Kingzett published his experiments in 1874 in the *Journal of the* (London) *Chem. Society*. At first he assumed that by the oxidation of oil an organic peroxide was first formed, and when treated with water this was decomposed with camphoric acid and peroxide of hydrogen. He found that at the end of fifty-four hours there were 45 parts of peroxide of hydrogen in 10,000 of the solution, or nearly one-half per cent. He also demonstrated the antiseptic and disinfectant power of the solution; 5 c.c. of a quarter per cent solution kept 50 to 100 c.c. of milk, eggs, etc., a long time.

Kingzett, in a second paper, published in 1876, refers the hygienic influence of pine and eucalyptus trees to similar causes, that is, the continual oxidation of their essential oils and formation in the air of peroxide of hydrogen. He also said that patients recover more quickly in wooden hospitals for like reasons He says that the solution contains none of the oil of turpentine, that it is not poisonous, and will not injure linen garments or fabrics. It does not attack utensils and tools, and is completely volatile.

In making turpentine water freshly distilled oil is not so good as the old that is partially changed to resin. Rennard, in his experiments, mixed Russian turpentine, that had been several years in the laboratory, with water, in the proportions of one to ten, twenty, and thirty. They were kept in open bottles, and often shaken. The amount of peroxide formed in the first three days was small, but gradually increased; the oil turned yellow. The chromic acid reaction was used in testing for peroxide of hydrogen. The clear-filtered solution was acidified with a few drops of dilute sulphuric acid, ether poured on it, and then a few drops of a solution of chromate of potash added and shaken. If peroxide of hydrogen is present, the ether becomes more or less blue. The longer it is exposed to the air the more peroxide is found in the solution. A quantitative estimation of the peroxide of hydrogen was made by adding permanganate solution until the last drop caused a pink color that lasted a few seconds. Samples of different ages were found to contain from 0·3 to 2·8 per cent.

Jacobsen says that a very active oil of turpentine is obtained by mixing one part of rectified oil of turpentine with three parts of absolute alcohol in a loosely closed vessel. It is left a few weeks in the sunshine, then the alcohol is allowed to evaporate. The resinous mass that remains when shaken with water forms a powerful bleaching liquid.

This subject has an additional interest in this country from the fact that a manufacturing chemist in the West is now selling a substance labeled "aromatic ozonized liquid," which is strongly acid, has an odor of essential oils, and probably contains oils of turpentine, wintergreen, etc., in the active or ozonized condition. I. B.

Lac.

Lac is one of the many useful productions of the Indian Empire; it is also found in large quantities in other parts of the Asiatic continent. This substance forms a crust surrounding the branches and twigs of certain trees, and is the excretion of an insect called *Coccus lacca*. The insect belongs to the natural order Hemiptera, genus Coccida, which are remarkable for their powers of propagation, and often their numerous offspring are so closely crowded together that the trees on which they live are exhausted and injured by them. Hampden G Glasspoole, in the British *Pharmaceutical Journal*, says: The trees selected by these insects for the depositing of their eggs are the bishar tree, *Croton lacciferum*, the *Butea frondosa* (palus prass or dhak), *Ficus religiosa* (peepul), and *Schleuhera trijuga* (koosum). Of the last mentioned tree Dr. Brandis, in his "Forest Flora of Northwest and Central India," says, it produces the best lac, which keeps good for ten years, while the lac from other trees is said to last only two years. In the central provinces of India the natives say that lac from this tree is capable of being propagated on others, but the koosum tree itself will not admit of the propagation of lac from trees of other kinds.

Mr. J. Mackee, in a paper on "The Formation of Lac Preserves," in the *Quarterly Magazine of the Indian Forester*, vol. i., page 269, says: "After the larvæ appear, they crawl about the stem of the plant in search of the young juicy spots from which, when once fixed by their proboscis, they cannot be removed without fatal injury. The males and females are identical in size and shape, and both commence at once the formation of their cocoons by excreting a substance resembling lac, those of the male being ovoid or elliptic in form, while those of the female are more circular and exhibit three distinct apertures, arranged in triangular fashion in the roofs, one being the anal aperture through which impregnation is accomplished, and the larvæ eventually swarm, the other two those by which the insect obtains a supply of air. About ten weeks after the birth an important change takes place in the larvæ, the female cocoons are completed, and the insects have assumed the final or imago state. As the female insect never shifts her place, but remains fixed in the position she first took upon the twig, the male is obliged to seek her, which he does by leaving his cell in a backward manner by the ventral aperture, and crawling on the female cell, he fulfills his office, and almost immediately dies. Impregnation having been accomplished, the female busies herself in sucking up large quantities of the vegetable juices, increases greatly in size, and begins the excretion of true lac. The oval body of the insect becomes a deep red color, and if at this stage a piece of the lac incrustation is broken off the insect is perceived as a little bag of red liquid (which yields the dye), and the place where the wound has been made bears a snow-white mark, as if it had been touched with a point of chalk; a similar mark is also found under every insect. Under the microscope they clearly appear to be specks of a semi-crystalline saline efflorescence. After having laid her eggs, the female dies, and soon a new generation swarms forth to enact the same process again. The thickness of the lac incrustations varies from half an inch to an inch in diameter. The branches are broken off from the trees by the natives, and in this state it is carried to market and called stick-lac."

In commerce there are three varieties of lac, known as stick-lac, seed-lac, and shell-lac. Stick-lac, as just stated, is the resinous substance gathered on the branch in its natural condition, and often containing the dead insect; this when chewed colors the saliva a beautiful red, and when burnt emits a strong agreeable odor. When stick-lac has been separated from the branches, etc., and coarsely pounded, the native silk and cotton dyers extract the red color from it by boiling it in water. The yellowish, hard, resinous powder which remains has somewhat the appearance of mustard seed, and is called seed-lac; this is sometimes melted together, and called lump-lac; it is used by the natives to make bracelets, etc. Shell-lac is prepared by putting a quantity of seed-lac into long cloth oblong bags, two men holding each end of the bag extended over a gentle charcoal fire, by which process the lac melts. When quite fluid each man twists the bag so as to force out the melted substance, and this drops upon pieces of the stem of the plantain (*Musa paradisiaca*), placed beneath, the smooth and glossy surface of which prevents the lac from adhering. The degree of pressure regulates the thickness of the coating; at the same time, the fineness of the material the bag is composed of determines its clearness and transparency.

The chemical constituents of the different kinds of lac from the analysis of Dr. John Unverdorben (who made resinous bodies his particular study) and Hatchett appear to be as follows:

Stick-lac on the branches, etc., just in the state it is found contains:

1. An odorous resin, soluble in alcohol and ether.
2. A resin insoluble in ether.
3. A bitter balsamic resin.
4. Acid of lac (laccic acid).
5. A dun-yellow extract.
6. Coloring matter analogous to that of cochineal.
7. A fatty matter like wax.
8. Some salts and earth.

Unverdorben classified the resin produced in lac, besides the coloring matters and laccic acid, thus:

1. A resin soluble in ether and alcohol.
2. A resin, insoluble in ether, soluble in alcohol.
3. A resinous body little soluble in cold alcohol.
4. A crystallizable resin.
5. An uncrystallizable resin, soluble in ether and alcohol, but not in petroleum.

Seed lac contains, by Mr. Hatchett's analysis, in 100 parts:

Resin	68·0
Coloring matter	10·0
Wax	6·0
Gluten	5·5
Foreign substances	6·5
Loss	4·0
	100·0

Dr. John's analysis gives very similar results, save that among the foreign substances he notices 1·0 salts of potash and lime, to which probably the white spots on the bark under the incrustation, which were previously noticed, may be due.

Shell-lac, according to Mr. Hatchett's analysis, gives:

Resin	90·5
Coloring matter	0·5
Wax	4·0
Gluten	2·8
Loss	1·8
	99·6

Lac resin can be procured pure by solution in alcohol; it makes an excellent varnish. It is soluble in diluted hydrochloric and acetic, but not in sulphuric acid. Shell-lac has a great tendency, says Dr. Ure, to combine with salifiable bases, as with caustic potash, which it deprives of its alkaline taste. This solution, which is of a dark color, driesinto a brilliant transparent reddish-brown mass, which may be redissolved both in water and alcohol. By passing chlorine in excess through the dark colored alkaline solutions the lac resin is precipitated in a colorless state. When this precipitate is washed and dried, it forms, with alcohol, an excellent pale yellow varnish, especially with the addition of a little turpentine and mastic. With the aid of heat shell-lac dissolves readily in a solution of borax.

Lac-dye or cake lac is produced from a watery infusion of ground stick-lac evaporated to dryness and formed into cakes about two inches square and half an inch thick; these are of various qualities and stamped with peculiar marks to designate their different manufacturers. This dye isof a splendid crimson color and is used by the natives for dyeing silk, but seldom for cotton on account of the expense. The color of the red leather of Nurpur and other places is due to this dye. This dye has long been known in Europe, for before the discovery of the cochineal insect it was universally employed for dyeing red. The crimsons of Greece and Rome and the imperishable reds of the Brussels and Flemish schools were obtained from this insect.

Dr. John's analysis of these cakes is as follows: Coloring matter, 50; resin, 25; solid matter, consisting of alumina, plaster, chalk, and sand, 22. These cakes when prepared for dyeing are dissolved in diluted muriatic acid, and tin is the mordant, and this gives a very brilliant scarlet hue to woolen cloths.

Lac has been known to the Hindoos for many ages. Their carpenters mix the crude substance with native spirit, which produces a strong colored varnish which they use in stead of paint for the woodwork of their houses, temples, etc. The beautiful glossy lacquer with which the Indian houses, etc., are covered is also produced from the same source. Indian lapidaries make use of lac as a vehicle for retaining the hard powders used in cutting and polishing gems. Coarse lac is used for making bangles or ornaments in form of rings for the arms of the lower classes of females, the best shell-lac being used in the manufacture of ornaments for the superior classes.

In Ainslie's "Materia Indica" it is stated that a tincture of lac is a favorite medicine among the Arabians in preparing cleansing washes; they call it "meliawer." Also a decoction of stick-lac in mustard seed oil, to which has been added a little powdered root of the *Morinda citrifolia* is used in Behar as an unguent for anointing the body in cases of general debility. Lac is found in most parts of India; in the central provinces it occurs very extensively. It is also found in some of the countries of Southern Asia, Siam, Ceylon, some of the islands of the Eastern Archipelago, and China, Siamese lac being held in high estimation.

MISCELLANEOUS INVENTIONS.

An improved automatic fire extinguisher has been patented by Mr. Paul Oriolle, of Nantes, France. This is an apparatus which automatically attacks a fire immediately on its breaking out. This apparatus is caused to act by the slightest abnormal rise of temperature, and consequently operates so as to extinguish the fire at the very beginning. The principle of the apparatus is based on the use of substances fusible at low temperatures for closing the orifices of pressure water pipes, so that the fusion of such substances causes the opening of the pipe, and creates a continual projection of liquid.

An improved rotary clothes drier has been patented by Mr. Horace Palmer, of Lebanon, Conn. The invention consists in a rotary clothes drier having a slotted pivoted post, with bars hinged to it, and carrying the clothes lines. To these bars are hinged the upper ends of connecting bars, the lower ends of which are pivoted to crossed bars placed in the slots of the posts, and held down by a lever to put the clothes lines under tension.

An improved necktie fastener has been patented by Mr. Jacob Goldberg, of New York city. This invention relates to devices for attaching a necktie to a collar button; and it consists in a case containing an apertured spring-operated slide adapted to engage with a collar button to hold the necktie in position.

An improved pistol and carbine holder has been patented by Mr. Louis S. Flatau, of Pittsburg, Tex. The object of this invention is to provide cheap and efficient means for carrying firearms either upon the person or on horseback, it being so constructed that the arm may be quickly and easily drawn for use and easily returned to place in the holder.

An improvement in beehives has been patented by Mr. Daniel K. Barnhart, of Gaines, Pa. The object of this invention is to keep bees warm and dry in winter and cool in summer. The upper part of the hive and the honey boxes, when used, are surrounded by an air chamber, which protects the bees from the heat of the sun.

Mr. Robert W. Pain, of New York city, has patented an automatic harmonica in which a perforated sheet of paper is employed to regulate the admission of air to the reeds. The invention consists in the combination of a perforated strip of paper or music sheet, and a flexible wind-chest or air-compressor pump, with an ordinary harmonica or similar instrument, whereby the harmonica is made to execute tunes automatically.

Mr. James M. Hawley, of Odin, Ill., has patented an improved machine for cleaning, separating, and grading grain. This machine separates wheat from other grains and seeds, and grades the wheat according to the size of its kernels. It will readily separate timothy and red top seeds.

An improved cotton chopper and cultivator has been patented by Mr. James D. Patterson, of Competition, Mo. This machine is well designed and arranged for the peculiar work of cotton cultivation. It is provided with plates to be forced into the ground by the feet of the operator to bar off the plants, and their construction permits of their passing over any rubbish, and thus prevent the rubbish being dragged along and the plants being torn down thereby.

An improvement in harvesters, patented by Mr. Stephen McB. Krigbaum, of Golden, Col., relates to that class of harvesters in which the cut grain is carried across the platform and elevated to a binder's table or to a binding mechanism. The object of this invention is to insure the even falling of cut grain upon the platform, and thereby prevent the loss of grain resulting from the uneven falling of the grain.

An improvement in spring wagons has been patented by Mr. George A. Elliott, of North Grosvenor Dale, Conn. This invention relates to that class of carriages known as skeleton, buckboard, and side bar carriages or buggies; and it consists, principally, of a novel construction and arrangement of the springs, whereby the buggy is made light, easy riding, and low.

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Electrical Patents in the United States.

The subject of patents has always been an interesting one in the United States, but it seems to be on the increase even now.

During the year 1881 nearly 16,000 patents were granted in the United States, a larger number than was ever granted before in this or any other country.

This would seem to indicate increased inducements to special inventors in certain lines of invention, were it not for the fact that a careful study of their special classifications adopted by this Patent Office shows no marked increase in any particular class, with one single exception, viz., electricity.

In that class there has been remarkable energy displayed, and the Commissioner has found it necessary to divide the classification within the year by transferring to other divisions of the examining corps such details as could be properly spared and yet not materially affect the class proper.

The division of electricity has grown to be the largest in the Patent Office, with an average monthly showing of over two hundred new applications.

It has been the practice in the Patent Office to observe with the greatest strictness a proper classification, and to this end only such details as gas lighting devices, electrical registers, conductors, insulators, and, in short, those devices not purely electrical in their nature, have been lopped off. There are now employed in the electrical division one principal examiner, seven assistants, and three clerks, a larger force than in any other division in the office, and yet it has been found necessary to make the transfers above noted in order that the work might be kept up. On the above force there devolves the duty of examination as to novelty, utility, operativeness, etc., and oftentimes careful and accurate experiments are made to prove the assertions alleged in descriptions of inventions.

By order of Commissioner Marble, of the Patent Office, all United States patents appertaining to or bearing upon electricity granted prior to July 1, 1881, have been reprinted and the drawings thereof reproduced and bound up in neat substantial quarto volumes of about two thousand pages each. There are sixteen such volumes, the subject matter of each being of such sub-classes as naturally relate to each other, thus giving in each volume a full *resume* of the state of the art from its origin to date. There were issued to, and including, the above date, 3,825 such patents, which are subdivided into sixty-nine sub-classes.

The following table shows the number of each particular kind of patent which relates directly to the telegraph, to wit:

Telegraphs	46
" (automatic)	111
" (dial)	23
" (duplex)	61
" (dynamo)	8
" (multiplex)	7
" (perforating)	26
" (printing)	191
" (quadruplex)	19
Circuit closers	31
Condensers	5
Electro-magnets	42
Keys	42
Lightning arresters	8
Morse registers	20
Relays and sounders	111
Conductors	149
Insulators	107

In duplex and multiplex telegraphy there has been but little advance, but there are pending applications for patents for several valuable inventions.

In telegraphs and telegraph apparatus but slight advance is apparent, the leading inventions being in the applications of dynamo instead of batteries for telegraphic purposes.

There is also much interest manifested in relation to the Faure secondary battery, and applications are pouring in upon that subject, but as yet nothing appears to be any advance upon what Faure has done. There is, however, as much interest developed in dynamo machines, and there are at present pending over one hundred and fifty applications.

The telephone occupies the minds of would-be patentees to a wonderful extent. The first telephonic telegraph patents were granted in 1875, and before January 1, 1878, they numbered less than two dozen. Now they constitute in all eight sub-divisions, embracing all kinds of telephones, telephone telegraphs, alarms, calls, appliances, etc., all told 438 patents.

A large interest is also apparent in telephones and telephone exchange systems, and there are pending over two hundred applications on these devices.

Some idea may be formed about the interest manifested in America as to the future of the electric light when it appears that there are now pending over three hundred applications for patents on various features thereof, a large majority of such applications being for what is known as incandescent patterns and their appliances.

Taking the subject of electrical patents as a whole the most activity has been exercised within the following during the past three years: 1, electric lights; 2, dynamo machines; 3, telephones and their appliances. Prior to January 1, 1878, there were only 20 patents on electric lights; July 1, 1881, there were 192. Prior to July 1, 1879, there were only 19 dynamo and magneto machines; July 1, 1881, shows 111.

Where there are so many minds brought to bear upon kindred subjects it is not strange that many should invent the same thing, or take the same method of obtaining similar results in scientific experiments and investigations. This is found in the examining department of the Patent Office to often be the case with electrical appliances. Old patents are innocently re-invented and several persons frequently invent the same thing. This is mainly because they are prescribed by the immutable laws of science that must be always obeyed under certain given relations. Some of the wonders of electricity applied by Franklin in his investigations would be thought new and astonishing if shown for the first time at this day. In 1748, at a picnic, he "killed a turkey by the electric spark, and roasted it by an electric jack before a fire kindled by the electric bottle."

The practical storage of electricity was long ago proved by Franklin's "bottled lightning." If many of the inventions now prove to be of no immediate practical use or advantage they may yet lead to something in the future that will be of constant use and great benefit to the world. This has always been remarkably true of electricity, more than of any other department of science or mechanics.—*Journal of the Telegraph.*

How Paper Car Wheels are Made.

The Allen Paper Car Wheel Works are located at what is now the northern extremity of Pullman, Ill., though the Union Foundry and Car Wheel Company is building a large foundry and dwelling houses about half a mile north of this point, which will doubtless become a part of Pullman at an early day. The buildings of the Allen Company are two parallel structures, extending 370 feet north and south by 150 feet, connected in the center by an annex. The rear building is used for a foundry, and in the front building the paper car wheels are made and fitted into their casings. On the second story are the offices of the company. Above the center floats a flag bearing the words, "The Allen Paper Car Wheel Company."

The *Western Paper Trade* says: Entering the office, the visitor is conducted to the point on the first floor where the straw board is received, at present at the rate of about a carload a week. It is the ordinary straw board of commerce, which until recently had been purchased at the Rockton Mills, in this State, but is now made at the Allen Company's mill at Morris, Ill., where it is cut by machinery into circular disks, with a hole in the center for the hub of the wheel. These disks are a little larger than the sizes required for the wheels, which are 26, 33, and 42 inches. Three of these disks are fastened together with ordinary flour paste, applied by hand with a brush, and the triple sheets are piled together to the thickness of three or four feet. Then the mass is placed in a hydraulic press and subjected to a pressure of about 650 tons for three hours. When removed from the press each three sheets is found incorporated into a single solid board. These boards are sent up-stairs to the heating room and subjected to a temperature of 120° Fah. for two weeks, or until every drop of moisture has been extracted. They are then sent down stairs and pressed again to straighten them, and pasted together, dried and pressed again and again, until they are of the thickness required for the wheels, having to undergo hydraulic pressure three times, and to remain in the drying and seasoning rooms some six weeks, or even more.

When the paper material for the wheels is prepared, it varies from four to five inches in thickness, according to the size of the wheel, and is as solid as the hardest wood. One hundred and seventeen sheets of ordinary straw board contribute to the paper structure of a 42 inch wheel, and one hundred sheets to a 26 inch wheel. After being thoroughly dried the paper block is carried to the trimming room and placed upon a lathe, the tender of which is given a steel tire to which the block is to be fitted, and it is turned to the required size, which is always a little larger than the interior of the tire that is to cover the edges of the paper. Then the block is handed over to the painter, who treats it to two coats, consuming about a quarter of a pound of brown mineral paint, and it is then ready to be fitted into the tire. It is again removed to the ground floor, and forced into the tire by hydraulic pressure, applied at the rate of 3,000 pounds to the square inch, so that the paper block fits as closely as possible into the rim of the wheel, the whole structure forming a very compact mass. The hub is then forced into its place, and heavy iron plates fastened upon either side of the wheel by strong bolts extending through it. The wheel is then ready for use. A 42 inch wheel will weigh about 1,115 pounds, divided as follows: Paper, 185 pounds; tire, 560 pounds; side plates, 140 pounds; hub, 200 pounds; bolts, 50 pounds. The tires are of the best German steel, made at the Krupp Works in Prussia; the wrought iron plates, hubs, and bolts are of American material, the castings being made at Pullman. American tires are not used, it is stated, because they are not yet made in sufficient numbers to supply the demand.

About eighty men are now employed in the Allen Works here, and the company have a factory of about the same capacity at Hudson, N. Y. More men will be required here, however, when the new machinery, now making, is completed. At present twenty-four to twenty-six wheels a day are made, but it is expected to increase this number 25 per cent within a short time. The cost of a 33 inch paper wheel is about $80, and of an iron wheel of the same size not far from $15, but it is claimed that the paper wheel will outlast and outwear the iron wheel to an extent that renders the former a decided economy. A distance of 100,000 miles is about the maximum service to be obtained from axles with iron wheels, while on various roads the axles used with paper wheels have averaged over 400,000 miles each. This difference is accounted for on the ground that the paper centers intercept or absorb all vibration occasioned by contact between the tire and the rail, while with iron wheels this vibration is submitted to the axle, thereby causing a more rapid wearing of the journal, and the disintegrating of the axle.

The paper wheel is practically indestructible, and can be used indefinitely. When the steel tire wears out a new tire can be placed over the paper, and when a breakage occurs these wheels are sent back to Pullman to be repaired. The danger from accidents by their use is said to be reduced to a minimum. The Pullman Palace Car Company have used the paper wheels for about ten years, and according to Mr. A. B. Pullman's statement, "have never had an accident caused through broken wheels or axles with any cars having paper wheels under them. While the present style of wheel has been in service we never had a paper wheel fail *en route*." This is another tribute to paper as an element to civilization. The man would have been considered a "crank" who, fifteen years ago, had predicted that paper car wheels would outwear and be safer than iron wheels. The first paper car wheels were made by Richard Norton Allen, in Brandon, Vt., in 1869, and these wheels were first used on a Pullman sleeping car in 1871.

RECENT INVENTIONS.

An improved horseshoe has been patented by Mr. James B. Finch, of Bozeman, Montana Ter. The object of this invention is to relieve the feet of horses from the jar or shock of traveling on hard or paved roads, and also to provide for removal of the calks from the shoe. The invention consists in a flanged calk and rubber block combined with a recessed shoe.

A cheap, efficient, and easily removable shoe for protecting the feet of fat cattle and oxen while being worked or driven long distances upon the road, has been patented by Mr. John M. Goodman, of Mill Creek, Pa. This invention consists principally of two right and left ground shoes or plates, upon which the foot of the animal rests, each plate being provided with upwardly projecting side flanges or fenders, which are inwardly inclined and curved to fit the sides of the hoof, the two parts of the shoe being adapted to be secured upon the foot in any suitable manner.

Mr. David F. Goodyear, of Memphis, Tenn., has patented a can, box, or receptacle for grocers, druggists, and family use, for holding dry comminuted substances, from which small quantities can be conveniently taken without exposing the contents of the can, box, or receptacle to the air, or taking the can or receptacle from the shelf, or removing it from the position in which it is placed. This invention consists principally of a can having a lower or bottom compartment, with a removable sliding scoop, the main compartment of the can being provided with a hopper-shaped bottom opening immediately above the scoop, and adapted to be opened and closed by a slide operated from the outside of the can.

A corroding house for the manufacture of white lead by the old Dutch process has been patented by Mr. William H. Wetherill, of Philadelphia, Pa. These improvements relate to the buildings or houses used in the production of lead carbonates by the old Dutch process of corrosion. These houses have been constructed of wood, and are expensive both in first cost and in maintenance on account of their rapid decay. The invention consists in a permanent structure of stone or brick constructed to facilitate the process.

Mr. Edwin E. Glaskin, of Lower Cape, New Brunswick, Canada, has patented an improvement in the class of fire kindling blocks containing sawdust, resin, and tallow, or some other oleaginous substance. Such blocks have had two prominent defects, which have greatly impaired their utility—that is to say, they have been either too soft, so as to soon lose their form and adhere together, or too brittle and friable, so that they would not retain their shape, but crumble into fragments. These results are due to lack of due proportion of the ingredients and of sufficient pressure when the blocks are being moulded. The process of producing the fire kindling blocks consists in mixing dry sawdust with resin and oil, in the proportions respectively, of five parts, one part, and one-sixteenth of one part, and then placing the mass in suitable moulds and compressing it to the degree of one thousand pounds, or thereabout, to the square inch, for the purpose of compacting it into hard non-friable blocks.

An improved stereotype-plate holder has been patented by Mr. Andrew Overend, of Philadelphia, Pa. This invention consists of a metallic stereotype block having improved means for holding the plates. A graduated gauge block is provided for fixing or determining the margins.

Messrs. William B. Padgett and Willis J. Brock, of Batesville, Ark., have patented a wagon brake, constructed so that it is applied to the vehicles automatically when the team ceases to draw, and the power of the brake can be increased and the brake locked away from the wheels at the will of the driver.

An improved process of treating hide in the manufacture of counter-stiffeners has been patented by Mr. William H. Metcalf, of Brooklyn, N. Y. The object of this invention is to render hide counters waterproof, so that they shall retain their rigidity under all circumstances. The invention consists in a process of treating the hide, which consists in saturating with a solution of benzine, paraffine, and drying oil.

An improved sap spout has been patented by Mr. George J. Record, of Conneaut, Ohio. The invention consists in the combination with the tapering tube of an eccentrically perforated ring flange, whereby additional security is obtained against the accidental detachment of the sap bucket.

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