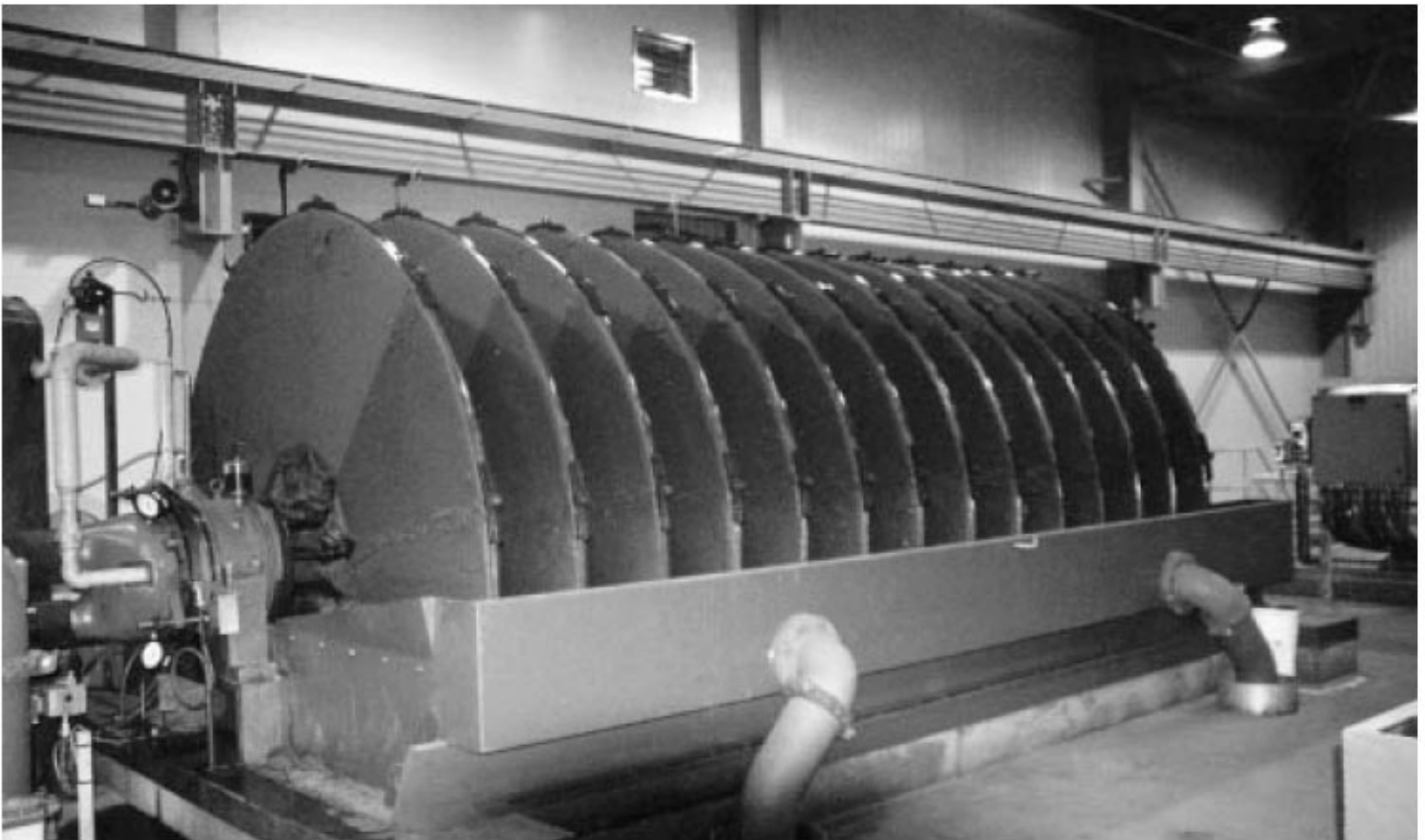


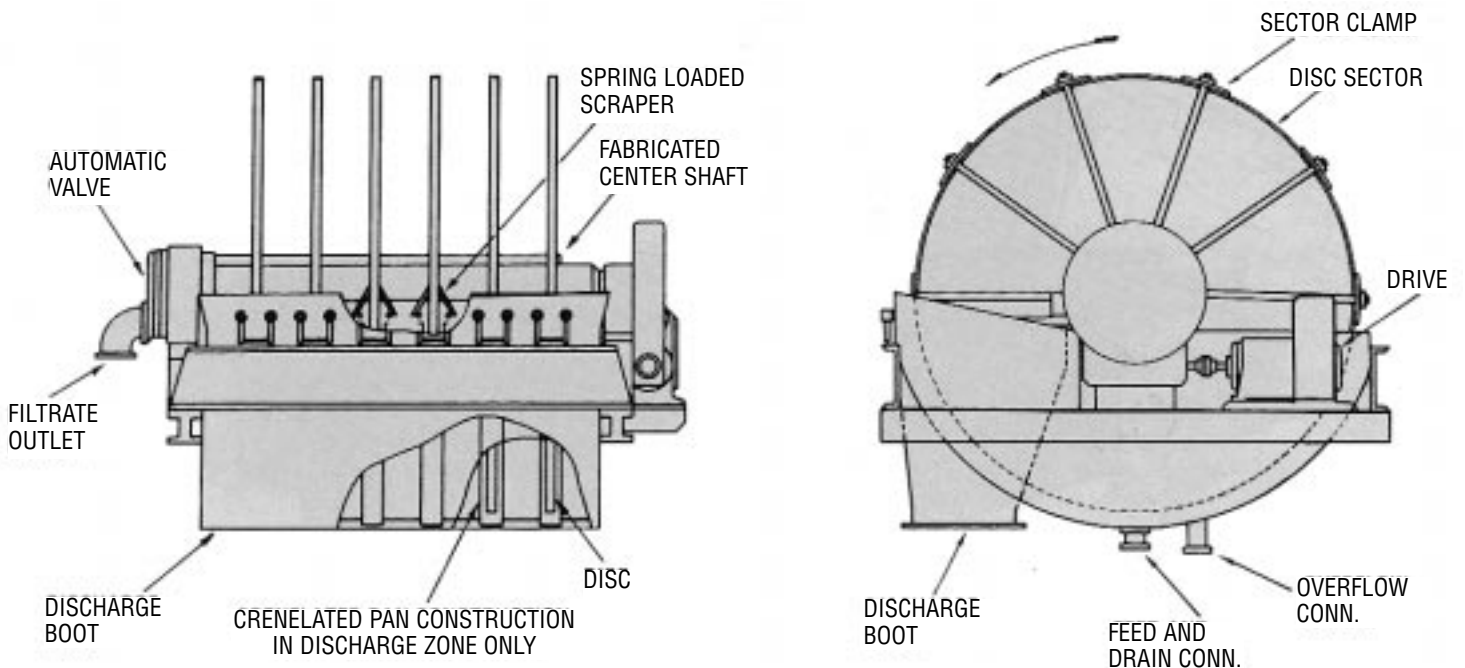
# The American Disc Filter...



... *for continuous dewatering in metallurgical,  
chemical, industrial and food processing*

# The American Disc Filter...

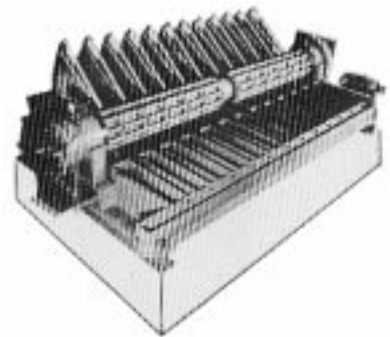
... for metallurgical, chemical, industrial and food processing



*The American Filter, the prototype of all continuous vacuum disc filters currently in operation, was first developed in 1906. It is readily identified from the Oliver Continuous Rotary Drum Filter by its disc construction. Primarily a dewatering unit, its applications are most numerous in the coal, metallurgical and cement processing industries. The great popularity of the American Filter is due to the ease of removing and replacing the individual disc sectors, sometimes accomplished without stopping the Filter, and its excellent overall design which provided more square feet of filtration area per unit of floor space than any other type of continuous vacuum filter.*

**DESCRIPTION . . .** Basically the American Filter consists of a number of discs centrally mounted on a shaft suspended at each end of the filter tank. Each disc consists of multiple pie-shaped sectors which are individually covered with a suitable filtering medium. Sectors are held in place around the centre shaft by radial rods on each side and by clamps at the top. The filter tank in which the discs revolve will vary in shape according to method or use of agitation. The cake, removed by a specially designed discharge mechanism, falls through individual compartments into a hopper beneath the Filter. When agitation is desired, GL&V/Dorr-Oliver has the proper tank and/or agitator design to fit the process material. Agitators are thoroughly discussed on the following page.

**OPERATION . . .** While vacuum is applied to individual sectors, the discs revolve through the slurry in the tank, and an evenly distributed cake of solids is formed on each side of the submerged sectors. The filtrate flows through the filter media into the center shaft and out the ported filter valve. As the discs continue to revolve, the cake emerges from the slurry, held tight against the filter media by pressure differential. It then passes through the drying zone where wash liquor may be applied. As the revolving sectors approach the discharge zone, vacuum is automatically shut off by bridges in the valve. Pressure air is then admitted back through the shaft to the sectors in the discharge zone. The air pressure exerted on the underside of the cake releases the cake from the cloth, thus facilitating final cake discharge. The discharged cake falls through openings between the pans and into a transfer hopper. The sectors continue to revolve and pass down the slurry to form another cake. Considering each sector as a unit, the cake forming, washing, drying and discharging operations are going on continuously and concurrently.

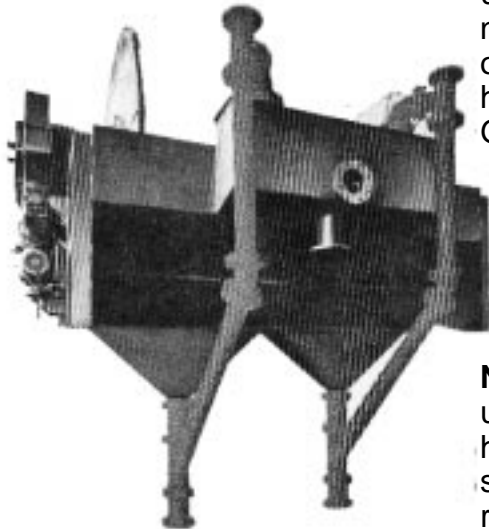


*Partially assembled view of 8'6" x 12 disc American Filter clearly shows individual pan construction. Built for Sharon Steel Co., this unit is dewatering coal at Rachel, West Va.*

# American Filter . . . FEATURED EQUIPMENT

## AGITATORS

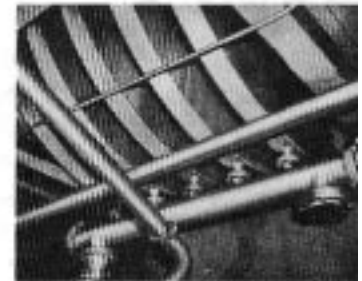
As a result of GL&V/Dorr-Oliver's continuing search for improved techniques in wet processing methods, unique and totally different methods of agitation are now available on the American Filter. Thus, regardless of the physical characteristics of the material being handled, the proper design is available only from GL&V/Dorr-Oliver.



*Air Lift Agitator*

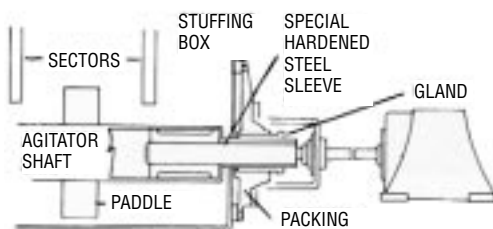
**AIR LIFT AGITATION . . .** utilizes compressed air to continuously recycle slurry. Consisting of simple piping, air lift agitation requires no moving parts and negligible maintenance. The result is a homogeneous slurry.

**NON-AGITATED TANKS . . .** are utilized when the slurry density is homogeneous in nature and will not settle quickly. In these instances, the rotating filter discs provide adequate agitation to the slurry in the tank.

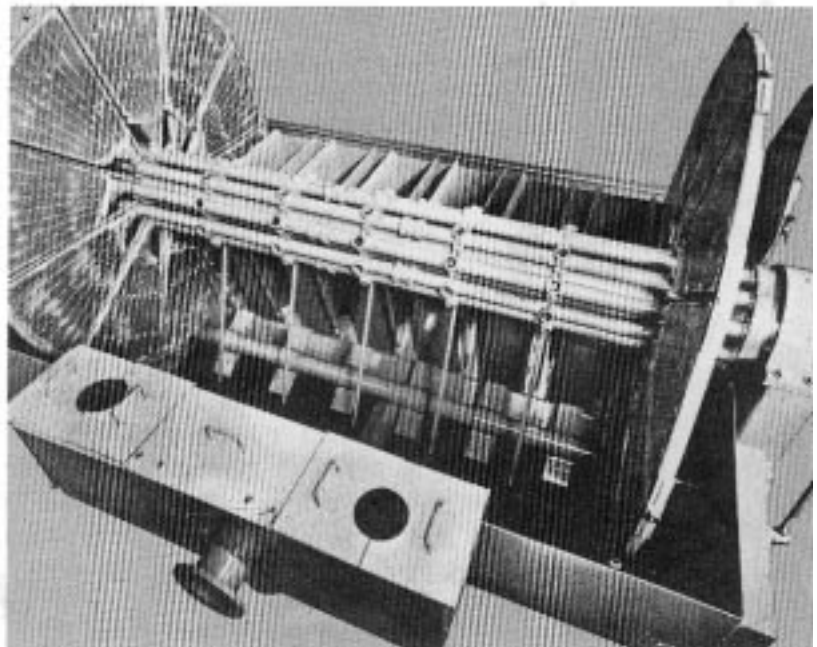


*Individual Pan Construction permits action of rotating discs to maintain proper agitation of slurry and suspension of solids.*

**PADDLE TYPE AGITATION . . .** was specifically designed for agitating heavy gravity solids. It consists of many paddles evenly spaced along a single shaft. Constant speed or variable speed motors are provided to suit operating conditions. Normally installed in V-bottom tanks, the agitator paddle shaft is independently driven. A water lubricated bearing, with a specially hardened shaft sleeve through the stuffing box, keeps the shaft and stuffing box essentially free of erosive solids.



*Water Lubricated Bearing*

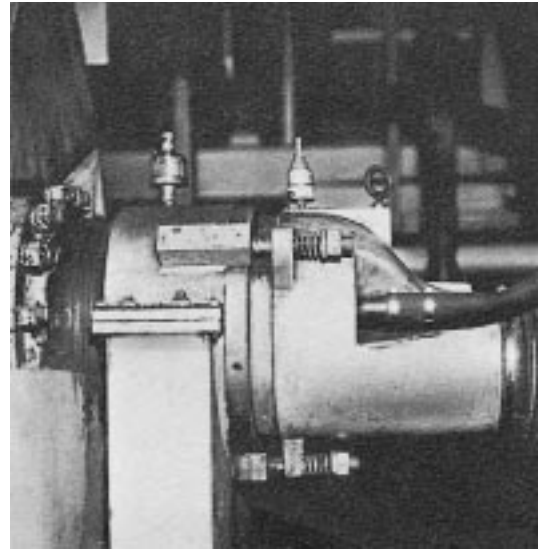


*Paddle Type Agitator on 6' dia. x 7 disc American Filter built for Cleveland Cliffs Iron Co., Eagle Mine, Ishpeming, Mich., for use on taconite.*

## FILTER VALVE

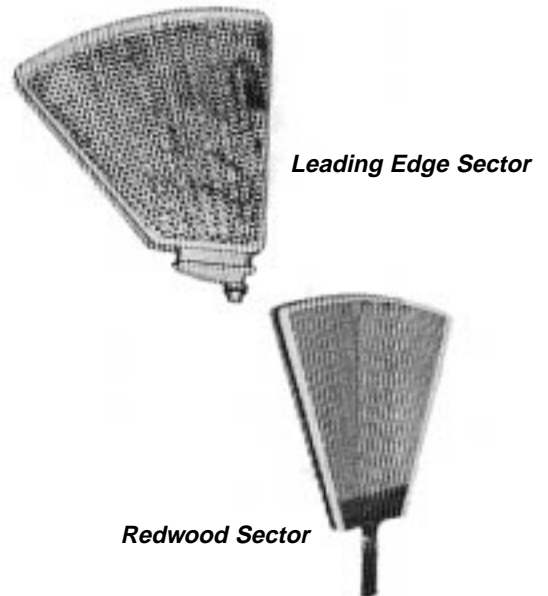
The filter valve is the automatic control point for the filtering, washing, dewatering and drying cycles of the filter. A film of lubricant, automatically supplied, provides a seal between the rotating shaft and stationary valve.

The valve is streamlined high capacity with an open center, insuring straight line flow at maximum hydraulic capacity. It is held in place by three springloaded studs that permit easy access to the bridge plate and wear plate. Both the bridge plate and wear plate are replaceable. Single and double solution valves are available.



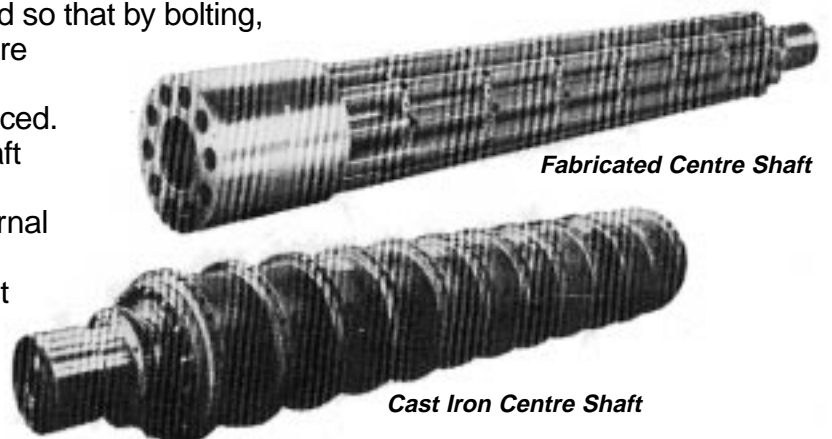
## DISC SECTORS

As each filter disc consists of a number of independent, interchangeable sectors, it is possible to reduce a worn cover with minimum down time. If disc rotation is slow enough, the change can be made without stopping the filter. To replace a worn cloth it is necessary only to remove the sector involved. This is easily accomplished by (1) removing the two radial rod nuts and clamps, (2) sliding out the worn sector, (3) replacing it with a freshly covered spare sector and (4) replacing the clamp and tightening the nuts. Where operating conditions dictate periodic media replacement, many plants schedule replacements on a rotating basis in order to minimize down time. Sectors are available in iron, aluminum, bronze, steel, stainless steel, plastic and redwood, depending on process requirements.



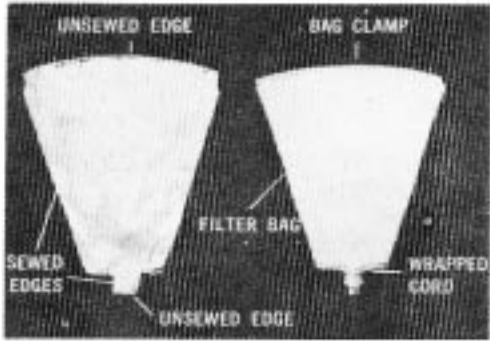
## CENTER SHAFTS

Two types of center shaft are available – cast iron and fabricated. The standard, proven cast iron shaft is sectionalized, with either two or three discs per section. Section ends are flanged so that by bolting, various lengths of center shaft are obtainable. This feature enables a section to be individually replaced. The newer fabricated center shaft consists of a central pipe with trunnions on each end and external drainage pipes mounted around the periphery. The fabricated unit features individually replaceable drainage pipes and lighter construction.



# American Filter . . . FEATURED EQUIPMENT

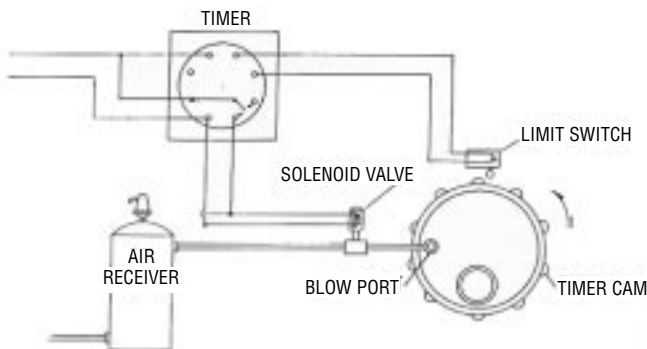
## MEDIA



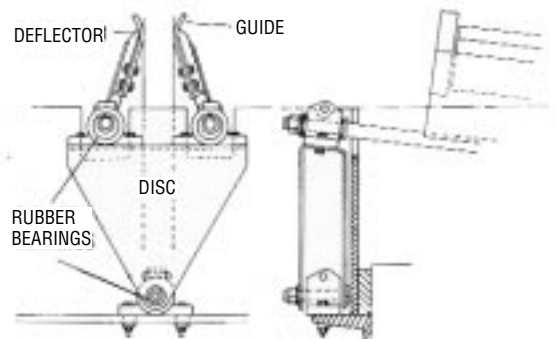
The standard filtration medium for the American Filter consists of cloth bags sewed on the tapered sides and open at the pipe connection and the top. The top of the sector is caulked and a convex metal bag clamp is tightened over the caulking. Various weaves such as woven wire and numerous materials such as cotton and wool, metal and synthetics are available for service on all American Filters. The selection, of course, depends upon the characteristics of the slurry feed to the filter.

## DISCHARGERS

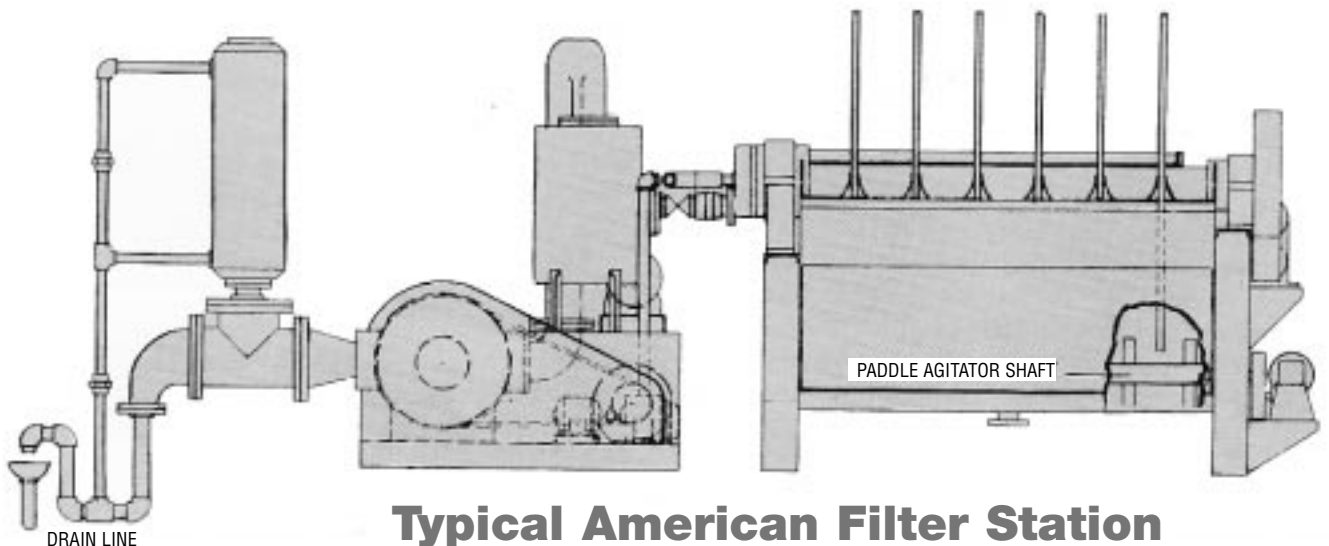
The function of the discharger is to deflect the cake, released by air blow, from the disc and into special discharge compartments. The standard discharger supplied is a floating blade cake deflector mounted on the tank so as to allow for necessary movement of the revolving disc. Curved blade deflectors providing a tangential cut are available for removing fine sticky cakes. Snap blow discharge can also be supplied for special discharge requirements.



*Snap Blow Timer Arr'gt.*



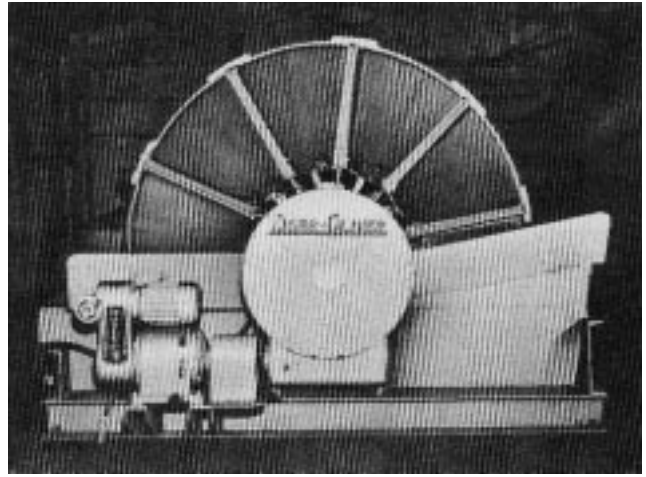
*Torsion Mounted Deflector Blade*



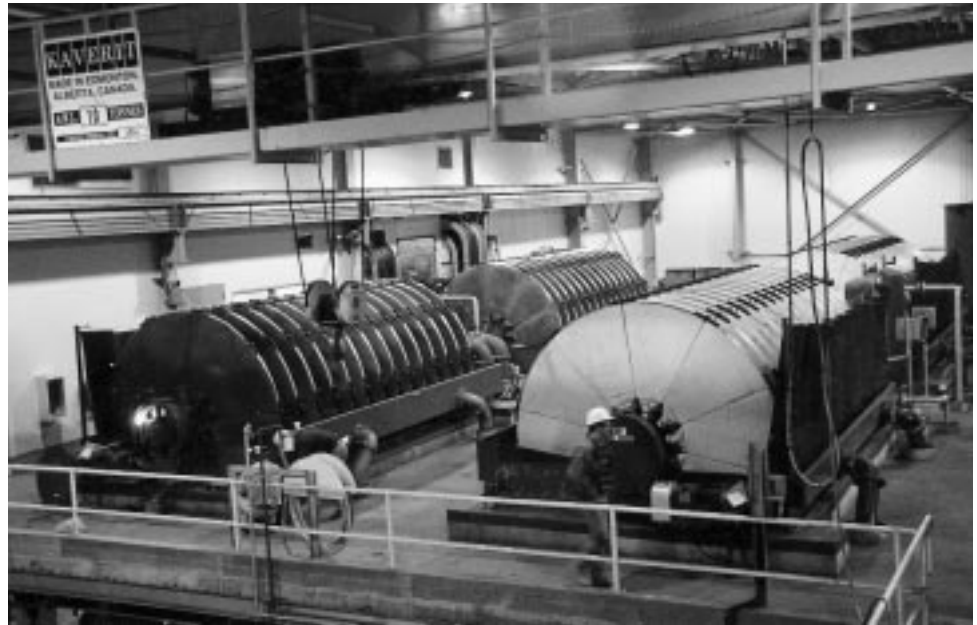
**Typical American Filter Station**

## ADVANTAGES

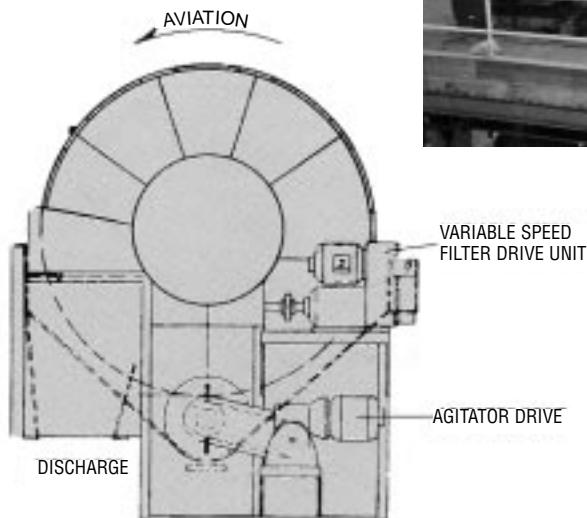
- **Low Cost Filtration Area** – less floor space is required for any given filtration area requirement.
- **Quick and Easy Sector Removal and Replacement** – results in minimum down time and peak efficiency.
- **Multiple Feed to One Unit** – with a divided filter tank, two or more products can be handled simultaneously. Extremely important in pilot plant or small tonnage operations where different products must be kept separate: i.e., where differential flotation is practiced.
- **Multiple Sizes** – range from 20 to 3500 square feet of filtration are in a single unit.
- **Proper Tank and/or Agitator Design To Fit Process Material** – only on GL&V/Dorr-Oliver equipment.
- **Material of Construction** – available in all standard and corrosion-resistant materials.



*An 8'6" diameter x 5 disc American Filter with individual pan type construction is the heart of a fine coal recovery system in a Southern West Virginia plant.*



*These four large 10'6" dia. x 14 disc American Filters are dewatering tailings for paste backfill in an Eastern Canadian plant.*



DIAMETER	4'0"				6'0"								8'6"							
DISCS	1	2	3	4	2	3	4	5	6	7	8	4	5	6	7	8	9	10	11	12
FILTER AREA (sq.ft.)	20	40	60	80	100	150	200	250	300	350	400	370	465	555	645	740	830	925	1015	1110
OVERALL LENGTH	4'6"	5'8"	6'10"	7'0"	6'11"	8'0"	9'1"	10'2"	11'3"	12'4"	13'5"	10'1"	11'3"	12'5"	13'7"	14'9"	15'11"	17'1"	18'3"	19'5"
OVERALL HEIGHT	5'0"				7'3"								9'5"							
OVERALL WIDTH	5'5"				7'8"								9'11"							
HORSEPOWER	3/4				1				1-1/2				2				3			

DIAMETER	10'6"										12'10"									
DISCS	6	7	8	9	10	11	12	13	14	4	5	6	7	8	9	10	11	12	13	14
FILTER AREA (sq.ft.)	900	1050	1200	1350	1500	1650	1800	1950	2100	1000	1250	1500	1750	2000	2250	2500	1750	3000	3250	3500
OVERALL LENGTH	13'9"	15'3"	16'9"	18'3"	19'9"	21'3"	22'9"	24'3"	25'9"	10'4-9/16"	11'8-9/16"	13'0-9/16"	15'7-5/8"	16'11-5/8"	18'3-5/8"	19'7-5/8"	20'11-5/8"	22'3-5/8"	23'7-5/8"	24'11-5/8"
OVERALL HEIGHT	11'10"										14'8-1/2"									
OVERALL WIDTH	13'6"										15'1-1/2"									
HORSEPOWER	3		5				7-1/2				3				5				7-1/2	

#### CANADA

GL&V/Dorr-Oliver  
174 West Street South  
Orillia, ON L3V 6L4  
Tel: +705 325 6181  
Fax: +705 325 2347

#### USA

GL&V/Dorr-Oliver  
612 Wheelers Farm Rd.  
Milford, CT 06460-8719  
Tel: +203 876 5400  
Fax: +203 876 5432

#### NETHERLANDS

GL&V/Dorr-Oliver B.V.  
Wegalaan 42-44  
2132 JC Hoofddorp  
Tel: +31 23 567 8111  
Fax: +31 23 562 62 64

#### AUSTRALIA

GL&V/Dorr-Oliver Pty. Limited  
Unit 8/12-18 Victoria Street  
Lidcombe, NSW 2141  
Tel: +61 2-9749-4499  
Fax: +61 2-9749-4933

#### BRAZIL

GL&V/Dorr-Oliver Brazil  
Rua Georg Rexroth 609  
09951-270 Diadema-Sao Paulo  
Tel: +55 11 745 9291  
Fax: +55 11 745 9091

GL&V/Dorr-Oliver  
333 S. Allison Parkway,  
Suite 304  
Denver, CO 80226-3115  
Tel: +303 986 4656  
Fax: +303 986 4959

#### SOUTH AFRICA

GL&V/Dorr-Oliver South Africa  
Unit A8, Mini Units  
5 Galaxy Avenue  
Linbro Business Park  
Linbro, Sandton  
Tel: +27 11 458 8100  
Fax: +27 11 608 0372

#### LICENSEES

#### INDIA

Hindustan Dorr-Oliver Limited  
Dorr-Oliver House  
Link Road, Chakala  
Andheri (East)  
Mumbai 400 099  
Tel: +91 22 832 5541  
Fax: +91 22 836 5659

#### CHILE

GL&V/Dorr-Oliver Chile Ltda.  
Moneda 140, Oficina 1301  
Santiago  
Tel: +56 2 699 1074  
Fax: +56 2 671 7395

GL&V/Dorr-Oliver  
1000 Laval Blvd.,  
Lawrenceville, GA 30043  
Tel: +707 963 2100  
Fax: +707 963 7504

#### CHINA

GL&V/Dorr-Oliver  
Rm 1003 Kelun Building A  
No. 12 Guanghua Rd.,  
Chaoyang District  
Beijing, P.R. China  
Tel: +86 10 6581 8465  
Fax: +86 10 6581 2250

#### JAPAN

Sanki Engineering Company Ltd.  
Sanshin Building, Room 300  
1-4-1 Yurakucho, Chiyoda-Ku  
Tokyo 100-8484  
Tel: +81 3 3502 6198  
Fax: +81 2 3506 8546

#### MEXICO

GL&V/Dorr-Oliver Mexico  
Av. Cuauhtemoc No. 1338  
Desps. 302, 3032Y 304  
Col.Santa Cruz Atoyac  
03310 Mexico, D.F.  
Tel: +52 5 688 5877  
Fax: +52 5 688 5619

#### GERMANY

GL&V/Dorr-Oliver GmbH  
Friedrich Bergius Str 5  
D-65203 Wiesbaden  
Tel: +49 611 2040  
Fax: +49 611 204255

#### FRANCE

GL&V/Dorr-Oliver France  
22 Rue Pierre Mendes-France  
77200 Torcy  
Tel: +33 160 17 12 63  
Fax: +33 160 17 1185



www.flsmidthminerals.com