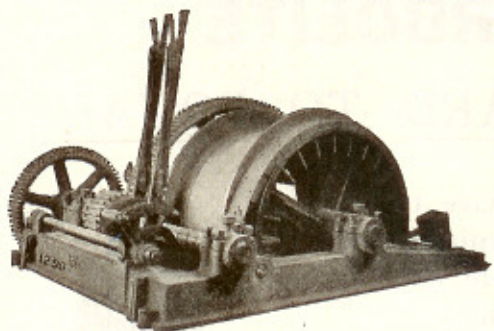


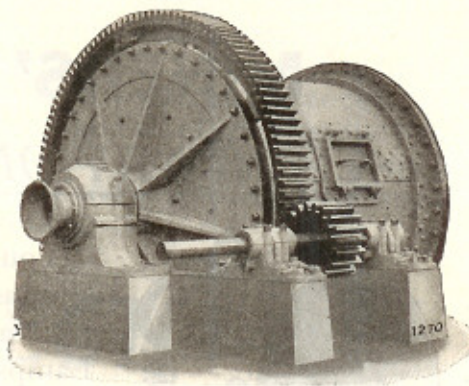
DEWCO

ELECTRIC HOISTS



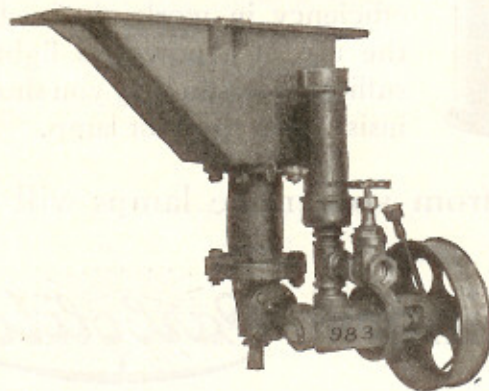
Single and Double Drum.
For all capacities up to 50,000 pounds.
Suitable for Any Service.

BALL MILLS



Will Crush Wet or Dry. Takes Feed
Direct from Crusher, Rolls or Stamps.
5-ton to 500-ton capacity in one unit.

RICHARDS IMPROVED PULSATOR JIGS



Simple and Efficient. Large Capacity with
Small Floor Space. Various Types.

EVERYTHING FOR THE MINE AND MILL



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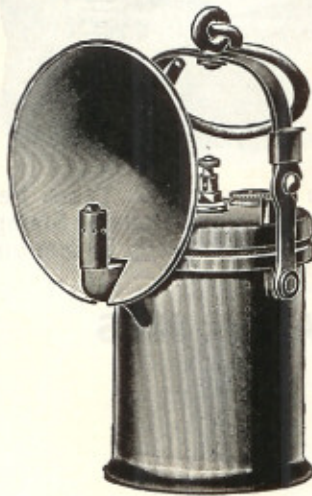
Cable Address, "AIRDRILL," San Francisco





WOLF LAMPS AND MINERS' CARBOLITE

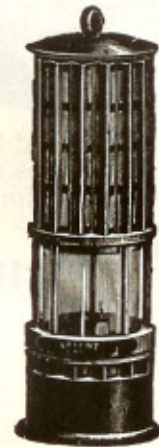
A COMBINATION HARD TO EQUAL



You don't have to use that "just as good" mine lamp. We have a complete line of Wolf Lamps in stock.

The life of your men depends to a great extent upon a brilliant and reliable source of light.

This, as well as for the greater efficiency in work obtained by the use of a powerful light, is sufficient reason why you should insist upon the best lamp.



Best results from your mine lamps will be obtained if you use

Miners' Carbolite

Carbolite consists of large uniform-sized pieces; therefore, it is most economical to use, because, being free from "fines" and dust, it generates gas slower and there is no sudden excess generation of gas—no overheating of the lamp or clogging of the burner. It is made of the purest raw material obtainable and is guaranteed to produce the highest average gas yield.

In stock in 100 and 25 pound drums; 10 and 2 pound cans

THE HENDRIE & BOLTHOFF
MANUFACTURING & SUPPLY CO.
 PIONEER MACHINERY AND SUPPLY HOUSE OF THE WEST
 DENVER · COLO.



For Impact Screens

Consider the operation of the Impact Screen. The screen-frame is supported by an elliptic spring of the carriage type. A vibrating motion is imparted by the two ratchets operating as cams. The cams force the screen-frame down and the springs bring it back against the stops with a sharp, jarring impact. All of this is for the sole purpose of inducing a more rapid discharge of the particles through the meshes of the screen itself, and all of the ingenuity and thought that have made the impact screen possible would be of little avail if the *screen itself* were inefficient or structurally weak.

PERFECT Double-Crimped Woven-Wire Cloth Is the Screen to Use

It is made in a wide variety of mesh and material to suit every conceivable set of conditions. It is the result of years of experience and patient experimentation. The double-crimp provides at once stiffness and a high percentage of net discharge area.

A trial order when you make your next replacement will prove the truth of these claims

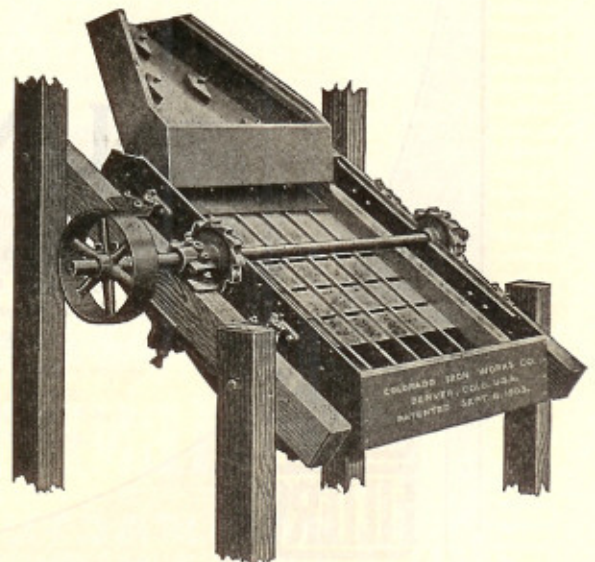
SEND FOR THE DATA BOOK. IT IS FREE

Ludlow-Saylor Wire Company

General Offices and Factory:
ST. LOUIS, MO.

Branch Offices:

20 East Jackson Street, Chicago Mills Building, El Paso, Texas
Felt Building, Salt Lake City, Utah



This illustration used by courtesy of Colorado Iron Works Co., Denver

High Extraction for Small Mills

is perfectly feasible without the installation of elaborate, high-priced apparatus.

Have you ever wondered why somebody did not design a simple, practical, inexpensive and at the same time efficient classifying device that would be suitable for small, as well as large mills?

Somebody has. The answer is to be found in the

Richards Pulsator Classifier

LAUNDER TYPE

It is intended to be attached to the bottom of the mill launder, as shown on the drawing below.

It is of the hindered settling type, and effects the separation between coarse and fine pulp through the action of an upward current of water, acting against the falling pulp in a series of rapid pulsation.

Water is brought to the pulsator valve under a head of 20 feet; adjustment to suit any ore is furnished through a controlling valve for regulating the water supply.

Only one-tenth of a horsepower is required to operate it.

The space occupied is merely nominal.

Don't continue to lose money by sending an unclassified pulp over your concentrating tables.

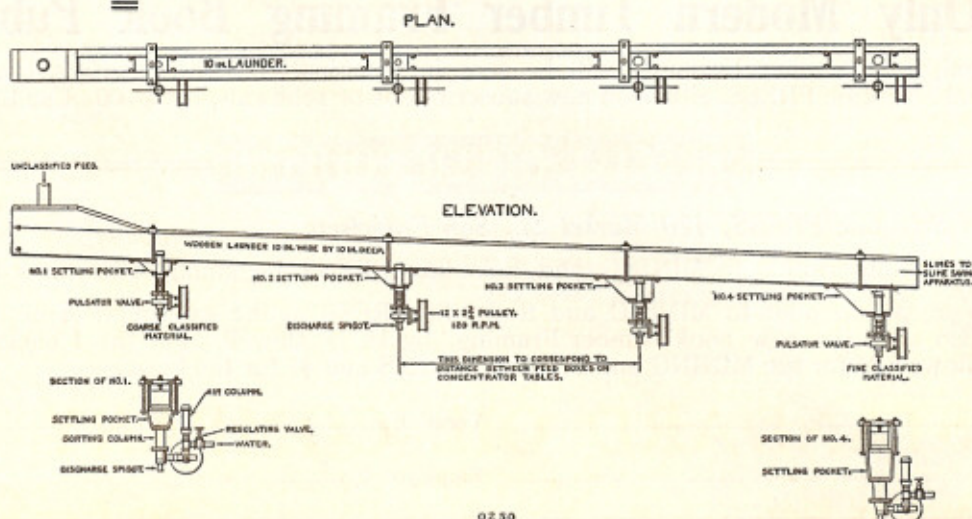
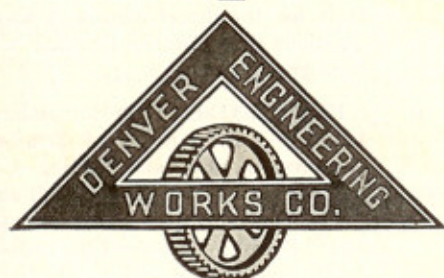
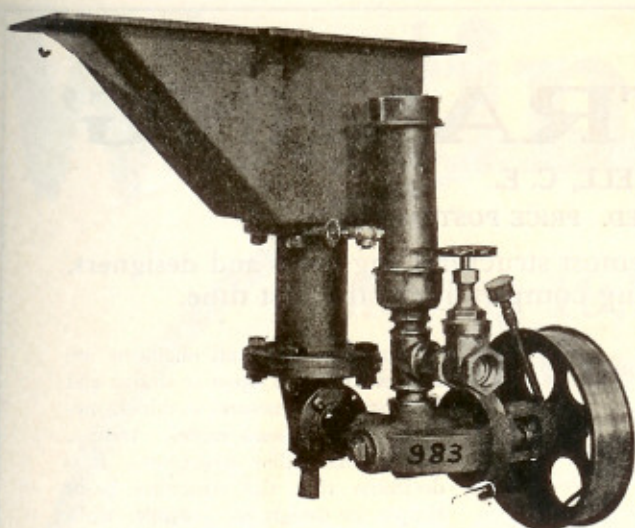
Send for catalogue—prices—investigate this device.

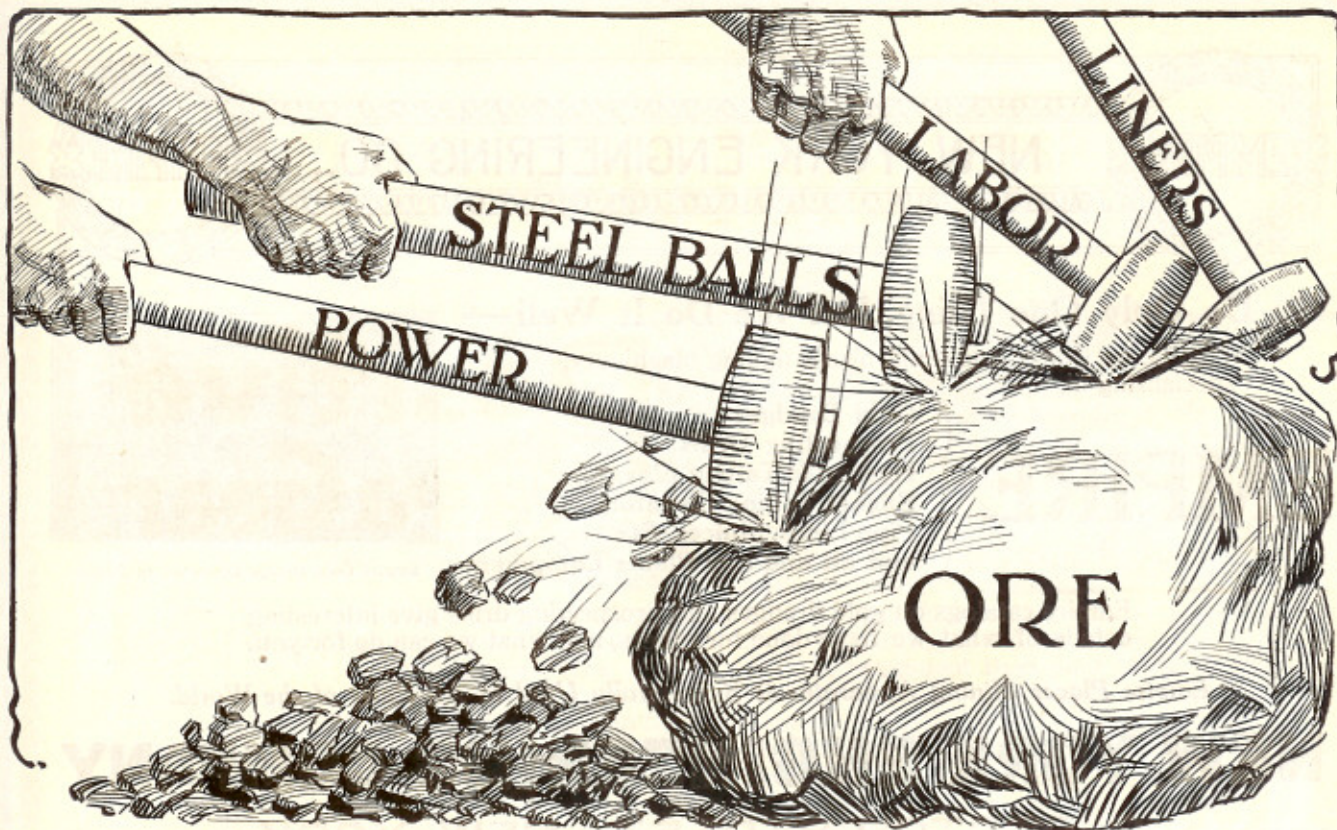
FULL INFORMATION ON REQUEST

Denver Engineering Works Company

2900 Blake Street

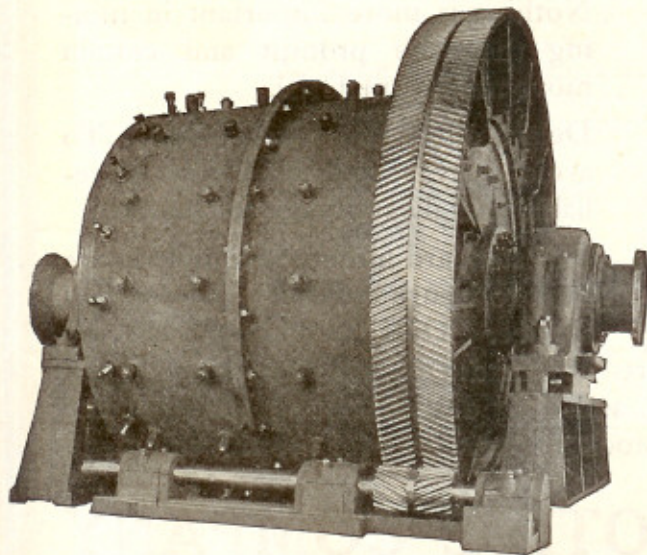
Denver, Colorado





If these four things were free it would matter little what Ball Mill you used

If large capacity in small space were not a requirement of latter-day mining you could afford to pick your equipment with your eyes closed. If you do not care how fast your liners wear out, or how much your other overhead costs amount to, you might as well stick to obsolete methods.



Results Prove the Value of the MARCY

Thirty-six Marcy Ball mills in operation at the Inspiration Consolidated Copper Co. have a daily capacity of 17,000 dry tons per 24 hours—475 tons of coarse feed each.

The Grate Discharge covers the entire end of the mill, giving a Discharge Area nearly ten times the trunnion discharge area. Finely ground material will not remain in the mill longer than it should.

Write today for the Marcy book, "One Easy Step," and also ask for "Successful Purchasing." Both will be sent without obligation.



THE MINE AND SMELTER SUPPLY COMPANY

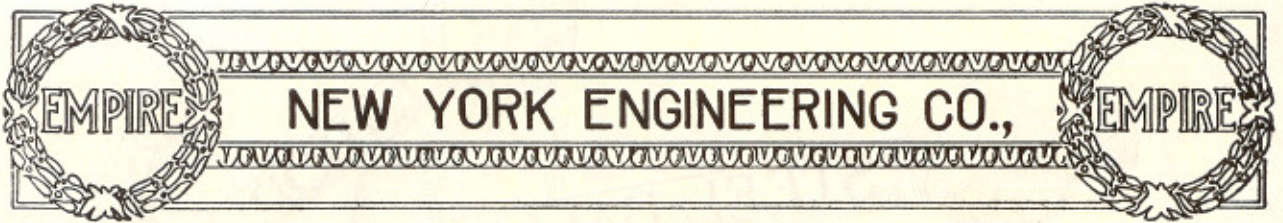
A SERVICE STATION WITHIN REACH OF YOU

DENVER

SALT LAKE CITY

EL PASO

NEW YORK OFFICE - 42 BROADWAY

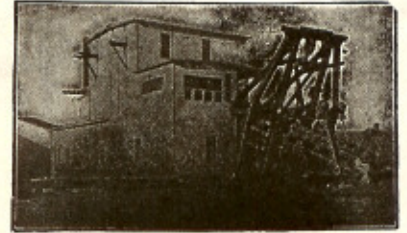


We Do Only One Thing, But We Do It Well—

That is, we design and build placer mining machinery, specializing in

EMPIRE

**Gold Dredges
Prospecting Drills
Hydraulic Tailing Elevators
Bucket Tailing Elevators
Pipe Lines, Sluices, Etc.
and all and any Placer Equipment**



Empire Gold Dredge Operating in Siberia

Empire catalogs on gold dredges and prospecting drills give interesting details of what we have done for others, and what we can do for you.

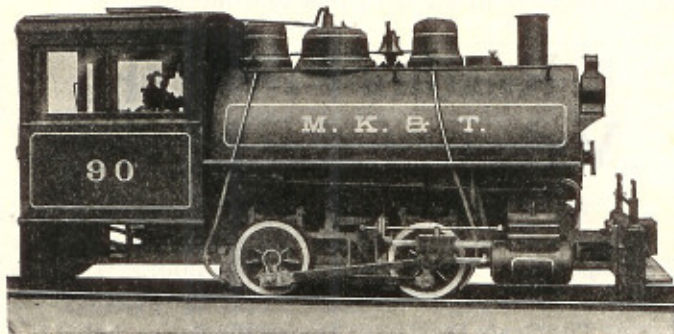
Empire Placer Mining Apparatus is Successfully Used in All Parts of the World.

NEW YORK ENGINEERING COMPANY

2-RECTOR STREET, - NEW YORK

V. A. Stout, Western Representative, Balboa Building, San Francisco, California

KEEP THE WORK GOING



Nothing is more important in mining than the prompt and certain movement of material.

Delays affect the whole work. To avoid delays locomotives must be reliable and always ready for service.

Our standard mining locomotives are built to insure reliability and constant service. Only tested materials are

used in their construction. All wearing parts are made to templates and gauges. Interchangeability of like parts is guaranteed, and long delays waiting for duplicate parts avoided, as duplicate parts are kept in stock at our works for prompt shipment.

AMERICAN LOCOMOTIVE COMPANY

30 CHURCH STREET, NEW YORK

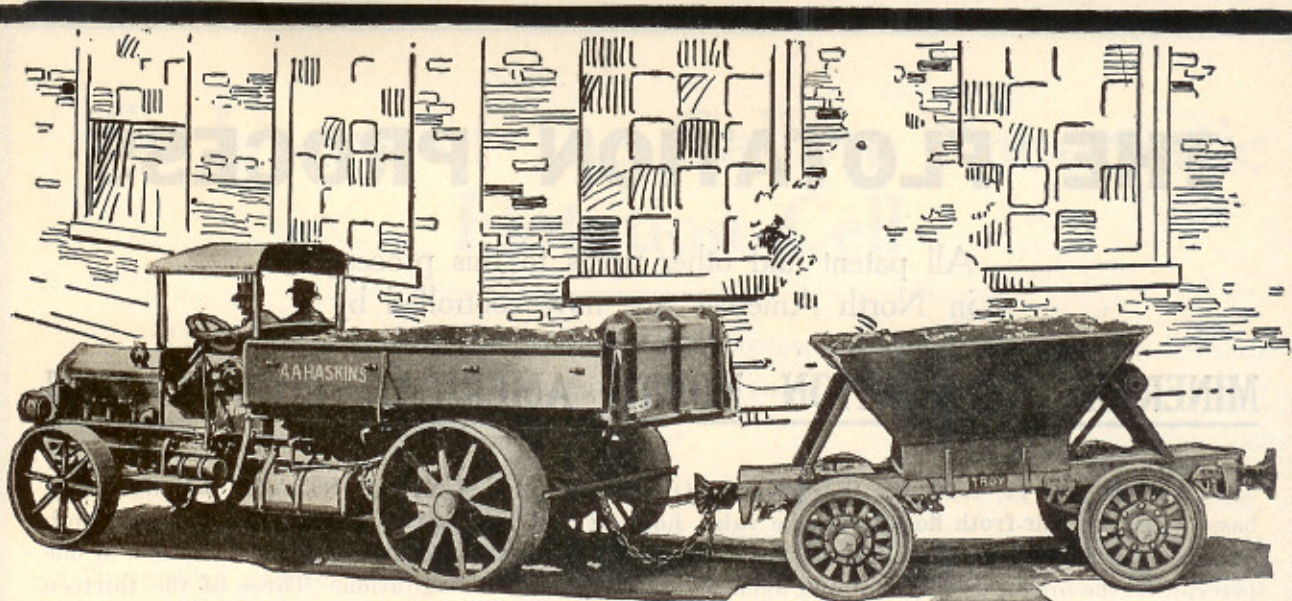
McCormick Building, Chicago, Illinois.

A. Baldwin & Company, New Orleans, La.

Dominion Express Building, Montreal, Canada,

N. B. Livermore & Company, San Francisco and Los Angeles, California.

Northwestern Equipment Company, Seattle, Wash., and Portland, Oregon.



Read this:— “We own the largest deposit of pure dolomite in America. The mine is located 10½ miles from the railroad in San Benito County, Cal. The deposit is located in the mountains over a twisting, turning road with grades up to 10% and 1½ miles long. The road is covered with dust from 6 to 8 inches deep. To get the dolomite to the railroad was a problem. Hauling with horses costs \$58.21 to deliver 40 tons a day, using 40 horses, 5 drivers and necessary stable help.

“Early this summer we purchased a White Truck with a carrying capacity of 5 tons. We wished to haul additional tonnage at a minimum expense by the use of a trailer. Everyone who has seen the road said we would be lucky to get the truck over it and to forget a trailer.

“Notwithstanding the criticism, we purchased a cheap trailer costing less than \$500.00. This trailer pulled so hard we abandoned it after one trip and then purchased through your San Francisco dealer, Mr. Bacon, a bottom dump Troy Trailer with rubber tires. The drivers of the truck tell us they do not know it is running be-

hind, so easy does it pull. In 35 years’ experience in hauling we have never seen a better piece of equipment than your Troy Trailer. It has been in continual service with our truck 24 hours a day and the tires are still perfect.

“With the Troy Trailer and White Truck we haul 10 tons at a time and make 4 round trips every 24 hours, a distance of 84 miles. Only requires one man for the outfit and that is the driver. It cost us \$58.21 daily using 40 horses (5 teams of 8 horses each) 5 drivers and 2 stable men. This outfit delivered 40 tons. Now with the Troy Trailer and White Good Roads Truck we deliver 40 tons in 24 hours with only 2 truck drivers and save \$29.50 a day. This is for one unit only of Troy Trailer and White Truck. As we contemplate adding 9 additional units we shall then save \$295.00 per day. We can then deliver 400 tons every 24 hours. We have found by practical and costly experiment the Troy Trailer and White Truck to be the very best adapted to our conditions and requirements.

Yours truly,

“A. A. HASKINS DOLOMITE COMPANY,

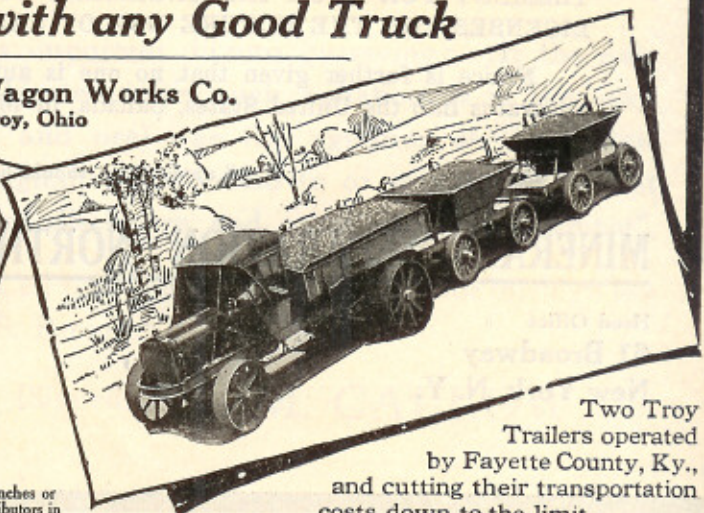
Troy Trailers

can be operated with any Good Truck

The Troy Wagon Works Co.
Troy, Ohio



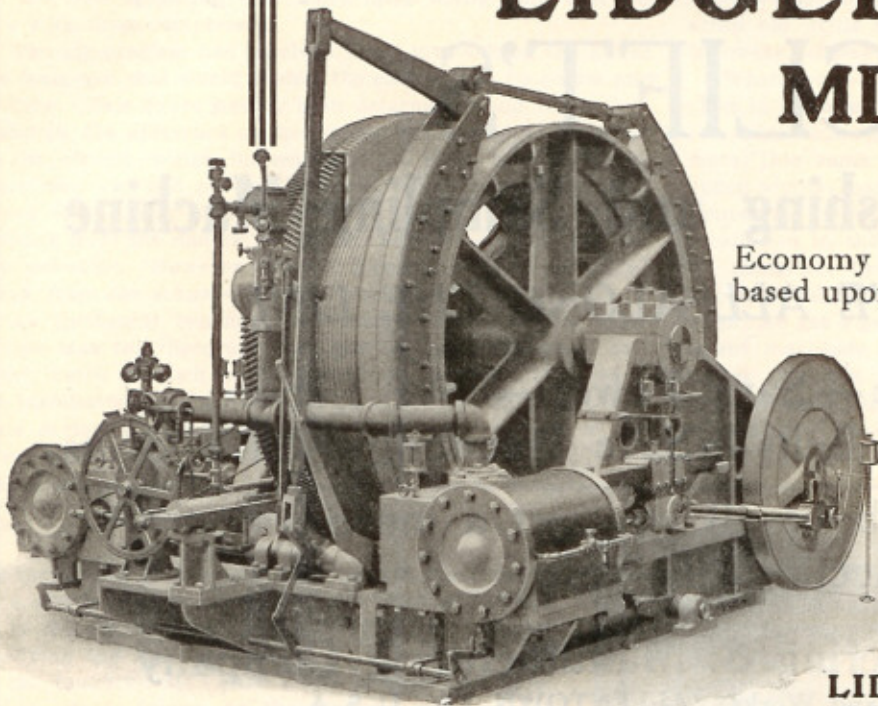
Showing how Troy Trailers follow in the track of the truck regardless of road conditions



Two Troy Trailers operated by Fayette County, Ky., and cutting their transportation costs down to the limit.

Branches or distributors in all principal cities

LIDGERWOOD MINE HOISTS



Economy in Mine Haulage must be based upon the hoist.

We build Mine Hoists to meet every type of mine service.

Operation and maintenance costs per ton handled are at a minimum with Lidgerwood Hoists.

Steam Hoists built up to 1,000 H.P. Electric Hoists built in any size.

LIDGERWOOD MFG. CO.
96 LIBERTY ST., NEW YORK

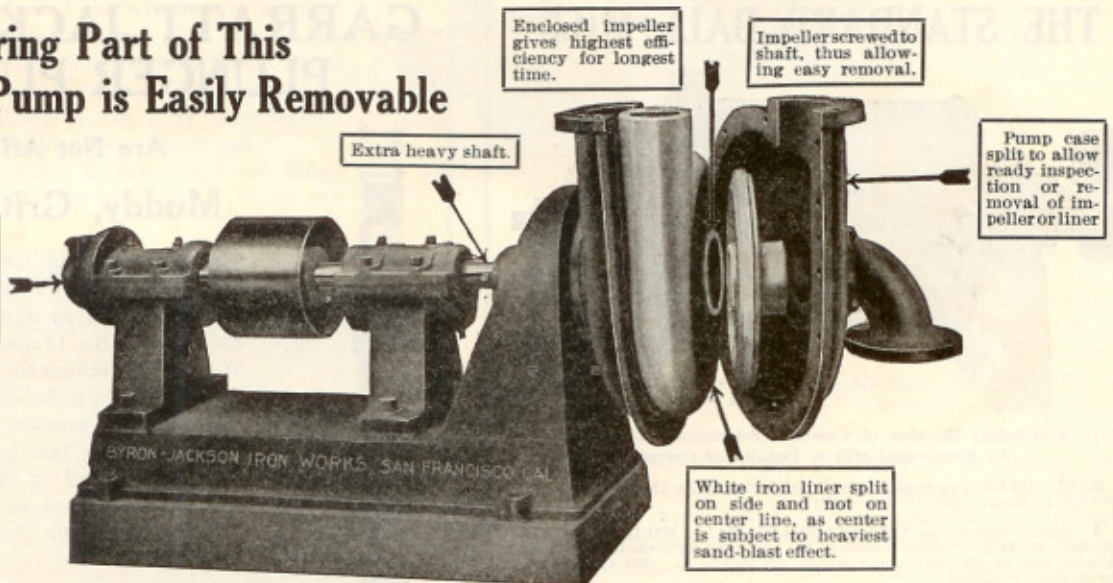
Chicago
London, Eng.

Los Angeles
Philadelphia

Seattle
Pittsburgh

N. B. Livermore & Co., San Francisco

Every Wearing Part of This Tailing Pump is Easily Removable



Mechanical thrust bearing which eliminates balance ports. Balance ports permit circulation causing undue wear on runner.

Enclosed impeller gives highest efficiency for longest time.

Impellers screwed to shaft, thus allowing easy removal.

Extra heavy shaft.

Pump case split to allow ready inspection or removal of impeller or liner

White iron liner split on side and not on center line, as center is subject to heaviest sand-blast effect.

The success of our new type tailing pump has been instantaneous, because it was designed for mining work in conjunction with mining engineers of practical experience. Among others, we have supplied and have on hand orders for this type of pump from

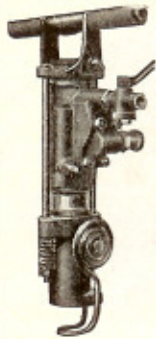
Alaska Treadwell Gold Mining Co. Bunker Hill & Sullivan Mining Co.
Utah Copper Co. San Vicente Mining Co. Seoul Mining Co.

all of whose engineers are recognized in their respective countries as being leaders in their profession.

Catalogue 25A is yours for the asking.

BYRON JACKSON IRON WORKS
SAN FRANCISCO

HAVE YOU TRIED "CARR" BITS



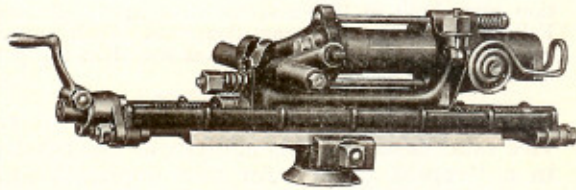
You Can Use Your "Jackhammer"

For Shaft Sinking, Bench Work—in fact, for practically every down-hole drilling requirement—or

You can slip it in the "Jackhammer" Mounting and use it for light drifting and other flat-hole work.

Bulletin 4221 describes both "JACKHAMER" and Mounting.

Ask for a copy.



With Your "Jackhamers"

At the Payroll Mine they had very hard ground, so hard that one "Jackhammer" used 50 pieces of steel.

When they tried "Carr" Bits eleven holes were put in with six steels in three hours. Before the change was made this would have taken six hours and 40 pieces of steel.

How Would "Carr" Bits Fit Your Ground?

"Carr" Bits are a product of Ingersoll-Rand Engineering. You can make them in the Leyner Sharpener.

INGERSOLL-RAND COMPANY

11 Broadway
NEW YORK

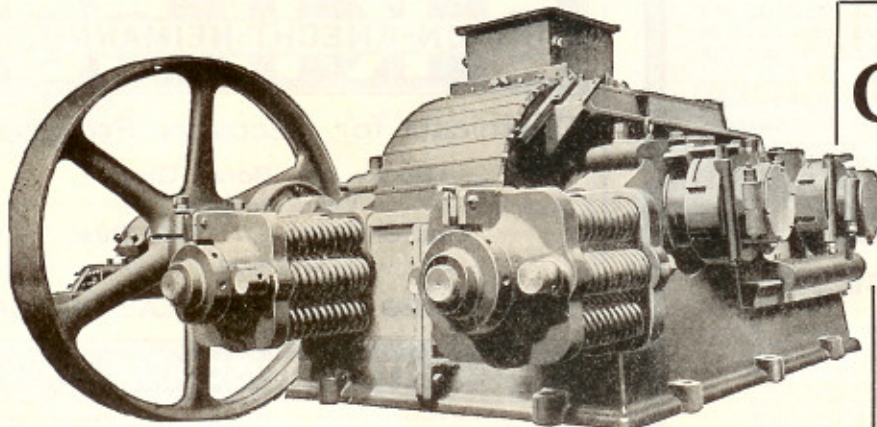
Offices the World Over

165 Q. Victoria St.
LONDON

Air Compressors

Drill Sharpeners

104-JD



GARFIELD Crushing Rolls

The Rolls for constant, heavy duty

Use Garfield Rolls for constant duty, big reductions and enormous tonnage.

Garfield rolls are crushing over half a million tons of ore per day, in some instances making a successful reduction of nine to one on hard ore.

Roll shells are kept from pitting and corrugating, even when making as large a reduction as mentioned above. No grinding machine yet developed will equal the results obtained from rolls. The reason is simple enough; all of the power expended is applied directly to crushing.

Garfield rolls are built in the following diameters of roll shells with width of face to suit tonnage: 36 in., 37½ in., 42 in., 43½ in., 54 in., 60 in., 72 in.

WORTHINGTON PUMP AND MACHINERY CORPORATION

New York Office: 115 Broadway

Power & Mining Machinery Works: Cudahy, Wis.

Branch Offices in all Principal Cities

M430,4

Economy in Mine Station Pumping

The severe duty of mine station service requires a pump of compact design, capable of handling gritty or acid-bearing water, so designed that it will withstand the shock of back pressure and combining high efficiency with reliability in any condition of service.

"American" Centrifugal Pumps

fulfill these conditions, because they have been developed after many years of experience in building all kinds of pumps, to meet all these requirements. When so ordered, they are made of acid-resisting material, and equipped with air chamber, check valve, with by-pass, and with the check valve having a relief valve set to open at any predetermined pressure.

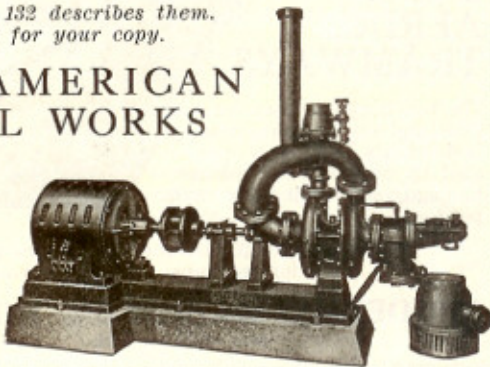
They are made in styles and multiple stages to meet any requirement of location or condition of head.

Catalogue 132 describes them.
Write for your copy.

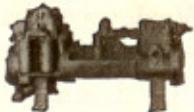
THE AMERICAN WELL WORKS

General Office
and Works:
AURORA, ILL.

Chicago Office:
First National
Bank Building



Smith-Vaile Yoke Type Boiler Feed Pumps



Not an ordinary, every-day Boiler Feed and General Service Pump, but something better.

Provided with removable and interchangeable water cylinder linings and adjustable packed water pistons, permitting compensation for wear.

Bulletin No. 780 will interest every engineer.

Standard Pumps for Every Service

PLATT IRON WORKS, Dayton, Ohio

Sales Representatives in Principal Cities

1

AWARDED



American Steel & Wire Company's
Trenton Bleichert System

Aerial Tramways

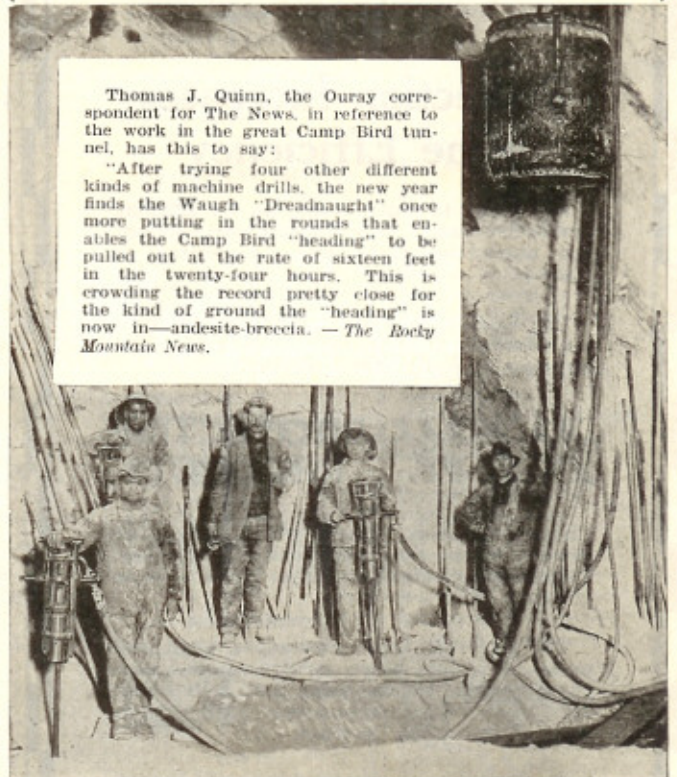
NO matter what the contour of the ground, we will construct a tramway that will transfer material at minimum expense; and no grades are too steep to surmount; no rivers or valleys too wide to cross; and no grading, bridges or viaducts of any kind are required. There is practically no limit to the length of these tramways.

Send for complete descriptive catalogue of tramways in use.

American Steel & Wire Company

Chicago New York Cleveland Pittsburgh West Chester Denver
Export Representative: U. S. Steel Products Co., New York
Pacific Coast Representative: U. S. Steel Products Co.
San Francisco Los Angeles Portland Seattle

THE WAUGH "DREADNAUGHT" DRILL STAYS ON THE JOB



Thomas J. Quinn, the Ouray correspondent for The News, in reference to the work in the great Camp Bird tunnel, has this to say:

"After trying four other different kinds of machine drills, the new year finds the Waugh 'Dreadnaught' once more putting in the rounds that enables the Camp Bird 'heading' to be pulled out at the rate of sixteen feet in the twenty-four hours. This is crowding the record pretty close for the kind of ground the 'heading' is now in—andesite-breccia. — *The Rocky Mountain News.*

"Dreadnaughts" used unmounted as hand drills for enlarging a "raise," in the Dome Mines, South Porcupine, Ontario. The ground was a mixture of white quartz and schist, yet with 5 machines they averaged thirty-four 10-ft. holes a shift.

When the steel is binding or runs into a slip, the hole is not lost if you are using a "Dreadnaught," for it can be cranked back while running with the full force of rotation, without danger of breakage. In a number of mines where "Dreadnaughts" are being used with drills of other makes, they use their "Dreadnaughts" for pulling steels that have been stuck by other machines.

THE Denver Rock Drill Mfg. Co.

DENVER, COLO.

New York El Paso Seattle Salt Lake City
San Francisco Houghton Butte Joplin Los Angeles
Canadian Rock Drill Company, Ltd., Toronto, Nelson, B. C.

M-39

Mining and Scientific Press

THE OPPORTUNITY PAGE

Mill Building and Ore Bins

Will sell separate or together complete steel mill building for housing hundred ton mill marked for re-erection, complete. Ore bins are exceptionally heavy, capacity 500 tons; made of steel throughout. Write for blue prints.

SOUTHWESTERN WRECKING COMPANY
EL PASO, TEXAS

POWER PLANT

For Immediate Delivery

- 2—350 B.H.P. Wolf Cross Compound Superheated Steam Locomobiles complete, with Condensers, Boiler Feed Pumps, Injectors and Feed Water Heater.
- 2—Dahl Liquid Oil Burning Systems Complete with Pumps and Heaters.
- 2—General Electric A.T.B. 32 pole, 345 K.V.A. 3-60-480 Engine Generators.
- 2—Type B.L.C., 35 K.W.H., 850 R.P.M., 125 V., Belt Driven Exciters.
- 8—Fort Wayne 60 cycle, 219 K.V.A. (175 K.W. 8-10 P.F.), 33,000 volt primary to 480 volt secondary, single phase Transformers.
- 2—Type H, 60 cycle, 25 K.V.A., 33,000 volt primary to 110-220 volt secondary, single phase Transformers.
- 1—Blue Vermont Marble Switchboard, with all necessary instruments.
- 8—3-phase Aluminum Cell Lightning Arresters.
- 6—200 amp. Choke Coils.

Above equipment has been slightly used but not misused and is guaranteed to be in first-class condition. Power plant is for sale only as a whole.

Mill Equipment

- 1—32"x10' Gates Revolving Screen.
 - 1—6"x16" Hardinge Mill.
 - 2—32"x15' Dorr Agitators and Tanks.
 - 2—36" Perrin Presses.
 - 1—6x9 Aldrich Vertical Triplex Pump.
 - 1—42x48 Belt Driven A.C. Tube Mill.
 - 1—52" Merrill Precipitating Press, 30 leaves.
 - 1—No. 787 H-H-M Steel Bullion Safe.
 - 1—42" Carlin Grinding pan.
 - 2—Erie City Economy Boilers.
 - 1—3x2x4 Duplex Boiler Feed Pump.
- Full Refinery Equipment.
Lot large Redwood Tanks, good condition.
Pulleys, Shafting and Transmission Equipment.

Motors

- 2—50 H.P. 3-60-440, 720 R.P.M. G.E. Motors.
 - 1—40 H.P. 3-60-440, 900 R.P.M. G.E. Motor.
 - 2—15 H.P. 3-60-440, 900 R.P.M. G.E. Motors.
- All above motors equipped with starting compensators arranged for conduit wiring, no voltage release and overload relays.

Miscellaneous

- 1—No. 1174 F.M. 1000-lb. Portable Scale.
 - 1—No. 1128 F.M. Platform Scale.
 - 1—No. 1046 F.M. double beam Warehouse Scale.
 - 1—No. 1928 ten-ton F.M. single-beam Wagon Scale.
 - 1—50-ton F.M. 4'x10' Track Scale with Type R Registering Beam and Steel Frame.
 - 1—7x10 Double Cylinder Steam Hoist.
 - 1—15 H.P. Fairbanks Gasoline Hoist and 500 ft. rope.
- Complete Boarding House Equipment.
Power Plant may be inspected at Beowawe, Nev.
Other material at Buckhorn, Nev.
Write for particulars and prices. Above list is incomplete.

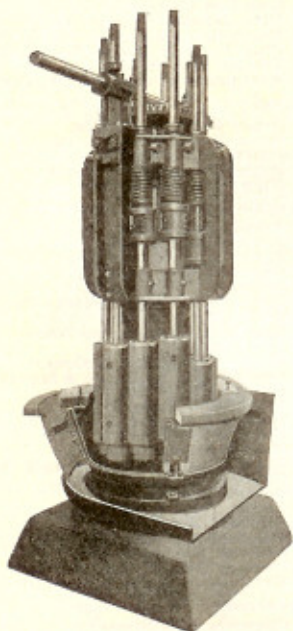
Nevada Engineering & Supply Company
Reno, Nevada

Straub Stamp Mill

AWARDED

GOLD MEDAL

PANAMA-PACIFIC
INTERNATIONAL
EXPOSITION



Our mills are made in three sizes—8-ton, 12-ton, and 20-ton—and are installed in all sections of the country, from Alaska to Central America. We claim a larger range of crushing than any other mill both in hardness of ore and size of screened product.

One man writes from a remote part of Central America, "I have operated the Straub Mill on every grade of ore from the very hardest quartz to clay, and find it all that any man could expect." He has one of our 8-ton mills, and says, "I am getting upwards of 18 tons on oxidized ore."

THE STRAUB STAMP pays for itself in the saving it makes over ordinary mills on transportation, erection, and operating costs. Two men can erect a STRAUB mill ready for operation in two days.

CATALOG AND PRICES
ON APPLICATION

Straub Manufacturing Co.
OAKLAND, CAL.

Albany Grease

Gives exceptionally fine lubricating service on mine equipment. It will not cake or harden in ball bearings of cars. Used on hoists, fans, engines, etc.



A sufficient quantity of Albany Grease and an Albany Cup for test will be sent upon request. Address

Albany Lubricating Company
NEW YORK