


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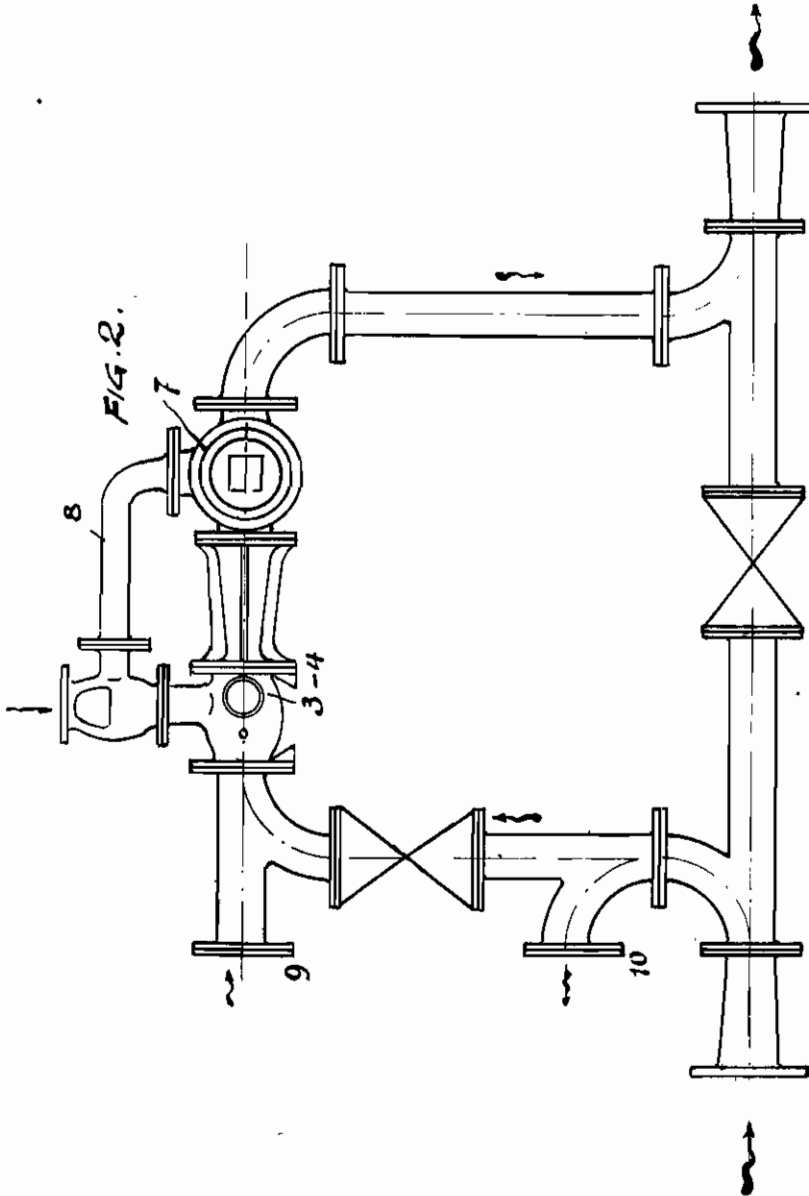
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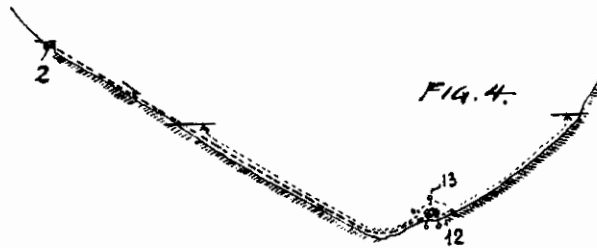
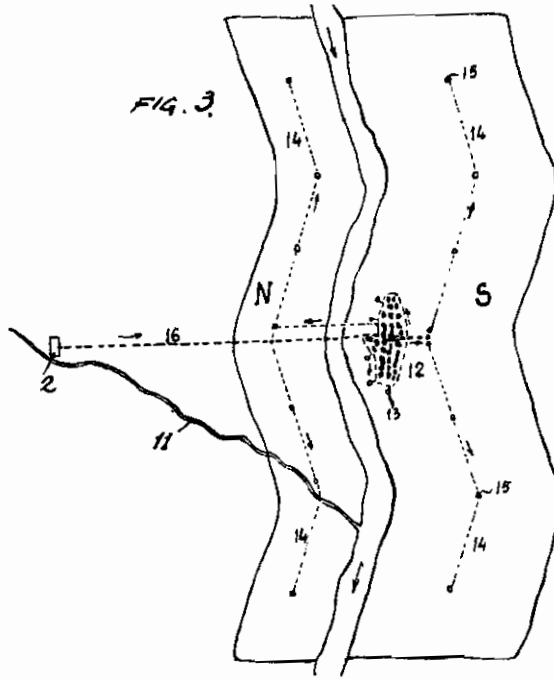
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ALIEN PROPERTY CUSTODIAN

METHOD AND APPARATUS FOR OBTAINING MIXTURES OF SMALL QUANTITIES OF SUBSTANCES IN SOLUTION OR IN SUSPENSION IN A FLOWING LIQUID

Giovanni Friedmann, Milan, Italy; vested in the Alien Property Custodian

Application filed January 19, 1939

It is known that, at present, even when there exists water under a certain head at the same level of the farm-manure pits, it is possible to use the water for fertilizing irrigation only when its pressure is reduced to naught, by running the water into the mixing pits or vats for diluting urines and dung. This liquid excrements (manure draining) is used for fertilizing irrigation of the land which lies at a lower level, and only exceptionally it is carried up-hill by means of tank wagons, or pumped up by means of special pumps and piping to the land overhead. This because it is very difficult and expensive to carry dung up-hill and particularly liquid.

Soil fertility therefore concentrates on the land placed under the level of the cattle stalls and sheep folds at the farmyards. Besides, urines and strained dung are never sufficiently diluted for reaching their greatest fertilizing efficiency, which is the greater, the more frequent the distribution to the crops of liquid in a very diluted form. There follows that, whilst the land below the stables is too rich and consequently covered with ammoniacal vegetation, of little value as fodder, the land overhead is semi-improductive being not or insufficiently fertilized.

To remedy this deplorable state of matters which causes so great a prejudice to agricultural economy, the system and apparatus according to the present invention, without requiring complicated and expensive machinery, difficult to handle by country folk, allows, with a small outlay in equipment and scarcely any operating expenses, the fertilization of land which is at present hardly productive; this is possible when one may dispose of even small amounts of water at a higher level.

One of the ways of applying of the invention is illustrated, solely as example, in Fig. 1 of the attached drawing, showing in longitudinal section, an apparatus capable of achieving the purpose of the invention. A special nozzle 3 with its diffuser 4 proportioned to the volume and speed of the liquid is fixed on the main pipe 1, coming from intake reservoir or from a pump, in proximity to the urine and pulpy dung in suspension in the liquid. Liquid excrements to be mixed, arrives through a secondary pipe 5, also of ample diameter, in chamber 6. Nozzle 3 and diffuser 4 can be easily changed, in accordance with the particular conditions of the plant.

The practical arrangement of a mountain plant is as follows: Unless a canal of running water is obtainable at a certain level, in which case it is sufficient to build an intake reservoir and cabin, it is necessary to have a tank or reservoir pro-

viding a certain head of water into which to collect the flow of springs or drains etc. It should be reckoned that for each 100 meters of water-head pressure, the diluted liquid may rise at most to 80 meters. Preferably the apparatus should not draw-up the liquid by suction and therefore it is advisable to place the mixer under the vats. A great dilution is advantageous both from the agricultural point of view as from that of obtaining the best results from the use of the apparatus.

If there is no natural water-head or if the latter is insufficient, in order to fertilize the whole land, one could make use of a pump, pumping up the water even to the higher spots where the natural pressure cannot reach. In such cases, any pump for drinking water or for irrigation may do.

Fig. 2 shows in plan a mixer in which, by means of a three-way valve 7, the same pressure of the water may be used for cleansing nozzle 3 by means of a washing circuit 8. A pump can also be switched-in between 9 and 10 for increasing the water pressure, when the natural pressure should prove insufficient for reaching the above stated high spots of land.

Figs. 3 and 4 show, respectively in plan view and in vertical section, a plant for a mountain village, which utilizes a stream 11 for providing the fertilization of the land slopes on both sides N and S of the valley.

From the damming reservoir 2, departs the pressure piping 16 which surrounds the village 12 and in which are inserted some mixers 13. From village 12 a piping 14 departs which conveys the fertilizing water. In this piping the hydrants 15 are inserted to which the displaceable pipes are attached which permits the entire zone to be uniformly irrigated and dunged.

The apparatus offers also the possibility of achieving a timely disinfection or wash-outs of poison gas or liquid (as for instance a wash-out of calcium chloride against yperite). The disinfecting substances may be used at their maximum of concentration, as the apparatus provides for diluting them; thus greatly reducing the expenses of transport and of spraying.

The apparatus can be used in the same manner for mixing fire extinguishing substances with the water employed in fire extinction.

Another application is that concerning anti-cryptogamic or antiparasite liquid spraying, by making use of the water under pressure of the common water main supplies.

GIOVANNI FRIEDMANN.