Reported Officially for the Scientific American

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING MARCH 1, 1853

BEDSTEAD FASTENINGS—By Asa N. & Alden Case, of Gustavus, Ohio—We do not claim the pawl and ratchet, but we claim the combination of the inclined plane and head, with the pawl and two ratchets for the purpose of fastening bedsteads and tightening the cord, as specified.

SWIVEL NIBBED KEYS FOR DOOR LOCKS—By A C. Harig, of Louisville, Ky.: I am aware that the nib of the key has been fitted into the tubular shank, and so secured therein by a pin fitting into a groove that the burglar's instrument, when applied to the nib, would rotate it without moving the key; also that the key, by a plate attached to the inner lock plate, has been held so that it could not be rotated; but I claim the guard bit attached to the swivel nib in combination with the ordinary bit and shank of the key, constructed and operating as set forth.

ROTARY STEAM ENGINES—By James McKay, of Philadelphia, Pa.; I claim the passages for the exhaust steam, arranged so that they shall cover and encircle the entire periphery of the stationary cylinder, and have their ingress and egress openings so arranged as to cause the exhaust steam, as it escapes, to envelope the whole surface of the cylinder, as described.

In combination with the ordinary valves and parts which form a passage for the steam, to and from the engine, I claim the supplemental exhaust parts and valves, which act in conjunction with the ordinary exhaust valves, whereby a free egress for the exhaust steam is afforded without leaving large open passages for the steam to waste in.

Also, the combination of the sliding pistons, with self-adjusting valves and steam-ways, which admit a portion of the steam that propels the piston, behind its inner end, to act as a spring to press it out into the steam space, whichever way the engine may be turning.

Also mounting or hanging the two cylinders on radial and axial journals, respectively, arranged in a common plane, and at right angles to each other, whereby the two cylinders can accommodate themselves to each other, so as to avoid binding, as set forth.

MACHINE FOR MAKING AXES—By Jonas Simmons of Cohoes, N. Y.: I do not claim the employment of rolling dies for shaping an axe; but I claim the arrangement of the rolling dies with a rest bar to support the iron whilst being rolled, and an eye bar, arranged not only to serve as a mandrel to shape the eye of the axe, but with the rest bar to hold the iron firm during the process of rolling, the rest bar and eye bar being connected with the machinery, to give them appropriate movements, to cause them to co operate with the rolls, in shaping the axe, and these parts, further in combination with a scarfing bar, for the purpose of shaping the blade to receive the steel point in order to complete the axe, substantially as set forth.

SUPPLEMENTAL VALVE IN RECIPROCATING STEAM ENGINES—Chas. A Spring, of Kensington, Pa.: I claim the arrangement of a valve in the lid of the steam chest, or the equivalent thereof, between the cylinder of a steam engine and the boiler, in such manner that it will prevent the reflux of the lead steam, by closing, whenever the pressure of the steam in the engine excludes toat in the boiler, and opening again whenever the pressure in the boiler is greater, substantially as herein set forth.

LOOMS—Wm. Townshend, of Hinsdale, Mass.: I do not claim actuating the pickers by the backward motion of the lay alone, but, first, I claim the cam wheel on the chain shaft, right angle lever, and staples or slide bolts combined and acting as described to bring the picking motion into operation alternately on each side by the backward motion of the lay as specified.

Second, actuating the picker staffs by the lay on its backward motion by means of the vibrating studs, when combined with levers attached to the swords of the lay, and two bent levers, arranged and combined in the manner described.

Third, the two levers are connected together by the adjustable pin so as to give greater or less motion to the selvage warp, when actuated by the cam as described.

Fourth, the apron or straps connected to the bar, and kept to the cloth by proper weight or power, so as to cause sufficient friction to wind the cloth on the cloth beam, when said apron and bar are moved or actuated from the lay or otherwise, so as to produce the effects herein described.

BEDSTEAD FASTENINGS—E. Sumner Taylor, of Cleveland Ohio: I do not claim separately the pawl and ratchet, nor a continuous right and left hand screw, but, I claim the combination of the pawl and ratchet with the spiral grooved sections attached to the tenons arranged and applied in the manner and for the purpose herein specified, namely; the tenons of one side rail and one end rail, being furnished with the plate, having the spiral groove turning to the right and left as described, making a tight joint with the post; the other side and end rails having on their tenons a groove, passing around the tenon at right angles to the axis and fitting the pins, as described, so that by having one side of the tenon on each end flattened to enable it to pass the pin, in order to allow it to enter the groove, when by turning in either direction, less than a complete revolution, the pin fitting into the groove prevents the posts and rails from separating, and by attaching the ratchets to the end of this side rail and one end of the end rail, with the pawls attached to the posts, as specified, by tightening of the cord put on in the manner described, the whole frame of the bedstead is held firmly together by the combined action of all the parts described, one end rail and one side rail remaining stationary, the other end rail and side rail turning as described for the purpose of tightening the cord, both being secured by the pawl and ratchet.

CURRY COMBS—By Wm. Wheeler, of Troy, N. Y.: I claim the application of a ring, loop, or fixture on curry combs, for the insertion of a thumb as a guard and rest therefor, the ring or loop being made in one piece with the back strap, as set forth.

RE-ISSUE.

BRAKES FOR CARS—By Nehemiah Hodge, of North Adams, Mass. Dated Oct. 2, 1849: I am aware that the brakes of a car made with trucks or truck frames have been connected in different ways, so that the brakes of both trucks could be brought down simultaneously upon the wheels by the action of either windlass.

I therefore do not claim any machinery for doing merely this, but when this has been done the machinery applied to the windlasses and brakes of the trucks has not been such as to cause, under all, or nearly all circumstances, while the car is in operation, or running on a railway track, in which there may be curves or deflections from straight lines in the laying of its rails, and when either windlass is put in operation, the like amount of force which may be brought to act upon the brake lever of one truck, to act (through movable rod, or connecting mechanism) upon the brakes of the opposite truck.

I therefore claim my improvement in actuating the brakes of a car having two trucks, that is to say, a combination of four levers and three rods, as applied to the brakes and two windlasses of the car, and operated by either of the windlasses so as to bring down at the same time the brakes of both trucks upon the wheels thereof with the same or practically the same degree of force, and whether when the car is running on the railway the axles of one truck or of the wheels of one truck are thrown or moved out of parallelism with those of the other truck, or the rubbers, or brakes become unequally worn, or of an unequal thickness as above stated.

Extension of a Patent.

On the petition of J. Augustus Roth, of Fairmount, Philadelphia Co., Pa., praying for the extension of a patent granted to him on the 31st of Oct., 1839, for an improvement in furnaces for smelting ores, for seven years from the expiration of said patent, which takes place Oct. 31st, 1853.

It is ordered that the said petition be heard at the Patent Office on Monday, the 3rd of Oct., 1853, at 12 o'clock M.; and all persons are notified to appear and show cause, if any they have, why said petition ought not to be granted.

Persons opposing the extension are required to file in the Patent Office their objections specifically set forth in writing, at least twenty days before the day of hearing; all testimony filed by either party to be used at the said hearing must be taken and transmitted in accordance with the rules of the office, which which will be furnished on application.

S. H. HODGES, Com. of Pat.

Washington, March 2, 1853.

Miscellaneous News of the Week.

The Fresnel apparatus selected for the light-house on Sand Key, Fla., will be a brilliant flash light of the first magnitude, and may be expected to be lighted by the 1st of June.

The Metropolitan Mechanics' Fair, now in progress in the east wing of the Patent Office, has drawn together thousands of persons from the cities and surrounding country.

A line of steamers is to be established between New Bedford and New York.

The large blast pipe at the Crane Iron Works, Catasuqua, Lehigh, Pa., burst on the 24th ult. The works were damaged to an extent of $40,000. Two furnaces turning out forty tons per day, were stopped. It will take three months to repair the damages.—No one was hurt.

The bill for the reduction of the value of our silver coin has been approved by the President, and goes into operation on the 1st of June next.

Experiments have been lately made at Chicago to ascertain the amount of oxygen necessary to support life. Six hundred persons having been placed in a hall in one of the hotels of that city all the doors and windows were closed, at the end of the third half hour it was found unsafe to continue the experiment any longer.

A doctor of Tarbes has left 25,000 francs reward for the discovery of the disease which kills off one-third of the yearly produce of leeches.

Depth of the Ocean.

Captain Denham, Royal Navy, now prosecuting a scientific voyage, recently read a paper at the Royal Society, in which the deepest sounding of the ocean ever made was recorded. On the passage from Rio de Janeiro to the Cape of Good Hope, in 36°, 49', south latitude, and 27°, 6', west longitude, on a calm day, the ocean was ascertained to be 7,706 fathoms deep, or 7 7 geographical miles.

C. L. Chatten, Esq., of Camden, S. C., will please accept our thanks for a barrel of delicious sweet potatoes received from him a few days since. They came in good condition and were excellent specimens of South Carolina growth.

Riddle's Report of the Great Exhibition.

[Continued from page 198.]

Although by artificial cultivation the quantity of humus in a soil may be increased almost to any degree, still, in spite of this, there cannot be the slightest doubt that a soil must gradually lose those of its constituents which are removed in the seeds, roots, and leaves of the plants raised upon it. The fertility of a soil cannot remain unimpaired, unless we replace in it all those substances of which it has been thus deprived. Now this can only be done by manure.

The manures thus used are divided in two classes:—

1. Animal or natural manures.
2. Chemical or artificial manures.

Among the most important of the animal manures are the excrements of animals. The peculiar property of earth in absorbing putrid effluvia, and removing disagreeable smells, appears an indication of nature, to lead us to bury putrid animal substances, of which the excrements and dead carcases of animals are the most numerous and obvious. It would require no length of experience to show that wherever this is done, vegetation is more vigorous. There is, therefore, another motive for burying manure than merely to get rid of a disagreeable substance. From the most ancient times, of which there are any records, the manuring of a field has been an important part of cultivation.

We may now inquire whether the excrements of animals are all of a like nature and power, and whether they in every case administer to the necessities of a plant by an identical mode of action. These points may easily be determined by ascertaining the composition of the animal excrements, because we shall thus learn what substances a soil really receives by their means. According to the common view, the action of solid animal excrements depends on the decaying organic matters which replace the humus, and on the presence of certain compounds of nitrogen, which are supposed to be assimilated by plants, and employed in the production of gluten and other azotized substances. But this view requires further confirmation with respect to the solid excrements of animals, for they contain so small a proportion of nitrogen, that they cannot, possibly, by means of it, exercise any influence upon vegetation.

We may form a tolerably correct idea of the chemical nature of the animal excrements, without further examination by comparing the excrements of a dog with its food. When a dog is fed with flesh and bones, both of which consist in great part of organic substances containing nitrogen, a moist white excrement is produced, which crumbles gradually to a dry powder in the air. This excrement consists of the phosphate of lime of the bones, and contains scarcely 1-100 part of its weight of foreign organic substances. The whole process of nutrition of an animal consists in the progressive extraction of all the nitrogen from the food, so that the quantity of this element found in the excrements must always be less than that contained in the nutriment.

When horse excrement is treated with water, a portion of it, to the amount of three or three and a half per cent., is dissolved, and the water is colored yellow. The solution is found to contain phosphate of magnesia and salts of soda, besides small quantities of organic matters. The portion of the excrement undissolved by the water yields to alcohol a resinous substance, possessing all the characters of gall, which has undergone some change; while the residue possesses the properties of saw dust, from which all soluble matter has been extracted by water, and burns without any smell. One hundred parts of the fresh excrement of a horse, being dried at 212° Fah., leave from 25 to 31 parts of solid substances, and contain accordingly 69 to 75 parts of water. From the dried excrements we obtain variable quantities of salt and earthy matters, according to the nature of the food which has been taken by the animal It results, then, that from 3,600 to 4,000 pounds of fresh horse manure, corresponding to 100 pounds of dry manure, we place on the land from 2,784 to 3,000 pounds of water, and from 730 to 800 pounds of vegetable matter, and also from 100 to 270 pounds of salt and other inorganic substances.

The latter are evidently the substances to which our attention should be directed, for they are the same which formed the component parts of the hay, straw, and oats with which the horse was fed. Their principal constituents are the phosphates of lime and magnesia, carbonate of lime, and silicate of potash; the first three of these preponderating in grains, the latter in hay. Thus, in 1,000 pounds of horse manure, we present to a field the inorganic substances in 6,000 pounds of hay, or 8,300 pounds of oats.

The peculiar action, then, of the solid excrements is limited to their inorganic constituents, which thus restore to a soil that which is removed in the form of roots or grain.—When we treat land with the manure of the cow or sheep, we supply it with silicate of potash and some salts of phosphoric acid; and when enriched with the manure of the horse, we supply it with silicate of potash and phosphate of magnesia. In the straw which has served for a litter, we add a further quantity of silicate of potash and phosphates; which, if the straw be putrefied, are in exactly the same condition in which they were before being assimilated. It is evident, therefore, that the soil of a field will alter but little if we collect and distribute the manure carefully. A certain portion of the phosphate, however, must be lost every year, being removed from the land with grain and cattle; and this portion will accumulate in the neighborhood of large towns. The loss thus suffered must be compensated for in a well managed farm; and this is partly done by allowing the fields to lie in grass. It is considered that, for every 100 acres of corn land, there should be 20 acres of pasture land, which produce annually, on an average, 5,000 pounds of hay. Then, assuming that the ashes of the excrements of the animals fed with this hay amount to nearly seven per cent., 341 pounds of the silicate of lime, and phosphates of magnesia and lime, must be yielded by these excrements, and will, in a certain degree, compensate for the loss which the land had sustained.

We could keep our fields in a constant state of fertility by replacing every year as much as we remove from them in the form of produce; but an increase of fertility, and consequent increase of crop, can only be obtained when we add more to them than we take away. It will be found that of two fields placed under conditions otherwise similar, the one will be most fruitful upon which the plants are enabled to appropriate more easily, and in greater abundance, those contents of the soil which are essential to their growth and development.

It will now be easily understood that, for animal excrements, other substances containing their essential constituents may be substituted. In Flanders, the yearly loss of the necessary richness in the soil is completely restored by covering the fields with ashes of wood or bones, which may or may not have been lixiviated, and of which the greatest part consists of the phosphates of lime and magnesia. The great importance of manuring with ashes has been long known by agriculturists. Now, bone manure possesses a still greater importance in this respect. The primary sources from which the bones of animals are derived are hay, straw, or other substances used as food. If we admit that bones contain 55 per cent. of the phosphates of lime and magnesia, and that hay contains as much of them as wheat straw, it will follow that eight pounds of bones contain as much phosphate of lime as 1,000 pounds of hay or wheat straw, and two pounds of it as much as 1,000 pounds of the grain of wheat or oats. These numbers express pretty nearly the quantity of phosphates, which a soil yields annually on the growth of hay and corn. Now, the manure of an acre of land with 40 pounds of bone dust is sufficient to supply three crops of wheat, clover, turnips, &c., with phosphates. But the form in which they are restored to a soil does not appear to be a matter of indifference; for, the more finely the bones are reduced to powder, and the more intimately they are mixed with the soil, the more easily are they assimilated.