

ANALYSES OF WATERS.

The separate account of the several analyses we omit, as the results are presented in condensed form in the table on the preceding page.

It appears from the foregoing table that the average composition of water is:—

Corroding constituents.....	Grains. 1-93
Sulphate of Lime.....	5-39 grs. } Incrusting
Carbonate of Lime.....	11-66 " } constituents. 17-05
Carbonate of Magnesia.....	
Oxide of Iron and Silica.....	1-10
Organic matter.....	0-49
Incrustation preventives.....	
Total per gallon.....	20-57

ANALYSES OF THE INCRUSTATIONS.

It was considered desirable to analyze a sufficient number of incrustations to determine with certainty their prevailing character. Although the analyses of the waters gave a tolerably good idea of the composition of the deposits, and made it certain that the chief constituents must be carbonate of lime, carbonate of magnesia, and sulphate of lime, a knowledge of the average proportions of these different constituents was essential to the proper selection of remedies, as the carbonates and sulphates require different reagents for their solution. Ten incrustations were therefore selected; six of them as fair average representatives of the usual deposits, and four as exceptional varieties.

The results of the analyses are tabulated as follows:—

No.	Source	Structure	Thickness	Sulphate of Lime	Carbonate of Lime	Basic Magnesia	Oxide of Iron and Aluminium	Water	Organic Matter	Silica	Total
1.	Stationary engine, boiler shop, Syracuse; Hydrant water.....	Compact and crystalline.	3-10ths in.	74-07	14-78	9-19	0-08	1-14	undet.	0-65	99-01
2.	Stationary engine, machine shop, Rochester; Canal water, 10 mos. Well water, 2 mos.....	"	2 inches.	71-37	26-87	26-87	0-92	1-28	undet.	1-76	100-00
3.	Locomotive, No. 211, Preight, both roads, Syracuse.....	"	1-82 in.	62-86	12-62	18-93	0-92	undet.	undet.	2-60	99-23
4.	Locomotive, No. 211, Preight, both roads, Syracuse.....	"	1-4th to 1-3d inch.	53-05	33-05	18-93	42-16	undet.	undet.	4-79	100-00
5.	Locomotive, No. 127, Preight, both roads, Syracuse.....	"	1-22d inch.	46-83	46-83	47-85	47-85	undet.	undet.	5-32	100-00
6.	Locomotive, No. 302, Preight, both roads, Syracuse.....	"	1-4th inch.	20-80	26-93	31-17	1-08	2-44	undet.	7-75	100-17
Average.....				56-49	18-11	19-77	0-69	1-62	undet.	3-81	100-00
7.	Stationary engine, Niagara Falls; River water.....	Brittle and granular.	2 inches.	4-95	86-25	2-71	1-03	0-63	undet.	2-07	97-54
8.	Stationary engine, Townsend's furnace, Albany.....	"	1 1/2 inches.	0-88	93-10	2-84	0-36	0-15	1-96	0-62	100-00
9.	Locomotive, No. 122, Rochester to Buffalo.....	"	.....	4-81	.....	.....	92-27	.....	.....	2-92	100-00
10.	Stationary engine, Dailydt and Greenhugh, Schenectady.....	Powder.	.....	20-07	.....	.....	61-09	.....	.....	8-24	100-00

ANALYSES OF BOILER INCRUSTATIONS.

Sulphate of lime.....	56-49
Carbonate of lime.....	18-11
Basic carbonate of magnesia.....	19-77
Oxide of iron and alumina.....	0-69
Silica.....	3-81
Organic matter.....	undet.
Water.....	1-62
	100-00

With a single exception all the locomotive incrustations were of this character, as were also most of those from stationary boilers. The incrustations from marine boilers belong to this class, consisting almost entirely of sulphate of lime.

2. Loose and friable, not at all crystalline; in thick masses, not in well-defined layers, composed chiefly of carbonate of lime. Only two specimens of this variety were met with, both from stationary boilers. They are evidently deposited from water containing very little sulphate of lime.

3. Consisting of a fine powder or mud. Noticed in only two instances; in one case in a locomotive, in the other in a stationary boiler. In composition the two specimens differ; one consisting chiefly of carbonate of lime and magnesia, the other containing 30 per cent of sulphate of lime.

[To be continued.]

PATENT-OFFICE DECISIONS.

INTERFERENCE BETWEEN THE SEWING MACHINES OF A AND B.

Elisha Foote for the Board.—A's machine is designed to make either the shuttle stitch or the Grover & Baker stitch at pleasure. His improvement consists mostly in devices by which the change is conveniently made from one to the other.

The first claim that is adjudged to interfere is as follows:—

"So constructing a sewing machine that it may be made to sew with two threads forming a shuttle or lock stitch, or a double-loop stitch at the pleasure of the operator, without taking from it any of its parts or adding to it other parts, substantially as described."

It is to be observed that A was not the first to make a machine with these changeable qualities. Several have been patented not only in this country but in England and France. In the machine of Nivelles, a Frenchman, patented here in 1861, it is necessary only to take out the looper and put in the shuttle, or take out the shuttle and put in the looper to make either of these stitches.

In view of these previous devices it is evident that A has invented nothing more than a particular form or mode of doing that which others before him had done in other ways, and he cannot claim anything beyond the scope of his invention, or any device that is not substantially his. He cannot by claiming properties and functions extend his patent so as to embrace other modes not his own.

The claim above stated is intended to secure the property of making a machine changeable "without taking from it any of its parts, or adding to it other parts." So that any other device though entirely different from his, in its whole structure and operation, if it happen to possess such a property, will infringe.

The property itself thus claimed, is not important. Its infringement would depend upon whether a shuttle was left out or put in its place—whether a needle was drawn back out of the way, or removed, and such like circumstances of little or no practical consequence, even Nivelles by simply turning his under needle to one side, instead of taking it out, would become an infringer. The case has no resemblance to those in which some new process has been discovered, or new principle applied, or new and important results attained by means which are but secondary and which can be varied without affecting the substance of the invention.

Two recent decisions by the Supreme Court of the United States apply to this case, and are opposed to such a claim. We refer to *Burr vs. Duryee* (1 Wallace, 553), and *Case vs. Brown* (2 *W.* 320), and in accordance with them the claim must be held to be in admissible and should be disallowed.

The machine of B is designed to make several different kinds of stitches. The object that he seems to have in view was to make a machine that by a few changes and adjustments would make most of the known and some new machine stitches. It is manifest that his application for a patent has been prematurely made, and that some of his devices have not received the test of a working machine.

There is scarcely a thing in common in the devices of the two parties. But B as well as A claims properties and functions, and the interference between them has arisen from these abstract claims.

The remarks we have made in regard to A's first claim apply equally to several of B's and to some more of A's. These should all be disallowed and then there will be left no interference between the parties. Each may be entitled to his specific devices, but neither to the general functions that have created the interference.

The conclusion has rendered it necessary for us to examine the testimony in reference to the priority of invention. The decision of the examiner is reversed.

Iron improved with titanium has been tested for tensile strength, and has stood a strain equal to 47 tons per square inch; and, in puddling furnaces fettered with the ore, the fettering has in some instances lasted a month without renewal, the iron produced being of uniform good quality. These are extreme cases, but indicate the value of the use of the ore.



ISSUED FROM THE UNITED STATES PATENT-OFFICE

FOR THE WEEK ENDING DECEMBER 19, 1865.

Reported Officially for the Scientific American.

Pamphlets containing the Patent Laws and full particulars of the mode of applying for Letters Patent, specifying size of model required and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

51,533.—Stop Valve.—Edward Andrews, Pottsville, Pa.: First, I claim the combination of the plug, A, chamber, C, and valve, B, for the purposes and in the manner set forth.

Second, The combination of the plug, A, chamber, C, valve, B, and gage cock, D, substantially as described.

51,534.—Foot Warmer.—Josias J. Andrews, Clyde, Ill.: First, I claim the combination and arrangement of the exterior casing, A, the plates, R and T, the partitions, P and L, and the apertures, D b and e, substantially as and for the purposes shown and set forth.

Second, In combination with the above I claim the employment of the oil cup, B, and wick-tube, C, arranged and operating as and for the purposes specified.

Third, I claim the combination of the casing, A, the plates, R and T, the partitions, F I, apertures, D, lamp, B C, perforated plate, E, and cone, G, all arranged and operating in the manner and for the purpose herein specified and shown.

51,535.—Car Coupling.—Theophilus Arndt, Mountjoy, Pa.: I claim the link or shackle, C, provided with hooks, b at its ends, in combination with the sliding rod, D, and the spring, H, arranged within the draw head, substantially as and for the purpose set forth.

I further claim the elastic or yielding plates, a, in the draw head when used in combination with the sliding rod, D, and spring, H, substantially as and for the purpose set forth.

[This invention relates to a car coupling of that class termed self-acting, and it consists in the use of a hook link or shackle, in connection with a sliding bolt and a draw head divided with yielding sides, whereby the link or shackle of the draw head of one car is readily allowed to connect itself with the draw head of an adjoining car, and the link or shackle readily disconnected when necessary.]

51,536.—Gang Plow.—Carroll Atwood, Lebanon, Ill.: I claim the metal bars, H and I, in connection with the clamp, J, all arranged substantially as shown, to admit of the lateral adjustment of the plow beams with the sills, K, for the purpose set forth.

51,537.—Quartz Crusher.—A. C. Austin, San Francisco, Cal.: I claim the manner of causing the jaws, K, to approach each other by being drawn down inclined planes for the purposes described and in the manner substantially as set forth.

51,538.—Bolt Screwing Machine.—Avery Babbett, Auburn, N. Y.: I claim, First, The sliding ring, D, for holding the dies, when used as, and for the purpose set forth.

Second, The inclined planes above described, when used in the manner and for the purpose herein specified.

51,539.—Dough Roller.—D. B. Baker, Rollersville, Ohio: I claim the device for rolling bread and other doughs, herein described, the same consisting of a traveling platform in combination with a roller or rollers, hung in adjustable bearings above the same, arranged and operating together substantially in the manner described.

I also claim the traveling platform, supported at each end upon rollers, g, and operated by a pinion and rack gear, in combination with the roller, o, hung in adjustable bearings of the standards, a, a, arranged together substantially as and for the purpose specified.

51,540.—Corn Horse for Stacking Corn.—Loring S. Barker, Pittsford, Mich.: I claim a folding corn horse, with a saddle or its equivalent (in place of the long pin, a, Fig. 6), and with movable legs for the purpose herein described.

51,541.—Treadle Motion for Sewing Machines.—Her- rick M. Barnes, Easthampton, Mass.: I claim the combination of the wheel, D, arms, A B, rods, h k, and a treadle or other motive power, when arranged and operating in the manner and for the purpose herein set forth.

51,542.—Knife Polisher.—Joseph W. Battelle, Worcester, Mass.: I claim an improved kolfe polisher, in which all the parts are constructed, arranged and combined in relation to each other, as shown and described.

51,543.—Gang Plow.—J. F. and W. L. Black, Lancaster, Ill.: First, We claim the connecting of one of the wheels, C, to its axle, A, by means of the bar, E, fitted in a socket, D, and connected by a chain, G, to a lever, H, in the manner substantially as described, to admit of the vertical adjustment of the plow, for the purpose specified.

Second, The adjusting of the draught pole, M, laterally through the medium of the screw, g, plate, h, and nut, i, substantially as and for the purpose set forth.

[This is seemingly a simple and excellent implement for plowing with a gang of plows.]

51,544.—Device for Controlling the Spool-thread in Sewing Machines.—H. E. Bodwell, Jr., Milburn, N. J.: I claim the combination of the threaded sleeve, C, having a shoulder, c', nut, D, and perforated plates, B B', when constructed and employed as and for the purposes specified.

[The object of this invention is to prevent the thread of spools set on sewing machines from springing over the ends of the spools, and so becoming entangled and soiled, and it consists in providing supplementary flanges on the ends of spools, or in making their flanges of an increased diameter, so that their peripheries shall extend beyond the circumference of the body of thread, whereby, when the thread is unwound, its coil shall not be allowed to spring over the ends of the spool.]

51,545.—Carpet Stretcher.—John Boyd, Lowell, Mass.: I claim the combination of the pieces, H B, with the hinged screw, D D, and the set screws, b b, arranged and operating substantially as described and represented.

[This invention consists in so constructing the handle of a carpet stretcher that it can easily be extended in length to suit different persons, and when not in use can be closed and folded up, making a