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**Contents:**

(Illustrations are indicated by an asterisk.)



## THE "LORD CLYDE"—ENGLISH IRON-CLADS.

The English Government has lately completed another iron-clad vessel of large dimensions both in hull and engine.

The vessel is of the class adopted by the English, being high out of water, and presenting a fair mark in hull and spars for artillery practice.

The hull is 280 feet long, 59 feet beam and 21 feet deep, and is 4,067 tuns burthen and finely modeled. The engines are the largest afloat; they are of the double piston-rod pattern, back-acting, with cylinders 116 inches in diameter and 4 feet stroke. The cylinders weigh nearly 30 tuns, and have slide valves working *vertically* (?) on the outside, by link motion; also gridiron expansion valve worked directly from the main shaft by eccentrics. The boilers are 9 in number and have brass tubes 2½ inches in diameter, with an aggregate heating surface of 19,000 square feet, and 700 feet of grate surface. The chimneys are 7 ft. 6 in. in diameter. There are surface condensers on Hall's plan; that is to say, the tubes are packed, top and bottom, with glands and stuffing-boxes, to allow them to expand without leaking. Two centrifugal pumps supply the water for circulation; these are worked by independent or donkey engines. Steam is used superheated in the main engines. Auxiliary engines are also supplied to work the main engines at starting or in maneuvering. The screw is four-bladed, 23 feet in diameter, and 22 feet 6 inches pitch.

At the trial of these massive engines on the measured mile, with steam at——pounds, and vacuum at 28 inches, the speed obtained was 13½ knots per hour. The speed of the screw was 12·825 knots per hour, showing a negative slip of three-fourths of a knot. The draft of water was 22 feet forward, and 24 feet aft—a condition highly unfavorable to speed. It is not stated by our cotemporary, the London *Engineer*, from which we derive these particulars, what pressure of steam is carried, or the grade of expansion.

The *Lord Clyde* is the fastest vessel in the English navy.

## THE DIFFERENCE BETWEEN DISTILLED AND FERMENTED LIQUORS.

In all ardent spirits the alcohol is formed from sugar by fermentation; in distilled liquors a portion of the water has been separated by distillation; the difference, therefore, is, that distilled liquors contain more alcohol in proportion to the water than merely fermented liquors.

Brandy is obtained by the fermentation of the sugar of various fruits—fructose; rum by the fermentation of cane sugar; and whisky by the fermentation of glucose, the sugar which is produced from the starch of various grains and roots. In all these cases a fermented liquor is first produced, and then a portion of the water is separated by distillation.

The process of distillation depends on the difference in the volatility of alcohol and water. Alcohol boils at 173° and water at 212°; by subjecting a mixture of the two, therefore, to a temperature of 173°, the alcohol is boiled away, and the water is left behind. The vessel is closed by an air-tight cover, from which a long pipe, bent in spiral form, is wound through a tub of cold water, and thus the vapor of alcohol is condensed to the liquid state again, when it can be caught and barreled. Alcohol has, however, so strong affinity for water, that it carries over considerable, and the separation by distillation is far from perfect; the strongest liquors obtained in this way do not contain more than 54 per cent of alcohol. A further portion of the water is separated by passing the liquor through quicklime, or other substance for which water has a stronger affinity than it has for alcohol.

Brandy and whisky both make their first appearance in fermented liquors—brandy in wine, cider, or perry; and whisky in ale or beer. The difference in the flavor of these liquors is due to the presence, in very minute quantities, of certain essential oils and ethers. From the extremely small quantities of these oils, it might be supposed that there could be no difference between brandy and whisky in their action on the system; but this is not a safe inference. As the action is upon the nerves, it is impossible to say how small a quantity may produce the most important effects.

## FIVE HUNDRED DOLLARS REWARD FOR A VARNISH.

In our advertising columns will be found an offer, by the Aerial Navigation Company, of a reward of $500 for a baloon varnish that will fill certain conditions, one of these conditions being, that it shall prevent endosmosis and exosmosis. As these terms may not be familiar to all our readers, let us briefly explain them.

If a piece of bladder is tied over the lower end of a long glass tube, and the tube, partly filled with alcohol, has its lower end inserted in a vessel of water, the water will pass inward through the bladder more rapidly than the alcohol will pass outward, and the liquid in the tube will consequently rise upward until it overflows at the top. Dutrochet, who first examined this phenomenon, called the flowing inward of the liquid endosmosis, from the Greek *endon* inward, and *osmos* impulse. At the same time a small portion of alcohol passes outward, and this movement he called exosmosis. At the present time the flow in both directions is designated by the general term osmose.

The explanation of the experiment described is, that the bladder absorbs water more readily than it does alcohol; as the water reaches the upper surface of the bladder it mixes with the alcohol, in accordance with the general law of liquid diffusion, giving place for the absorption of a further supply of water. On the other hand, the flow of alcohol in the opposite direction is in proportion to its affinity for the substance of the bladder.

In almost every case in which osmotic action occurs, a chemical change is wrought in the material of the bladder or other membrane employed; and if a partition of gypsum, clay, compressed charcoal, or other porous substance that is not acted on by the liquids, is substituted for the organic membrane, no osmotic action takes place.

When balloons are filled with hydrogen gas, or with carbureted hydrogen, and surrounded by the mixture of oxygen and nitrogen that constitutes our atmosphere, the gas within the balloon passes outward through the oiled silk or other material of the balloon, and the atmospheric air passes inward. This transference is called by some osmose, but we suppose the term not to be applicable in this case. If the interposing membrane exerts no absorbent action on the gases, but if they merely pass mechanically through its pores, the action would not be called osmotic.

What the advertisers want, however, is a material that will retain the light gas within the baloon, and will exclude the atmospheric air.

## PROFESSOR CHANDLER ON BOILER INCRUSTATIONS.

We noticed last week a report on boiler incrustations made to the President and Directors of the New York Central Railroad, by Charles F. Chandler, Ph. D., Professor of Analytical and Applied Chemistry in the School of Mines, Columbia College, New York, and, in accordance with our announcement, we now proceed to lay the principal portion of this report before our readers.

### PLAN OF THE INVESTIGATIONS.

"The following investigations were undertaken with the object of diminishing, as far as possible, the bad effects of the impure water supplied to locomotives on the section of the New York Central Railroad between Syracuse and Rochester. The large quantities of sulphate of lime and of the carbonates of lime and magnesia which these waters contain give rise to incrustations, varying from a loose mud to a hard crystalline scale. These deposits form a non-conducting lining to the boiler, involving loss of heat and consequent waste of fuel, and at the same time cause an over-heating of the metal, sometimes resulting in destructive explosions. The quantity of incrustation produced varies greatly. As much as thirteen hundred pounds have been taken from a boiler at one time, though this is an extreme case. The most serious injury from these waters is suffered, however, by the lower plates of the boilers, which are rapidly corroded in deep furrows and pits, and are sometimes even completely perforated, particularly along joints and about braces.

"In planning these investigations it was considered desirable—first, to subject the waters to careful analyses; second, to analyze the incrustations; third, to examine the various articles and methods in use for preventing incrustations and corrosion; fifth, to institute a series of experiments on the boilers themselves."

COMPOSITION OF WATERS NOW SUPPLIED TO LOCOMOTIVES.

| Stations. | CORRODING CONSTITUENTS. Ch. of Potassium | Ch. Sodium | Ch. of Magnesium | Sul. Potassa | Sul. Soda | Sum. | INCRUSTING CONSTITUENTS. Sul. of Lime | Car. M'gnesia | Car. of Lime | Oxide of Iron | Silica | Sum. | INCRUSTAT'N PREVENTIVES. Car. Potassa | Car. of Soda | Org. Matter | Total. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Syracuse, Onondaga Creek | 0·32 | 2·14 | ... | ... | 0·98 | 3·44 | 10·68 | 4·31 | 7·25 | 0·06 | 0·28 | 22·58 | .... | .... | 0·34 | 26·36 |
| Syracuse, Hydrant | 0·24 | ... | ... | ... | 0·07 | 0·38 | 16·71 | 3·69 | 6·84 | 0·06 | 0·25 | 27·55 | .... | .... | trace | 27·93 |
| Warner's | 1·91 | ... | ... | ... | ... | 3·72 | ... | 3·63 | 7·17 | 0·11 | 1·37 | 11·28 | 2·17 | 6·09 | 0·37 | 23·63 |
| Memphis | 0·29 | 0·26 | ... | ... | 0·36 | 0·91 | 10·12 | 4·41 | 6·75 | 0·09 | 0·31 | 21·68 | .... | .... | 0·18 | 22·77 |
| Jordan | 0·33 | 0·76 | ... | ... | 0·62 | 1·71 | 4·02 | 2·30 | 5·03 | 0·03 | 0·09 | 11·47 | .... | .... | 0·06 | 13·24 |
| Port Byron | 0·39 | ... | ... | 0·32 | 0·37 | 1·08 | 0·01 | 1·57 | 5·43 | trace | 0·16 | 7·17 | .... | .... | 1·28 | 9·53 |
| Savannah | 0·59 | ... | ... | 0·07 | 0·69 | 1·35 | ... | 5·94 | 11·93 | 0·10 | 0·56 | 17·63 | .... | .... | 1·52 | 20·50 |
| Clyde: Spring | 0·14 | ... | ... | 0·18 | 0·45 | 0·77 | ... | 4·40 | 9·66 | trace | 0·58 | 14·64 | .... | .... | 2·16 | 17·58 |
| Clyde River | 0·52 | ... | ... | ... | 1·21 | 2·10 | 4·40 | 3·03 | 6·07 | trace | 0·80 | 14·30 | .... | .... | 1·88 | 18·28 |
| Lyons | 0·29 | 0·37 | ... | 0·03 | 0·71 | 1·03 | 3·17 | 3·34 | 4·38 | trace | 0·18 | 11·07 | .... | .... | 1·00 | 13·10 |
| Newark | 0·47 | 0·38 | ... | ... | 0·32 | 1·17 | 3·19 | 6·01 | 9·15 | 0·08 | 0·30 | 18·73 | .... | .... | 2·16 | 22·07 |
| Palmyra | 0·76 | ... | ... | ... | 0·67 | 1·43 | 18·81 | 5·98 | 8·41 | 0·02 | 0·17 | 33·39 | .... | .... | 1·46 | 37·28 |
| Macedon Swamp | 0·14 | ... | ... | ... | 0·39 | 0·71 | 0·14 | 1·03 | 7·68 | trace | 0·04 | 10·53 | .... | .... | 1·14 | 12·04 |
| Fairport | 0·34 | 0·69 | 2·16 | ... | 0·18 | 3·19 | 8·72 | 1·03 | 5·07 | 0·10 | 0·20 | 15·06 | .... | .... | 1·14 | 19·39 |
| Rochester, North street well | 0·96 | 4·82 | 1·53 | ... | ... | 7·31 | 16·92 | 8·88 | 16·92 | 0·10 | 0·90 | 33·26 | .... | .... | 1·69 | 42·17 |
| Rochester, Genesee River | 0·28 | 0·05 | ... | ... | ... | 1·18 | 3·16 | 4·64 | 2·06 | 0·09 | 0·90 | 10·85 | .... | .... | 1·64 | 13·67 |
| Rochester, Canal, Round House | 0·33 | 0·17 | ... | ... | 0·61 | 1·11 | 2·16 | 4·60 | 1·81 | 0·05 | 0·18 | 8·80 | .... | .... | 1·24 | 11·15 |
| Average | 0·49 | 0·57 | 0·22 | 0·1 6 | 0·49 | 1·93 | 5·39 | 7·47 | 3·75 | 0·05 | 0·39 | 17·05 | 0·13 | 0·36 | 1·10 | 20·57 |

The numbers represent grains per gallon of 231 cubic inches.

### 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:—

| | | | Grains. |
|---|---|---|---|
| Corroding constituents | | | 1·93 |
| Sulphate of Lime | 5·39 grs. | Incrusting constituents. | 17·05 |
| Carbonate of Lime | | | |
| Carbonate of Magnesia. | 11·66 " | | |
| Oxide of Iron and Silica | | | |
| Organic matter | | | 1·10 |
| Incrustation preventives | | | 0·49 |
| 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:—

ANALYSES OF BOILER INCRUSTATIONS.

| | Source. | Structure. | Thickness. | Sulphate of Lime. | Carbonate of Lime. | Basic Carbonate of Magnesia. | Oxide of Iron and Aluminum | Water. | Organic Matter. | Silica. | Total. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | Stationary engine, boiler shop. Syracuse: Hydrant water | Compact and crystaline. | 3-16ths in. | 74·07 | 14·78 | 9·19 | 0·08 | 1·14 | undet. | 0·65 | 99·91 | |
| 2. | Stationary engine, machine shop. Rochester: Canal water, 10 mos. Well water, 2 mos. | " | 2 inches. | 71·37 | .... | .... | 26·87 | .... | .... | 1·76 | 100·00 | |
| 3. | Locomotive, No. 211. Freight, both roads. Syracuse | " | 1-32d inch. 1-4th to 1-3d inch. | 62·86 53·05 | 12 62 .... | 18·95 .... | 0·92 42·16 | .... 1·28 | undet. .... | 2·60 4·79 | 99·23 100·00 | |
| 4. | Locomotive: surrounding a brace | " | | | | | | | | | | |
| 5. | Locomotive, No. 127. Freight, both roads. Syracuse | " | 1-32d inch. | 46·83 | .... | .... | 47·85 | .... | .... | 5·32 | 100·00 | |
| 6. | Locomotive, No. 202. Freight, both roads. Syracuse | " | 1-4th inch. | 30·80 | 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 | | Fair average representatives of the usual incrustations. |
| 7. | Stationary engine, Niagara Falls: River water | Friable 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 | " | 1¼ 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 | .... | .... | .... | .... | .... | 2·92 | 100·00 | |
| 10. | Stationary engine. Bushydt and Greenleigh, Schenectady | Powder. | " | 30·07 | .... | .... | 61·09 | .... | .... | 8·24 | 100·00 | Exceptional incrustations, the only ones of their kind. |

The incrustations appear to be of three kinds:—

1. Hard, compact, and crystalline, formed of numerous thin layers, and consisting of from 30 to 75 per cent of sulphate of lime, associated with carbonate of lime, basic carbonate of magnesia ($2MgO, CO_2$) etc.

The average composition of the six specimens analyzed was—

| | |
|---|---|
| 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.

### INTERFERRENCE 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 stich 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 stich, or a double-loop stich 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 Nivelle, 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 Nivelle 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 *ib.* 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.

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IRON improved with titanium has been tested for tensile strength, and has stood a strain equal to 47 tuns per square inch; and, in puddling furnaces fettled with the ore, the fettling 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, F and I, 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 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.—Caroll Atwood, Lebanon, Ill.:

I claim the metal bars, H and I 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, F F, 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 plattorm 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.—Herrick 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 knife 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 plows, 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 side, 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