

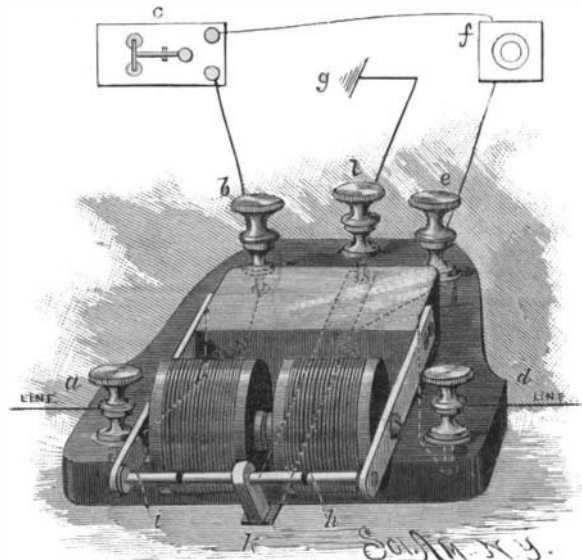
**AN IMPROVED PULVERIZER.**

The engraving shows a machine for pulverizing ores and similar substances, which is simple in construction, strong, and durable. Within the casing, *d*, is a steel lined ring, *a*, within which are placed three wheels provided with steel tires, *b*, and arranged in a triangle, as shown. These wheels or rolls are mounted on shafts in bearings in the case; the bearings of the two lower rolls are free to move in vertical slots in the case, so that their weight is carried by the ring which rests upon the upper roll, whose shaft is extended to receive the driving pulley, as shown in the sectional view. The revolution of the wheel, *b*, turns, by friction, the heavy ring resting upon it, while the ring revolves the two lower wheels. The ore to be ground is introduced into the space between these wheels, and is carried up by centrifugal force and crushed between the steel tires of the wheels and the steel lining of the ring. There is no slip between the rolls and the ring, and the material is crushed by the weight or pressure of ring on the upper roll and the weight of the lower rolls on the ring. The pulverized material passes out through the small slit-like openings, *e*. The machine is not liable to get out of order, and will pulverize a large quantity, introduced either wet or dry, in a comparatively short time.

This machine is the invention of Mr. William H. Howland, whose address is Room 25, No. 39 Broadway, New York city.

**AN AUTOMATIC CUT-OUT AND LIGHTNING ARRESTER.**

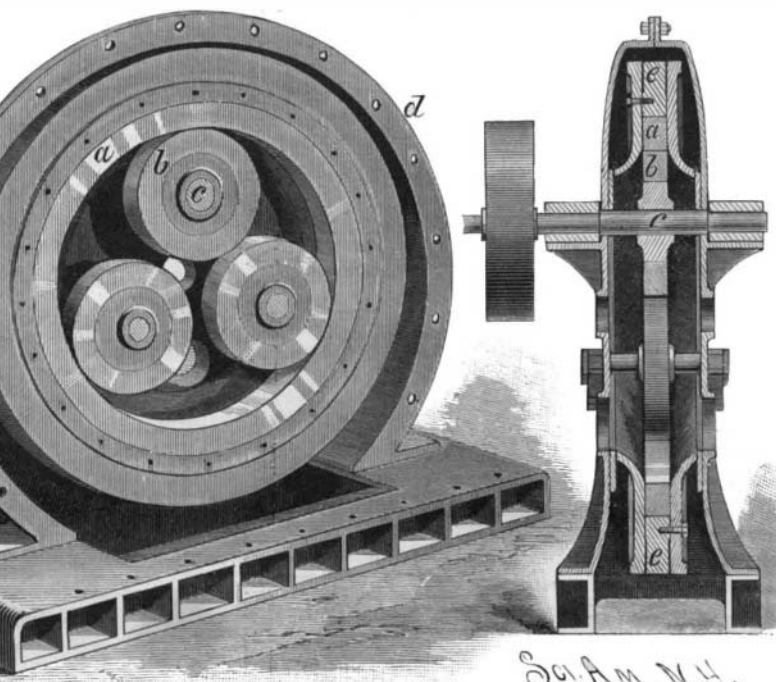
The illustration shows a simple arrangement for a device calculated for use in telegraph, telephone, and other stations where electrical line instruments are used, one intended not to interfere with the ordinary working of the line, but which will ground the line when the electric current is so greatly increased as to abnormally charge the apparatus, as sometimes happens during thunder storms. The apparatus is mounted on a block, in the center of which is a smaller block, from which project two metallic spring arms that support two electro-magnets wound with coarse, heavy wire, their pole pieces in the center closely approaching, but not in contact with each other. The spring arms project beyond the magnets, and at their ends carry contact points, *h i*, which project inward toward a central standard, *k*, which carries contacts in line and arranged to co-operate with the contacts, *h i*. The standard, *k*, is in electric connection with the ground at *g* through the binding post, *l*. The line wire leads to the binding post, *a*, thence through the spring arm and magnet to the binding post, *b*, to the line instruments at the station, *c f*, back to the binding post, *e*, through the coils of the other magnet to the post, *d*, and on to the line. The magnets, being made of heavy, coarse wire, will not be appreciably affected by an ordinary current, but when they become heavily charged, will so attract each other that the contact points, *h i*, are brought into electric connection with the contacts that extend from the central standard, *k*, thereby grounding the line.



**BELT'S CUT-OUT AND LIGHTNING ARRESTER.**

This invention has been patented by Mr. Perley P. Belt, of Columbus, Kansas.

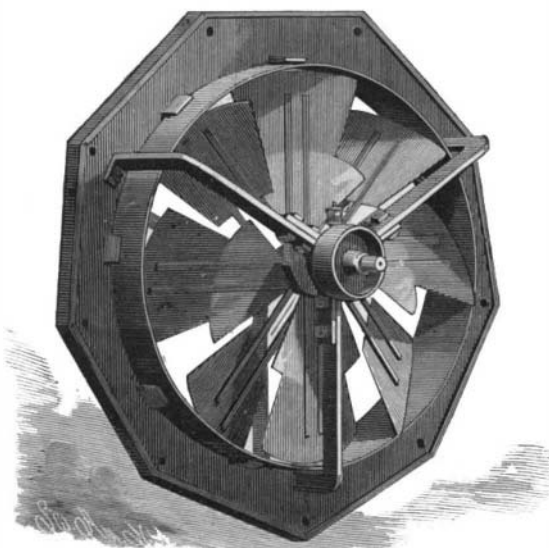
SUNFLOWERS are used in Wyoming Territory for fuel. The stalks when dry are as hard as maplewood and make a hot fire, and the seed heads with the seeds in are said to burn better than the best hard coal. An acre of sunflowers will furnish fuel for one stove a year.



**HOWLAND'S IMPROVED PULVERIZER.**

**IMPROVED ROTARY VENTILATOR.**

This invention particularly relates to rotary ventilators for ejecting foul air from apartments or buildings. The bearings for the shaft of the wheel are carried by frames secured by bolts to the front and back of the face plate. The meeting ends of the frames are bent to form a triangular central opening for receiving the bearings, and to provide for uniting the bars to-



**BRIGGS' IMPROVED ROTARY VENTILATOR**

gether by bolts. The vanes of the ventilating wheel are of special and peculiar construction. Half of the vanes—alternating with the others—are of arc shape, and are only made to extend partly along their arms from the perimeter of the wheel, thereby, so far as they are concerned, leaving a large central opening through the wheel outside of the hub. This opening is, however, mainly covered by the inner portions of the intermediate vanes, the outer portions of which correspond with the others. These inner portions are made much wider than the outer ones and are considerably extended on both sides, so as to slightly overlap each other. This construction, makes the inner part of the wheel much more effective than in wheels of the usual construction, and leaves an ample space between the several vanes for the passage of the air between them. This is also a valuable feature when it is desired to move air against a pressure, as it prevents the air from slipping back through the central opening. The arms carrying the vanes are tangentially, instead of being radially, arranged relatively to the center of the wheel.

In a wheel for blast purposes the arrangement of the blades would be somewhat modified. The outer and inner number of blades would be reversed, and the inner blades would be lapped very much to prevent any return of the air. The angle of the blade would be made to suit the work in each particular case.

This invention has been patented by Mr. Edwin F. Briggs, of 1221 De Kalb Avenue, Brooklyn, N. Y.

PEACH ROOT TEA is a remedy for epilepsy, according to Dr. J. L. Dorset, of Dorset, Va. (*Medical Age*). Three or four ounces of an infusion are to be given daily. Dr. Dorset reports one case in confirmation of his view.

**A Use for Fire Damp.**

The distressing explosions which occur from time to time in European coal mines, and less frequently in those of America, are in some cases the result of finely divided dust suspended in the atmosphere of the collieries, but for the most part they must be attributed to the presence of marsh gas, the dreaded "fire damp" of the miners. When this hydrocarbon is mixed with air, it forms a highly explosive compound. In the fiery coal pits of England the gas is one of the most serious obstacles to mining operations. It is, however, an excellent fuel, and forms almost the sole constituent of the natural gas issuing from many of the Pennsylvania wells. The proposition has therefore been made, and we believe the actual experiment is now in progress, to drill six inch bore holes down through the coal measures and thus afford an outlet for the gas reservoirs.

The fluid, if found in sufficient quantities, could then be used as a fuel, while the mines at the same time would be relieved of a very undesirable tenant. The coal mines of western Penn-

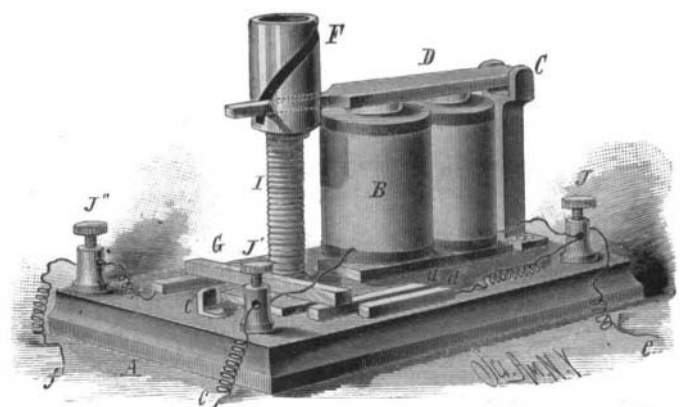
sylvania are fairly free from fire damp, the gas being largely stored in the porous Devonian sandstones which lie above the coal measures. Local conditions have, however, dictated a different disposition of the gas in the geology of England. The coal seams themselves are its depositories. Instead, therefore, of possessing an economic value, it is, under the present arrangement, a constant menace to those engaged in winning the coal. It is hardly probably that these borings would have a sufficient output to make their value comparable with that of American gas wells, but the proposition is well worth considering, if for no other reason than the possibility of lessening the fatality among the miners.

**Instrument for Reproducing at Will an Invariable Quantity of Electricity.**

The instrument is a voltmeter hermetically sealed and thus rendered independent of barometric, hygrometric, etc., fluctuations. The water decomposed by the current during each operation can be reconstituted afterward by passing a spark between two wires sealed in the upper part of the tube.—*Marcel Deprez*.

**LIGHTNING ARRESTER AND AUTOMATIC CUT-OUT.**

A recent invention to afford an improved lightning arrester and automatic cut-out for dynamo-electric machines is shown in the accompanying illustration. When the current is working normally on the circuit, the armature, *D*, is drawn down to the bottom of the cam, *F*, turning the sleeve in opposition to the tension of the spring, *I*, and bringing the bar, *G*, into contact with the bar, *d*, of the lightning arrester. The line wire, *e*, is connected with the binding posts, *J* and *J'*, these posts being connected with the terminals of the magnet, *B*; and when the line wire is struck by lightning, the current, in passing from *d'* to *d*, to reach the ground through the bar, *G*, and ground wire, *f*, forms an arc between *d'* and *d*, when the dynamo current will continue to pass the space between the base of the lightning arrester to the ground for an instant, and the diversion of the current allows the magnet to become demagnetized, thus releasing the armature, *D*, and removing the bar, *G*, from the bar, *d*, when the arc will be broken and the dynamo current follow its original



**HOREN'S LIGHTNING ARRESTER.**

path. This device also indicates, by its momentary action, if the lightning arrester is clogged with dust or any conductive material, so as to short-circuit the dynamo and send the current to the ground instead of over the line. This invention has been patented by Mr. John Horen, of Omaha, Neb., and the device is being manufactured by Mr. John Brannan, of 439 Lawrence Street, Denver, Colorado.