

A Great Gas Project.

The fact that Bradford, Wellsville, Richburg, Bolivar, and all the towns and hamlets on the northern and middle oil fields are not only lighted, but heated by gas, the machine shops, boilers, and hotels being supplied with the same fuel, has attracted the attention of capitalists, and, according to a correspondent of the *Philadelphia Press*, a syndicate is forming to still further utilize the natural gas of the northern belt, which extends from Lake Erie east 200 miles, and from Bloomfield, Ontario county, N. Y., south to near Pittsburg; in other words, nearly 200 miles square. As an evidence that this gas is practically inexhaustible, the fact is stated that one well at Sheffield, Warren county, has been flowing steadily for fifteen years, and another in Westmoreland county nearly as long, and the gas from either would light and heat the city of Philadelphia. It is stated that the gentlemen who are interested in the enterprise are all large capitalists, and are confident of ultimate success in supplying the great cities of the Union with gas, for light and fuel, at much less rates than even electricity can be furnished.

American Public Health Association.

The American Public Health Association will hold its tenth annual session at Indianapolis, Ind., October 17 to 20 inclusive. Papers are promised on many subjects of sanitary interest, including the different action of disease in the white and the black races, the removal of excreta, heredity, the work of sanitary associations, vaccination, intermittent fever in New England, and cattle disease. Committees will report on the prevention of venereal diseases, compulsory vaccination, the management of epidemics, cattle diseases, the National Museum of Hygiene, and other matters of popular and professional interest. Two proposed amendments to the constitution will come up for action. Information with respect to contributions, membership, transportation, and so on, may be had of the secretary of the association, Azel Ames, Jr., 12 Pemberton Square, Boston.

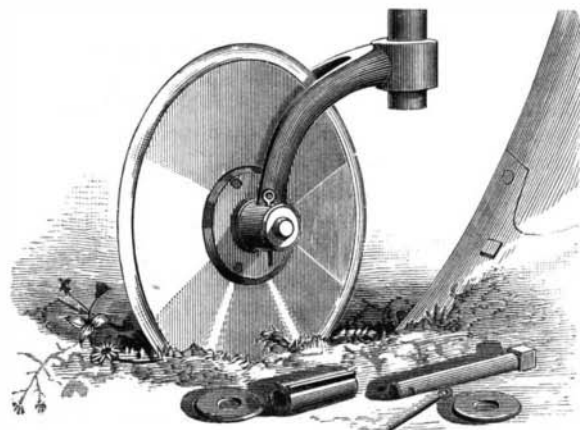
A Rocky Mountain Railway Tunnel.

The Denver and South Park Division of the Union Pacific Railroad pierces the main range of the Rocky Mountains, 150 miles southwest of Denver, Colorado. The length of the tunnel is 1,700 feet, and its altitude above the sea 11,500 feet. The approaches on either side are described as marvels of engineering skill, laid through scenes unrivaled for grandeur and magnificence. Although the tunnel commences with a sharp curve at its eastern end, so nicely was the engineering done, that when workmen from either side met in the heart of the great snowy range, they found only about one inch variation in the respective bores.

This tunnel, said to be the highest in America or Europe, leads to the new silver region of Gunnison.

IMPROVED PLOW COLTER.

The annexed engraving represents an improved plow colter recently patented by Messrs. David Morris and Hugh Speirs, of Bunker Hill, Ill. This plow colter is constructed with a circular blade provided with a hub having a removable metallic bushing inserted in it, and a wooden pin passes through the bushing and is attached to the ends of the

**MORRIS & SPEIRS' PLOW COLTER.**

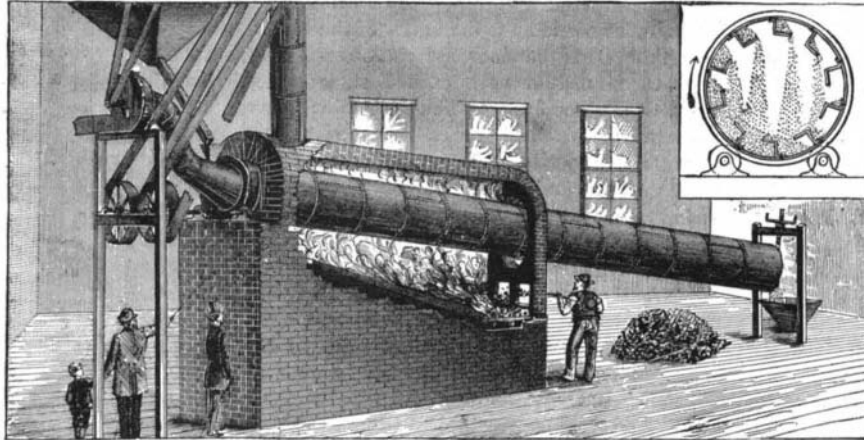
colter yoke, one of the ends being countersunk to receive the head of the journal, and the other end perforated to receive a pin passed through the opposite end of the journal. Leather washers are inserted between the ends of the hub and bushing and the yoke. By this arrangement the wear is lessened, and the parts subject to wear can be readily and cheaply renewed, and the expense of purchasing the more costly parts of the colter is avoided.

A Pony Ranch in Texas.

A Texas paper describes an 8,000 acre ranch in that State entirely devoted to the breeding of ponies for children. The breeding stock consists of seven Shetland stallions and forty-five mares, all thoroughbred, and two hundred small spotted pony mares. These little ponies range over the prairies like sheep, and are described as very gentle.

COMBINED DRIER AND COOLER.

We present to our readers an engraving which illustrates a new invention for drying and cooling grain and other material, in one operation, in the most thorough manner, by the joint use of hot metal surfaces and forced currents of hot and cold air. A prominent manufacturer, who has given this method of drying careful study and many experiments, says: "The science of drying is in itself exceedingly simple; but to those who are entirely unacquainted with it, it appears mysterious, for the reason that the medium for carrying off the water, being air, is not visible. All the science there is about it is that the air absorbs moisture as a sponge absorbs water. . . . Heated air will absorb moisture in proportion to the increase of its temperature. A cubic foot of air at 32° will carry off only two grains of water, while at 160° it will carry off sixty grains,

**WORRELL'S COMBINED DRIER AND COOLER.**

hence the necessity of heating the air, which should be as dry as possible, and made to move rapidly, so as to remove the moisture from the surface as it works its way out from the center of the body being dried."

The inventor of the machine herewith illustrated, after ten years of practical experience with three different driers, has devised a machine which appears to carry out the ideas just quoted in the most simple and effectual manner. It is all iron, with no bearings exposed to the heat, simple, and therefore not liable to get out of repair, requires little power, and is economical to operate, as it presents large surfaces, utilizing all the heat.

This machine is virtually a new departure among driers, being constructed so as to cool the material being dried, as well as dry it, in one and the same operation. All persons who have operated drying machines know how much labor and trouble it requires to cool grain (to prevent it from "heating" in bulk) after it has been discharged from the drying machines ordinarily used. In fact this labor is often greater than that required to dry the grain. This very serious objection is entirely overcome in Worrell's combined drier and cooler, and this feature largely increases the value of the machine.

A few words will suffice to explain the engraving, so that any one can easily understand the operation of the drier. The furnace surrounds about one-half of the long drying cylinder, which is slowly rotated by the friction wheels connected by short shafts with the two pulleys seen at the left. The exhaust fan is shown just above these pulleys. The grain or other material being operated upon is fed into the cylinder through the air spout, where it is spread by the troughs, which run the entire length of the case, into a number of thin streams, as represented in the enlarged cross section of the cylinder. This view gives a good idea of the large amount of metal surface furnished for heating the grain and air; and what a very large surface of grain is presented for the heated currents of air to absorb the moisture from. Owing to the inclination of the case, which can be varied while in motion by screws, the grain gradually passes to the lower or discharge end.

After it has passed through that portion inclosed by the furnace, the cooling part of the process is accomplished by the same current of air which is drawn in at the lower end, which is open. The grain is here discharged into the hopper in a dry and cool condition, suitable for storing in bulk for shipment or immediate consumption. It will be noticed that the grain nowhere comes in contact with the gases of combustion, and consequently it is not tainted and thereby rendered unfit for food.

This machine is adapted for drying and cooling damp or musty grain, seeds, berries, fruit, brewers' grain, tobacco, salt, sugar, and other granular substances. It is peculiarly suited for drying corn for export meal, or new corn, so that it may be graded as old. Elevator owners will notice that this machine may be used without the furnace to cool heated grain.

This invention was patented April 25, 1882. These machines are furnished of any size up to a capacity of 5,000 bushels per day. There is now in operation one of 2,500 bushels capacity at Hannibal, Mo., where it is exhibited to interested parties. Any further particulars may be obtained by addressing the patentee, S. E. Worrell, Hannibal, Mo.

THE largest and oldest chain bridge in the world is said to be that of Kingtung, in China, where it forms a perfect road from the top of one mountain to another.

Liabilities of Employers for Injuries to Workmen.

In an action against an employer for the death by injury of a workman, it appeared that the death was caused by the slipping of a plank on which deceased was at work, and which had negligently been placed on some guard rails. The employer was not present at the time, but had left the work in charge of a competent foreman. The work was the building of an iron bridge. The work was in its nature perilous, but the peril was obvious. Ample materials were at hand to secure safety, but the precautions for safety were neglected through the fault of deceased and his fellow-laborers. Held, that defendant was not liable for the death. The servant engaging in hazardous employment assumes its risks, but does not those of the negligence or malfeasance of the master. The master must use diligence, having respect to the nature of the service, to provide the proper materials, appliances, and instrumentalities for doing the work, and also to use due diligence and care in the selection and employment of competent and careful fellow-servants for the particular work or service to be performed.

Discoveries of Magnetic Iron.

In sinking an Artesian well on the premises of the St. Paul (Minn.) Harvester Works, magnetic effects were noticed. At the depth of 630 feet a hard stratum was struck, and operations continued to be very difficult for a distance down of 40 feet or more. On analysis the substance of the harder rock proved to be magnetic iron ore, exceedingly rich in quality. A second well has been begun to determine whether the ore deposit underlies any considerable area. There is not a little excitement in the neighbor-

hood, the belief being that St. Paul is destined to be the center of a great iron producing country.

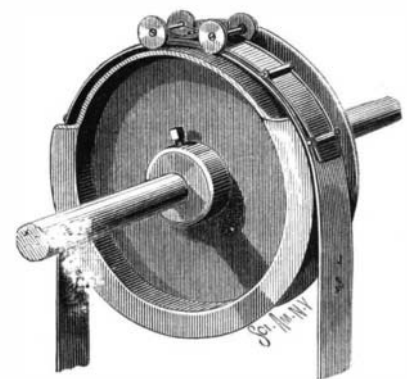
A dispatch from Yankton, Dakota, dated August 22, says that the second Artesian well bored there has developed powerful magnetic properties. It would be interesting to know more of the nature of the rock penetrated. Perhaps there is iron in that place also.

DROP PRESS BELT PROTECTOR.

Since drop presses have been run by power with a rope or belt over a moving pulley to raise the drop, there has been wanting some arrangement to keep the belt or rope off from the pulley when the drop is not in use, as when the belt or rope is in contact with the pulley it is continually wearing and heating, which causes the rotting, or rather slow burning of the belt.

This unnecessary friction is accompanied with a continual disagreeable noise. During a considerable portion of the time from one cause and another drops are not in use, either on account of repairs, or for want of work, or waiting for dies to be set, and as it is not usually convenient to take off the belt or rope, it is generally left on until worn out. It will thus be seen that quite a saving can be effected by the use of a device for keeping the belt from the pulley, besides preventing the noise.

In the accompanying illustration is shown a device that will meet all the requirements, and that can be easily made and applied. There are only two steel springs and two shafts with rawhide wheels. The two springs are riveted together in the middle, and the under spring fastened to

**DROP PRESS BELT PROTECTOR.**

the rope or belt by cross pieces, as shown in the engraving; the wheels and the upper spring are to raise the belt, while the under spring keeps the belt off from the pulley, while suspending it over the moving pulley, and at the same time keeping it ready for use, the same as if in contact with it, and offering no hinderance when it is required to swing the drop for heavy work.

This invention has recently been patented by C. R. Bannih, of West Cheshire, Conn., from whom further information can be obtained.

A VOLCANO named Sheramino, in the center of Japan, which had been silent for seventy years, broke out in eruption on August 6. A severe earthquake shock was felt in Tokio and Yokohama on August 18.