

a wide field for future growth. It is worthy of mention that the largest contract ever made for paints, *i. e.*, that for painting the Metropolitan Elevated Railroad of this city, was awarded to this company, and their liquid white has been exclusively used for several years upon the United States Capitol at Washington.



Asbestos.

The New York office of the company is at No. 87 Maiden Lane, where illustrated catalogues, descriptive of their inventions, can be obtained, and their goods are sold by dealers in all the principal cities and towns in this country and abroad. The London house of Messrs. Witty & Wyatt, No. 9 Fenchurch street, E. C., have the sale of these goods in Great Britain and the English colonies.

PENCIL HOLDER AND SCISSORS.

A handy combination of pencil holder and scissors is shown in the annexed engraving. The pencil holder may be of any of the usual forms.



Benson's Combined Pencil Holder and Scissors.

The one illustrated is what is known as a pencil-point protector, having a shoulder in the middle to limit the extent to which the pencil can be inserted. The tube beyond the shoulder is fitted to receive a small pair of scissors, which are attached to a block connected with an external sliding sleeve, by means of which they are projected from or drawn into the tube.

This invention was lately patented by Mr. H. C. Benson, of New York city.

Action of Vegetable Acids on Tin.

Professor Charles E. Munroe, of Annapolis, states that the ordinary fruit acids, such as those contained in apples, tomatoes, rhubarb, lemons, etc., all acted upon tin. Some cider which he examined, and which had been stored in a tin fountain, contained 117 milligrammes of metallic tin to the liter in solution. One case was given where persons eating fruit preserved in tin cans were made violently sick, and tin only was found in the fruit. Corrosion of tin pipes by water was referred to, and it was suggested that the corrosion was due to the vegetable acids in the water.

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NEW ICE CRUSHER.

We give an engraving of an improved ice crusher made by Thomas Mills & Bro., 1301 North Eighth street, Philadelphia, Pa., which is the result of a long experience both in the practical use and in the manufacture of machines of this class. The machine shown in the engraving is designed to be driven by power, but this firm also make crushers to be driven by hand.

The essential features of this machine are clearly represented. The movable and fixed spiked jaws converge, so that as a piece of ice becomes reduced in size by the crushing action of the jaws it continually falls until it is finally reduced to small pieces which come within the capacity of the speculated rollers at the bottom, which can be adjusted to crush the ice to any degree of fineness. Below the rollers there is a follower which pushes the crushed ice out toward the rear of the machine.

The largest of these machines will receive an ice cake weighing 100 lb., and will crush 10 to 12 tons per hour. The smallest machine takes a cake weighing 10 lb., and there are several intermediate sizes.

The advantage of this machine is that the ice can be rapidly crushed to a uniform size, insuring the degree of compactness most desirable for packing purposes.

These machines are in use by hotels, ice cream factories, fish packers, and private families, and are acknowledged to be efficient and satisfactory.

NEW ADJUSTER FOR MIRROR AND PICTURE FRAMES.

It requires no little skill to hang a series of pictures at a uniform angle, and it is often difficult to attach the cord to a mirror so that it will have the desired inclination without bracing or propping of some sort. To avoid these difficulties Mr. Charles A. Simpson, of Saxonville, Mass., has invented a very simple and inexpensive attachment for frame hangings, which is readily applied and holds the frame at any desired angle.

The frame is hung with cords in the usual way, but the screw eyes are so located that it may hang a little straighter than the desired angle. Near the lower corners, on either side of the frame, is placed a screw eye, C. A cord, D, attached to the picture cord by means of a common hook, A, and passing through the screw eye, C, is provided at the



SIMPSON'S ADJUSTER FOR HANGING FRAMES.

end with a flat hook, B, which clamps the cord by being canted by means of the weight of the frame. The hook, B, may be moved up or down on the cord, D, to alter the inclination of the frame. The adjustment is the same for both sides of the frame.

The advantages of this simple invention are too apparent to need recital here. It enables one to adjust his frames at any desired angle, and it insures their remaining in position.

Test of a Safety Elevator.

The proprietors of the Grand Central Hotel, in this city, recently gave a public exhibition of the efficiency of a safety air cushion which had been affixed to their large passenger elevator by the inventor, Mr. F. T. Ellithorpe. The elevator was, the makers claimed, the largest and heaviest in the world. The safety cushion consisted of a stout rubber bag, so placed beneath the floor of the elevator as to expand by the upward pressure of the air confined in the elevator shaft, and gradually arrest the fall of the elevator by filling the shaft like a piston head, and retarding the escape of the air from a closed well at the bottom.

In making the test the supports of the elevator were severed, and the elevator was allowed to drop a distance of 123 feet, retarded only by the safety cushion. The inventor had faith enough in his protective device to trust his life to it, and made the hazardous trip not only without harm but without serious discomfort. The motion of the elevator was arrested with so little shock that several eggs on the floor were not cracked, nor was a goblet of water overturned. No record was made of the pressure of the air in the well or of the time covered by the fall. The motion of the elevator was very rapid until within a few feet of the bottom. The efficiency of the safety cushion was amply demonstrated.

Iridium for Electric Lights.

The latest material offered for an incombustible "burner" for the electric light is iridium. Mr. Holland, gold pen maker of Cincinnati, claims to have discovered a flux by means of which he is able to fuse iridium in an ordinary draught furnace. He casts the metal in any shape desired, and in bars or ingots weighing as much as ten ounces. The metal thus fused and cast defies the file and resists all acids. The only mechanical way of cutting it is by friction with a copper wheel charged with diamond dust or fine corundum. Mr. Holland claims, further, that the cast iridium makes suitable "burners" for the electric light, and that so used the metal is durable without protection from the atmosphere.

IMPROVED HAND HOE.

The engraving shows an improved hand hoe adapted to universal use in the cutting away of grass or manipulating the soil about plants. The novelty consists in the peculiar form of the blade, which is constructed of a main body portion setting off to one side of the longitudinal axis of the handle in a parallel plane therewith, and a curved or upturned end portion, which, as well as the main portion, is sharp upon both edges.

This useful tool was recently patented by Mr. Robert L. Turner, of Olena, Ohio.



Turner's Hand Hoe.

RECENT INVENTIONS.

Mr. George W. McKenzie, of Dyersburg, Tenn., has patented an improvement in baling presses by which great pressure is exerted upon the bale, and which is easily and rapidly operated. A hinged lever, connected with the follower and provided with a clevis, pulleys, and rope for actuating the same, are the principal features of the improvement.

Mr. Thomas D. Gallagher, of Cleveland, Ohio, has patented an improvement in stock cars, which supplies readily detachable troughs for feeding and watering cattle during transportation. The trough is attached and detachably secured on the outside of the car by flanged edges working over longitudinal braces on the car.

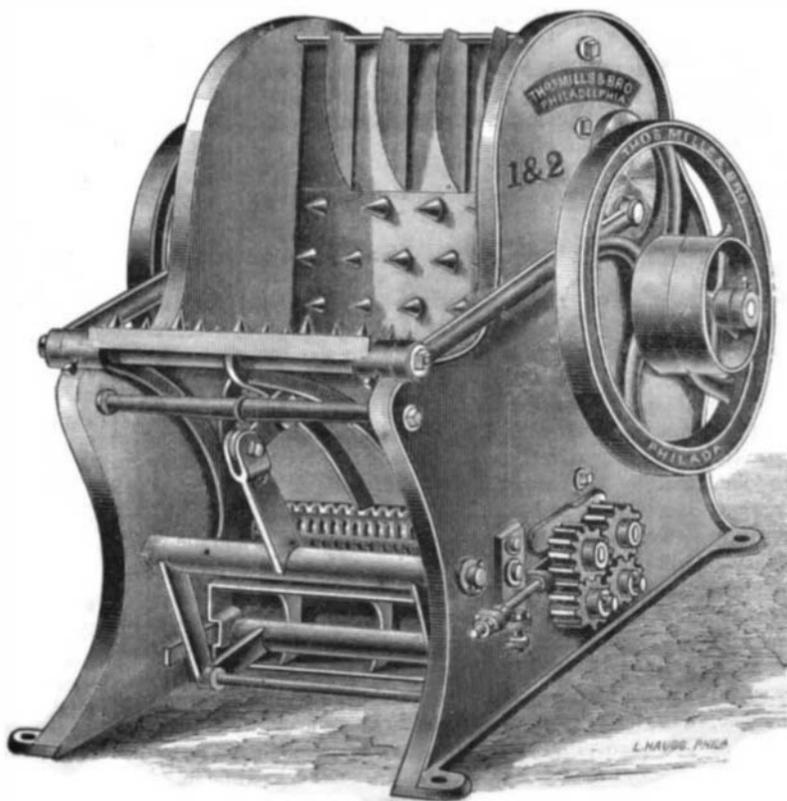
Mr. Ross Hall, of Millersburg, Ohio, has patented an improved stove of that class having exterior attached reservoirs or feeders delivering coal into the lower part of the fire pot. The arrangement is such that the combustible gases evolved by heat from the coal in the lower part of the fire pot pass up through the incandescent coal, where they are consumed and add to the heat of combustion.

Mr. Henry H. Spencer, of Mound City, Ill., has patented a rotary spading machine which imparts to the spades a compound rotary and reciprocating movement, their rotary motion being temporarily arrested while they enter the ground without checking the movement of the carriage or causing strains upon the gearing, and at a suitable moment withdraws the spades, completely frees them from the earth, and turns the latter over.

Mr. Abel Henning, of Easton, Md., has patented an improved carbureting apparatus, in which a peculiar arrangement of parts causes the pump which feeds the oil to a mixing chamber to be operated by the same power which actuates the air blower. Peculiar devices for volatilizing the oil and mixing the vapors with air are also supplied.

Mr. Samuel T. Richardson, of Cambridge, Md., has patented a lever power and dredge winder, designed more especially for oyster dredges, but applicable to analogous purposes, which not only much reduces the very hard labor of dredging in the ordinary way, but also avoids the danger to life and limb caused by oyster dredges catching on a rock.

Mr. Jacob Katzenberg, of New York city, has patented an improvement in suspenders



IMPROVED ICE CRUSHER.

whereby they may be made cheaper and yet be strong, more durable, and more ornamental, with due elasticity.

Messrs. James Semple and Wilkinson Crossley, of Broad Brook, Conn., have patented an improved apparatus for extracting dyes, which consist of an upright cylindrical vessel containing horizontal plates for supporting the dye stuffs, provided with pipes for introducing steam, boiling, drawing off the extract, and forcing the latter from the vessel, and also provided with appliances for introducing the unleached dye stuff and removing the spent stuff. Devices for regulating the process are also supplied.

Mr. Thomas Robinson, of Newtonville, Ind., has invented a potato-bug catcher, so constructed that the insects can be conveniently caught and removed from potato vines and other plants. The device consists of a box having an inclined apron and extended sides to receive the bugs, guard plates to prevent the bugs from shaking out, guard plates to intercept the flying bugs, and a socket and handle for carrying the implement.

Mr. Thomas M. Ullery, of Wakefield, Kansas, has patented an improved lime kiln, which provides means for separating the burned lime from the ashes of the fuel, and for facilitating the drawing of the lime from the kiln. A horizontal shoveling plate is placed between the mouth of the kiln and the ashpit, coming short of the rear wall of the throat or opening into the bottom of the kiln, and supporting a grate inclined upward and backward from the rear of the shoveling plate to the rear or back part of the throat. In passing down the inclined grate the burned lime is separated from the ashes.

Mr. Frederick F. Bioren, of Newark, N. J., has patented an apparatus for removing snow from streets and railroads. An oil tank is provided with a series of wick tubes, and a fan blower provided with corresponding pipes that operate as blow-pipes to direct the air from the blower forcibly upon the flames issuing from the wick-tubes, thereby forming blow-pipe flames which are directed upon the snow or ice to be removed. A combustion chamber which can be vertically adjusted to protect, direct, and concentrate the flames is used, and the entire apparatus is mounted on a wheeled platform, to be drawn along the surface of the street as may be required.

Mr. James Simmons, of St. Louis, Mo., has patented an improved icebox, which has its main frame and walls so constructed that the refrigerator may be taken apart and closely packed for shipment, and put together again for use when wanted.

Mr. Robert H. Dimock, of New Haven, Conn., has patented a marine paint and process for manufacturing the same. The paint consists of linseed oil with certain preparations of copper incorporated therein to make a paint poisonous to animal and vegetable life.

Mr. Solomon B. Elithorpe, of Rochester, N. Y., has patented a lasting machine, which combines in a suitable frame a seat for holding a last, flanged levers for fitting the leather about the last, a vertically adjustable templet provided with clamps and pressing screws for holding and stretching the leather upon the last, and a gathering cord for holding the leather so stretched.

Mr. Joseph Johnson, of Lebanon, Ohio, has patented an improvement in harness, consisting in a novel construction and arrangement of devices used in connection with the back strap and collar, whereby provision is made for dispensing with traces or tugs for pulling, and with breechings for holding back.

COOKING BY STEAM.

In the popular mind steam cooking is associated with charitable soup kitchens, public poorhouses, prisons, and similar institutions, where sodden and unsavory food is turned out wholesale for uncritical palates. To apply steam for the finer work of the civilized kitchen is quite another matter; and to those who are unfamiliar with recent progress in this direction it seems little less than incredible that steam cooked food can, in range or quality, bear any comparison with that prepared by a skillful cook at an open fire. Yet it would seem to be precisely in the matter of quality in the product that steam is likely to prove most serviceable as well as most economical in the kitchen.

The one thing essential to good cooking (presupposing, of course, an intelligent cook and a proper supply of raw materials) is a supply of heat properly distributed and under perfect control as to intensity. These conditions are not easily met with direct fire heat, and when met necessitate incessant vigilance on the part of the cook to prevent such variations in the heat of the fire as may injure the quality of the food in preparation. Even with the utmost vigilance much food is overcooked either by miscalculation or to secure the proper cooking of the rest. In roasting and browning a joint, for instance, the thinner portions are very apt to be overdone or dried while the thicker parts are being sufficiently cooked.

With steam cooking, under proper conditions as to apparatus, these difficulties are entirely done away. With the same source of heat supply a dozen ovens in a row may be kept either at the same temperature steadily hour after hour, or each may be maintained at a temperature exactly suited to the work to be done in it, and varied as may be desirable, without affecting in any way the rest. This puts the work of the cook upon a strictly scientific footing, the various operations being individually and collectively under perfect control, thus ruling out entirely the large and wasteful element

of uncertainty, which costs so much in spoiled food and spoiled temper under ordinary kitchen conditions.

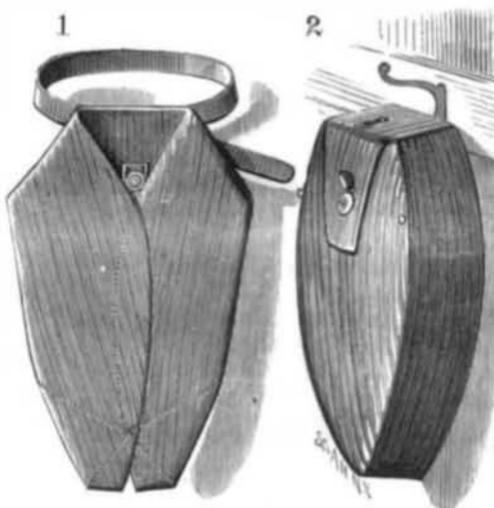
A practical illustration of these truths, as well as of the capacity of steam cooking to cover the entire range of culinary processes, is furnished daily in the extensive kitchen of the well-known restaurant of Messrs. Crook & Nash. This establishment, which ranks among the first in New York in respect to age, size, and the quality of the cooking, has lately been refitted and provided with a complete outfit of steam appliances on the patented system of Mr. John Ashcraft. No fire is used in the kitchen, the steam being taken from an adjoining building and distributed in pipes to the various sets of cooking apparatus. For baking, roasting, broiling, and other operations requiring a dry heat, the steam surrounds the cooking chamber, but does not enter it. Boiling is done either in jacketed vessels surrounded by steam, or as in cooking vegetables the steam is directly admitted to the articles, which are cooked in their own juices with no wastage of material or flavor. The meats cooked by this method are exceptionally tender and juicy, and free from the flavor of gases absorbed from the fire, the taint of scorched flesh or fat, and other unsavory qualities usually developed in irregular cooking with fire.

With the increasing use of steam in dwellings and larger establishments the employment of steam in cooking is likely to be greatly extended. Where public systems of steam heating are adopted steam cooking stoves must entirely take the place of existing ranges; and, judging from the result obtained by Messrs. Crook & Nash and others, the change from fire to steam is pretty certain to lead to better as well as more economical cooking than now prevails.

Great economy is also possible through the employment of the waste steam of factories for culinary purposes. In many cases the heat now thrown away in waste steam would amply suffice to cook the food of the workmen and their families and do it better than is possible with the ordinary cooking stove.

CONVERTIBLE TRAVELING CAP AND SCARF.

The article of apparel shown in the annexed engraving is designed especially for travelers' use, and is convertible into



CONVERTIBLE TRAVELING CAP AND SCARF.

what is known as a "flat scarf" and into a cap, answering an excellent purpose in either capacity. The top of the article is made in the form of a cap, and the flexible side portions fold in when the article is used as a scarf. A clasp is secured to the top, which is engaged by eyes attached to the sides when they are closed down upon the top. By unclasping the sides and unfolding them, a comfortable cap is formed.

This article has been patented by Mr. A. Weiler, of Crefeld, Prussia.

Substitutes for Lumber.

We are in receipt, from Mr. S. W. Hamilton, of Lawrence, Kansas, of a sample of lumber made from straw, manufactured after a process patented by himself, the particulars of which he does not explain. He informs us, however, that he can manufacture lumber like the sample sent, in any desired length, from 12 feet upward, and to 32 inches in width, at a cost competing with the better or finishing grades of pine, although he does not inform us whether this competition will apply equally to sections where lumber is comparatively cheap, as at Chicago, and at Western grain producing points, as at Kansas. We imagine, however, that the expense will vary but little at any point where straw is obtainable in large quantities.

The manufacture is, of course, confined to a grade which will compete with the better class of lumber, as there would be no object in filling the new product with knots, and shakes would scarcely be obtainable even if desired, while sap and decayed wood must be impossibilities. The sample sent to us will hold a nail as well as wood, is equally susceptible to a high painting finish, and can be polished to as high a degree as is at all desirable. Being made waterproof, we can discover no possible reason why it should not be as durable, or even more so, than pine or even oak, while its adaptability is evidently as great for roofing purposes, as for the fine work of a dwelling.

The question of cost appears to us to be the most important element yet to be practically solved. We can see no reason why it is not susceptible of being worked under the plane or other ordinary tools of the carpenter, and when once fitted to its place, we can readily believe that it will be free from shrinkage or swelling. In appearance, the sample before us resembles hardwood, being about as dark as oak and more dense in texture, with a specific gravity one-fifth greater than thoroughly seasoned black walnut. For finishing purposes, it will not, as a rule, be necessarily as thick as ordinary lumber, its tensile strength being apparently double that of wood of the same thickness. On the whole, we are favorably impressed with the appearance of the new artificial lumber.

In connection with the new styles of building material, we may mention a new block of buildings now in course of erection on the corner of Randolph and Dearborn streets in this city, the facings and trimmings of which are wholly of terra cotta, which is another name for baked clay. These trimmings are moulded to the desired shape, and may be made as highly ornamental as is the carved pattern in which they are formed. By adding a mixture of sawdust with that portion of the clay which does not require a finished surface, the block may be reduced in any reasonable degree as regards weight, while, being hollow, a large piece is comparatively light. The faces being made of finer clay, carefully moulded, present a finished character, and the block as a whole presents as rich an appearance as any in this city of elegant buildings, and is in favorable contrast with the massive stone pillars of the lower part of this or the surrounding buildings. It is evident that inventive art combined with æsthetic taste will, in the future, readily adapt itself to the demands of civilization, and while building timber may grow scarcer, succeeding generations will think of the age of wood as well suited to the needs of a generation which, in its rapid settlement of a new country, found it indispensable, at the same time congratulating themselves upon the possession of more durable, fully as ornamental, and equally as cheap a substitute in clay, glass, paper, and iron. We may speculate upon the details of architectural estimates in the future as including paper for doors and window frames, floors, mouldings, and roof; glass for porches and pillars, as well as for lighting; terra cotta for window caps and sills, and as well for cornices and walls; and iron for beams, joist, and rafters, with not a sliver of wood in the whole construction. Future generations will realize what at present we but anticipate.—N. W. Lumberman.

INTERNATIONAL GEOGRAPHICAL CONGRESS.

The Italian Geographical Society, to whom the direction of the Third International Geographical Congress has been committed, announce that the meeting will be held this year in Venice, September 15 to 22.

The Third International Geographical Exhibition will be held at the same place, beginning September 1 and closing October 1.

The preparatory work of the Congress and the Exhibition has been intrusted to a managing committee, presided over by the President of the Italian Society. It is probable that the Congress will be divided into seven scientific groups:

1. Mathematical Geography, Geodesy, Topography.
2. Hydrography, Maritime Geography.
3. Physical Geography, Meteorology, Geology, Botany, Zoology.
4. Historical, Ethnographical, Philological Geography; History of Geography.
5. Economical, Commercial, Statistical Geography.
6. Methodology, Tuition and Diffusion of Geography.
7. Explorings and Geographical Travels.

The Congresses at Antwerp, in 1871, and at Paris, in 1875, were very successful, and have had an important influence on the progress of geographical discovery. Correspondence, whether with regard to the Congress or the Exhibition, should be addressed to the Managing Committee of the Third International Geographical Congress, 26 Via del Collegio Romano, Rome.

Explosive Medical Compounds.

The medical and pharmaceutical journals have recorded a number of cases of explosions having taken place by the admixture of explosive substances. Among the prescriptions having given rise to such accidents we will mention the following: 1st. Mixture of hypophosphite of lime, 50 centigrammes; chlorate of potash, 3 grammes 75 centigrammes; lactate of iron, 30 centigrammes. 2d. Solution of glycerine, 8 grammes, in acid chromic, 4 grammes. 3d. Mixture of chlorate of potash, tr. ferri perchlorid. and glycerine has exploded in the pocket of a patient. 4th. Chlorate of potash mixed with catechu and used as a dentifrice, may explode in the mouth of the patient, provided hard friction is used. 5th. Pills of oxide of silver (frequently used in England in affections of the stomach) have exploded in the patient's pocket. Pills of permanganate of potash and ferri reduct., pills of golden sulphur of antimony and chlorate of soda, may explode during or after their preparation. It is, therefore, essential to avoid associating glycerine, and, in general, substances easily reduced, with such oxidizing agents as chromic acid, chlorates, permanganates, and certain organic acids.—Bull. gén de thérapeut.

A FAST ATLANTIC PASSAGE.—The Arizona, of the Guion Line, arrived at Queenstown February 2, having made the quickest trip on record. The time from New York was 7d. 22h. 23m.