

to define, if practicable, with some degree of precision, the import of this term. The familiar etymology of the word "manufacture" indicates that it originally implied something made by the hand of man; but it has long since outgrown this primitive and narrow signification, and keeping pace with human progress, it has come at last to include alike the process of fabrication and every object upon which art or skill has been exercised, whereby a product has been fabricated, either by the hand of man or by the labor he directs. (Webster on Patents.) This broad, though sufficiently accurate definition would embrace "machines," which certainly, strictly speaking, are "manufactures,"—the latter constituting a genus of which the former are but a species; so far as relates to "machines," the statute, therefore, must be regarded as presenting, in fact, a *double enumeration*, which is interesting to note, because manifesting the extreme solicitude of the Legislature to cover, with its protection, the whole field of useful invention.

It is often an embarrassing question whether a particular invention is "a new manufacture," or only an improvement upon a manufacture already subsisting and known, and it is not easy to lay down a rule which would, at all times, solve this perplexing problem. It may be safely held, however, that if the invention only modifies a pre-existing manufacture, and by that modification merely improves, without so essentially changing its character and functions as to destroy its identity, it will be but an improvement, and should be so claimed. This question should be treated as of really but little practical importance. By our laws the specification is made part and parcel of the patent; and if the invention be therein correctly set forth, no misapplication of terms in the designation of the claim will vitiate the patent *a fortiori*; it should not be allowed to prejudice the application. It should, at most, furnish grounds for a suggestion on the part of the Office, whereby the error might be corrected. It is not assumed in this particular case, that more appropriate designation than that employed, could, within the range of the patent law, have been given to the invention. The position maintained is that the "beam" is not, in point of fact, "a new manufacture." There are on file the affidavits of three practical mechanics, who represent themselves as well acquainted with the various kinds of iron beams used in the construction of buildings, and who, therefore, sustain to this issue the relation of experts. After comparing the beam of Badger with those which have preceded it, they declare that they regard it as "a new article of manufacture." Their judgment, uncontradicted, is entitled to the greatest weight. Coryton (on Patents) holds this language: "The amount of difference from existing things requisite to constitute the result of the improvement or discovery 'a new manufacture,' is, in every case, a question of fact to be referred to the particular branch of industry to which it is applied, and requiring an accurate acquaintance with the state of manufactures, rather than a knowledge of general jurisprudence for its determination."

The objecting Examiner is understood to assert, in effect, that this beam is in no sense a manufacture, because not an article of merchandise; and that it is not patentable, for the reason that it is wanting in invention. In regard to the first feature of the objection—admitting, for the sake of the argument, that a manufacture is necessarily vendible and merchantable—I think the beam comes fully up to the requirements of the Examiner's definition. Like door and window frames, and other heavy articles of iron which now enter extensively into buildings, it is made for sale, and is, in fact, bought and sold, and forms as much an article of merchandise, as legitimate an object of commerce as a paper of pins. I confess myself unable to perceive the strength of the position taken, that it is, at best, but "an improvement in architectural materials," and cannot be ranked as a manufacture, because its utility can only be tested or realized

when it is "used in some other and further connection" than that which it occupies in the workshop, or in other words, only when it has been placed in position in the building. The same thing, it seems to me, might be said of the plow, whose merits are only demonstrated after it has buried its share in the field which it is destined to furrow—and so of a countless multitude of similar inventions. The reference given being out of view, and the novelty and utility of this beam being conceded, I should, therefore, not have hesitated to grant a patent for it as a new article of manufacture, or as a new and useful improvement thereon, as the facts might have warranted. Nor should I have delayed my judgment in the matter until I could have instituted an elaborate and critical analysis of the process of labor, mental and physical, through which the inventor had probably passed, with a view of ascertaining the amount of invention which has been called into exercise. I regard such a method of investigation as delusive and unsatisfactory in its results. We know that some of the most important and valuable discoveries which have marked the progress of the arts and sciences have been the effect of accident, or the suggestion of some stray but happy thought, which came, as it were, unbidden; while, on the other hand, men have exhausted their intellects and their lives in fashioning, combining and maturing the most abstruse processes and machinery, without having contributed one dollar to the world's wealth, or one throb of enjoyment to its happiness. The law, essentially practical in its judgments, looks only to the *fruit* of the invention, and if it finds there the indispensable features of novelty and utility, it will presume a sufficient amount of invention to support a patent; nor is there any other lens through which the invention can be safely examined. All others, however specious, do but obscure and darken the inquiry.

Until within a few years the English Courts, regarding patents as establishing monopolies in derogation of common right, have shown them little favor, yet if any case has been reported in that country, combining novelty and utility, but in which the patent has been declared invalid for want of invention, it has escaped my researches. Such a case would be an extreme one, and should be most cautiously pronounced upon. (Webster's Reports of Letters Patent, 409, note E.)

The Constitution declares that Congress shall have power to promote the progress of science and useful arts by securing for limited time to authors and inventors, the exclusive right to their respective writings and discoveries. This embraces *all inventors*, and imposes no limitation save that the invention protected shall be useful. It is a fair if not a necessary inference that Congress has sought to carry out this provision of the fundamental law, by extending as ample and complete protection as was contemplated by the founders of the government. Indeed, in the comprehensive words employed in the statute, we have a sufficient evidence that the National Legislature has met this obligation in good faith, and if it has not been fulfilled it has not been from lack of zeal, but from lack of the knowledge of languages. If, however, the stringent construction not favored in certain quarters be adopted in practice, it is to be feared that many inventors who have been summoned to this Office by the Constitution, would find its door shut in their face. It must be assumed as the only safe and tenable ground which can be occupied in the administration of this Office, that *every new and useful invention* is patentable, and may be appropriately ranked under one or other of the clauses designated in the statute. Names happily are not things; and if the specification describes an invention uniting the indispensable requisites of novelty and utility, it will not be considered as of the essence of the claim, that it should be referred *eo nomine*, to any one of the heads of the statutory enumeration. A failure to adopt some one of the designations presented in that enumeration,

or the adoption of what the office might regard as an inappropriate designation, should not be allowed to embarrass the application, if the specification itself combines the characteristics mentioned.

It is due to the dignity of the subject and to the generous spirit of the Constitution, that the patent laws should be liberally construed, having ever in view the great end they were designed to subserv. They were enacted for the government of an office whose range of action is altogether above the barren field of mere technicalities. That office, in my judgment, would be forgetful of its mission, and disloyal to one of the highest interests of humanity, were it to permit itself to be entangled in a mesh of mere words, or palsied by doubts, born of intricate metaphysical disquisitions. It has to do with the substance of things, and to deal with the earnest, ingenuous, practical intellect of the age, and it should be dealt with frankly, not perplexing and discouraging inventors, by subtle distinctions, but kindly taking them by the hand, as the benefactors of their race, and strewing, if possible, their pathway with sunshine and with flowers.

As the reference given is regarded as an anticipation of this invention, the application must be rejected.

J. HOLT,
Commissioner.

The Acacias.

These are among the most useful of trees, and besides, they form graceful ornaments in streets and fields. They have small flowers collected in balls or spikes of a white, red or yellow color. They inhabit all the warm countries of the world; some of them yield gum arabic, others gum senegal. The bark of one variety gives us the astringent substance called catechu, or *terra japonica*. The flowers of some are extremely fragrant, and are much used in Italy as a perfume. Many species have a bark possessed of valuable tanning properties. The timber is very durable, and it requires little or no cultivation. The Chinese use the yellow flowers to dye silks with, and it gives a color which is, as yet, unrivaled. One genus is known here as the Locust tree, and it is worthy of more general attention.

The Indian Mutiny.

The mutiny in India is likely to affect disastrously a vast amount of progressive industry. Within the last twenty years, the amount of the products of other countries consumed in India has increased from \$20,000,000 to \$85,000,000, and her native productions have more than kept pace with it. Every nation that trades with her becomes her debtor. In 1835, the surplus produce of India was \$40,000,000; in 1856 it exceeded \$125,000,000. Last year the balance due India for the excess of the exports over the imports was \$41,000,000. The specie imports have increased from \$14,000,000 in 1846 to \$62,000,000 in 1856. The present war puts a stop to all this trade.

Dishonesty.

A California correspondent writing to us says, in connection with other remarks, "we are now shipping from one to two millions of dollars monthly to the Atlantic States, for which we get paid in merchandise of the following kinds:—Boots and shoes made up of paper, leather and shavings, so that persons often wear out four pairs a month, unfinished pants and shirts, axes with bad handles, colliers' picks without steel." It is really dishonest to send such goods in exchange for hard cash, and we hope that such a suicidal system will soon be stopped.

Wm. D. Wilson, Editor of the *Iowa Farmer*, at Mount Pleasant, Iowa, writes to us that he intends to travel extensively through that State during the coming winter, and will undertake to sell patent rights on good agricultural machines adapted to that region. Mr. Wilson is a stranger to us, but we presume he can furnish satisfactory references if called upon to do so.

The Aquarium.

MESSRS. EDITORS:—There is one feature which no writer on the aquarium has yet noticed: when a tank is properly stocked, the water soon gets crowded with animalculæ, which swarm among the plants, and occupy the sides of the glass in countless numbers, made visible only by the aid of the microscope. These facts are in accordance with certain laws of nature, and the presence of vegetable and animal life always develops them. But observe the utility of these animalculæ; they contribute to the sustenance of the other living creatures by supplying them with food. The researches of chemistry have proved that these minute organizations respire in much the same way as plants, while animals generally absorb oxygen, and perish if the introduction of that gas is suspended. These minute organisms absorb carbonic acid gas, and give out oxygen in abundance. My experience convinces me that a tank which has been fitted up for some months, will sustain a much greater amount of animal life than one of the same dimensions but recently stocked. Beginners should distinctly remember the leading principles of the aquarium, and then success in maintaining one may, without much difficulty, be achieved. If the tank have not a distinctly self-supporting character, such as will preserve its strength without alteration of any kind, it may be concluded that there has been unskillful management in its stock.

H. D. BUTLER.

[The above communication will, no doubt, be interesting to those of our readers who have begun to stock aquaria; but we think the writer's remarks apply more especially to salt water tanks.—EDS.]

Heat and Cold.

A lady correspondent writes to us, giving her idea of the philosophy of the facts recorded in our recent article on this subject. We will give a condensation of her letter, which is to the effect "that heat is never strictly speaking evolved by the agitation of water; but, the cause of elevation of temperature, when water flows along shutes, tubes, or is shaken in a patent churn, is due to the friction of the globules of water against the solid material with which they are in contact." She finds fault with us for saying anything against poetical expressions, and, as a lady only can, defends the poets from the charge of writing false science, in such a manner that we must refrain from argument, hoping, however, to hear from her again.

A Steamboat Newspaper.

Among other innovations which the mammoth steamship *Great Eastern* is about to inaugurate, will be the publication of a daily paper on board for the benefit of the traveling public—the regular "public" of travelers—whom she may be bearing across the ocean. But this startling feature is anticipated on the western waters of the New World, for the New Orleans and St. Louis packet steamer *James E. Woodruff* now sails equipped with the force and material for the publication of a regular *daily paper on board* during her trips up and down the river, with a job office attached for the printing of bills of fare and other work.

LONGEVITY.—The *Pacific Sentinel* says that an Indian named Pedro died at Santa Cruz on the 7th September, aged 130 years. In 1784, when the Mission there was founded, Pedro was an old man, as is known to many people residing at Santa Cruz.

TRAVELING AMERICANS.—The amount expended by American travelers in Europe is estimated at \$10,000,000 annually. This is no small amount to be emptied into the pockets of European hotel keepers and railway companies.

CHLOROFORM LINIMENT FOR BURNS.—M. Bargiacchi states that he has found the extreme suffering produced by bad burns completely relieved by means of a liniment composed of chloroform and cod-liver oil.