

and ultra violet rays to strike it. Far beyond the visible violet rays, the substance fluoresced with green light. Here, then, we have a method of rendering that region of actinic rays visible and amenable to experiment.

In spectrum analysis, the metals are recognized by bright lines in different localities of the spectrum. Silver, for example, gives two bright lines in the green. Stokes discovered that it as well as other metals gave lines in the actinic spectrum also. The lecturer exhibited these lines on the screen by burning bits of different metals in the electric arch, when they came out beautifully in the fluorescent spectrum of the invisible rays. It seems to us that, by means of this extension of the spectrum, the utility of that wonderful instrument, the spectroscope, has been extraordinarily increased.

It follows from these experiments that light rich in short waves, such as that produced by the electric discharge in rarefied nitrogen, is the most effective for showing the beauties of fluorescent substances. The lecturer had accordingly arranged a number of Geissler tubes, containing pure nitrogen highly rarefied, through which he passed the electric discharge of the enormous Ruhmkorff coil, represented in the SCIENTIFIC AMERICAN of December 28, 1872.

Sulphate of quinine solution, illuminated by these tubes, glowed with a milky blue light, although it is perfectly transparent.

Æsculin, a substance contained in the decoction of horse chestnut bark, produces the same effect. By means of this property, the one twenty-millionth part of æsculin can be detected in water.

An extract of the seeds of stramonium glows with a green light.

Morin, a substance extracted from Brazil wood, lights up with a brilliant green.

"Canary" glass, which contains uranium, fluoresces with a splendid green color.

Many other substances were exhibited with beautiful effect by Professor Morton; the most remarkable, however, were two recently discovered by himself, and which he named thallene and petrollucene. To these was due the striking beauty of the flower exhibited in the early part of the lecture. Messrs. Hawkins and Wale, instrument makers in the Stevens Institute building, have made a very neat portable arrangement for showing these substances. A small folding pocket of blue glass contains a design painted with fluorescing substances. This can be carried in one's pocket and exhibited by daylight.

In order to study the properties of fluorescent bodies, the lecturer had examined by means of a spectroscope the light emitted by a great number of fluorescent substances, which were illuminated by a beam of sunlight deprived of all but the blue and violet light by passing through a solution of ammonio-sulphate of copper. He found that æsculin, quinine, morin, and many other bodies gave continuous spectra, while those of the salts of uranium, thallene, petrollucene, etc., were characterized by bands of great regularity but differing with different substances and resembling their absorption spectra. Curious connections have been found between the latter and the luminous bands, of fluorescence in certain cases, as, for instance, with thallene and petrollucene, as had indeed been already observed in other substances by Stokes and Hagenbach?

What, then, is fluorescence?

In answer to this question, the lecturer projected on a screen the image of a little pith ball suspended by a thread so as just to touch a tuning fork. Then taking another similar tuning fork, he went off to some distance and sounded it. The vibrations from this fork traveled through the air, set the other one in motion, and this motion was communicated, though with far inferior rapidity, to the pith ball, whose swinging to and fro was plainly visible to the audience. In a similar manner the vibrations of light might be conveyed by the luminiferous ether to a fluorescent body, whose particles would set in motion, though with diminished velocity, the ether filling up the interstices between them, thus giving rise to a color of lower order.

Railroads and Bridges.

During a recent lecture at Cooper Union, in this city, by Professor Plimpton, of the Stevens Institute, he described the wonderful influence railroad power had upon commerce and all descriptions of industry in this country, and stated that the United States had more miles of railroad than Great Britain, France, Spain, Italy, Switzerland, United Germany, Austria, Turkey, and Russia combined. The London *Engineer* recently asserted that in the world there were 130,000 miles of railroad, and America had 60,000, but the fact was that this country had no less than 68,000 miles, and this year would have 76,000 miles of railroad. The lecturer described the formation and materials composing the four great descriptions of bridges—the arch, truss, suspension and tubular, their relations to each other, the amount of pressure they could bear, and what strain they should be expected to resist, by comparison with the work they would be required to perform.

The Hydra.

This is an instrument for obtaining samples of the ocean bottom, the invention of a blacksmith on board of the British ship Hydra. The Challenger, the English exploring ship now on a voyage of discovery round the world, is supplied with quite a number of these instruments. The machine consists of a hollow metal rod, fitted with valves, and on which are rove cast iron weights of 100 pounds each, one for every 1,000 fathoms of estimated depth. The whole is so adjusted that the weights detach themselves on striking the

bottom, and only the rod, with the soil within it, is recovered. When the Challenger started on her voyage three months ago, she had thirty of these weights, which will probably have to be replenished before she has completed her work.

A much better instrument for deep sea sounding is that invented by Sidney E. and G. L. Morse, brother and nephew of the late Professor S. F. B. Morse, patented here in 1866. This machine consists of a rod containing a series of hollow glass balls, by means whereof, the number of balls being increased or diminished, any desired degree of buoyancy may be imported to the instrument. Bags of sand or stones are attached by which the rod is carried down and the lower end made to scoop up a portion of the ocean bottom. The sand bags become detached when the rod strikes bottom, and the rod then rises with amazing velocity to the surface, shooting up into the air as if discharged from a gun. This instrument is also provided with glass pressure chambers, and mercury, so arranged that the pressure of the water will drive the mercury from one chamber to the other. The depth of the ocean bottom will be indicated by the quantity of mercury so exchanged. The register of depth is very exact. This sounding instrument requires no line, and is, we believe, the first of the kind ever invented.

DECISIONS OF THE COURTS.

United States Circuit Court.—Nineteenth District, California.

TRADE-MARK INFRINGEMENT.—HARDY AND MOORMAN vs. CUTTER et al.

This action is brought to perpetually enjoin the defendants from infringing the trademark of the plaintiffs, and for damages. The substantial allegations of the bill are that one John H. Cutter, in his lifetime, was the manufacturer and vendor of an article of whisky known as "Cutter Whisky," that it was a superior article, and acquired great reputation throughout the United States; that said Cutter adopted and used certain trademarks to designate said article, and which are set out in the complaint; that in July, 1869, said Cutter sold and transferred to the plaintiffs his stock of whiskeys, and also the exclusive right to use his said name, trade mark and brands.

Exhibit "B" of the complaint is a copy of the wrapper used by plaintiffs on their bottles containing Bourbon whisky; the other, "C," is used on the bottles containing "Rye" whisky; and, save in this particular, the wrappers are precisely alike. It will therefore examine "B" only. This wrapper or label is of a light brown color, and about six by twelve inches in its dimensions. Near the top are printed in large black letters the words, "J. H. Cutter, Old Bourbon Whisky." Immediately under this lettering is the representation of a barrel, on the head of which are printed the words "J. H. Cutter, Old Bourbon." Under the word "Bourbon" (as a representation of the British crown, and under that the words "A. F. Hotaling & Co., Sole Agents for the Pacific Coast." Underneath the barrel, in black shaded letters, are the words "C. P. Moorman & Co., Distillers, Louisville, Kentucky." Beneath all this are eight additional lines of printed matter, in type of various sizes, and occupying a space of about three by five inches. The whole is surrounded by an elaborate border, also in black.

Copies of the labels or trademarks alleged to have been employed by defendants, and which it is claimed are a simulation of the plaintiffs' trademark and labels, are also annexed to the complaint, marked Exhibits "D" and "E," and these Exhibits "D" and "E" are the only trademarks that the defendants are alleged to have used or employed in and about their business.

I will first examine "D." This label is about two inches shorter and one inch narrower than Exhibit "B"; indeed, the difference in the dimensions of the two labels is so great as to be detected at a glance. In color, instead of being a light brown, it is a bright yellow. Near the top are printed the words and letters "J. F. Cutter, Extra," and immediately under the word "Extra" is a yellow star within a shield. On the left of the shield is the word "Trade," and on the right the word "Mark," and under the shield the words "Old Bourbon." The label is also provided with other devices, letters, words, figures, or emblems. The whole is surrounded by a black border, much less elaborate than that surrounding Exhibit B, and only about half its width. This Exhibit D is used by defendants on their boxes, barrels, and casks.

Next in order is Exhibit "E." This is used by defendants on their bottles. In size it is about three by four inches. In color it is pure white, surrounded by a plain and very narrow border of black. The device and lettering are precisely like those contained in Exhibit D, except that the star within the shield is white upon a field of gray. Underneath, and within a separate border, are these words: "Notice.—This whisky has been distilled from selected grain, and is bottled expressly for medicinal and family use. None genuine without the fac-simile signature of the subscriber covering the cork." J. F. Cutter, of the late name of H. Cutter, of California.

To say that either D or E is a simulation of B, to my mind, the utterance of an absurdity that the senses of the most ordinary observer would at once rebuke. To say that a star within a shield is a simulation of the British crown is no more absurd than to contend that the American eagle is an imitation of the British lion, or that the crescent of the Turk is a simulation of the cross of the Christian. The only words used by the plaintiffs, and which have been adopted by defendants, are "Cutter" and "Old Bourbon." As shown above, defendants have an unquestioned right to the use of the words "Old Bourbon," and this brings us to the second inquiry, namely: Has the defendant used his own name, J. F. Cutter, improperly? Several cases have been cited where a party has been restrained from the use of his own name in connection with his own goods, but in all these cases he was guilty of appropriating the whole or material portions of the plaintiff's trade mark in addition to the name.

In the case of *Croft vs. Day*, decided in the English Chancery, the defendant not only used the name, Day & Martin, under which plaintiff's business was conducted, but the colors of his labels were of the same nature as plaintiff's; his labels were, exactly the same size; the letters were arranged in precisely the same mode; and the very same name appeared on the face of the jars. In deciding the case the Master of the Rolls says: "The defendant has a right to the use of his own name; * * * but I must prevent him from using it in such a way as to deceive and defraud the public, and to obtain for himself, at the expense of the plaintiff, an undue and improper advantage." It is unnecessary to refer to the cases in detail, as the one cited above lays down the doctrine that has been uniformly followed.

J. F. CUTTER'S WHISKY.

It may be true, and probably is, that the profits of the plaintiffs have been diminished by the defendants' emarking in a similar business; and this remark will apply with equal force to thousands of other cases where competition has lessened the income of established houses; and yet the law does not afford a remedy. J. F. Cutter has the same right to manufacture and vend Bourbon whisky that the plaintiffs have, and so long as he refrains from simulating their trademark, and uses only his own proper name, together with the name of the article in which he deals, with an emblem or device in no way resembling plaintiff's, clearly he is acting strictly within the rights guaranteed to him by the law of the land. From these views it follows that the demurrer must be sustained, with leave to the plaintiffs to amend within ten days, if they shall be so advised.

Inventions Patented in England by Americans.

[Compiled from the Commissioners of Patents' Journal.]

From April 18 to May 1, 1873, inclusive.

- BRUSH MAKING MACHINE.—H. C. Covert, New York city.
 CAR COUPLING.—E. H. Janney, Alexandria, Va.
 CLEANING WASTE.—S. S. Lewis et al. (of New York city), London, England.
 DYEING INDIGO.—J. Marble, Worcester, Mass.
 ECONOMISING FUEL, ETC.—E. F. Griffin, Chicago, Ill.
 FRUIT CAN, ETC.—W. H. I. Howe, New York city.
 GAS PURIFIER.—E. Duffee, Haverhill, Mass.
 MAKING METAL TUBING.—S. R. Wilmot, Bridgeport, Conn.
 ORDNANCE, ETC.—J. P. Taylor, Elizabethton, Tenn.
 PILED FABRIC.—A. Warth, Stapleton, N. Y.
 RAILWAY CARRIAGE.—W. B. Rogerson, Paterson, N. Y.
 REED ORGAN.—G. Woods, Cambridgeport, Mass.
 SHAPING STONE, ETC.—C. W. Lewis, New York city.
 TELEGRAPH.—T. A. Edison, Newark, N. J.
 TELEGRAPH.—W. F. Coffin, New York city.

Recent American and Foreign Patents.

Improved Heating Stove.

William R. Akers and James E. Johnson, Malcolm, Iowa.—This invention consists in the arrangement of an air chamber at the base of an air heating stove, to receive the foul air from the room and discharge it into the smoke chamber to be carried off with the smoke, so as to maintain a purer atmosphere in the room and regulate the draft, the construction of the whole being simple and cheap, and calculated to be very efficient and serviceable.

Improved Cradle.

David Souder, Houston, Ohio.—This invention consists, mainly, in a folding frame, to which is suspended by suitable means the bottom frame, with some strong fabric stretched over it, which frame rocks readily on the folding or supporting frame, and may be adjusted on it to any desired height. By disconnecting one side of the bottom frame, the supporting frame may be folded up to be carried about or stored, without taking up unnecessary space.

Improved Grain Dryer.

Edwin S. Forgy, Dayton, Ohio.—This invention is an apparatus for drying grain and other similar substances which can be moved from place to place, and which will fully utilize the heat generated. A stove is arranged in the base of a casing of sheet metal with which is connected a pipe which passes through the casing and extends upward on the outside to conduct off the smoke and gaseous products of combustion. A zigzag, which consists of a frame in which is fastened a series of inclined plates, is so arranged that grain placed upon the upper plate will, when the zigzag is vibrated, descend from one plate to another, or from the top to the bottom of the zigzag, and be discharged near the bottom of the casing. The zigzag has room to play laterally within the case, and is vibrated by means of an eccentric rod which is supported on eccentric journals in boxes on the sides of the case, a rotating motion being given the eccentric rod by means of a crank, so that hand or other motive power may be applied. By this arrangement the grain is subjected to a gradually increasing temperature as it descends. The vibrations of the zigzag will evenly spread the grain over the plates and set it in motion.

Improved Cloth Measuring Register.

Samuel Crocker, Fort Allen, Iowa.—This invention has for its object to furnish an improved device for attachment to a merchant's counter, which shall be so constructed as to count and register the number of yards measured, thus rendering a second and third measurement of the goods unnecessary. In using the machine, a bar is adjusted to the division marks of the scale of a plate that indicates the number of yards to be measured off, where it is held by a spring catch. The end of the edge of the cloth to be measured is then brought by the right hand of the operator to the button on the upper end of a stop. The left hand is then slipped along the edge of the cloth to the last fret of the scale. The stop is then pressed downward by the thumb of the right hand, and a spring revolves a wheel half a tooth. As the pressure upon the stop is removed, the said stop is forced upward by another spring, and the wheel is revolved another half tooth, bringing a pointer to the division mark marked 1 on the scale of the plate, and so on, the pointer always registering the number of yards measured off. As the pointer in its movement reaches the bar first mentioned, the further operation of the machine is stopped, and the operator knows that he has measured off the required quantity.

Improved Boiler Tube Scraper.

John B. Christoffel, Williamsburgh, N. Y.—This invention has for its object to improve the construction of the boiler tube scraper for which letters patent No. 62,816 were granted to the same inventor on March 12, 1867. Upon a rod are placed two movable collars. On these are formed as many radial pins as there are designed to be blades in the scraper. The blades are made of light spring steel, are arranged spirally, and have holes in their ends to receive the pins of the collars. To the rod at the inner sides of the collars are secured stops, to prevent said collars from moving toward each other while allowing them to move outward freely. Upon the rod at the outer sides of the collars are placed washers, against which rest the inner ends of the springs which are coiled around said rod. This construction enables the scraper to adjust itself to the size of the tube to be operated upon, and adapts it to be used either end forward, as may be desired.

Improved Invalid Bedstead.

Oscar G. Cosby, Richmond, Va.—This invention consists of a bed with canvas above the mattress on rollers extending from head to foot, one on each side, arranged as to stretch the canvas tight and hold the patient on it; while the mattress and its frame, which are suitably arranged and provided with devices for lowering it, are lowered to allow a vessel to be presented under the mattress. The rollers are jointed near the head, and provided with devices for raising and lowering that portion to support the patient in a sitting or reclining position. Gears and cranks are employed to raise and lower the mattress and its frame, also the head portion of the canvas and the rollers on which it is stretched, and ratchets and holding pawls are used to hold them in position.

Improved Trimmings.

Wellwood Murray, New York city.—The above inventor has patented two inventions. The first consists of a bias box plaited trimming of plain lace alone, or the same with the edges trimmed with figured lace, or figured lace or other goods trimmed with figured lace or other suitable trimming on the edges, folded longitudinally a little one side of the middle, so that one edge trimming comes a little higher than the other, showing two rows of edging or trimming. The bias box plaits of one part cross those of the other diagonally. This trimming it is proposed to use for making collarettes for ladies' neck wear, also cuffs and other light articles, and also trimmings for various purposes. The second invention, called collarette trimming, is composed of a combination of plaited ruching of net, with narrow plaited and pointed muslin, the net being placed on one side only, or on the front and back of the muslin, and sewed along the middle of the front piece and upper edge of the back piece when a back piece is used, to the plain edge of the muslin. There may be one or two strips of the latter, one placed above the other when two are used, and made narrower than the bottom piece so that the points of the latter will not be covered. The back piece of net will be wider than the widest strip of muslin so as to project below the points, thus making the said trimming of one or two rows of points, and with or without a margin of net projecting below the points.

Improved Carving Machine.

Henry Grubenbecher, New York city.—The invention consists in the improvement of carving machines. The supporting table furnishes bearings for the spindle of the cutting tool and for the gage pin, and also a support for the sliding carriage, to which the jointed block and pattern holding frame are attached. The spindle is revolved with a suitable driving shaft. The tool can be applied to and removed from the spindle, so that it may be replaced when desired. The gage pin is fastened in the support, which is laterally adjustable on the table and can be set at any suitable distance from the tool, according to the dimensions of the articles to be cut. It can also be longitudinally adjusted in the support, so that its point can be set and held exactly in line with the point of the tool. The slide can move back and forth, but not sidewise, or up and down. To its front end is secured a cross arm. The block to be carved, and the pattern to be imitated, are fastened to the face of a plate which has ears at its ends, which are pivoted to the ends of a bar. The plate can be swung to hold the block and pattern at any suitable angle to the tool and gage pin, and can be locked at any desired angle to the bar. The whole frame can moreover be vibrated so that the block and pattern can be swung on two different curves. A spring connects with the slide and tends to draw it back, away from the tool and pin. Another spring serves to balance the frame and to hold it nearly horizontal. The operator, after the block and pattern have been properly secured to the plate, and the tool and pin being adjusted, has only to vibrate the plate up and down, and draw it back and forth, and swing it sidewise so as to bring every part of the pattern in contact with the pin, which will cause the tool to reach corresponding depths and parts of the block, and to reproduce the pattern. When work is to be cut on more than one side, namely, when it becomes necessary to turn the pattern, in order to bring all parts of its surface in contact with the pin, a holder is used in which laterally adjustable brackets are fastened to the face of the plate. The block to be cut is centered between the brackets, and the pattern between the brackets. When the pattern is turned, the block will also be turned in the same manner and degree by virtue of a swivel connection.

Improved Furniture Spring.

William T. Doremus, New York city.—This invention has for its object to furnish an improved spring for chairs, bed bottoms, and other articles of furniture. The invention consists of an improved spring formed by the combination, with each other, of the case, made in two parts oscillating upon each other. To one part are attached rigid blocks, and in the face of the other part is formed a recess to receive them. In the inner part of the latter plate is also formed a transverse groove to receive a cross bar, between which and the blocks rubber springs are interposed. Open metallic bands pass around the rubber blocks and the projections to prevent the former from spreading when under pressure, and also to prevent the wear of said rubber blocks by friction. By this construction, as the one part of the case is oscillated or turned back and forth upon its pivoting point, the rubber blocks will be alternately compressed by the bar.