

Steam on the Canals.—The Reward of One Hundred Thousand Dollars Offered by the State of New York.—Modification of the Preliminary Tests Required.

At a meeting of the commission appointed by chapter 868 of the laws of 1871, held at the office of the State Engineer and Surveyor, at Albany, N. Y., on the 6th and 7th days of August, 1872, the following members were present: Van R. Richmond, chairman, George Geddes, Erastus S. Prosser, George W. Chapman, John D. Fay, Willis S. Nelson, Wm. W. Wright.

Various persons were heard by the commissioners in regard to the preliminary tests heretofore required, and certain modifications were made, as will appear by the following preamble and resolution, that were passed and ordered to be published:

WHEREAS, It is the opinion of the commission that the intent of the law, in regard to the speed required of competing boats, is that the same shall be determined by the rate of movement through the levels of the canal, not including lockages or the navigation of the Hudson river, and that the objects of the preliminary tests required will be secured by not requiring over 100 tons of cargo to be carried west; therefore, it is

Resolved, That the first and second resolutions, adopted by this board July 10, 1871, relating to preliminary tests, which were as follows:

Resolved, That for the purpose of carrying out the intent of the law, this commission will require, among the tests to be made, that the several competitors shall make not less than three round trips, from New York to Buffalo or Oswego; each boat to be loaded with not less than 200 tons of cargo each way; the trips to be commenced as soon as any party is ready, and all completed in the least practicable time. For the purpose of determining the time consumed by each and all the trips, the clearance must show the day of the month and the time of day that the boat passes each collector's office; certified copies thereof to be furnished to the commission. In order to obtain information in regard to the practical working of the several devices in competition, as soon as practicable, the engineer of the commission, Mr. David M. Greene, of Troy, will inspect the same from time to time, as in his judgment may be necessary, and report the facts obtained to this commission.

Resolved, That competitors are hereby notified that for the purpose of carrying out the intent of the law, though it is desirable that the three consecutive round trips from Buffalo or Oswego to New York be made at the earliest time practicable, the whole of the year 1872 will be allowed to such persons as may desire so much time, and the awards will not be made until the close of navigation in that year,—be and the same are hereby modified by the passage of the following resolution:

Resolved, That boats making the three round trips from Buffalo or Oswego to the Hudson river and return, as heretofore required by this commission for the purpose of determining the rate of speed of said boats, will not be required to continue the trips to New York city, nor to carry more than one hundred tons of cargo going west, and that deductions from the time consumed in navigating the canals will be made for passing the locks, equal to twenty hours for each round trip from Buffalo, and proportional allowance will be made if the trial is from Oswego. In case of delays growing out of obstructions to navigation, that are caused by breaks in the canals or injuries to the structures or sunken boats, or such as detain boats drawn by horses, the time lost will also be allowed for in computing speed.

The commission adjourned to meet at the office of the canal commissioners, in the city of Syracuse, Tuesday, October 1st, 1872, at 3 o'clock, P. M.

Recent Patent Decisions.

United States Circuit Court—Southern District of Louisiana.

A suit at law upon letters patent for an improvement in metallic ties for cotton bales, granted to Frederic Cook, March 2, 1858. Mary Frances McComb and James Jennings McComb, plaintiffs; and George Brodie, defendant.

THE LAW OF INFRINGEMENT—THE LAW OF DAMAGES.

WOODS, Circuit Judge.

There may be a claim for two inventions in the same patent if they both relate to the same machine or structure; and an action can be sustained for the infringement of either one of these separate inventions when claimed as separate and distinct in their character.

Where plaintiff's patent covered three different features of invention, but suit was brought on one claim only, the jury were instructed to consider the case precisely as if the patent covered that claim alone.

The third claim of Cook's patent of March, 1858, for cotton bale tie, construed to be for the right to use an open slot cut in a buckle, which without the cut would be a closed buckle, so as to allow the end of the tie or hoop to be slipped sidewise underneath the bar through which the slot is cut.

If a party uses the open slot for passing the end of a cotton tie sidewise under the slotted bar, it makes no difference whether such end is in the form of a loop or not, if the result attained is that the end of the tie has been "slipped sidewise through the slot underneath the bar, so as to effect the fastening with greater rapidity than by passing the tie through endwise."

A man cannot have two patents for the same process because for different purposes.

When the means, devices, and organization are patented, the patentee is entitled to the exclusive use of this mechanical organization, device, or means, for all the uses and purposes to which it can be applied, without regard to the purposes to which he supposed, originally, it was most applicable.

To constitute infringement the contrivances must be substantially identical, and that is substantial identity which comprehends the application of the principle of the invention.

If a party adopts a different mode of carrying the same principle into effect, and the principle admits of different forms, there is an identity of principle though not of mode; and it makes no difference what additions to or modifications of a patentee's invention a defendant may have made; if he has taken what belongs to the patentee, he has infringed, although with his improvement the original machine or device may be much more useful.

All means, however changed in form, but which act on the same principle and effect the same end, are within the patent; otherwise a patent might be avoided by any one who possessed of ordinary mechanical skill.

The rule of damages at law is not what the defendant has made, or what he might have made, but it is the loss sustained by the plaintiff by reason of the infringement.

If plaintiff was ready to supply the market with his patented goods, and his business was hindered or interfered with by the competition of defendant, plaintiff's damage will be the amount of profit which he has lost by reason of such interference.

If a plaintiff neglects to prove that his patented article was stamped, or that he gave to the infringer the notice required by section 38 of the patent act of 1870, a jury cannot award him more than nominal damages.

W. M. Randolph, C. Roselius, J. A. Campbell, and S. S. Fisher, for plaintiffs; Semmes and Mott, for defendant.

United States Circuit Court, District of Massachusetts.

WOODWARD vs. MORRISON et al.

This was a suit in equity, brought against Louis P. Morrison and George G. Noah by Joseph Woodward, for an alleged infringement of letters patent granted the complainant, February 20, 1866, for an improved prepared paste for book binders.

INFRINGEMENT UPON ARTICLES OF MANUFACTURE—INFRINGEMENT OF CHEMICAL PROCESSES—CHEMICAL EQUIVALENTS—CONSTRUCTION OF PATENTS.

SHEPLEY, Circuit Judge.

The invention patented to Joseph Woodward, February 20, 1866, for an improved paste, consisted in the discovery that the use of a very minute quantity of corrosive sublimate would arrest the tendency to fermentation in the paste, without imparting to it any poisonous properties; also, that an improved result was effected by the addition of chloride of sodium, or an equivalent salt, soluble in the aqueous solution of corrosive sublimate.

A paste in which corrosive sublimate is used in proper quantity to prevent decomposition without making the compound poisonous and unsafe to handle, held not to be anticipated by a paste in which the same ingredient is purposely used in such quantity as to make the compound poisonous and destructive of animal life.

Semble, that where the patented invention is an entirely new article of manufacture it might be sufficient to find that the defendant makes substantially the same thing, whether by the same or a different process.

Patents are infringed by the substitution of chemical equivalents as well as of mechanical equivalents.

The use of chemical equivalents may infringe a patent even if in some respects they are improvements on the original process patented.

To constitute an infringement of a chemical process, it is not necessary that the substituted ingredient be the equivalent in every respect and for every purpose of that in place of which it is used; it must only be an equivalent in the particular process, contributing to produce the same composition of matter by substantially the same chemical action.

Where the patentee of an improved paste used the chloride of sodium mainly for increasing the solubility of the antiseptic agent employed and assisting in its diffusion through the mass of the paste: *Held*, that the use of the chloride of zinc, which in the particular process produced practically the same result, was an infringement.

Every specification is to be read as if by persons acquainted with the general facts of the mechanical or chemical science involved in the invention; and the specification of the parts is a specification to ordinary skillful mechanics or chemists of the well known mechanical or chemical equivalents.

If there are equivalents, mechanical or chemical, existing, but previously unknown to ordinary skillful mechanics or chemists, these are not included in the specification of a patent unless specially stated therein. They are new discoveries in themselves, and may be used by all without infringing the patent.

The ingredients and the proportions thereof in their respective formulas of manufacture, as stated in the respective patents, are as follows:

<p><i>Complainants.</i> Flour, 2 pounds. Common salt, (chloride of sodium), 1 ounce. Na. Cl., 1 ounce. Alum., ½ ounce. Corrosive sublimate, (bichloride of mercury), 6 grains. Mercury, ½ ounce.</p>	<p><i>Defendants.</i> Flour, 100 pounds. Chloride of zinc, 5 pounds. Alum., 5 pounds. Bichloride of mercury, 1 ounce. Oil of cloves, ½ ounce.</p>
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JAMES B. ROBB, for complainant.

H. G. PARKER and B. C. MOULTON, for defendants.

ELECTRIC ILLUMINATION OF LIGHTHOUSES.—The following is a list of the electric lights in England and France with the dates at which they were erected:

Dungeness, January, 1862; Cape La Heve, France, South Light, December, 1863, North Light, November, 1866; Cape Grisnez, France February, 1869; Souer Point, England, January, 1871; South Foreland, England two lights, January, 1872. It is interesting to see, says *Nature*, that England took the lead in this matter of the adaptation of electric illumination to lighthouse purposes, and it must also be remembered that although the first electric light was only erected in 1862, yet in 1859 experiments were made, under the supervision of the late Professor Faraday, which were very successful.

[We believe that in the United States there is no lighthouse in which the electric light is employed.—Eds.]

A SPROUTING SNAKE.—Professor Cope states that he had for sometime a specimen of *Cyclophis astivus*, received from Fort Macon, N. C. The slender form of this snake and its beautiful green and yellow colors, show that it is of arboral or bush-loving habits. It never exhibited such in confinement, however; and instead of climbing over the caladia, ferns, etc., it lived mostly under ground. It had a curious habit of projecting its head and two or three inches of its body above the ground, and holding them for hours rigidly in a fixed attitude. In this position it resembled very closely a sprout or shoot of some green succulent plant, and might readily be mistaken for such by small animals.

An acorn suspended by a piece of thread within half an inch of the surface of water in a hyacinth glass, will, in a few months, burst and throw a root down into the water, and shoot upwards its straight and tapering stem, with beautiful little green leaves. A young oak tree, growing in this way on the mantelshelf of a room, is a very elegant and interesting object.

MANUFACTURE OF PINS.

A recent visit to the works of the Empire Pin Company, situated in Cohoes, N. Y., afforded us an opportunity to witness the entire process of pin making. The wire for this purpose is received in large coils, and the first proceeding is to render it straight and free from kinks and turns. Entering a long room filled with numberless little machines, which united to make an almost deafening clatter, our attention was directed to a coil of wire which had just been placed on a revolving spindle. The end was passed through an apparatus containing several small rollers, and then allowed to wind around a large wheel some two feet in diameter. From this wheel the coil is cut off in sufficient lengths. We now pass to the pin making apparatus proper, that is, the numerous small machines which spitefully seize the wire, drag it along under cutters, bite off small pieces, then supply each of the several bits with a head and sharp point, and finally throw them into a receptacle as nearly finished pins at the rate of hundreds per minute. We say "nearly finished," because, to all appearances, a handful of pins in their present condition appear to be all ready for use. But they are rough, they are still of yellow brass, and their points are far from smooth. We are now shown two revolving barrels into which, with a quantity of sawdust, the pins are thrown. Here they are rolled until perfectly smooth, when they are removed and treated to a boiling for four hours in a solution of cream of tartar and water, from which bath they emerge literally as "clean as a new pin," and, besides, thoroughly whitened.

Next they must be sorted. Pins of every size, some short, others long, must be separated, and each length placed in distinct boxes. To effect this, they are thrown on an inclined tray; down they slide, ranging themselves side by side. Now they pass over a piece of steel, in the edges of which indentations are cut of varying depths. Each pin keeps on its journey until it reaches a point at which one of the indentations makes a passage sufficiently wide for it to pass through lengthwise when it falls into its proper box.

The pins being now sorted, the next process is to place them in their papers. Being heaped upon a horizontal tray, they are sent, by a sweep of the attendant's hand, traveling down an inclined plane of steel, in which slots have been cut. Each slot is made of such a width as to allow the body of the pin to pass through but not the head. There are as many of these slots as there are to be pins in a row. The pins sliding down range themselves in an even line at the foot of the plane. Meanwhile a continuous roll of paper has been attached to the machine from underneath. This, as each row of pins is ready for insertion, is pressed and held into a die, which forms crosswise creases in it. The pins are then forced down through these creases, the paper leaves the die, and is rolled along; another row of pins falls into place, and the operation is repeated. The paper, when filled, is cut off into proper lengths, and sent to girls to supply missing pins. As each paper is completed, it is folded and then packed in bundles of a dozen each, marked, labeled, and sent to the market.

There is another auxiliary machine connected with this manufacture by which the pins which are crooked and which fall through the last described apparatus are separated from the straight pins which become mixed with them. This is done by causing the pins to fall upon a number of endless leather belts. The crooked ones remain steady, and are carried along the belts and dropped into a receptacle at the end of the machine. The straight pins, however, in falling upon the belts do not rest upon them, but, receiving by this means a vibratory motion, roll off between the belts and are caught in a box underneath. The great rapidity of this work can be judged from the fact that some 650 packages of pins, each package containing a dozen papers, are daily turned out at the works of the Empire Company.

CARBONIC ACID FROM THE LUNGS.—It is customary to show the presence of carbonic acid from the lungs by breathing into lime water, and as the experiment is usually performed, it is necessary to blow through the water for a considerable time. Dr. Krebs recommends the simple device of holding the nostrils when making the expiration; it is then possible, by drawing a long breath, to obtain a considerable precipitate in lime water in one expiration. The difficulty has been that nearly all of the carbonic acid escaped through the nostrils, and hence the erroneous impression that only a small quantity was given off from the lungs.

VALUE OF POULTRY MANURE.—From actual experiment it has been found that the droppings from four Brahmas for one night weighed in one case exactly 1 lb., and in another more than ½ lb., an average of nearly 4 ounces each bird. By drying, this was reduced to not quite 1½ ounce. Other breeds make less; but, allowing only 1 ounce per bird daily of dry dung, fifty fowls will make, in their roosting house alone, 10 cwt. per annum of the best manure in the world. Hence ¼ an acre of poultry will make more than enough manure for 1 acre of land, 7 cwt. of guano being the usual quantity applied per acre, and poultry manure being even richer than guano in ammonia and fertilizing salts. No other stock will give an equal return in this way; and these figures demand careful attention from the large farmer. The manure, before using, should be mixed with twice its bulk of earth, and then allowed to stand in a heap, covered with a few inches of earth till decomposed throughout, when it makes the very best manure which can be had.

The Union Mill Company, of Fall River, Mass., make print cloth, and they pay dividends of 140 per cent annually on the stock of the corporation.