

**A Literary Congress.**

It is proposed that a literary congress, to which the writers of all countries are invited, shall be held at Paris during the Exhibition. Preliminary steps have been taken by the *Société des Gens de Lettres* toward assembling this congress, and it is believed that the French Government is favorable to the idea, and will assign one of the halls in the Exhibition building for the accommodation of the members. The chief object will be the discussion of the questions relating to international copyright—a matter which is still as far from settlement as ever, notwithstanding the many diplomatic efforts that have been made. It is announced that Victor Hugo will deliver the opening address. A convention of the distinguished authors of the world, a large number of whom have already responded to the call, would be one of the most remarkable features of the Exhibition; though, if the "literary congress" should degenerate into a mere show, it would of course fail of its object and become as ridiculous as at present the plan appears judicious.

**IMPROVED VARIABLE EXHAUST.**

The invention herewith illustrated is a new exhaust or blast nozzle for locomotives or other engines, by means of which the blast may be rendered strong in order to increase the draught, or it may be so diffused as to produce little effect on the fire. Figs. 1 and 3 represent vertical and horizontal sections of the device, and Figs. 2 and 4 modifications of the same. It is placed in the front end of the locomotive, directly over the exhaust openings in the center casting. The upper part of the nozzle, A, in Figs. 1 and 3, is turned off conically, and the lower portion is cylindrical. A hollow cone, B, having a sleeve, C, projecting inwardly from its base, is placed upon the nozzle, A, and supported by a shoulder thereon. The open mouth of the cone is equal in area to both of the exhaust pipes, and projects a short distance above the nozzle, so that an annular space is left between it and the latter. The object of this arrangement is to produce a vacuum by the steam issuing from the center nozzle drawing the relief steam after it. The sleeve, C, is accurately fitted to the cylindrical portion, and ports, D, are made through both it and the nozzle. The distance through which the cone is turned is limited by a stop screw, and for moving the cone a rod leading from the cab is attached to the arm, E.

When a strong blast is required the cone, B, is turned so that the ports in the nozzle will be covered by the sleeve, C. The exhaust steam will then issue with great force from the nozzle passage, and, being concentrated, create a strong draught in the smoke stack of the locomotive. When the blast is not required the cone is turned so as to open the ports, D, permitting a portion of the exhaust steam to escape through said ports into the cone. The steam is thus deflected so that its force, and consequently the effect of the blast on the fire, is greatly diminished.

In the modification represented in Fig. 2, instead of the cone, B, there is a solid sleeve, F, on which are two curved tubes, G. These last have ports opening through the sleeve, and communicating when the latter is turned with ports in the nozzle, the orifices of which are shown at H. When the sleeve is rotated so that the ports coincide, the steam escapes at all four openings, and is thus diffused. When the ports are closed it makes its exit as a blast from the nozzle apertures, H.

In Fig. 4, the upper plate, I, is movable in a horizontal plane about the boss, J, through which pass the nozzle tubes, K. On the plate, I, are other tubes, L, and ports are made through plate, I, and the plate beneath. By turning plate, I, the ports may be opened or closed, and the steam permitted to escape through two or four orifices.

Patented through the Scientific American Patent Agency, January 1, 1878.

For further particulars address the inventor, Mr. George S. Brainerd, St. Albans Iron and Steel Works, St. Albans, Vt.

**Explosive Dust.**

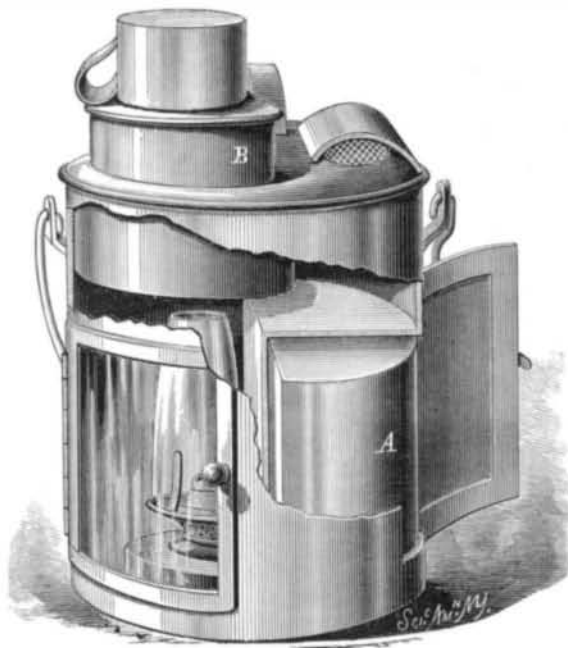
Nature refers to the frequent explosions of malt dust in machines, and speaks of three explosions having taken place in four years, and these not due to any culpable carelessness, but ignited either by a spark from a piece of flint passing

through the steel rollers or from some excessive friction on some part of the wood fittings.

The man in charge of the mill, on one of these occasions, stated that they were grinding at the ordinary pace about mid-day, with the window open and no gas turned on. The explosion was quite sudden, and the flame sufficient to singe the man's whiskers, the force so great that the door of the engine room was blown open, although the only opening between the two rooms was a small hole through which the shafting worked.

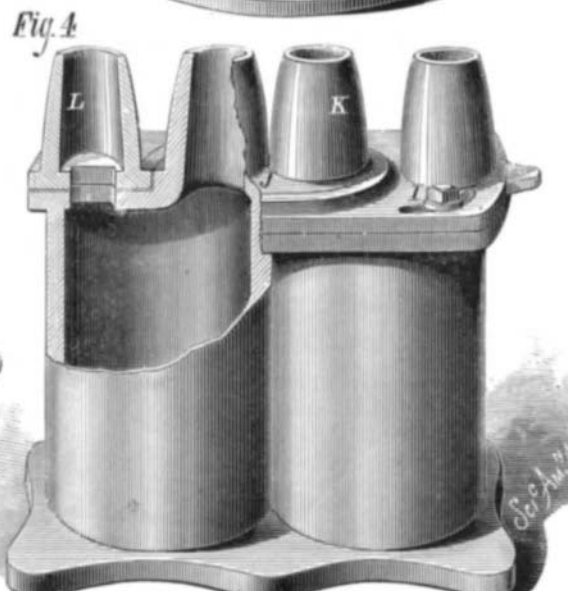
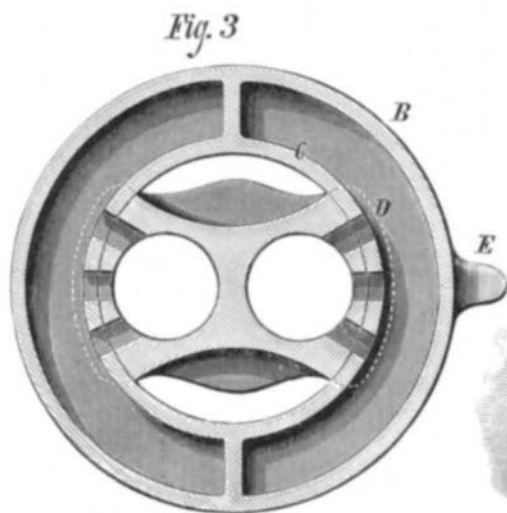
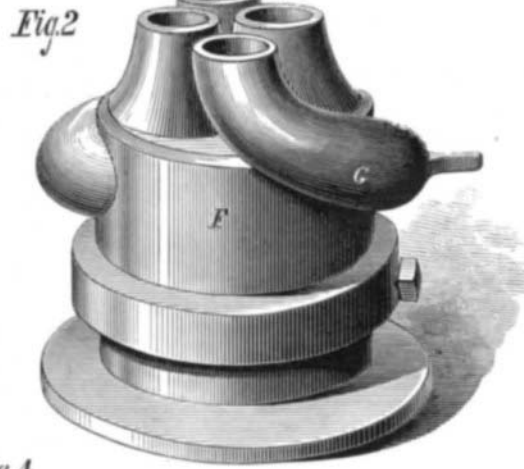
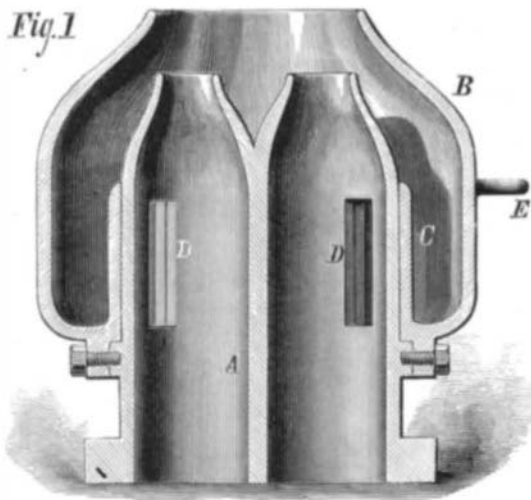
**COMBINED DINNER PAIL AND LANTERN.**

Our engraving illustrates a very handy contrivance for workmen who labor at night or in tunnels, mines, caissons,



HAIGHT'S COMBINED DINNER PAIL AND LANTERN.

or other localities where artificial light is needed. It consists of a dinner pail and lantern combined, the heat arising from the flame being utilized to keep the food warm. A is a compartment in which a box containing the food is placed. In the main portion of the pail a lamp is arranged, to which

**BRAINERD'S EXHAUST NOZZLE FOR LOCOMOTIVES.**

access may be had through the mica door. In the cover is a coffee receptacle, B, surmounted by a cup, which may be turned over the lamp whenever it is desired to warm its contents. Also in the cover is an aperture for the escape of smoke and heat. The usual bail is provided.

This device was patented through the Scientific American Patent Agency December 18, 1877, by Mr. Joseph Haight, of Port Chester, N. Y.

**New Mechanical Inventions.**

Mr. Thaddeus Hodgson, of Amherst, Nova Scotia, has invented a new Machine for Gumming and Sharpening Saws. A plate, bolted to the front of a work bench, serves as a support for the saw, and a sliding shaft, guided by a handle, carries a band pulley and an emery wheel, by which the grinding is done.

A horizontal Wind Wheel, invented by Mr. Martin Everhart, of Victoria, Texas, is so constructed as to automatically adjust itself to the force of the wind, and shut itself off entirely in case of a storm, while it may also be regulated by hand as desired. An independently rotating frame carries a pair of adjustable rudders, which hold it in any position required. At the forward end of the frame are two pairs of wings, working together, which are ordinarily held closed by a weighted cord, but expand and screen the wind wheel whenever the wind becomes too strong.

The same inventor has also patented a system of Applying an Irregular Power, such as that produced by the intermittent action of a wind wheel, to driving light machinery regularly. This is effected by an ingenious combination of details, by which two weights are drawn upward independently, and their cords wound upon separate drums, the driving machinery being automatically shifted by whichever weight, in its downward motion, reaches the limit of its movement first.

Mr. C. T. Porter, of Newark, N. J., has invented an improved Journal Box of cylindrical form, which has inclined cheeks, and is secured by wedges and gibs in a novel manner. The inventor claims that by his mode of construction he is enabled to place the supporting wedges as near as possible to the line of thrust, and that it renders a horizontal engine equal to a vertical engine in supporting the shaft in the direction of the line of centers.

An improved Axle Lubricator, invented by Mr. E. W. Moyer, of Bernville, Pa., is claimed to be economical of oil and to exclude the dust. The axle is made hollow, with an interior reservoir, exit duct, and grooves packed with wicks; the cap also has an inclined oil duct, and the hub is similarly supplied with oil receptacles and packed grooves.

Mr. G. W. Ford, of Elba, N. Y., has invented a machine for Expanding and Contracting Metals, for use in upsetting tires and similar work. The gripping attachments are exchangeable, so as to be applicable to various kinds of work, and the power is applied by a pair of hinged levers having a powerful purchase.

An improved Grapple has been patented by Mr. A. L. Larwill, of Beaufort, S. C. The object of the inventor is to improve the construction of grapples used for digging phosphate rock, or for similar purposes, so as to relieve the strain on the claws and bent arms, and to adapt them for cutting a suitable quantity of rock to be brought to the surface. This is accomplished by adding to the grapple one or a series of cutting blades or chisels, for loosening and separating the rock.

Some new improvements in Saw Mill Head Blocks, patented by Mr. W. H. Abrams, of Eugene City, Oregon, are intended to render the action of the saw mill, to a great extent, automatic. This is accomplished by certain ingenious peculiarities in the gearing, by which the clutches are shifted and the pinions turned, with each complete movement of the carriage.

An improvement in Lewises, or appliances for connecting heavy blocks of stone to hoisting ropes, has been patented by Messrs. Walter Graham and J. A. Dennison, of Annisquam, Mass. A pair of wedge-shaped jaws, connected by a pair of links to a single link, are secured in an undercut recess of the stone by driving a key between them, and may be detached by knocking out this key.

An improved Wagon Jack has been invented by Mr. Simeon Smith, of Deersville, Ohio. It consists of a fulcrum cam lever, connected by pivot links, with a vertically guided post.

A device for Cleaning the Mud Pipes of Steam Boilers has been invented by Mr. Henry Green, of Chilton, Wis. It consists in a shaft which extends through stuffing boxes in the heads of the mud pipe, and carrying several screw blades or wings, so arranged that when the shaft is in its normal position none of the blades will extend downward and become imbedded in the sediment. By rotating the shaft the mud and water are thoroughly agitated.