

ing the nuts 92 so as to permit the clamp pins 87 to swing outwardly away from the lugs 91. The head 13 and the arm 41 are then, assuming suitable disconnect or flexibility in the pipe 64, pivotally swung upwardly about the hinge axis 86, which swinging movement causes the coupling device 76 to be disconnected. The swinging movement of the head with the backwash arm thereon can be accommodated by providing the supply pipe 64 with a flexible portion, or by providing some other suitable disconnect within the supply pipe.

The operation of the filter assembly 11 is preferably automatically controlled so that the backwash operation is automatically carried out whenever the control system senses the need for a backwash operation. Particularly, the assembly 11 is preferably provided with a pressure sensor 96 which is responsive to the difference in pressure between the inlet compartment 18 and the outlet compartment 19, which sensor is actuated when such difference exceeds a preset amount, thus indicating that flow therethrough is being undesirably restricted. The pressure sensor, when responsive to a predetermined drop in pressure in filtrate, can thus be utilized to actuate the motor 67 so as to cause the backwash arms to be sequentially stepped around the filter units so as to clean same. The backwashing of the individual filter units can be controlled by means of a preset adjustable timer which controls the amount of backwash time for each individual unit and which causes the backwash arms to be sequentially stepped to the next position at the end of each backwashing or cleaning cycle.

In the event that a pressure sensor is not utilized for initiating a backwashing cycle, then a preset adjustable timer can be utilized for energizing motor 67, which timer will be set so as to cause the complete backwash operation to be sequentially initiated after the filter assembly has been operated for a predetermined time.

While the filter assembly as illustrated and described has the outlet line 23 connected to the lower portion of outlet chamber 19, it will be readily apparent that the outlet line 23 could also be connected directly to the upper portion of chamber 19 if so desired.

Although a particular preferred embodiment of the invention has been disclosed in detail for illustrative purposes, it will be recognized that variations or modifications of the disclosed apparatus, including the rearrangement of parts, lie within the scope or the present invention.

The embodiments of the invention in which I claim an exclusive property or privilege are defined as follows:

1. A filter assembly for removing contaminants from a fluid, comprising:

closed, hollow housing means having first and second end portions fixedly interconnected by an intermediate tubular portion;

wall means including a partition member fixedly secured to said housing means and dividing same into first and second chambers, the first and second chambers being disposed adjacent the first and second end portions, respectively, of the housing means;

inlet conduit means fixedly connected to said housing means and in communication with said first chamber for supplying a fluid-solid mixture thereto;

outlet conduit means fixedly secured to said housing means and in communication with said second chamber for discharging filtrate therefrom; and

filter means mounted within said housing means for removing a majority of solid material from the fluid-solid mixture when the fluid flows from the first chamber to the second chamber, said filter means including a plurality of separate filter units disposed in an arcuate arrangement within said housing means;

each filter unit including:

(a) an impervious, elongated annular housing member disposed within said housing means

and fixedly secured to said partition member and having openings in opposite ends thereof for providing communication between said first and second chambers, and

(b) an elongated, mesh-like, cylindrical filter element disposed within said housing member and spaced radially inwardly from the sidewalls thereof, said filter element having one end closed and the other end open, the open end of the filter element being connected to the surrounding housing member;

backwash means for sequentially and intermittently backwashing and cleaning the individual filter units with a backwash fluid separate from the filtrate contained in said filter assembly, said backwash means including first and second backwash arm means disposed within said second and said first chamber, respectively, and rotatively supported on said housing means, said first and second backwash arm means each having a flow passageway therethrough and means thereon for cooperation with the opposite ends of the individual filtering units for permitting the individual filter units to solely communicate with the passageway formed in said first and second backwash arms; and

inlet and outlet pipes located exteriorly of said housing means and connected to said first and second backwash arm means, respectively, said inlet pipe communicating with an external source of said backwash fluid.

2. A filter assembly for removing contaminants from a fluid, comprising:

closed housing means having internal wall means dividing said housing means into an inlet chamber and an outlet chamber;

said housing means including an inlet conduit in communication with said inlet chamber for supplying a fluid-solid mixture thereto;

said housing means also including an outlet conduit in communication with said outlet chamber for discharging the filtrate therefrom;

filter means mounted within said housing means for removing a majority of solid material from the fluid when the fluid flows from the inlet chamber to the outlet chamber, said filter means including a plurality of separate filter units disposed in a circular arrangement within said housing means;

each filter unit including:

(a) an impervious, elongated housing member having an opening in one end thereof in communication with said inlet chamber for permitting the fluid-solid mixture to enter therein;

(b) an elongated, mesh-like, cylindrical filter element disposed within said housing member and spaced radially inwardly from the sidewalls thereof, said filter element having one end closed and the other end opened, the closed end of said filter element being disposed closely adjacent the one end of said housing member, and the other end of the filter element being connected to the housing member and being disposed in open communication with said outlet chamber,

(c) whereby the mixture as supplied from the inlet chamber into the housing member then flows radially inwardly through the filter element with the solid material being collected or deposited on the outer peripheral wall of the filter element;

backwash means for sequentially and intermittently backwashing and cleaning the individual filter units with a backwash fluid separate from the filtrate contained in said filter assembly, said backwash means including first and second backwash arm means disposed within said outlet chamber and said inlet chamber, respectively, and rotatably supported on said