"American" Sand Blast Barrels

GRAVITY TYPE
PRESSURE TYPE

Rapid, inexpensive means of removing sand, scale, rust, oil, etc., from castings, forgings, stampings, and metal ware in great variety.

A clean matt finish is obtained --- ideal for enameling, painting, plating, galvanizing, rust-proofing or welding.

Machine tools wear longer when castings have been sand blasted.

The American Foundry Equipment Co.
INCORPORATED

366 Madison Avenue, New York

PHILADELPHIA CLEVELAND PITTSBURGH DETROIT
YORK CHICAGO

Bulletin No. 534

WITH the advent of quantity production in foundries there arose a need for a better method of cleaning castings than brushing or tumbling. The result was the rapid development of sand blast in various forms, such as barrels, rooms, cabinets, etc. Of these, the sand blast barrel is perhaps the most generally useful type of equipment.

A slowly revolving drum contains the work, and as the pieces slide over and by one another all surfaces are repeatedly exposed to the sand blast. Results are not dependent upon impact but solely upon the cutting or peening action of the particles of abrasive.

A very large class of work, endless in variety and common to nearly every foundry, can be cleaned to excellent advantage in "American" automatic sand blast barrels. They successfully handle iron, steel, malleable, brass, and bronze castings, stampings, hardened steel parts, pulleys, gears, stove parts, automobile parts, etc. Pieces weighing from one ounce up to fifty pounds are not unusual, and loadings vary from one hundred and fifty to fifteen hundred pounds to the charge, depending upon the size of barrel and character of work.

The common tumbling mill often operates for a couple of hours to a charge and even then the cored holes and pockets are seldom properly cleaned. Often the surfaces are not suitable for enameling or galvanizing without further handling and cleaning. Edges and corners are blunted and brittle pieces apt to be broken.

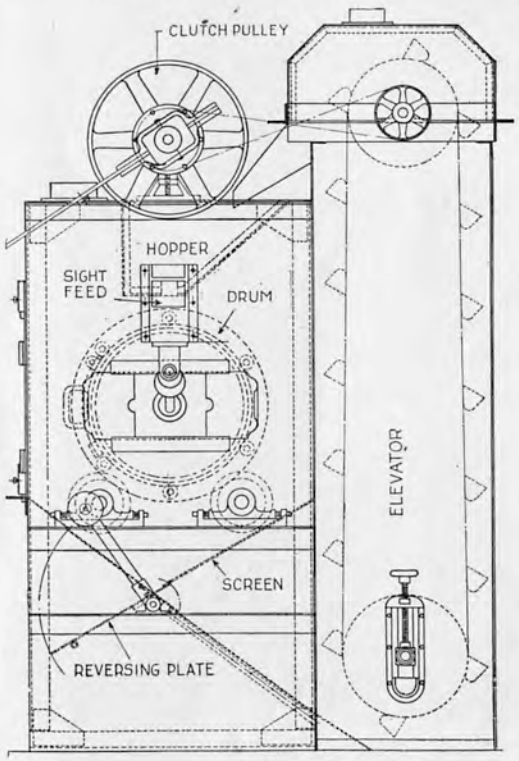
The sand blast barrel, on the other hand, operates only from 10 to 30 minutes per charge and the cored holes, cavities, etc., are thoroughly cleaned, leaving a matt surface, ideal for holding enamel, paint, or spelter without peeling. Fragile pieces are seldom broken and edges remain sharp.

American Sand Blast Barrels are made in two general types, Gravity and Pressure. Each has a perforated steel drum, housed in a dust tight casing, with a jet of air-driven sand entering through the center of each drum head, effectively reaching all surfaces of the contents as the barrel revolves. Differences between the two types lie chiefly in the method of reclaiming and elevating the abrasive, as explained further on.

The used abrasive sifts out of the drum and is automatically cleaned of dust as it returns for reuse. This cycle is continuous and only requires the occasional addition of new abrasive to replace that which disintegrates and passes off as dust. "American" sand blast machinery operates with any of the common abrasives, sand, chilled shot, or steel grit, without any change in the mechanism.

"American" Gravity Type Barrels

In the gravity type of barrel the abrasive feeds downward by gravity into the air jets which drive it into the drum. The gravity feed is visible and the amount of sand fed can be controlled readily by the operator. If at any time the supply of abrasive fails it is instantly apparent at one of the sight-feed openings.



Side Elevation: Gravity Type Barrel in Diagram.

Spent sand sifting from the drum falls upon an inclined "reversing plate" that deflects it obliquely to the rear of the casing and into the buckets of an endless belt elevator. The elevator drops it into feed boxes above the top of the drum, where it is screened of nails, broken cores, and other foreign matter before it passes to the nozzles for reuse.

Drum Construction

Thick steel boiler plate is used for the body of the drum, with heavy cast iron heads. There are no obstructions inside to catch or lock the contents; even the blast nozzles do not project inside. A durable tread at each end of the drum runs on the driving rollers as a wearing surface.

"American" drums are built extra heavy and rugged, to withstand the

action of hammering castings and grinding sand. Continuous operation without interruption for replacements has been sought and one will find this nearly true in the superior service and longer life of these drums. Comparison of weights, given in table on page 7, with the weights of competitive barrels is suggested.

Sloping drum heads can be provided if desired in the Nos. 2 and 3 Gravity Barrels to add a lateral movement to the rotary motion of the contents. The blast is distributed over a larger area in these sizes, and this lateral movement causes each piece to pass through the strongest part of the blast and receive uniform treatment.

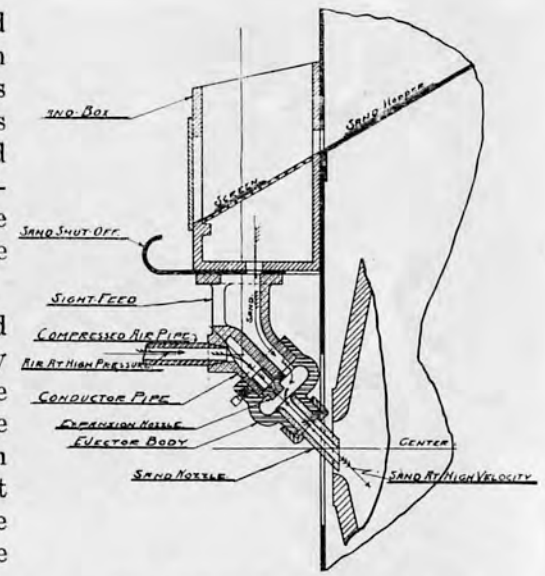
No. 2A barrel is built only with straight drum heads. The dimensions of this drum give it 50 per cent greater loading capacity than the No. 2 with sloping drum heads.

The removable drum door, which is a section of the perforated shell, can be quickly lifted off. Its latch will not clog with sand nor become damaged in unloading. In the two larger sizes the door is provided with a light crane that swings it to one side.

Gravity Type Drum with Sloping Heads.

Economy of Air

In the American Gravity Type the air consumption is constant, due to the use of an inner air nozzle that is not subjected to sand action.



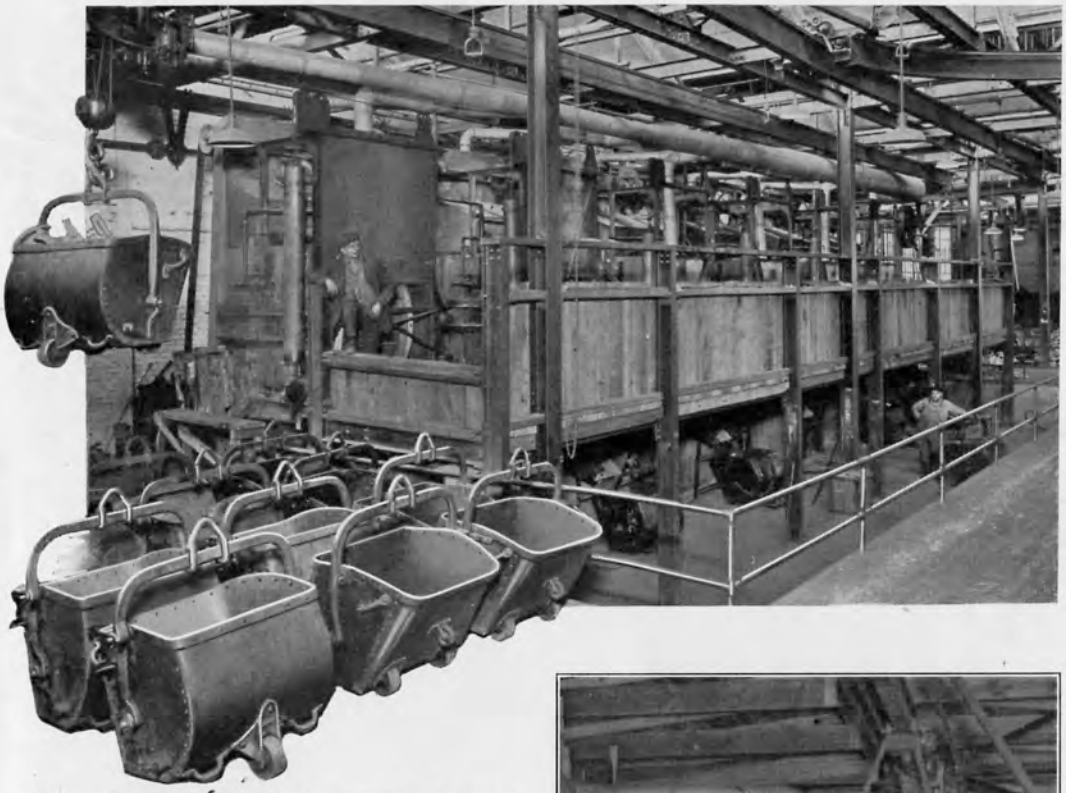
Cross Section: Sand Feed and Nozzles.

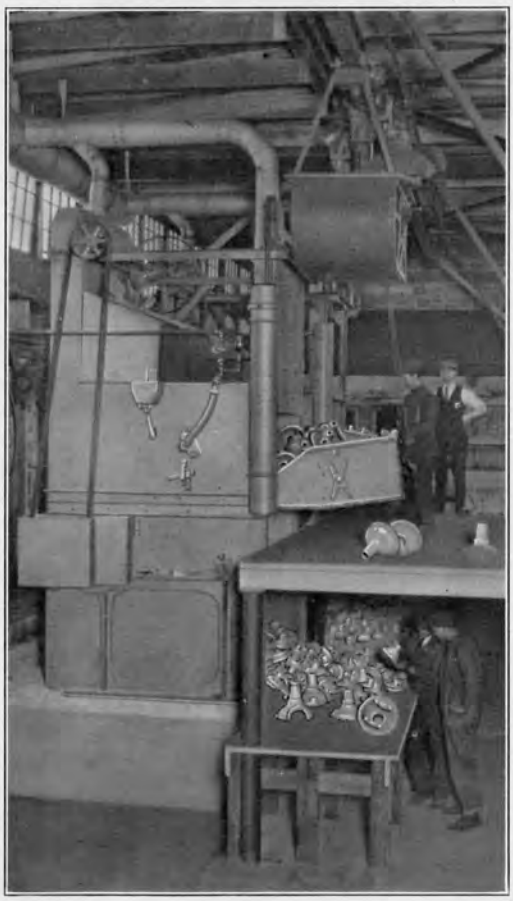
The sand falls at a steady rate into a mixing chamber where the jet from the air nozzle catches and drives it through the blast nozzle. The only part usually requiring replacement is the blast nozzle and this can be removed and a new one inserted in about thirty seconds from outside the casing.

Quick Loading and Unloading

This feature is of greatest importance to the user who wishes to keep his machines running to capacity. A partial turn of the drum after the door has been removed instantly dumps the con-

Method of Dumping Directly into Wheelbarrow or Truck.





(Above) Battery of Six No. 3 Gravity Type Barrels in a Large Malleable Foundry.
(At right) Side View of a No. 3 Gravity Type Barrel. These views show quick methods of handling castings to and from the sand blast barrels by mono-rail bucket system.

tents. This is very different from keeping the machine idle while men remove the pieces by hand or with a shovel.

In dumping, the contents ordinarily slide out rather than drop, thus protecting fragile pieces from too rough treatment. If desired the construction can be modified in the Nos. 2 and 3 Barrels to accommodate a wheelbarrow, tote box, or other receptacle directly beneath the drum to catch the contents as they are discharged.

Maximum production can be reached by mounting the sand blast barrel so that castings can be loaded into the drum from an upper level and discharged on the floor below. The loading and unloading men do not then

interfere and the blasting proceeds with but little interruption.

The door of the housing, Nos. 2 and 3 Barrels, is counterweighted and slides vertically with little effort. There is nothing about it to stick or give trouble by loosening or wearing.

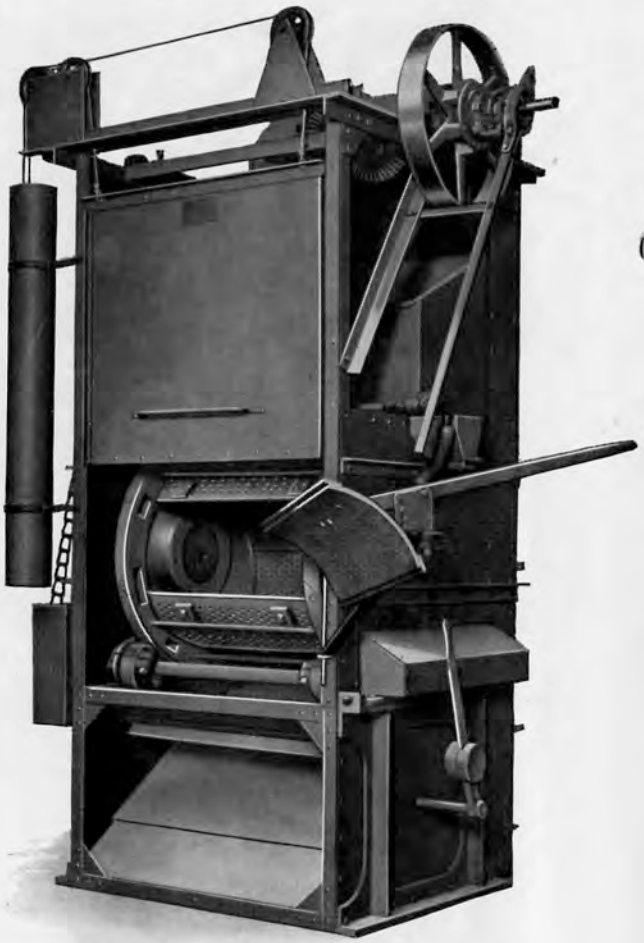
Economy of Abrasive

American equipment utilizes all the cutting qualities of the abrasive, no usable abrasive being wasted. It is returned to the feed box over and over again until disintegrated and carried off as dust. Sand is most commonly used, but other abrasives, such as chilled shot or steel grit, may be used equally well without any change in the mechanism nor any increase in power.

Dust Removal

As the elevator buckets discharge the recovered abrasive at the top of the machine an exhaust current of air snatches away all float dust while the good abrasive drops into the feed boxes. Only the dust, which has no abrasive value, is thus removed.

No. 1 Gravity Type Barrel.



No. 2 Gravity Type Barrel.
Reversing plate shown in position to discharge castings

Dust laden exhaust air is best disposed of by connection to an "American" cloth screen dust arrester, which may serve a single sand blast unit or the entire factory dust collection system, permitting the barrels to be used where most convenient.

Installation

Gravity type barrels are set on the floor with all parts above that level. No pit or special foundation is necessary, and the machine is ready to operate as soon as connected to the air supply, exhaust system, and power.

Working blueprints are supplied.

A competent erector may be had to superintend the erection and instruct operators in its use, as covered in proposal forms by this Company.

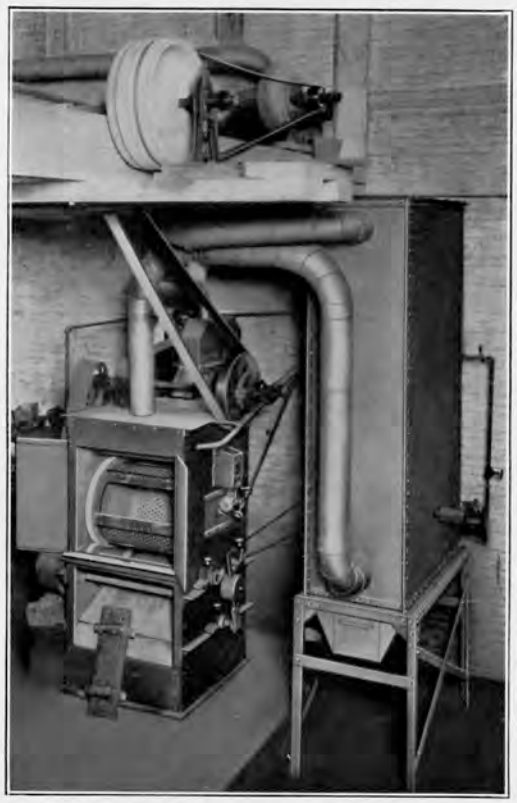
Two to four days are ordinarily required to assemble and demonstrate a barrel machine. These figures are based on one erector, one helper, and ordinary facilities. All labor estimates should be qualified by local facilities and conditions, such as cranes, tackle, help, and close quarters, therefore they are only approximate.

Shipment

The frame and housing together are skidded for shipment, with drum skidded separately, except Barrel No. 1, in which case it is shipped in place. Fixtures, sprockets, shafts and pulleys are boxed.

Standard Equipment

With each Gravity Barrel we include an attached driving shaft with friction clutch pulley; air pressure gauge; moisture separator to drain oil and water from the air line; 50 hard iron nozzles.

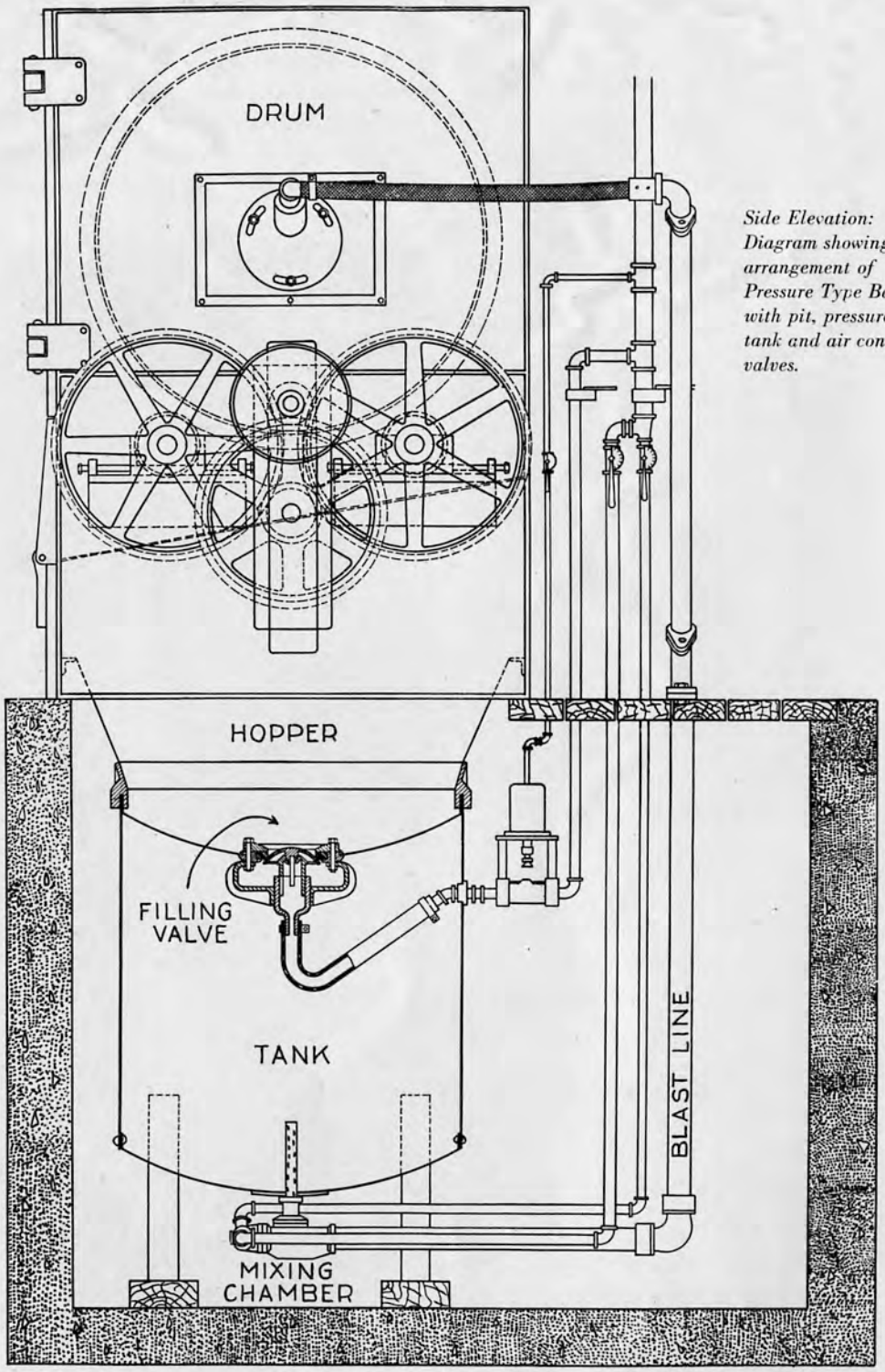


Complete Sand Blast Barrel Installation.
No. 1 Gravity Barrel, No. 1 Cloth Screen Dust Arrester and Exhaust Fan.

DIMENSIONS—GRAVITY TYPE BARRELS

Sizes	Drum		Shipping Weight	Floor Space			Exhaust Conn.	Clutch Pulley		H. P.	Nozzles
	Diam.	Length		Width	Depth	Height		Diam.	Face		
No. 1	20″	34″	1970 lb.	5′0″	4′9″	8′0″	7″	20″	3″	2	2-(3/16″)
No. 2	32″	40″	8200 lb.	6′6″	7′0″	12′4″	9″	30″	4″	3	2-(5/16″)
*No. 2A	42″	36″	8200 lb.	6′6″	7′0″	12′4″	9″	30″	4″	3	2-(5/16″)
No. 3	50″	40″	13000 lb.	7′0″	8′0″	14′8″	10″	30″	4″	3	2-(5/8″)

(Dimensions in feet and inches.) *Straight head drum only.



Side Elevation: Diagram showing arrangement of Pressure Type Barrel with pit, pressure tank and air control valves.

Battery of Three Pressure Type Barrels Cleaning Malleable Fittings. Castings brought and removed by mono-rail buckets. American Cloth Screen Dust Arrester No. 6 at the right.

"American" Pressure Type Barrels

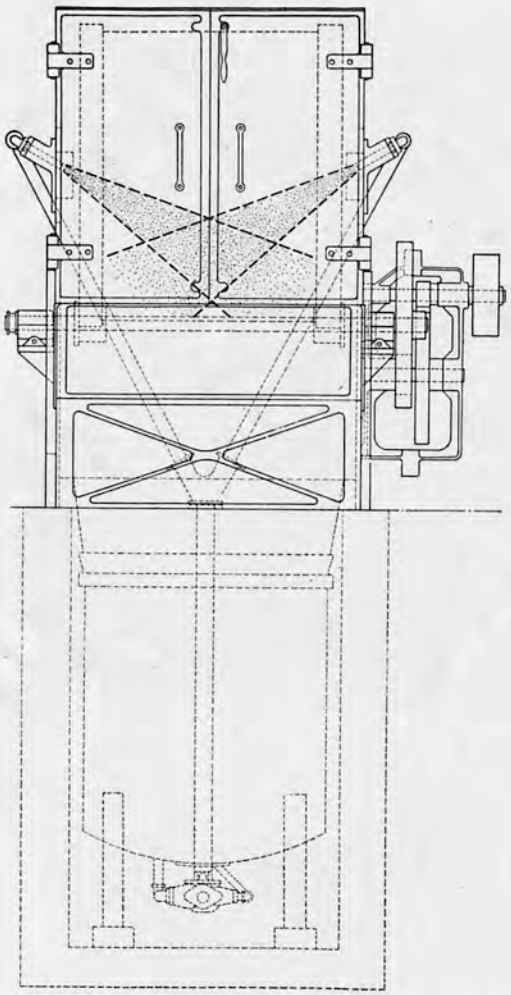
In the Pressure Type of equipment the working supply of abrasive is contained in a steel tank under air pressure. The entire course of the abrasive from tank to discharge nozzles is through air lines under pressure and the resulting high sand velocity enables pressure type barrels to clean steel and malleable castings and forgings with special success.

By using lower air pressure the same equipment serves admirably for gray iron, brass, bronze, and aluminum castings.

Barrels operating by the Pressure System comprise a dust-tight casing which encloses a slow speeded revolving steel drum with perforated shell. A jet of sand enters the drum through a nozzle at the center of each drum head, effectively reaching all surfaces.

Spent abrasive falls from the drum perforations upon a screen plate, thence to a collecting hopper below. Upon stopping the machine and releasing the pressure from the air lines, this sand flows into the pressure tank through our Automatic Filling Valve, ready for use again.

Upon flowing from the pressure tank through a trap designed to prevent clogging, the sand enters a mixing chamber from which an air jet drives it into the blast line. The latter divides at a "Y" and distributes the blast evenly to the two blast nozzles.



Front Elevation: Diagram showing driving gear unit of Pressure Barrels and blast from nozzles.

The drive for turning the drum is a compound reduction gear unit, with cover, driven by belt from shaft or motor to a pulley supplied on the machine.

Loading and Unloading

The hinged door of pressure type drums swings downward and contents may be loaded by hand or shovel, from buckets, or dumped in through chutes. The drum can be quickly emptied as shown on the next page.

Dust Removal

Cross currents of air in the base of the drum housing sweep all float dust into the exhaust system, where it can be collected by an "American" Cloth Screen Dust Arrester. Nothing but dust, which has no abrasive value, is thus removed.

Economy of Abrasive

The abrasive is used over and over until it disintegrates into dust—no usable abrasive being wasted. Any common abrasive, such as sand, shot, or grit, can be used equally well without any change in the mechanism.

Only One Moving Part

There is only one moving part in the whole system for handling the abrasive —a filling valve plug. This valve is air controlled and is located in the head of the pressure tank.

Spent sand accumulates in the hopper until such time as the air pressure in the tank is released. The automatic filling valve then immediately opens, the abrasive flows into the tank, and when the pressure is turned on, the valve closes.

This action is simple and positive.

Installation

The pressure tank with hopper is almost invariably placed below the barrel to avoid any mechanical apparatus for rehandling the abrasive. In most cases a pit is used, such as shown in the diagram, page 8. This requires the least floor space of any system.

Though a little water in the pit of some installations would dampen the sand and stop operations, an "American" pressure tank will keep on working even with a couple of feet of water in the pit in emergencies.

The barrel, after being erected, is ready to operate as soon as the exhaust and air line connections are made and power is supplied to the 14x4-in. driving pulley. About 3 h.p. is required.

Working blueprints are supplied with every barrel.

A competent erector may be had to superintend the erection and instruct operators in its use, as covered in proposal forms by this Company.

Pressure Barrel Open, Showing Finished Castings Ready for Removal. Individual motor drive can be supplied if especially ordered.

Shipment

The Pressure Barrel is shipped with the housing, tank, and drum each skidded separately, hopper crated, and fixtures boxed.

The weight ready for shipment is about 5800 pounds.

The Pressure Barrel requires about the same time as a Gravity Barrel to assemble ready to operate. (See page 7.)

Standard Equipment

With each Pressure Barrel we include air pressure gauge; moisture separator to drain water and oil from the air line; 50 hard iron nozzles, ⅜-inch unless otherwise ordered; first quality heavy rubber lined blast hose to the nozzles; driving pulley.

Blast Accessories

We can also supply suitable accessory equipment of standard manufacture, such as air compressors, receiver tanks, sand, shot, grit, blast hose, etc. We are glad to advise concerning the selection of these items, whether ordered from us or not.

"American" Cloth Screen Dust Arresters, built by us, are especially suited for sand blast, grinder, and tumbling mill service.

Other Sand Blast Items

Our line includes all approved forms of sand blast apparatus, such as automatic and hand operated rotary tables, sand blast rooms of various types, machines for blasting bar stock and tube stock, chinaware cleaning machines, and portable sand blast pressure tanks.

AMERICAN EQUIPMENT

Sand Cutters
For any size of floor and all kinds of sand

Sand Blast
Barrels
"Humane" Rooms
Down Draft Rooms
Rotary Tables
Cabinets
Tanks
Guns

Dust Arresters and Fans

Core Machines and Accessories

Molding Machines

Pattern Compound

Pattern Frames

Snap Flasks

Pouring Jackets

Steel Flask Bars

Charging Buckets

Oven Trucks