

**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.

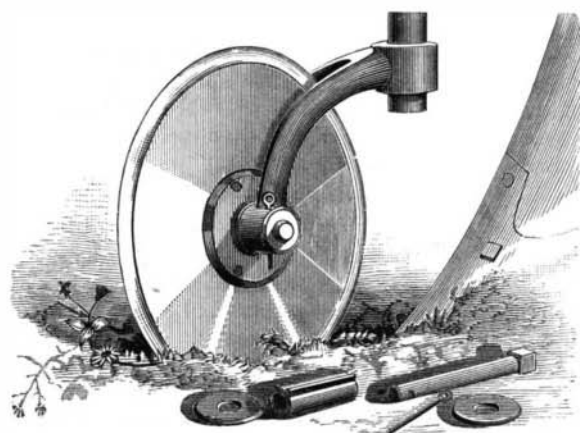
**A Rocky Mountain Railway Tunnel.**

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.**

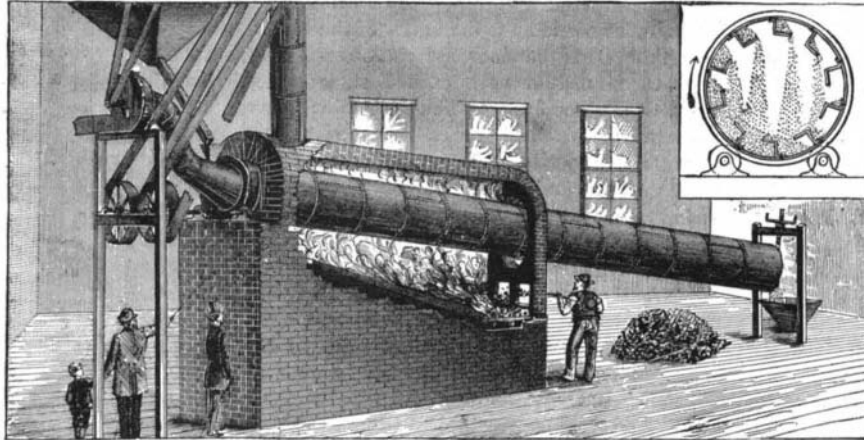
colter yoke, one of the ends being countersunk to receive the head of the journal, and the other end perforated to receive a pin passed through the opposite end of the journal. Leather washers are inserted between the ends of the hub and bushing and the yoke. By this arrangement the wear is lessened, 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.

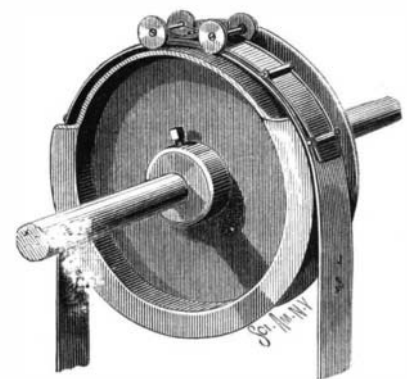
A dispatch from Yankton, Dakota, dated August 22, says that the second Artesian well bored there has developed powerful magnetic properties. It would be interesting to know more of the nature of the rock penetrated. Perhaps there is iron in that place also.

**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 hindrance 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.

**New Autographic Printing Method.**

The following method, by Mr. Crocker, of Tasmania, is described in the *Southland Times*:

The basis of operations is common window glass—a most unlikely but perfectly reliable material to withstand the rumble and roll of modern printing machines. A solid ink, composed of beeswax, resin, and lampblack, is made in proportions about which there is no secret. The drawing medium is a common steel pen, with this important adjunct, that it is constantly subjected to the action of a very tiny jet of gas, or an electric spark, which keeps the pen hot. It is inserted in the stick of ink, and its heat at once dissolves a “dip.” The artist now proceeds to sketch on the glass, the fluid ink running as freely as necessary, but the instant it leaves the pen it again becomes solid, and adheres to the glass without blurring or running. As a consequence, shading of any intensity may be executed without risk of forming one big blot. The plate is now ready for an “engraver” whose hand is more potent and swift than that of any of his predecessors. This is hydrofluoric acid, a chemical well known as being about the only “eater” of glass known in practical chemistry. A small portion of this is poured over the face of the glass, and in a very short space of time eats its way downward. The ink, however, defies the acid, and the glass below the sketch therefore remains intact. All that now remains to be done is to mount the slip of glass on a metal block of the same height as printer’s type, where it is secured with a little shellac, and the engraving is ready for the printing press.

**Use the Chloride, not Chlorate.**

It is well known that chlorate of potassium is a very good remedy to gargle the throat, but comparatively few physicians are aware of the fact that it is not this remedy which is so successful in mercurial stomatitis, but chloride of potassium.

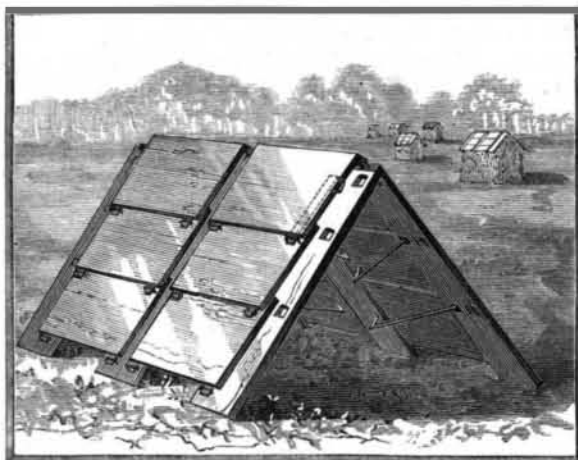
Professor Wertheim draws the attention of physicians especially to this fact (*Wiener Med. Blätter*, 15, 1882). He reminds them that the formula of the first is KClO<sub>3</sub>, but that of the second KCl. He says that the chlorate should never be used, as in concentrated solution it may even prove very harmful; while the chloride is very innocent; a specific in sore throat, and especially in mercurial sore mouth, and very analogous to common salt, which is simply a chloride of sodium, instead of potassium. In America the chlorate is commonly used; no wonder, therefore, says the *Med. and Surg. Reporter*, that it is not found here as efficient as in France and Germany, where they use the chloride.

**PORTABLE ROOF FOR HAY AND GRAIN RICKS.**

The engraving shows an improved portable roof for hay and grain ricks, which can be built up or removed very easily and quickly, and can be folded compactly for storage. The invention consists of a roof formed of two roof sides, held together by novel fastenings.

The rafters are provided at each longitudinal edge with a series of apertures, which receive the upper hooked ends of straps attached to the ends of the inner surfaces of the roof boards, the hooks projecting inward from the upper edges of the boards. The lower ends of the straps or bands project from the lower edges of the boards, which are overlapped, as shown in the engraving, the hooks being passed into the apertures in the rafters, and the lower ends of the straps being passed through staples on the outer surfaces of the boards.

The hooked rods are forced into the hay or other material through the apertures in the rafters, in such a manner that the hooks or barbs catch on the hay or other material, and



McEVROY'S PORTABLE ROOF FOR HAY AND GRAIN RICKS.

the heads rest against the outer surfaces of the roof sections. If desired, this roof can also be supported by posts with suitable framework, by which means a cheap and efficient shelter may be obtained for implements, machinery, or live stock.

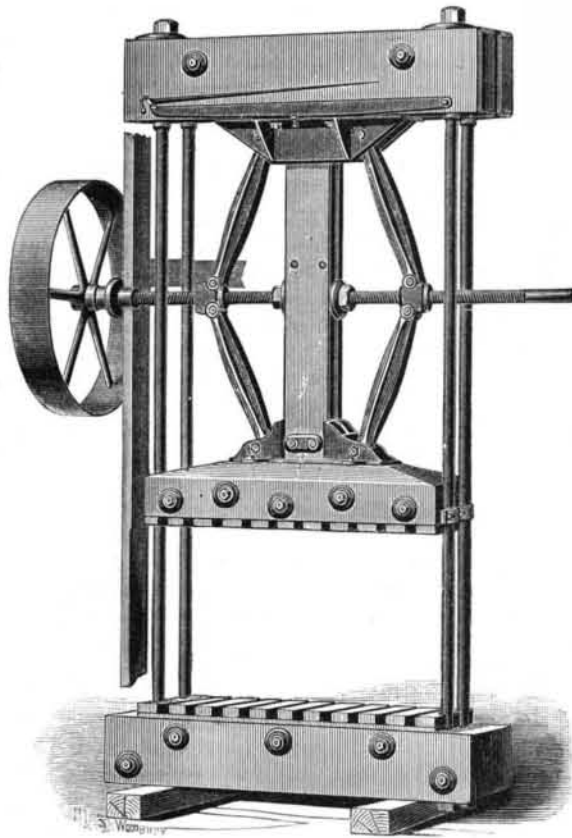
The upper board of one side is to be extended over the ridge to protect the same. The entire sides of the roof can be stored away, or the boards can be detached from the rafters, and the detached boards and rafters can then be stored. As no nails, bolts, or screws are required to secure the boards on the rafters, the boards can be attached or removed very easily and rapidly.

This invention has been patented by Mr. Wm. McEvoy, of Equality, Ill.

**BALING PRESS.**

Many devices have been used for obtaining pressure, the most prominent among which are the lever, the common screw, and the hydraulic, none of which develop a progressive power, but, on the contrary, are only enabled to give the same power and movement of platen at the end as at the beginning of the work. In pressing most substances but little power is required in the early part of the operation, but as the pressure is applied the resistance increases, requiring a corresponding increase of power, until at last the resistance becomes so great that no amount of power can wholly overcome it.

With the press herewith illustrated the power increases at every turn of the screw, the platen decreasing in motion in



BOOMER & BOSCHERT'S BALING PRESS.

the same ratio, so that the increase of resistance and development of power are so nearly equal that the work is easily accomplished from beginning to end.

This press seems well adapted to the purpose of baling goods. It is operated by a belt from the pulley on the end of the screw to a countershaft, on which are pulleys for crossed and open belts, which revolve the screw in either direction, as desired. We are informed that the manufacturers furnish presses of this description for any size of bale, and that they also make them wholly of iron.

Further information can be obtained by addressing the manufacturers, Boomer & Boschert Press Company, Syracuse, N. Y., or 62 Vesey Street, New York city.

**Bottled Beer.**

The following directions for bottling and keeping beer will be of interest to consumers as well as bottlers:

1. In cold weather beer can be drawn from the keg and bottled as soon as it is received, but in warm weather it foams so that it is necessary to keep it several days in a cool cellar, if it has got warm in transport, before tapping.

2. The bottles must be very thoroughly washed each time before filling with warm water and soda, then rinsed repeatedly with cold water until all the soda is washed out, to prevent the beer tasting of soda.

3. Great care must also be devoted to the corks. Those that have been bored or broken must never be used under any circumstances. Whether new or old corks are used they must be soaked in warm soda solution and repeatedly washed with cold water until perfectly cold. It is better, however, not to use corks in beer bottles that have already been used once.

4. In filling the bottles a wooden spigot is used with a piece of rubber tubing attached that reaches to the bottom of the bottle, so as to prevent foaming as far as possible. The hottle is immediately corked, so that the carbonic acid may not escape, and the cork driven down with a small wooden hammer. Great attention must be given to the cleanliness of the rubber tubing and spigot, rinsing them with soda solution before each time of using. [And afterward, too?]

5. The bottled beer should be kept in a cool, dark place, and setting upright is preferable to letting them lie on the side. Every beer has some sediment. When the bottles stand up this sediment becomes attached to the bottom of the bottle, so that if the beer is poured out carefully all except the last glass will be clear and free from turbidity.

6. When drunk beer should always have a temperature of 48° or 50° Fahr. The flavor and effervescence are best at that temperature. If much warmer than 52° any beer will taste flat. Drinks that are too cold injure the stomach. A little practice soon enables a person to judge correctly of the temperature by feeling.

7. In warm weather beer should be used within about eight or ten days after filling. During cold seasons it keeps rather longer—up to two weeks even without injury.—*Gewerblatt für Hessen.*

**Rules for Laying Drain Pipes.**

The New York Board of Health require that earthenware drain pipes connecting dwellings with street sewers shall be hard and salt glazed, sound, and cylindrical; at least five-eighths of an inch thick if five inches in diameter, and three quarters of an inch thick if six inches in diameter. Pipe must be connected with hydraulic cement of the best quality. No “tempered” cement can be used. The pipes must be laid with such good alignment that the inspector can see through the entire line from the house to the sewer, and every section must be bedded in cement so as to have a firm bearing, not only at the hub, but along its entire length. The inside of the drain must be freed from all cement which may have oozed through at the joints, and from all other obstructions. Before the drain is covered notice must be sent to the Health Department, by the owner or plumber, that the inspector may visit and examine the work, and the Board of Health will not approve or permit a drain which has not been examined by one of its inspectors and found to be properly constructed.

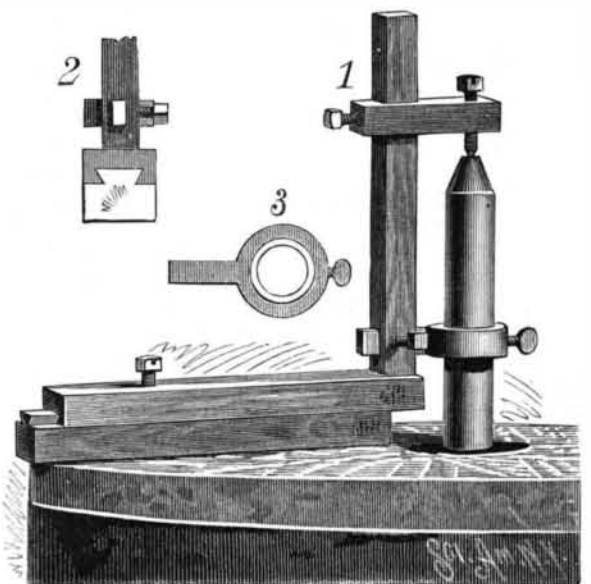
**The Use of Lime in Coal Mining.**

A series of experiments took place on the 28th of August, says the *St. James Gazette*, in the workings of the Wharnccliffe Silkstone Collieries, near Sheffield, the object being to test the new method of winning coal by the use of compressed lime instead of blasting powder. The experiments took place in the Parkgate Seam. A hole about three inches in diameter and four feet deep was drilled through the solid coal and cleaned out; a perforated iron tube was then inserted, and the lime cartridge, three inches long, put in. When the lime had been rammed home and the hole made up, a force pump was used to inject water into the bottom of the tube. Simultaneously with the injection of the water the rending process began, and in thirty minutes about ten tons of coal came down almost in an unbroken mass. Of the whole of the fall, not more than six per cent of the coal was small, a much smaller percentage than under the old system. It is predicted by some of the oldest miners that compressed lime will eventually supersede the use of blasting powder and thus revolutionize the system of winning coal.

**NEW MILLSTONE PAINT STAFF.**

This invention is a working or test guide for paint staffs used in dressing millstones. It is designed to facilitate the work of obtaining a perfect running face. The guide is applied to the spindle, so that the weight of the guide and staff is carried upon the spindle, and not upon the face of the stone. By means of this arrangement all inequalities or variations in the surface of the runner can be readily detected.

In using this guide it is hung on the spindle by passing the eye-piece over the spindle and adjusting the slide so that the screw shall bear upon the upper end of the spindle at the center. By turning this screw the guide is slowly raised or lowered, as required, and the weight of the guide and the staff is wholly supported by the screw. The staff may be moved freely around upon the spindle, and by low-



DAVIS' MILLSTONE PAINT STAFF.

ering the guide the staff will touch lightly upon the high places of the stone as it passes around. Then, by removing the marked projections with a pick, and repeating the operation until the staff marks the face evenly, the burr will be brought to a perfect face.

With this guide the work of facing a runner is made simple and easy, and there is no liability of making one side higher than the other.

In order to adapt the guide for use with spindles of different sizes, the eye-piece is provided with a collar, held in place by a set screw. These collars are of different diameters for fitting spindles of different sizes.

This invention has recently been patented by Mr. T. E. Davis, of Range, Ohio.