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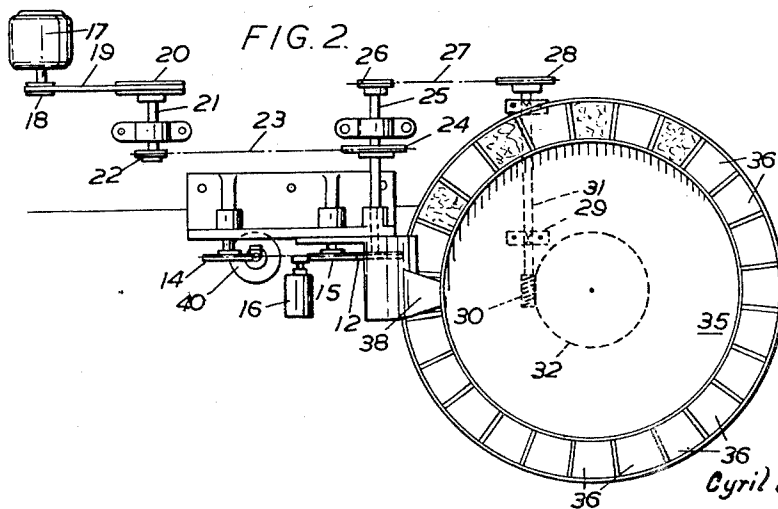
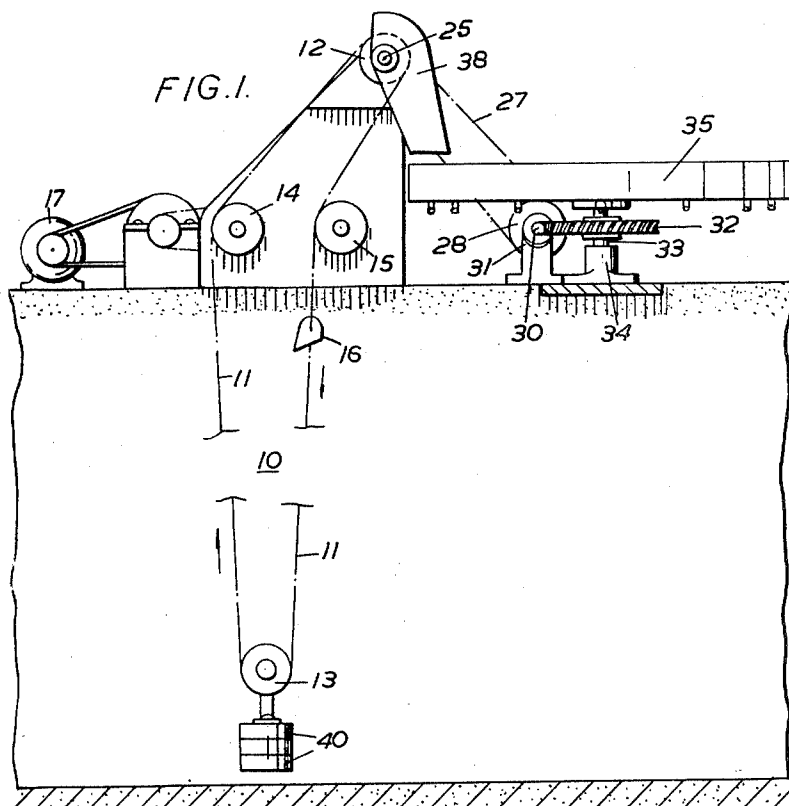
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2,705,425

APPARATUS FOR TAKING SAMPLES OF SEWAGE AND OTHER FLOWS

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2 Sheets-Sheet 1



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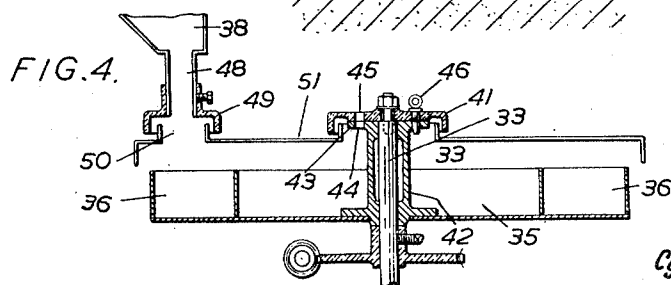
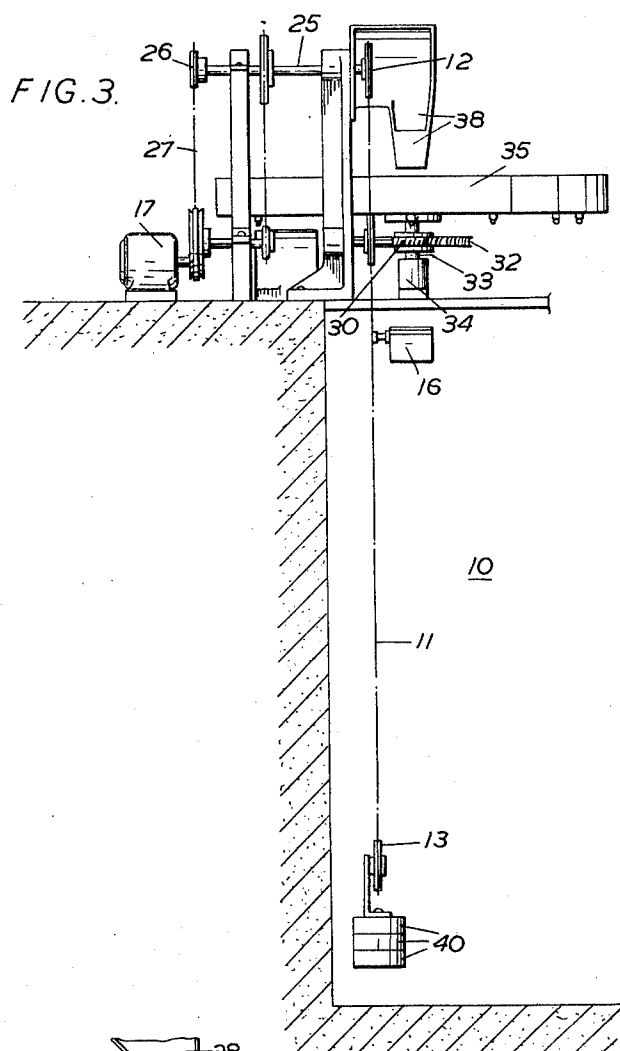
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APPARATUS FOR TAKING SAMPLES OF SEWAGE AND OTHER FLOWS

2 Sheets-Sheet 2



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APPARATUS FOR TAKING SAMPLES OF SEWAGE AND OTHER FLOWS

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4 Claims. (Cl. 73—421)

This invention relates to means for taking samples of sewage and other flows.

It is the practice on sewage works to take samples of the sewage at regular intervals throughout the day, usually at the outfall, and sometimes at different stages in the process of purification, and this sampling is at present done by hand at hourly or other regular intervals throughout the day, and sometimes through the night also. To do this requires the regular attendance of a chemist or assistant, and much time is taken up thereby.

The objects of this invention are to do away with the need for this attendance for the purpose of securing the samples, to provide mechanical means for taking the samples at the desired time intervals, and to provide means for preserving such samples separately, and without admixture or dilution, until such time as it is convenient to handle them.

Further objects of the invention are to enable an installation to be left without sampling by hand for any convenient period, say for instance twelve hours, and to obtain a sample by mechanical means once every hour throughout the period, and further to preserve the twelve samples separately so that each can be examined and the times and order in which the samples were obtained made immediately apparent.

In the accompanying drawings:

Figure 1 is a longitudinal part sectional view.

Figure 2 is a plan.

Figure 3 is a transverse section.

Figure 4 is a detail showing how the drive to the turntable can be disconnected when required.

Within a channel or other enclosure 10 an endless elevator chain 11 is arranged, the chain being carried over top and bottom sprockets 12, 13 respectively, with intermediate diverting sprockets 14, 15. The elevator chain 11 carries a single bucket 16 which dips into the sewage in the bottom of the channel. An electric motor 17 is mounted at the surface of the channel and drives a pulley 18, which in turn by a V-rope 19 drives another pulley 20 mounted on a spindle 21. The spindle 21 carries a chain sprocket 22 which through a chain 23 drives a sprocket 24 mounted on a spindle 25. This spindle carries the top sprocket 12 by which the elevator chain 11 is driven. It also carries another sprocket 26 connected by a chain 27 with a sprocket 28 mounted on a worm shaft 29 carrying a worm 30 and mounted in bearings 31. The worm 30 drives a worm wheel 32 mounted on a spindle 33 supported in a bearing 34 and carrying a horizontal turntable 35. The motor 17 is started up automatically by an electric time switch at hourly or other suitable regular intervals, when it is desired to take samples. The motor is stopped by a limit switch operated from the elevator after the chain 11 has made one circuit. The limit switch is so positioned that it stops the bucket 16 in approximately the position shown in Figure 1, that is, on its downward travel between the point of discharge at the surface and the level of the sewage below ground. The gearing between the motor and the elevator may be arranged to give one circuit of the elevator chain in say one to two minutes during which the sample is taken. The bucket 16 discharges each time into one of several partitions 36 arranged round the periphery of the horizontal table 35. The latter is so synchronised with the elevator that at each discharge of the bucket 16 the turntable 35 moves round one partition, so that if the turntable 35 has twelve peripheral partitions or pockets 36,

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each adapted to contain a sample, it will move one-twelfth of a circle for each chain circuit of the bucket 16, and at the moment of each discharge of the bucket containing the sample, one of the partitions or pockets 36 will have moved directly under the bucket to receive the contents, and so on in sequence till each of the twelve partitions has received its sample. In Figure 2 the twelve partitions 36 are shown separated by intervening blank spaces, but it will be obvious that there could easily be twenty-four partitions or pockets and the gearing could be arranged to move the turntable one twenty-fourth of a circle at each circuit of the bucket. A tap may be provided under each pocket to discharge into a test-tube or the like and so drain the pocket, and in some cases removable pockets may be substituted for the fixed pockets, the removable pockets being preferably withdrawn radially. The bottom of the elevator chain 11 is arranged at a depth where it is immersed at the lowest level to which the sewage may fall, and is preferably tensioned by hanging a weight 40 attached to and centrally below the bottom sprocket 13. A single endless chain 11 is preferable for the elevator, with the bucket 16 fastened at the side of the chain to avoid the diverting sprockets 14, 15, which are necessary for giving an overhang at the discharge point, so that the sample can be discharged down a chute 38, the outlet of which is preferably tubular as shown at 48, Figure 4 and which may be fitted with a sliding weatherproof shield 49 over the aperture 50 in the cover 51 so that there is no possibility of splashing from one pocket to another, and so that there is no danger of rain or snow falling or draining into the samples when the apparatus is open to weather. The bottom weight 40 is slung from the opposite side of the sprocket 13 from the side on which the bucket 16 passes. The driving spindle 33 for the turntable 35 has a cover flange 41 attached to it at the top which serves also as a weather cover as indicated, and the turntable 35 has a hub 42 attached to it. The hub has a flange 43, in which there are a number of holes 44, corresponding to the number or to a multiple of the number of pockets 36 in the turntable. There are two holes 45 in the cover flange 41 and a peg 46 is passed through the hole 45 into any one of the holes 44. The peg therefore acts as a key connecting the turntable 35 with the driving spindle 33. The driving spindle can be disconnected from the turntable by withdrawing the peg 46, whereupon the turntable 35 can be rotated freely. This is a convenience when the samples are being drawn off from the pockets 36 and provides that when the peg 46 is again inserted into any one of the holes in the flange 43 the pockets are correctly repositioned in relation to the bucket elevator for again starting up.

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

1. Means for taking samples of sewage and other flows comprising a frame, sprockets mounted in said frame, an elevator carried by said sprockets and movable into the sewage, drive means applied to at least one of said sprockets to move the elevator, at least another one of said sprockets being located to form an overhang at the point where the sewage is to be discharged, a bucket attached to said elevator, said bucket being situated at the side of the elevator so that it is out of the way of the sprockets during its travel, a weight hanging in the bottom of the elevator, being wholly carried by said elevator and serving to tension said elevator, and a receiver positioned beneath the overhanging portion of the elevator to receive the contents of said elevator bucket when it discharges.
2. Apparatus according to claim 1 in which the drive means moves said elevator one complete circuit at a time so that the bucket collects a sample, discharges it into the receiver, and then comes to rest again.
3. Apparatus according to claim 1 in which the drive means is operatively connected with said receiver, and at each circuit of the elevator, said drive means acts to move said receiver, the receiver having a series of pockets therein, the movement imparted to said receiver serving to bring each of said pockets successively in position to receive the contents of the elevator bucket.
4. Apparatus according to claim 3 having a disen-

gageable connection between the drive means and the receiver.

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