THE MANUFACTURE OF WALL PAPERS.

[*Continued from first page.*]

ple machine, the essential parts of which are two rollers, an upper one of steel, engraved with the pattern desired—ribs, wavy lines, or reticulations of any kind—and a lower one of hard manila paper. With many patterns this embossing adds very materially to the effect. The making of velvet or "flock" papers, as they are sometimes called, is an interesting process in the manufacture. The illustration shows the application of "flock" to portions of a pattern. These portions are hand-printed with varnish. Then the paper is laid in a tray which has an elastic bottom, and the "flock"—carefully ground and colored shoddy, imported for the purpose—is sifted over it. A boy then skillfully beats a rat-a-tat on the elastic bottom of the tray, which insures the even distribution of the "flock" over the varnished parts to which it is to adhere. "Plain flocks" are made by evenly coating the paper with varnish by drawing it through a machine constructed for the purpose, after which it is laid in a tray. The flock is sifted over it, and it is beaten by a series of long fingers moved by steam. These papers have the appearance and richness of fine cloth, and are much in demand for many purposes of decoration.

The designing department of such an establishment as the one we are visiting is, of course, a center of interest. Here artists are at work, getting their hints from foreign patterns, from tapestries, from stuffs of various kinds, from pottery, from objects of nature, from every possible source, for new designs. It cannot always be told in advance what pattern will strike the public eye and prove fashionable. Nor does it always follow that the most really artistic design will be the most popular. The only thing for the designer to do is to create a wide variety, and so suit all tastes. In this first-class establishment, however, though some of the patterns may not appeal to your taste or to mine, there will be nothing that is really inartistic. Both the designs and the combinations of color will conform to the canons of good taste.

THE MANUFACTURE OF WALL PAPERS.—WINDING IT INTO ROLLS.

Navigation of the Air.

Mr. F. W. Brearey, of the London Aeronautical Society, recently read a paper on aerial navigation, and explained, with the aid of models, the principles upon which attempts had hitherto been made and should in the future be made to effect artificial flight. The conclusion at which the Aeronautical Society had arrived was that flight was merely a mechanical action capable of imitation, that it was unassisted by air cells or other contrivances for effecting levity, that the balloon was incapable of being rendered useful to man as a means of locomotion except in the way of waftage. The tenants of the air, great as was the variety in their size and form, resembled one another in possessing three important capacities, the association and proper adjustment of which constituted the property and power of flight, namely, weight, surface, and force. The weight of a body was due to the action of gravity, and the problem was how so to retard or regulate the action of gravity as to cause its influence to be infinitesimally distributed. Having explained what he wished to show by projecting some peculiarly folded pieces of paper across the theater, he then let fall from a height a bat-shaped model, which soon, taking a curve, shot out in a nearly horizontal direction for a time. Had force, the third great principle of flight, been employed, it would have neutralized the action of gravity so long as it continued, and the flight of the models would have been prolonged. In endeavoring to estimate the proportion of plane surface to weight, so that the one might carry the other by the application of impulsive force, we were not without significant data. So varied were the forms of flight and so widely different the conditions—in some cases a heavy weight being supported by small planes or wings, and in others little weights by extensive surfaces—that, if ever the subject should be mastered, flight would probably be effected in more ways than one. Great weight and small surface, as the observations of M. De Lucy showed, must be accompanied by great velocity, as in the flight of the common sparrow, while with small weight and great surface, as in the butterfly tribe, a reduced velocity only was requisite. If, therefore, man could construct the necessary surface of strength sufficient to insure safety, he could certainly add, by the aid of engine power, sufficient velocity to obtain support from the atmosphere.

The Smoke Nuisance in Cincinnati.

The Cincinnati (Ohio) Board of Aldermen have passed an ordnance making the use of an effective smoke-consumer compulsory upon the part of all manufacturers and others whose business requires the use of a chimney that has become a nuisance to the neighborhood. The matter of selecting a consumer is left entirely with the user, the only requirement of the ordnance being that it shall be effective. Failure to comply with the provisions of the ordnance renders the one thus offending liable to a fine or imprisonment, or both.

It is expected that difficulties will be encountered in the enforcement of the ordnance, and there is a fear that many manufacturers will be driven into buying worthless devices, but there can be no doubt that the city will be ultimately benefited. It is also well established that there will be a gain to those employing effective devices, because of a more economical use of fuel.

The smoke nuisance in Cincinnati has long been of a grievous character, and it has been growing steadily worse with the city's growth. The contrivances in use in cities where bituminous coal is used, both in this and foreign countries, have been carefully examined, and their respective merits reported upon. The Board of Exposition Commissioners has given the subject especial attention, and large premiums have been offered for two successive years for smoke-consumers whose efficiency could be established. None of those tested has been found to be all that was desired, but almost any of them would be a great improvement upon the furnaces now in use

Alderman Oliver mentioned, at a meeting of the board, that while in London the past summer he observed that, though fifty times as much soft coal was being consumed as in Cincinnati, there was more smoke to be seen in one ward of Cincinnati than in the whole city of London. Here is a good subject for study by inventors.

REELING UP WALL PAPER.

RECENT INVENTIONS.

Mr. Robert Seeger, of St. Paul, Minn., has patented an improved vapor burner. The invention consists in a combination with the inlet or retort tube of a burner provided not only with an ordinary jet hole, but with an auxiliary jet hole which admits of a flame impinging upon the inlet tube to heat the latter and vaporize the liquid passing through it. Shields are formed on the inlet tube, and the tip tube is provided with an overhanging disk to retain the heat derived from the auxiliary flame; also the tip tube, which is vertically adjustable, both controls the air inlet and has holes in its side which communicate with an interior chamber in the burner, whereby a return current of gas to the jet hole is formed.

An improvement in wire fences has been patented by Mr. Lorenzo Dow, of Denver, Col. The invention consists in combining sheet metal posts open longitudinally to give elasticity, and provided with tongues, with wire rails, of which one is wrapped around each post, whereb they wires are kept taut.

Mr. George T. Finagin, of Pioche, Nev., has patented an improved monkey wrench. The handle of the wrench, which carries the fixed jaw, is serrated on its front edge, and the sliding jaw also formed with serrations to correspond. Surrounding this movable jaw and the handle is a broad yoke, which is recessed on its side opposite said jaw, to receive within it the fulcrum and pivoted end of a lever. This lever is provided at its forward end with teeth which engage with cogs on a wedge within the yoke and bearing on the handle, so that when the lever is down, in which position it is maintained by a spring, the wedge locks the serrated jaw on the serrated handle, but when the lever is raised the wedge is released, and said jaw left free to move. This forms a very simple and strong construction, and provides for an extended grasp by the wrench.

Mr. Edward A. Smith, of St. Albans, Vt., has patented an improved smoking tube. The invention consists in a smoking tube, preferably of cigar shape, provided internally with a spool having end flanges and draught slots. This spool is placed in the tube to leave a chamber in the rear of it next to the mouthpiece, and a space in front for the charge of tobacco or cartridge containing the same. This smoking tube is clean, safe, and convenient. The smoke, passing through the spool and rear chamber in broad and thin streams, becomes cooled and deposits the oily matter it contains before reaching the mouthpiece, and the device generally seems to meet every requirement that the smoker can desire.

A very ingenious and useful check file, suitable for stores and other mercantile establishments, has been patented by Mr. Herschel V. Sanford, of Milledgeville, Ga. The object of this invention is to promote accuracy in receiving and filing cash checks and other memoranda. The check file has a supporting frame for attaching it to the cashier's desk. In using the device, the salesman passes his money and check to the cashier, and then forces down one of a series of levers bearing his distinguishing mark. This causes a file-covering lever to be removed from one particular file of a series of wire files, so that the cashier cannot err and put the check upon a wrong file. As soon as the cashier has filed the check, he touches a lever which causes the removed lever to again drop into place on or over the file it controls.

An improved tag, which combines facility of manufacture with reduced cost, has been patented by Mr. John Chantrell, of Bridgeport, Conn. The device consists in a combination, with the cord and tag body, of a metallic clip passed through a slot in said body and formed with end tongues which are bent down, upon either or both sides of the clip, to firmly connect the cord with the tag body, the whole forming a very secure as well as cheap tag.

An improved apparatus for facilitating sketching from nature, has been patented by Mr. Richard D. Gallagher, of Omaha, Neb. In this apparatus, a folding canopy, having a curtain to receive the head and upper part of the body of the artist, and provided with a mirror and lens in its top, is used in connection with an adjustable drawing board in the bottom of the canopy frame, the whole being arranged so that the picture of the country back of the artist will be visible upon a sheet on the board, and may be sketched thereon. The mirror is adjustable, and the adjustment of the board to bring it into proper focus with the lens is effected by employing a circular board capable of being turned, and having a screw-like fit in the bottom of the canopy frame. The top of said frame is supported by folding braces, and the entire frame is sustained by folding legs, to certain of which is attached a folding seat, the whole admitting of being packed into a small compass and very convenient of carriage.

An improved gong bell has been patented by Mr. Patrick McMahon, of New York city. The object of this invention is to obtain in gongs a heavy blow of the hammer with a comparative short movement of the operating lever, and also to provide a gong that can be used right or left hand without change of the mechanism.

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Heretofore sketching blocks have been made of a series of detached sheets united at the edges by a strip of paper or muslin, which sheets are successively cut from the block and loosened after the completion of the sketch for the purpose of laying bare the next sheet; but these detached sketches are easily lost and mislaid, and are very apt to become soiled and damaged. Mr. Charles R. Lamb, of New York city, has patented a sketch-block in which the completed sketches need not be entirely detachable to lay bare the next lower sheet.

Messrs. Louis R. Sassinot and Max L. C. Huet, of New Orleans, La., heve patented an improved portable furnace, which is light, strong, and durable. The improvement consists in a portable furnace formed of a cylindrical or square metal box containing a basket for the burning fuel, which basket is provided with a series of hooks, which are hooked on the edge of the exterior vessel.

Mr. Henry F. Childers, of Elsberry, Mo., has patented an improvement in newspaper files, in which bars or rods and locking and pointed holding screws are used to hold the papers in place, one of the locking screws being provided with a nut and forming a pivot for the one bar to turn upon when entering or removing a paper. By this improvement a paper can be filed with little trouble. The loosening of a nut and moving aside of a bar prepare the file for the reception of a paper, which, when placed on the file, is secured by the reverse movements of the nut and bar. The bar or rod also protects the points that secure the paper in its place, so that the points cannot possibly tear holes in or mutilate a paper when it is desired to turn from one paper to another.

Mr. Charles D. Jaques, of Curtisville, Mass., has patented a horse-tail tie. The object of the invention is to provide a device by means of which horses' tails, after they have been braided or twisted and folded, may be easily and quickly secured for holding and protecting them from mud. The invention consists of a divided ring or clasp, which, after the tail of the horse has been braided and folded or twisted and folded, is opened and placed around the tail. This clasp is formed with a slot in its back to receive a binding cord that not only serves to bind the tail securely, but also, by engaging with projections on the face of the clasp, to prevent loss of the clasp, which may if desired be provided with a button catch.

Mr. Henry S. Northrop, of Pittsburg, Pa., has patented an improved metallic roofing shingle. This invention relates to sheet metal shingles which are to be secured to the roofs of buildings with nails or similar fastenings. The shingles are of such form that in laying them the edges may be united to form a water-tight joint without the labor of seaming, and the shingles fastened to the roof in such manner that the nail heads will not be exposed to the weather.

An improved steam cooker has been patented by Mr. Thomas F. Dean, of Boston, Mass. The invention consists in a suitable vessel of cylindrical or other form, provided near its mouth with a V-shaped water ring, one edge of which is united with the upper edge of the vessel, the bottom of this V-shaped ring resting upon a bead projecting from the vessel. This vessel is provided with a conical cover, a sieve, or perforated disk for receiving the articles to be cooked, with a water filling tube, with an exhaust tube for carrying off the odor of the articles being cooked, and with a small pane of glass or mica, that is inserted in the side of the boiler to show the condition of the contents or height of the water.

A new and improved waist of waterproof material, for the purpose of protecting the dress from being soiled or discolored by perspiration, has been patented by Emma R. Turner, of Watseka, Ill.

Messrs. Olof Johnson and Johan J. Sandström, of Algona, Iowa, have patented an improved mould for forming the walls of cisterns or wells. In using this apparatus the hole for the cistern or well is made somewhat larger than the required diameter when finished. The mould is then placed in position in the hole and the cement or plaster is poured around it. When said cement or plaster is sufficiently hard and "set" the mould is removed by either separating the sections or by simply releasing the latches, so that the dome and the cylinder may be rolled or folded.

An improved placer worker and concentrator has been patented by Mr. Robert Barber, of Omaha, Neb. This invention relates to that class of apparatus used in placer mining whereby the ores or tailings are disintegrated, sifted, and washed preparatory to an amalgamating process.

The Durability of Redwood.

Mention was made in a recent issue of this paper of the suitability of redwood for wine casks. Messrs. Fulda Brothers, of San Francisco, tell us that redwood casks have been used in California for many years; indeed, two-thirds of the vast wine crop of that State is fermented and stored in casks and tanks made of this timber. The casks simply require to be slightly steamed and well soaked to remove the color; after that the fermentation of the wine does not extract any color or taste.

The trade in redwood is becoming of considerable importance, a great deal being shipped eastward to Denver, Omaha, Kansas City, and the Atlantic coast as far as Rhode Island.

The wood is specially valuable in situations which occasion rapid decay in other timber. Seventy years ago the Russian Fur Company erected a redwood stockade at Fort Ross, Alaska. The posts were cut down level with the ground some years ago, but the buried parts remain perfectly sound, excepting the thin layer of sapwood near the bark, the alternate soaking and drying of seventy years having no injurious effect upon the heart wood. A piece of one of the posts, with a certified statement of its history, was sent to San Francisco a few weeks ago. The sender, Mr. G. W. Coll, of Fort Ross, states that he knows of shoots from old stumps which have grown to be three or four feet in diameter in forty years, indicating a hopeful restorative power in redwood forests under favorable conditions.

The redwood in demand in California for underground uses is what is known by the lumbermen as "black-heart redwood." It shows a dark color when cut with a knife, the outer layer only becoming "seasoned." "Black heart" is exceedingly heavy—too heavy to float. One who has observed schooner-loading at chutes along the coast tells the *Pacific Rural Press* that a post of this wood which plunges overboard never rises, and a board lingers on the surface a moment and then slowly slides down into the depths. This is the sort which is sought for in foundations, and under brick walls is believed to be imperishable.

Self-Propelling Fire Engines.

At the recent convention of the Massachusetts State Firemen's Convention, held in Springfield, Mass., beginning on the 11th of October, a self-propelling fire engine from Hartford, Conn., was exhibited and greatly astonished many people. The *Fireman's Journal* says:

"It steamed around the City Hall Square twice, the last time in fifty seconds, and then the engine was reversed and run backward. Afterward it ran up grade of half a mile or more at a fast rate, belching smoke and sparks high in the air. . . . The plaudits of the crowd were more than ever called forth when the engine, while coming rapidly down the steepest grade, was stopped suddenly, backed a trifle, and then sent down the hill again."

A Hartford letter to the *Journal*, speaking of this exhibition, is more explicit. It says:

"Her first exhibition of ascension was at Armory Hill, where her performances completely annihilated the doubting Thomases. She carried 110 pounds of steam, and blew off when she topped the hill. The parade lasted a couple of hours, and in the afternoon thousands of people turned out to see her go around Court Square. At a given signal, and with 110 pounds of steam, she went away and made the circuit in handsome style. A horse car impeded her travel slightly at one corner, so she 'continued the march' and made the second circuit in forty-eight seconds—a quarter mile trip with four corners to turn. Then she went up and down a straight stretch in front of City Hall, forward and reversed, and was loudly applauded. Next she went to Harrison avenue, where there is a hill with a grade of seventeen feet to the hundred. Her new-made friends lacked confidence there, but only for a moment. At the word of command up the hill she went, and had a hundred pounds of steam when she landed. Then, by orders, she rolled down to the center of the hill, stopped, went back a few feet, and then to the foot of the hill. Then she reversed, and backed up the hill, came down, went to the head of the street and turned about, speeded through again, turned about, and was dismissed."

This engine is called first-class, having two 7⅜ inch steam and two 4¼ inch water cylinders; 8 inch stroke of pistons. It is designated as No. 7 Blake, and has been in service since March, 1876, in Hartford, where its practical performances have been greatly admired.

There has been much prejudice among firemen against self-propellers, because they have, it is said, to be carefully watched and handled, requiring trained men to operate them. But the success of this sample, together with that of No. 4, in the same city's service, which has smaller steam cylinders, with the same sized pumps, having the same stroke, and which was put in service in June, 1879, seems to demonstrate the entire practicability of this improved system of fire extinguishers.

Fast Trains to the West and South.

The Pennsylvania Railroad Company began, October 31, the experiment of running a special passenger train from this city to Chicago, stopping only at Harrisburg, Pittsburg, and Fort Wayne. The trip is made in twenty-six hours—ten hours less than the best time heretofore.

Arrangements have been made for a rival train on the New York Central, which began running November 5. It leaves New York at eight o'clock in the morning, and is due in Chicago at five minutes past nine the following morning. The distance by the Pennsylvania route is 913 miles; by the New York Central, Lake Shore and Michigan Southern, 979 miles.

The saving of time by the fast trains makes it possible for mails to reach San Francisco thirty-two hours earlier than heretofore, and the intermediate points are correspondingly benefited. Connection with the fast train on the New York Central is made at Albany by a train leaving Boston at 6 P.M., making the time from Boston to Chicago about twenty-seven hours.

A fast mail service has just been established between New York and Jacksonville, Florida. The mail leaves New York at 4:35 A.M., and arrives in Jacksonville the following day at 6:20 P.M. Included in this service is a mail for Atlanta, Ga., which reaches that city at 10:35 A.M. the day after leaving New York.

Correspondence.

Steam Buggies.

To the Editor of the Scientific American:

It seems strange to me that the subject of steam buggies has not received more of the attention of the mechanical public. The advantages of such conveyances would be many and very desirable. It need not or would not cost any more or so much as animal propulsion, when the entire cost of buggy, horse, and harness is considered.

The wear and tear would not exceed the same or equal it when the same entire present rig is considered.

The cost of feed would not be equaled by that of the small quantity of fuel consumed.

The wages of groom or stable boy would be saved, as no attention would be necessary scarcely, except when under way.

The only other requirements would be to keep up the supply of water for the boiler and of liquid fuel and keeping the machinery oiled. The machinery could be painted and nickel-plated, so that nothing more than wiping would be necessary.

The suburban resident, going to or from the city, could run his little steam buggy into his buggy shed, turn off his supply of liquid fuel, and leave it with no dread that his trusted and valuable horse may not be properly fed and cared for, or, when turning down his flame and locking up his engine on making a stop, that on reappearing his horse may have frightened and run away, injuring himself and destroying buggy and harness.

The advantages of a steam buggy over our present horse and buggy are many, and you can no doubt enumerate more of them and clothe them in better language than I have done, as well as point out what inherent disadvantages such a vehicle and mode of propulsion would have or be likely to have.

I (and no doubt many others of your subscribers) would like very much to have you devote an article to this subject, pointing out the essentials or leading points in such a conveyance, and directing the attention of manufacturers of small engines or carriage manufacturers, who could experiment easily and inexpensively in this field to this very promising subject.

It would be necessary for you to discuss the grades and kinds of pavements or roadways that could be overcome by such a vehicle, in what way the power could be most simply generated and efficiently applied to the buggy, etc.

It seems to me that benzine will be found the most suitable fuel, burned in a gas pipe burner pierced with fine holes, as it is now in use for other heating purposes. On turning a cock the benzine burns at all these fine holes and heats the burner, so that the fluid is forced back by the vapor generated, and which, escaping under the consequent pressure, burns like a gas flame and very economically.

Also I think the power should be conveyed to the driving axle or wheels by a suitable chain, to avoid slip and be reliable.

The weight of boiler, engine, and connections, together with the load, should bear on the hind or driving wheels, and one wheel only in front would be necessary to steer or guide the conveyance.

I think an upright tubular boiler, in which steam could be raised and generated quickly, and in large quantity for its size and weight, would be most suitable.

W. C. K.

The mechanical difficulties that have prevented the use of steam on common roads have by this time come to be fully appreciated by practical men, and they do not appear to be formidable or numerous, especially so since liquid fuel, high steam, and small powerful generators have taken practical shape. The adhesion of a pair of driving wheels that sustain a considerable portion of the load has been repeatedly shown to be sufficient for all practicable road grades. The link motion seems to fulfill the requirements of increased power at starting. The noise and smoke tending to frighten horses that are met on the road have been mastered, so that a well-trained horse pays little attention to steam carriages, even when seen for the first time.

It seems, therefore, that this field is an inviting one for the inventor, and that our correspondent's points are well made. The weight of the complete steam buggy in the present state of engineering and carriage building arts need not now remain as so great an objection as formerly. Steel, aluminum bronze, and high steam are capable of greatly reducing the avoirdupois of a horse power in the steam engine.

The Fontaine Locomotive.

To the Editor of the Scientific American:

In recent numbers of your paper are drawings of the Fontaine locomotive and detailed descriptions of it. The inventor claims that there is a great gain in the application of the power by the intervention of what is equivalent to gearing between the engine and the rolling wheels. I do not gainsay this; indeed, I think he is right. But what I wish to suggest is this: that if there is a gain in the case of a locomotive there would be an equal advantage in using the same intervention between the engine and the wheels of a sidewheel steamer.

The wheels of a steamer may be regarded as rolling over a plane from two to four feet below the surface of the water. Therefore the conditions between the engine and wheels are

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