

RECENT INVENTIONS.

A strikingly novel improvement in pillows and bolsters has been patented by Mr. William T. Doremus, of New York city. The object of this invention is to prevent the stuffing of pillows and bolsters from being crowded out of place by pressure applied to parts of the said pillows and bolsters. The invention consists in a pillow or bolster formed of a central roll surrounded by two or more parallel rolls, connected with the said central roll along its sides. This not only prevents the stuffing from being crowded out of place by use, but the pillow can be adjusted for the head to rest upon one of the surrounding rolls or in the space between two rolls. Some of the rolls may be made harder than others, and thus allow the user a harder or softer support for his head.

A patent has been granted to Mrs. Helen M. Snyder, of Pine Bluff, Ark., for an improvement in preparing, painting, and mounting photographic pictures. The object of the invention is to produce colored photographic pictures mounted on plain or curved surfaces, and which shall be durable and superior in appearance. The invention consists in a process which is divisional into four parts, namely: first, saturating the picture by immersion in melted paraffine; second, heating by immersion in hot water to render the picture pliable and transparent; third, attaching the picture to heated glass coated with paraffine; and fourth, rubbing down the picture while kept warm. Photographic pictures thus prepared and treated are superior in transparency and beauty, permanent, of brilliant color, and free from bubbles and discolorations; also, when painted on the face, give better opportunity for artistic work, and may be perfectly sealed to curved surfaces.

An improvement in children's carriages, which is valuable for the safety it secures, has been patented by Mr. Hiram Seaman, of New York city. The object of the invention is to prevent accident from the wheels of the carriage running over obstructions, and also by rolling down inclines when the carriage is unattended. The invention consists in hanging the forward axle of the carriage at its center on a spindle which projects from the forward end of a longitudinal rod that connects at its back end with the rear axle of the carriage. By this construction either front wheel is free to rise in passing over an obstruction without tilting the carriage body, and the forward axle can be turned to anchor the carriage.

Mr. Ambrose A. Hastings, of Newark, N. J., has patented certain useful improvements in lamps. The object of this invention is to improve the light-giving qualities of lamps and secure greater safety in their use. To these and other ends the globe or part globe of the lamp is made of one piece with the oil chamber; the neck of the lamp, which is grooved, and the burner-collar, which is formed with a flange, have combined with them a rubber packing ring and a clamping plate secured by a nut, whereby the burner collar is firmly connected with the lamp; the part globe, which is stationary, is formed with recesses, and has combined with it an upper removal part, and spring buttons applied to both sets of recesses to hold the two parts of the globe together, and whereby the upper part of the globe may be readily removed; also there is combined with the stationary part of the globe and the clamping plate a key for operating the stem of the wick feeder, held disengaged from said stem by a spring, whereby the wick can be adjusted without interfering with the removal of the burner.

Mr. King G. Streeter, of Littleton, N. H., has patented a very neat and durable glove fastener. In this device a tubular shank, having an eye on its outer end, is secured to the glove on one side of the wrist opening. Through this eye is loosely fitted a wire bent in reverse directions at its opposite ends, which latter have knobs that prevent the wire from dropping out of the eye. In using the fastener one end of the wire is passed through the buttonhole in the glove wrist, and said rod or wire then used as a lever to draw the parts of the glove wrist together. The other end of the rod is next passed through the button hole, and the rod afterward adjusted to bring its central portion within the eye. The buttonhole is fitted with an oblong eyelet to prevent the glove wrist from being worn or torn around the buttonhole.

Improvement of Cattle Cars.

In their bid for an improved cattle car the American Humane Association laid down as a requisite the ready adaptation of the new device to old cars. A pioneer in the invention and introduction of cars for transporting cattle humanely writes us that his long study of the problems involved have made it plain to him that old cars cannot be satisfactorily altered to meet the conditions required. He says:

"To successfully feed and water cattle in a railroad car, and give them opportunity for rest, the animals must be separated, each one being placed in a separate stall or compartment.

"The separating partitions must be made flexible, yielding, or elastic, so that the animals cannot be injured by the jerking of the cars, and so that they will yield when the animals lie down.

"They must be made adjustable, so that the width of stalls can be changed to suit animals of different sizes, and they must be made removable, to facilitate the loading and unloading of the cattle, and so that the car body may be cleared for the loading and carrying of ordinary freight on return trips.

"A transverse position of the stalls has been proven to be the most simple, practical, and economical.

"Practical trials have demonstrated that the feeding and drinking troughs may be one and the same, hinged to fold into the wall space of the car when not in use, or covered with a suitable lid when not in use.

"Each car must be independently organized, so that it will be a complete stable within itself—that is, it must have troughs and water tanks and feed bins, to carry at least one day's supply of feed and water for the animals in the car, so that in case of drought or of accident or detention to trains the animals may still be fed and watered.

"The water tank should be in the roof of the car or underneath the floor of the car, out of the way.

"The feed bins should be on the roof of the car, and this, together with the water tank, should be so arranged that the attendant from the top of the car can feed and water the animals, if need be, while the train is in motion."

To meet these conditions satisfactorily, he affirms, new cars must be constructed.

It is possible, however, that some of our inventive readers may think differently. It is certain that a successfully altered car, infringing no devices already patented, would be a desirable property, as well as the means of hastening the much desired reform in the carriage of live stock.

The Bulk of a Ton of Coal.

The newspaper discussions of the tricks of the retail coal trade and the too common practice of delivering short weights have brought into prominence the question of checking the dealers' weights by cubic measurements. The following table for determining by measurement the weight of coal was given the *Herald* by a presumably honest dealer:

Color of Ash.	Name of Coal.	Cubic Feet to 2,000 lb.	Cubic feet to 2,240 lb.
White.....	Honey Brook.....	34.5	38.6
White.....	Hazleton.....	34.8	38.9
White.....	Sugar Loaf.....	34.8	38.9
White.....	Old Company's.....	34.8	38.9
White.....	Spring Mountain.....	34.8	38.9
White.....	Greenwood.....	34.8	38.9
Pink.....	Cross Creek.....	35.1	39.2
Pink.....	Council Ridge.....	35.1	39.2
Pink.....	Buck Mountain.....	35.1	39.2
White.....	Locust Mountain.....	35.5	39.6
White.....	Mahanoy.....	35.5	39.6
Gray and red.....	Shamokin.....	36.9	41.0
Red.....	Lorberry.....	37.3	41.4

Another gives a table by which small consumers can determine by barrel measure the weight of coal delivered. Using for a measure an ordinary flour barrel, the following are said to be average measurements for stove, egg, or grate coal. Furnace coal will measure a trifle less, and nut coal more.

One Ton	Barrels.
Lehigh coal will give.....	8½ @ 8¼
Scranton will give.....	9¼
Lackawanna will give.....	9 @ 9¼
Red ash (varies greatly) will give.....	8¾ @ 10
Reading (hard white ash) will give.....	8½ @ 8¾
Locust Mountain will give.....	8¾
Cumberland will give.....	9

The Utilization of Refuse.

A system of destroying the noxious properties of refuse and converting it into more or less useful matter has now had a fairly extended trial at several towns in England, notably Leeds, Blackburn, Warrington, and Derby, and has been found fairly successful. Leeds has led the way in these improvements, and the municipal authorities are satisfied with the result. The furnaces and other appliances were designed by a Mr. Fryer, of Nottingham, and their first practical trial was made at Burmantofts, about two miles from the Town Hall of Leeds, by the erection of a six-celled destructor and a carbonizer. The destructor consists of six (or more) compartments or cells, built in brick, lined with fire brick, and tied together with iron rods. It occupies a space of 22 feet by 24 feet, and is 12 feet in height. An inclined road leads to a platform over the top, and another incline leads from the level of the firing floor to the adjoining road. Each cell is capable of destroying or carbonizing seven tons of refuse in twenty-four hours, and to secure the greatest economy, the work goes on uninterruptedly. The cells consist of a sloping furnace, with hearth and firegate covered by a reverberatory arch of fire brick, with one opening for the admission of refuse, another for the escape of the gases, and a furnace door for the removal of clinkers. The refuse is emptied on the platform, and shoveled into the cell, falling first on the incline, thence reaching the sloping hearth, whence, when sufficiently dry, it is pushed on to the fire, where, owing to the radiant heat of the firebrick arch, it burns fiercely, the products of combustion being gases, a fine ash, and clinkers. Every other cell is provided with an opening large enough to take in infected bedding, mattresses, etc., as well as diseased meat. The gaseous products of combustion pass through a flue to a boiler, which supplies steam to a horizontal engine driving two mortar mills. In these mills the clinkers are mixed with lime, and ground into an excellent mortar, which sells readily at 5s. a load; while the tin cans and iron are sold for old metal. No fuel of any kind is required, the cinders and other combustibles found in the refuse supplying all that is needed.

During the year 1879 the following is an account of the work performed by the Burmantofts destructor: 14,000 tons of rubbish; 190 beds and mattresses; 264 carcasses of pigs

attacked by some fever; 1 cow, 10 sheep and lambs, 28 quarters and 13 cwt. of bad meat. The staff required for each "shift" comprises a foreman, who acts as engine driver, four furnacemen, and one laborer. Besides the destructor there is also a carbonizer, which is necessarily built in a different manner, as it is used to convert street refuse and vegetable matter into a charcoal, which sells at the rate of 30s a ton. The carbonizer consists of a group of brick cells, each having a separate furnace. It is 26 feet long, 12 feet wide, and 15 feet 6 inches high. The "shoot" is fitted with sloping plates, which project from its sides, and form a kind of spiral cave or ledge, which, near the bottom of the cell, takes the form of a fire block, resting on a wall which divides the contents of the cell from the gases of the fire. The vegetable and other refuse to be converted into charcoal is filled into this chute or well in a solid mass, the eaves or ledges forming on their underside a flue, so that the matter is gradually heated as it slips down the well, until, at the bottom, it is surrounded by nearly red-hot fire brick. The charcoal is withdrawn at the bottom, and is placed in a cooler worked by the steam engine, and each cell is capable of treating 2½ tons of vegetable and street refuse in twenty-four hours. The cost of a complete establishment, with a six-celled destructor, an eight-celled carbonizer, boiler, engine, mortar mills, buildings, etc., is £4,500. No nuisance of any kind is experienced in the vicinity of the depots, and the refuse which might, under other circumstances, be deposited in places where it would become the hotbed of disease, is effectually destroyed or utilized.—*Building News.*

What is the Cause of Plugs of Putty Holes Showing?

As for the above there are a great many answers given. Almost every painter you ask will give you a different reason, while the majority of them will tell you when the plugs show that it is the fault of the body-maker in not putting them in right, and the body-maker will tell you that it is the painter's fault, and so it goes.

We have heard some men tell us the way they overcame this difficulty of keeping the plugs from showing, which is to avoid putting any glue in the hole; glue the edges of the plug only, and as you drive it in, avoid coming in contact with the head of the screw, because if you let it touch the screw the wood is temporarily upset, and as it seeks its natural condition, and being free to expand but one way because of the screw head back, they are bound to come beyond the panel on the outside surface, but if they are not driven back upon the screw head it will be more than likely, instead of showing on the outer surface, to go the other way, which would prevent it from showing.

Be this true or not we cannot tell; but there is one thing certain, they show, and the painter cannot stop this, and therefore should not be to blame. There are very few places where there are plugs put in that they do not show, and how to remedy it, so far as the painter is concerned, will remain a mystery.

In putting nail holes or screw heads, we do not favor the plan of most body-makers putting the brads or screws in as deep as they can get them without going clear through the panel, as it is very hard to get the lead color in these deep holes. But where this is the case, we must do the best we can with the priming and leading. We must get in the holes all we can, and as far as we can, and then take some hard drying putty and fill the holes about half full, and when this is dry fill up the rest of the holes. This putty, we think, is the best, because it dries firmer and harder, and there is not so much danger of shrinkage as there is in putty made of whiting. The first putting in a deep hole cannot dry as quick as the outer part, on account of the air not getting to it so well. If you should putty them full with the one putting, there will invariably be trouble with shrinking or swelling of the putty. Some painters do not use putty for brad holes, but fill them up with paint and filling. Should there be any places that are not entirely filled up after the body is rubbed down they then use the putty. We have no experience in this way of working, but give it as one of the methods described to us.

We have seen brads and screws where they have been put in level with the surface or a little below, after being puttied and painted, and no trace of them could be found, and sometimes remained hid a great deal longer time than some that are put in deep; but of this you cannot convince the woodworker or get him to acknowledge any of the theory presented on this question.

Now we have seen the brad level with the panel and no putty used, and yet show as if it had been puttied, and the putty swollen out. This, we think, is caused by not having thoroughly seasoned wood, and is occasioned by the shrinking of the panel. Some painters imagine the putty is more inclined to show by the wood swelling than by its shrinking, because, as they say, in driving a brad or nail into the wood, the wood being pressed away to make room for the nail, the damp weather will swell the wood around the nail, and thus force the putty out. We have noticed the swellings do not look the same at all times. Sometimes very bad, and again hardly visible to the eye. Whether dampness causes this, we are unable to say, but are inclined to think it has somewhat to do with it.

The only thing we can do is to use thoroughly seasoned lumber, have the woodworker to drive the nail or put the screw in so as to require the least amount of putty, and then for the painter to let the putty as well as the paint have time to dry. We have seen painters putty a job, and a few hours

afterward give a coat of paint, so that he may finish the puttying the next day; now it has been puttied twice before the first has had time to dry, and consequently will show every place where there is a nail or screw, because no precautions have been used against it.—*Carriage Monthly*.

NEW HUSKING GLOVE.

The engraving shows a device for protecting the parts of a glove most exposed to wear in husking. It is applied to a glove of ordinary make, and consists of a coil of wire surrounding each finger and the thumb of the glove. The coils are fastened at the front and back by means of small metal clips riveted to the glove. These clips are sustained by straps fastened to the same rivets, and extending down the back of the glove to a point near the wrist, where they pass out through slits in the glove, and are received by buckles attached to the wrist portion of the glove, so that the straps can be tightened or loosened to sustain more or less of the strain on the fingers and back of the glove.

This invention was lately patented by Mr. J. F. Glidden, of De Kalb, Ill.

Arsenic and Vanadium in Caustic Soda.

Since caustic soda is no longer exclusively made from crude soda and lime, but is also produced directly from red liquor, the product is often contaminated with undue proportions of chlorides, sulphates, carbonates, even nitrites, and sometimes cyanogen compounds. The author has now also met with arsenic and vanadium in caustic soda. The latter impurity may be disregarded, being rare and very minute; but the former is more serious. A sample of this caustic soda, dissolved in dilute sulphuric acid, and the solution tested directly in Marsh's apparatus, yielded a strong arsenic mirror. Assay by means of precipitation with hydrosulphuric acid, etc., yielded 0.16 per cent of arsenic acid. The same sample contained also 0.014 per cent of vanadic acid. The latter may be recognized by passing through a solution of the caustic soda a current of hydrosulphuric acid, when the liquid will finally assume an intense reddish-violet. This is filtered and acidulated with dilute sulphuric acid, when a precipitate will be obtained, which, after being washed, will produce with borax a yellow bead in the outer blow-pipe flame, and a green bead in the inner. On heating the precipitate in the air, a reddish-yellow mass is obtained, which is soluble in ammonia with a yellow color. The latter solution, slightly acidulated with hydrochloric acid, yields a bluish-black precipitate with infusion of nut-galls.—*Dingler's Pol. Jour.*

NOVEL TROTTING SULKY.

The axle of the sulky shown in the cut is curved upward and extends over the horse. The horse travels between the wheels, and the driver's seat is at the summit of the axle.

The shafts, formed of a continuous piece, meet in a curve at the rear of the horse, and are attached to the axle at a suitable height.

To prevent the irregular movements of the horse's body from being transmitted to the vehicle, the inventor attaches springs to the upper and lower side of each shaft and to the harness saddle.

It is claimed that this improved sulky is safer than those of ordinary construction, and enables the horse to make greater speed.

This invention was recently patented by Mr. C. F. Stillman, of Plainfield, N. J.

A Plague Among the Violets.

Another interesting problem for microscopists to solve is the cause of the disease which has broken out among the violets, an account of which was lately given by a leading florist.

When the disease commenced its ravages, some three years ago, violet growing was so far in the hands of a single producer that he had won the titular dignity of the violet king among New York florists. His vast plantation was wrecked in one summer, and he was financially prostrated by the operations of an invisible enemy. The season had been rather dry, and the blight was attributed in this special instance to the substitution of well for brook water in irrigating the plants. Experience soon furnished an emphatic negative to this theory, and showed that the disease was a true blight, like the potato rot, the vine disease, the pear tree blight, and similar destructive agencies that infest the vegetable kingdom. In the violet the disease makes its appearance while the plants are in blossom. The first symptom is the development of nearly circular spots on the petals of the flower, which resemble the spots caused by the concentration of the beams of the sun upon the surfaces of the leaves of plants by the refractive agency of raindrops after a summer shower, the globular and lenticular shape of the drop rendering it equivalent to a minute burning glass, concentrating the rays of the summer sun upon the surface beneath, and completely destroying the delicate vessels thus exposed to intense heat. After this symptom appears, the destruction of the plant is a question of a few hours only;

the leaves become limp and wilted, the stem withers from the root, and the delicate organism is soon transformed, from the minutest rootlet to the tip of the leaf, into a dry and lifeless effigy. The origin and natural history of the violet blight have not yet been investigated.

Poisonous Perfumes.

Various cases of poisoning from the use of perfumes have been reported in recent English journals. In one instance a



GLIDDEN'S HUSKING GLOVE.

little girl had bought some heliotrope perfume at a bazaar, and had applied it on her face. This caused a vesicular eruption, swelling, itching, and in fact erysipelas, which lasted for some time. The scent was made with some of the products of coal tar, and not with the odoriferous principles of plants, thus acquiring its irritating properties.

MECHANICAL INVENTIONS.

Mr. Andrew Hein, of Trenton, Mo., has patented an improved vehicle wheel, by which friction is reduced. The object of this invention is to facilitate the construction and



STILLMAN'S TROTTING SULKY.

easy running of vehicle wheels. The invention consists in providing the hub of the wheel with metallic bands having end cups adapted to contain boxes that carry rollers which bear on the inner circumference of the said cups or hub band extensions. The whole weight of the axle and the load supported by it rest on the rollers which run on the inner faces of the cups, so that the vehicle wheel will move more easily.

A very simple and useful improvement in clocks for night use has been patented by Mr. Ferdinand A. Jaekel, of Cincinnati, Ohio. The object of this invention is the pro-

duction of a clock the dial and hands of which may be projected upon a canvas or similar surface, like the pictures of a magic lantern, so as to be plainly visible at night. The invention consists in a transparent dial behind which is to be arranged a light, and which has a central stud that carries two wheels, arranged one behind the other, the central portions or bodies of which are also transparent, and have delineated on them, respectively, an hour hand and a minute hand. These wheels mesh with cog wheels on the hand arbors of a clock movement, which may be supported by a stand formed by a chamber for holding the light in rear of the transparent dial. By this construction and arrangement, all the advantages of an illuminated clock are obtained at a comparatively small cost.

An improvement in thill couplings, which provides for a ready and convenient coupling and uncoupling of the thill, firmly holds the latter to the axle, and avoids accidental uncoupling, has been patented by Mr. Herbert K. Forbis, of Danville, Ky. In this invention the thill is united to the jaws of the clip by a bolt or pintle which has an angular arm fast on its back end. This arm, when the thill is coupled, rests on the axle, and is held against the same by a spring latch bolt, the nose of which is beveled to permit of said bolt being forced back by the arm when the latter is adjusted to bear on the axle, after which the spring shoots the bolt and locks the arm. This prevents the removal of the pintle except by holding back the latch bolt and moving the arm of the pintle away from the axle.

A very useful invention, in the shape of a square attachment for saw blades, has been patented by Mr. Thomas U. Mekeel, of Poughkeepsie, N. Y. In this invention the heel portion of the blade of a handsaw has attached to it, by a pin passing through the blade, two bars or strips, that is, one on each side of the blade. These bars are formed with their edge or face toward the point of the saw straight and true. They constitute the head of the square or bevel, and can be turned on the pin which attaches them to the blade, either one independently of the other, to bring their faces at any angle to the back edge of the saw. Ordinarily they will be retained at right angles, in which position they may be held by a spring catch. This invention combines two tools that are generally used together, and the attachment, which is inexpensive, can be readily applied without injury to the saw blade. If desired only one pivoted bar may be used.

Mr. William C. Jones, of Coffeeville, Miss., has patented an improved baling press. The press, which is of a very strong and durable construction, offers every facility for baling cotton and other substances with precision and dispatch. It comprises a stout frame having an upper baling box, which is open below for reception of the follower, and has its sides and ends hinged to open downwards for convenience in removing the bale. Said ends fit grooves formed in the sides, and the latter when closed are secured by hooks. The head block fits within rabbets in the frame to allow it to be slid out for convenience in inserting the material to be pressed. The follower is worked up and down by a rotating screw box formed by the hub of a crown wheel, driven by a pinion, on the shaft of which are large and small pulleys for giving a slow pressing movement and quick return action of the follower.

Mr. William W. Wythe, of Ocean Grove, N. J., has patented an improved speed recorder for railway trains. In this improved apparatus the drum, which carries the chart, receives its motion from the axle of a car, by an eccentric on the axle acting against one or other of two pawls attached to levers on opposite sides of the axle, and provided with disks which operate respectively, according to the direction in which the car is moving, upon one or other of two elastic chambers that compress the air within them. These chambers are connected with two other flexible chambers that act upon levers having pawls which engage with a wheel of a train of gear to rotate the drum in either direction. A pencil moves over the ruled paper of the rotating chart in such manner that the diagonal lines produced are in the direction in which the train is moving, thereby obviating confusion in reading the record. This movement of the pencil is effected by a combination with a loose spur wheel of pinions, a spring operated detent, cord, spring drum, and other devices controlling a pencil-carrying rack bar. In this speed recorder compressed air is used not only to produce the movement, but also to indicate the direction of the prime mover.

Mr. James C. Scott, of Manchester, England, has patented an improved dividing engine, which is very ingenious. The invention consists in an arrangement whereby change wheels are dispensed with and an increased accuracy of division is secured. This is accomplished by causing the handle which gives motion to the movable part always to start from the same point, and to finish, after the required number of turns and fractions of a turn, against an adjustable stop on a graduated disk, after which it is turned in the reverse direction back to the starting point, which is a single notch in the disk that a spring-trigger in the handle