

## Science Notes.

**Application of Compressed Air to Dusting.**—*Cosmos* makes known a new application of compressed air which may be destined to become widely used. In all times it has been customary to blow the breath instinctively upon an object in order to expel the dust from it, and yet no one has hitherto thought of applying this very simple process upon a large scale. Whisk or bristle brushes, feather dusters, etc., are the enemies of furniture, which they ruin, and of bric-a-brac, which they break. A flexible tube provided with a nozzle and connected with a reservoir of compressed air may usefully replace them and perform their duty much more quickly and much better, the air searching out and dislodging the dust from the minutest crevices in the very body of a fabric. Air under a pressure of 3.5 atmospheres suffices for this operation. It is employed in precisely the same way that we use water derived from a garden hydrant to wash objects. The extremity of the nozzle is directed toward a piece of furniture, and in an instant the dust and bacteria will have been forced out of it and blown away. Every house that is provided with a motor will be able to connect a compression apparatus with it. In certain cities the supply may be obtained from a compressed air pipe line. Elsewhere the air may be compressed by hand into reservoirs. The cost of the first installation would not be much and would be fully covered by the saving in manual labor and implements for cleaning and by the preservation of household objects.

**Glass Impermeable to Heat.**—Workmen employed in metallurgic or other establishments often suffer greatly when they are obliged to labor near furnaces heated to a high temperature, and it would therefore prove of interest to have a glass through which the heat rays could not pass. A glass that supplies such a want is composed, according to *Dingler's Polytechnisches Journal*, of the following materials:

Sand.....	70 parts.
Kaolin.....	25 "
Soda.....	34 "

After this mixture has been melted, we find by analysis: 74.6 per cent of  $\text{SiO}_2$ ; 8.4 per cent of  $\text{Al}_2\text{O}_3$ ; traces of  $\text{Fe}_2\text{O}_3$ ; 15.4 per cent of  $\text{NaO}$ ; and 0.9 per cent of  $\text{CaO}$ . A plate of this glass 7.6 mm. in thickness allows but from 11 to 12 per cent of the total heat of a butterfly gas burner to pass.

**Cryostase—a New Body.**—A German chemist, says *Die Natur*, has just discovered a new body which, it appears, possesses the remarkable property of solidify-

ing under the influence of heat and of becoming liquid again at temperatures below zero. This body, which has received the name of cryostase, is obtained by mixing together equal parts of phenol, camphor and saponine, to which is added a slightly smaller quantity of essence of turpentine. Up to the present there has been no product known that possesses this property of liquefying when cold and solidifying when warm; for, although certain bodies, such as albumen, harden at a slightly elevated temperature, it is impossible to bring them back to a liquid state, even under the influence of very low temperatures.

**Destruction of Books by Insects.**—Although the destruction of books by insects, says *Nature*, is not so great in Europe as in India, it is sufficient to give general interest in the result of an inquiry into the means of preservation adopted in Indian museums. In the library of the Revenue and Agricultural Department of the government of India the books are disinfected by pouring a few teaspoonfuls of refined mineral naphtha, or what is known as benzine collas, into the crevices of the binding, and then shutting up the volume for a few days in a close-fitting box to prevent the escape of the fumes. Books so treated have to be afterward sponged over lightly with a very little of the finest kerosene oil, which should be rubbed off with a cloth before it has time to penetrate into the binding. Dr. George King reports very favorably upon a system adopted for preserving books in the Royal Botanical Gardens, Sibpore. It consists in brushing the books over with a saturated solution of corrosive sublimate made by constantly keeping a few lumps of the poison at the bottom of a jar of alcohol, so that the maximum amount may be absorbed. In the Indian Museum Library the books are kept in close-fitting glass cases with a few ounces of naphthaline upon each shelf, with the result that little or no damage is caused by insects. It appears that the paste used in binding the Indian Museum books is poisoned by adding about half an ounce of sulphate of copper to each pound of paste, while books already infested are disinfected by shutting them up for four or five days in a close-fitting box of loose naphthaline with as much of this substance as possible between the leaves.

**Imitation Gold in Russia.**—In addition to its large production of genuine gold, says *Die Natur*, Siberia frequently furnishes commerce with a false gold that sharpers quite easily succeed in palming off upon inexperienced gold seekers. This article is an alloy of lead, zinc, and copper which is poured into water, or into the ground through a wet broom. In this way

there are formed very small globules which, when solid, closely resemble the small pepites that are found in auriferous sand. It is not rare, moreover, to see the defrauders cover these grains with a layer of pure gold in order to more surely deceive their credulous customers. The false pepites thus manufactured are sold at a discount under the pretense that they are derived from a robbery committed in a neighboring exploitation. The buyer, allured by the relatively low price, allows himself to be persuaded, and purchases these grains, which he mixes with the gold furnished by his exploitation. This imitation gold is often sold not only in Russia, but also in Germany and other countries.

## Tea and Coffee.

Professor Schutzenstein has been investigating the effect on processes of digestion produced by these beverages. For this purpose the professor prepared an artificial gastric juice and mixed it with coagulated egg albumen, with and without additions of tea and coffee infusions. The results obtained are extremely instructive, for while the gastric juice by itself was able to digest ninety-four per cent of the egg albumen in the space of eight hours, when tea was added the proportion digested was reduced to sixty-six per cent, while when a decoction of coffee was mixed with the albumen the gastric fluid was only able to digest sixty-one per cent, or less than two-thirds of the albumen. The digestive power of the gastric juice appeared to vary with the strength of the infusion, the disturbing effect being less when the solutions of tea and coffee were weakened. The professor is of opinion that the deleterious effect produced is due to the tannin which is extracted during the process of making, and not to the presence of thein and caffeine, and he mentions that tea which has not been allowed to stand more than two or three minutes is less injurious because a smaller quantity of this undesirable ingredient, tannin, has been produced than when it is boiled up or left in contact with the leaves for a considerable length of time. But it should be remembered that the weaker infusions, besides containing less tannin, also contain less of all the poisonous properties contained in the tea leaf and coffee berry, and that it is not only the obnoxious tannin which is thus kept in subjection.

THE progress of the illumination of the Dark Continent is indicated by the fact that 700 locomotives cast the rays of their headlights through the gloom.

## RECENTLY PATENTED INVENTIONS.

## Engineering.

**STEAM JET BLOWER.**—David J. Crozier, Brooklyn, N. Y. This inventor has devised an attachment for the ash pit door, with which the steam supply is so connected as to permit the free swinging of the door, while a flap valve seals the draught aperture in the blower casing and affords means to graduate the inflow of air. The peculiar formation of the casing and jet producer affords a wide, thin, injected sheet of air and steam, speedily blowing the fire uniformly throughout its area, and designed to give much better results than circular jet blowers, while the fire chamber may be completely sealed when the fire is to be banked.

**WATER POWER MACHINE GUN.**—Parson B. Tyler, Spokane, Washington. This gun has a number of circumferentially arranged barrels, in the rear of which is a feed wheel carrying a cartridge belt and operatively connected with a water wheel, in connection with mechanism for exploding the cartridges. There is little mechanism liable to get out of repair in the gun, which is designed to automatically fire a continuous stream of bullets, and it may also be operated by hand if the water supply fails.

## Electrical.

**INCANDESCENT LAMP.**—William E. Forest, New York City. According to this improvement a compound stopper of two or more elements is inserted in the neck of the globe, one element tightly closing the neck and supporting the leading wires, and the other hermetically sealing the stopper and wires, while a third element may be added to give increased stability, forming a head for holding the lamp in its socket and for protection against breakage, the head acting as a buffer between the glass bulb and socket. The stopper is preferably of rubber, and in the neck and on the outer surface of the stopper is a plastic cement.

**ELECTRIC RAILWAY.**—Henry A. Doty, Janesville, Wis. This invention provides a conduit conductor, mostly insulated, but having thereon projecting uninsulated lugs, while flexible contact shoes are arranged to make sliding contact with both sides of the lugs, thus avoiding sparking and preventing leakage. The trolley used with this conductor may be applied to any kind of a car, being adapted to run smoothly in the slot of the conduit, while having such freedom of lateral movement that it always retains its correct position without regard to the rocking of the car or the rounding of curves.

## Mechanical.

**SPRING MOTOR.**—Sigismund B. Wortmann, New York City. This is an improvement on several former patented inventions of the same inventor in a class of motors deriving their power from coiled springs, the design being to concentrate power from a number of springs and transfer it to a power shaft, the springs being wound singly or collectively while the shaft is still or

while it is in motion. Any number of springs in suitable drums may be grouped around the drive shaft, by the revolution of which all the springs in the group may be simultaneously wound up, and any number of groupings of drive shafts and springs may be employed, each shaft being in communication with a common power shaft. Great economy of space is obtained by the improvement and the friction is reduced to a minimum.

**FLOOR JACK.**—John L. Kobler, Le Sueur Center, Minn. This device consists of a lever and a clamp having a U-shaped loop at one end, one leg of the loop being extended outwardly, forming a lateral arm to which the lever is shackled near one of its ends. A dog is formed integrally with the lateral arm, joining at its base with the outer end of the arm, the dog being disposed at an acute angle to the arm. With this implement one person may readily secure flooring, sheathing or ceiling boards in place with one hand, driving the nail with the other hand.

## Agricultural.

**THRASHING MACHINE ATTACHMENT.**—William Taylor, Carman, Canada. This is a band cutter and feeder which may be quickly attached to any thrashing machine, the band cutter being readily and positively adjustable to or from the feed belt, as required in different kinds of grain. When the thrasher is not in use the conveyer may be folded down and locked out of the way of the tram. A governor in connection with the attachment automatically stops the machine when the speed drops below a certain degree, thus preventing the clogging of the machine and insuring a uniform feed.

**THRASHING MACHINE ATTACHMENT.**—David Harper, Scott County, Ill. (Post office Neelyville, Morgan County, Ill.) This is a self-feeder and band cutter consisting of a shaft tapered in each direction from the middle, and provided with a series of threaded knife seats and a like series of knives having threaded openings differing in diameter according to the different locations of the knives on the shaft. As the gavels of straw-bound grain are thrown upon the feed board the pivoted teeth of the elevator carry them up to the rotating knives, where the real teeth assist in forcing them along and hold them down on the cutters.

**GRAIN DRILL CLEANING ATTACHMENT.**—Edward J. Kemper, Hermann, Mo. This inventor has devised a simple and inexpensive attachment whereby the hoes of a grain drill may be quickly and conveniently cleaned from foreign matter, such as weeds or soil adhering thereto. This cleaning is accomplished without trouble by the driver of the machine, by means of foot levers so arranged that any one of the hoes in a drill may be passed in cleaning engagement with its cleaner, without interfering with any of the other hoes carried by the drill.

## Miscellaneous.

**SPIKE PULLER.**—Linville McC. Shattuck, Brookline, N. H. An upright bar or lever with a

fixed yoke near its lower end has side toes adapted to rest on a railroad rail, while an inner yoke is pivoted at its lower end to the fixed yoke. A pair of opening and closing spike-pulling jaws are pivoted together, and a series of links connect the jaws with and suspend them from the inner yoke, springs operating to close the jaws. The tool is a most efficient one, the greater the resistance offered by the spike, the firmer being the grip of the jaws.

**SHADE ROLLER BRACKET.**—Charles F. Flos, Brooklyn, N. Y. This bracket consists of a base fitted to slide upon a support, a shank projected from the base having its free end adapted to receive the trunnions of a shade roller, while a brake is projected from the outer surface of the shank in direction of the base support. These brackets may be quickly adjusted to rollers of any length, and need no auxiliary fastening devices when adjusted. They are durable and inexpensive, and do not mar the window frame to which they are applied.

**GUARD FOR SLIDES OF REPEATING WATCHES.**—George E. Humbert, Brooklyn, N. Y. This invention consists of a segmental bead or beads on the center of the watch casing, to form a guideway or guard for the slide to prevent foreign matter, such as threads and other substances, from passing under or catching on the slide, to bend or otherwise injure it.

**SHIELD.**—Thomas Keely, Memphis, Tenn. This is a device for use on express cars, vaults, buildings, etc., to enable an occupant to resist attempts at robbery, or for purposes of defense against an enemy. It consists of a port closure comprising a bearing in which freely turns a carrier supporting the barrel of a firearm. Peep holes permit the occupant of the vault or safe to view the entire surroundings, and the device facilitates firing in any desired direction.

**LOGGING SYSTEM.**—Richard Lamb, New York City. This inventor has designed a tramway especially adapted for hauling logs from within woods or swamps and delivering them for transportation or to a mill. This invention comprises a bearing cable supported by a bracket constructed to be easily attached to or removed from a support, a car on the cable having a hanging arm and hanging sheave blocks, while a hauling cable resting in the sheave blocks is attached to the hanging arm of the car. The tramway can be readily put up in any swamp or forest and as readily removed.

**GATE.**—John F. Ferris and Warren M. Thomas, North English, Iowa. These inventors have devised an improvement in farm gates, providing a gate which may be opened from either side of the fence by drawing downward upon a handle lever at one side or pushing up the lever at the other side, when a swing lever is swung upon its pivot, and a link connected with the lever draws on the free end of the gate to lift it from the keeper. Although the gate may be readily opened and closed by one passing through, it is a difficult matter for an animal to open the gate.

**BAKING POWDER CAN AND MEASURE.**—Henry R. Brown, Greenville, Tenn. This improvement consists of a horizontal cylindrical body with a bottom outlet closed by a measure, spiral brushes being supported in the body, while a sieve is located at the central outlet opening, whereby the material will be thoroughly mixed and the powder withdrawn without undue exposure of that remaining, the powder being mixed and sifted as discharged.

**ELEVATOR HATCHWAY GUARD.**—John W. Burdwin, Chicago, Ill. This hatchway inclosure is fitted with an arm adapted to be raised by hand when the car is at the landing at which freight is to be unloaded or passengers discharged, and the arm is so made and connected with a counterbalance that when it is raised the car or platform will hold it in elevated position. When the car or platform passes the hatchway, either up or down, the arm automatically drops to a position to protect the hatchway. The device is more especially designed for hatchways of freight elevators, and is inexpensive and trustworthy.

**HEATER.**—Harriet C. Cowdrey, New York City. This is a simple form of heater, more especially designed for use in halls, etc., where sufficient heat may be obtained with the aid of this improvement by the employment of a lamp, and without vitiating the air. The lamp is supported in the lower part of a sheet metal shell closed at the top, with open bottom and low down side slits, above which is a door with mica panel, while near the top of the lamp chimney is a second row of slits and shields, whereby a portion of the heated air is deflected into the room, the smoke, gases and odors being carried off by a pipe leading either to the chimney or through a window.

**HOOF WEIGHT.**—Frank D. Scott, Mount Morris, Mich. The block to be secured to the hoof, according to this invention, has a longitudinal recess in its inner face, in which is a spring latch consisting of a plate spring with a lug received by an opening in the block, while a releasing lever has a shank in the outer face of the body, with a recess in its head into which the end of the plate spring is received. The latch is not affected or released by any jar, the parts are all strong and durable, and the device is readily applied to or removed from the hoof without removing the shoe.

**CASH REGISTER.**—Charles J. Passick, Seward, Neb. This is an improvement in a formerly patented invention of the same inventor, perfecting details of construction and particularly the registering mechanism, that the machine may work more positively and efficiently.

**TAIL BOARD CATCH FOR DUMPING VEHICLES.**—Henry B. McKee, Brooklyn, N. Y. According to this improvement, a hook journal on the tail board is adapted to be engaged by an oscillating catch journal on the cart adjacent to the tail board, there being a rod connection between the catch and a stationary portion of the cart. The device securely holds the tail board closed until the cart is dumped, when the tail

