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PATENTS BY JOINT INVENTORS.

When two or more persons jointly invent a new improvement, the patent therefor may be properly issued in their joint names. But if one specific part is the invention of one of the inventors, and another specific part invented by the other party, the patent, if taken as a joint invention, is invalid. In such cases two separate patents should be taken, one by each inventor. This is well illustrated in a trial lately had in the United States Circuit Court, Southern District of Illinois, before Judge Gresham.

STEWART *et al.* v. TENK.

John Stewart and Will Campbell obtained letters patent No. 140,315 on June 24, 1873, for a joint invention for certain new and useful improvements in machines for paring, slicing, coring, and dividing apples and other fruit. The invention consists:

... First, in providing the said device with a paring knife so operated as to remove the skin of the fruit from all parts thereof outside of the parts operated upon by the coring knife; second, in conjunction with said paring knife, providing a convex anti-friction roller, to prevent any friction upon the device by the fruit when being operated upon; third, in providing the arm upon which said paring knife is mounted with the segment of a cogged guide or flattened sphere, so formed as to enable the said paring knife to operate upon a line describing one-half of the periphery of the vertical central plane of an ordinary shaped apple; fourth, in providing said segmental cog with a yielding ratchet, to assist the rotation of the cog and the preservation of an even pressure of the paring knife upon the fruit; fifth, in providing said device with a coring knife, which is so arranged that its cutting edge comes in contact with the parts of the fruit about the core with a draw cut; sixth, in providing said device with a double spiral fork for securely holding the fruit.

The twelve claims in the patent are for the machine as a combination and for separate and distinct portions of it as separate and distinct inventions. The bill charges infringement of only the tenth claim, which reads as follows:

"10. The combination of the arched coring knife, *i*, and slicing knife, *h*, substantially as shown and described."

It was insisted by the defendants' counsel that Stewart alone invented the arched coring and slicing knife, and that therefore a joint patent for this distinct invention was unauthorized. Stewart testified that he conceived the idea of combining the slicing and arched coring knife as it is described in the patent, and that he gave instructions to Campbell how to make the knife. He further testified that certain other parts of the combination which are covered by separate claims in the patent were invented by him, while other parts were invented by Campbell. Campbell also was examined as a witness; but his testimony on these points did not differ materially from Stewart's.

The judge held that Stewart and Campbell were entitled to a joint patent for what they jointly invented. It may be that their minds co-operated in combining the different parts which resulted in the production of the complete machine; but a joint patent can be sustained only for a joint invention, and the evidence shows that Campbell did not contribute to the invention covered by the tenth claim. Stewart was the sole inventor of the slicing and coring knife, and the patent for that, as a separate and distinct part of the machine, should have been issued to him alone. (Worden v. Fisher, 11 Fed. Rep., 505; Consolidated Bunting App. Co. v. Woerle, 29 Fed. Rep., 450.)

The bill was dismissed for want of equity.

TORPEDO BOATS IN A GALE.

The recent tests of torpedo boats at Kronstadt brought out some interesting facts, and will do not a little toward demonstrating that for the most effective work this class of craft must be divided into at least two general classes—sea-going and smooth water. The torpedo boats tested were all of them of the newest and most approved types, and, since these tests were competitive, we are enabled to form some idea of the relative skill in this description of naval architecture of the English, French, German, and Russian builders. There was the Sneaborg (French), 154 feet over all; the Vintara (German), 125 feet; the Kotling (Russian), 100 feet; and the Wiburg (English), 142 feet. The French boat was said to have a speed of twenty-two knots on the measured mile, but could not log more than twenty-one, even in a fairly smooth sea; the Englishman was said to be good for 25 in smooth water, the Russian 24, and the German about the same. On the third day, the sky lowered, the sea rose, and a good whole-sail blow which was prevailing developed into a gale, with a nasty sea running. This was a fortunate circumstance, for, as we know, the trials of torpedo boats so often take place in smooth water and under favorable circumstances that they have come to mean little or nothing. There was a trial in the English Channel, a while ago, in what might be called half a gale of wind, in which, of a fleet of 43 torpedo boats, not more than half a dozen could keep their noses up to it, and these pitched

and rolled and made such a serious matter of it that it was necessary to seek shelter. In the recent trial the Frenchman was the only one that could weather the gale and the seas. He toiled up the big seas after the foam crests atop and dashed down the other side with the same pertinacity as a ferret chasing a rabbit over foothills. The German had his hands full at the start keeping the water out of his engine room, and early in the day turned about and ran to make a harbor. The Englishman, too, had more weather than he could tackle, and the Russian alternately put his nose or stern under way up to the midship section, and his crew, giving up the test of speed, devoted themselves wholly to the important duty of trying to keep above water.

These boats that acted so badly were filled chock-a-block with machinery, while the Frenchman, while not able to keep up with them in smooth water, began to forge ahead as soon as the winds and seas increased. The splendid way in which this French torpedo boat—built, by the way, by M. Normand, at Havre—stood up and rode over the heavy seas would seem to show that sea-going torpedo boats are not so impracticable as was thought, and that, even on the agitated surface of the ocean, such boats, being let down from the deck of a war ship, can pick their way tenaciously through heavy seas toward an enemy who thinks himself secure from such craft amid the raging elements.

THE CELESTIAL WORLD.

TOTAL ECLIPSE OF THE MOON.

The moon will be totally eclipsed on January 28. The phenomenon will be generally visible throughout North and South America, Europe, Asia, and Africa. The conditions for observation will be specially favorable, as the spectator will neither be obliged to sit up late in the evening nor get up early in the morning for a view of the interesting exhibition.

The eclipse takes place in eastern standard time as follows:

	h. m.
Moon enters penumbra.....	3 27.5 P.M.
Moon enters shadow.....	4 30.2 P.M.
Total eclipse begins.....	5 30.7 P.M.
Middle of the eclipse.....	6 19.9 P.M.
Total eclipse ends.....	7 00 P.M.
Moon leaves the shadow.....	8 03 P.M.
Moon leaves penumbra.....	9 11.7 P.M.

It will be seen that the moon enters the earth's shadow before sunset, but when the total eclipse begins, at 5 h. 30 m. P. M., it will be dark enough to watch its progress through the most interesting stage. The moon will not be entirely lost to sight when totally immersed in the earth's dark shadow. She will shine faintly, with a lurid, copper-colored light, thus giving an unearthly aspect to the surrounding landscape. This light is refracted into the shadow by the earth's atmosphere. It varies greatly in different eclipses, depending upon the quantity of clouds and vapor in that portion of the atmosphere where the sunlight must graze in order to reach the moon.

The magnitude of the eclipse is 1.647, the moon's diameter being 1.

CONJUNCTION OF THE MOON AND SATURN.

An interesting phenomenon will occur on the same day that the lunar eclipse takes place. The moon will be in conjunction with Saturn on the 28th at 8 h. 28 m. A. M., being at that time 1° 10' south of the planet. When the eclipse occurs, Saturn will be west of the moon, and in her near vicinity, shining brightly while her fair face is hidden from view. After the eclipse is over, the moon, with her full round face, and Saturn, the evening star, only six days after opposition, will make a picture fair to see. Saturn may be readily recognized, for the twin stars Castor and Pollux are on the northwest and Procyon is on the southwest. He may also be known by his soft, serene light and by the absence of bright stars in his immediate neighborhood.

THE MORNING SKY AT THE CLOSE OF JANUARY.

The four planets Venus, Jupiter, Mars, and Uranus, as well as the first magnitude star Spica, may be seen almost in a row near the ecliptic in the morning sky. If the observation be made about 5 o'clock at the close of January, the planets and star will be visible in the following order:

Uranus will be high in the heavens, barely visible to the naked eye, but easily found with the aid of an opera glass or small telescope, about 4° northwest of Spica. The brilliant Spica is the next member of the starry ladder, and needs no pointing out, for it shines in solitary grandeur and is within two hours or 30° of the meridian. Mars is the third comrade in the celestial fellowship, shining with a ruddy hue about 7° northeast of Spica; Mars, Uranus, and Spica forming a small triangle. Jupiter, king of planets, appears next, on the celestial track, beaming with light. He is about half way between the horizon and zenith, as he rises not far from 2 o'clock. Venus, fairest of the stars and brightest of the row, completes the shining picture, being at that time only a few degrees above the horizon. If the observation be made earlier, the stars will be nearer the horizon; if it be made later, the stars will be higher in the heavens. The order of ap-

pearance of the stars on the last day of January is: Uranus, Spica, Mars, Jupiter, and Venus. On the 1st of January, it was Mars, Uranus, Spica, Venus, and Jupiter. During the month Venus and Jupiter met and passed each other; Mars overtook and passed Uranus and Spica, thus affording a tangible illustration of planetary wanderings.

PATENT, MAPLE SUGAR.

Among the curious inventions for which a patent has been granted is one to Josiah Daily, of Madison, Indiana, by which anybody who likes maple sugar and maple sirup may readily supply himself at a small cost. If the patentee's statement is correct, it is no longer necessary to go through the tedious and exhausting labors of tree tapping and sirup boiling in order to obtain maple sugar. If it should be found that the patent process will also convert into maple sirup a solution of the newly discovered chemical sweet known as "saccharine," which is said to be three hundred times sweeter than cane sugar, or the more recent artificial sugar of Drs. Fischer and Tafel, then the very acme of transformation will have been reached, and the interposition of Congress will be necessary to save the genuine maple sugar industry from going to destruction. This would only be in keeping with the action of Congress last year, in its effort to suppress the oleomargarine butter industry, because the popular taste preferred it to the rancid and dirty stuff called genuine butter which is found in all the markets. But let us return to our subject.

The patent maple sugar is made by simply mixing an extract of hickory with any ordinary sirup, such as cane sugar sirup or sorghum. The patentee says:

"The extract is to be obtained in any convenient manner, such as making a decoction of the hickory bark or wood, or percolating liquid through the same, or drawing off the sap from the tree. The bark or wood of the hickory tree may be ground to facilitate the extraction of its principle, and the extract may be made more or less strong by increasing or diminishing the quantity of bark or wood, or by boiling the extract for a longer or shorter time.

"In preparing sirups, I ordinarily add about three tablespoonfuls of the decoction to a gallon of heated or boiling sirup. Of course the stronger the extract the less the quantity required for flavoring a given amount of sirup. The sirup may be manufactured from any kind of saccharine matter or mixture of saccharine matters, or the sirups ordinarily found in the market may be used. The effect of the extract or decoction is to give to the sirup the flavor of the maple, producing a sirup which cannot be distinguished from genuine maple sirup.

"The high price of maple sirup, as well as its scarcity throughout the country, renders this improved sirup of great value, since a good substitute for maple sirup is thus produced, which comes within the reach of all.

"It is evident that the flavored sirup may be boiled down and a sugar resembling maple sugar in taste may be produced.

"In defining the limits of my invention, I would state that I do not claim broadly the use of extracts of the wood or bark of trees for flavoring sirups or sugars, as I am aware that a decoction made from the wood of the maple has been used for the same purpose. The maple, however, belongs to a different genus of tree from that of the hickory, and it is well known that extracts of wood, as a rule, differ from each other in taste, according to the nature of the tree. I have discovered that the hickory tree will produce the flavor of the maple, and I therefore claim as my invention the use of the hickory extract wherever it may be employed to impart an agreeable flavor.

"I claim:

1. The method herein described of flavoring saccharine matter, including sirup and sugar, which consists in treating or impregnating the same with the principle or extract of hickory, as specified.

2. An improved sirup or sugar consisting of any suitable saccharine matter flavored with an extract of hickory, substantially as described."

Supreme Court Decisions.

The following are recent decisions in the Supreme Courts of several States indicated on diverse subjects, all of which are important for business men to know:

Riparian Rights.—The owners of land bounded by a stream declared by act of Congress to be navigable do not acquire title extending to the center of the stream upon the repeal of the act. A railroad company having constructed its track along the bank of such river, inside the limits of high water mark, acquires title as against the adjoining owners, and the riparian owners are precluded from acquiring title by accretion. —C., B. & Q. Ry. Co. vs. Porter. Filed Oct. 6, 1887. Iowa.

Patent Needle Machine.—The patentee of a machine, capable of producing needles of a superior quality, subsequently obtained a patent upon the product of such machine. Held, that the patent was void, as an attempt to patent the function of the machine, and thus extend the monopoly of the invention beyond the time

allowed by law, and that an action could not be maintained against one manufacturing the same kind of needles by the use of the machine after the expiration of the patent thereon, when the right to use it had become vested in the public.—Excelsior Needle Co. vs. Union Needle Co., Cir. Ct., S. D. N. Y.

Nuisance—Keeping Troublesome Animals.—A party erected a shed on his lot adjoining the lot of another, and kept there horses, poultry, and hogs. In an application by his neighbor for an injunction restraining him from keeping these animals in such close proximity to his dwelling, an injunction was granted as against the continuance of the nuisance. An unsightly building erected near the residence of another is not a nuisance *per se*, and cannot be enjoined.—Trulock vs. Merte. Filed Oct. 10, 1887. Iowa.

Trade Marks.—The use of a trade name, though by a corporation of a company's name, which is a usual name, and having the same sense and a like appearance, is a violation of a trade right as using a trade name. Where an arbitrary name is used for an article, a trade mark may be secured therein, though subsequently the public may give the article the name assumed in description of it. The word "Cellonite" stamped upon goods similar to goods stamped "Celluloid," being the same article, is a violation of the trade mark "Celluloid."—Celluloid Manuf. Co. vs. Cellonite Manuf. Co., U. S. C. C., D. N. J.

Master and Servant—Injury to Employee from Defective Machinery.—An employee of a furniture factory was killed, the knife flying out of a rapidly revolving shaper head. The device for holding the knife was a new one, invented by one of the managers of the factory, and had never before been used. In an action for damages for the killing, the court ordered a verdict for defendant, and on appeal the judgment is reversed on the ground that the question whether or not it was a safe implement should have been submitted to the jury.—Marshall, Admr., vs. Widdicomb Fur. Co. Filed Oct. 13, 1887. Mich.

Salt Water for Cement Mortar in Winter.

The following German experiments designed to ascertain the effect of frost upon hydraulic mortars and cements gauged with and without the addition of salt to the water have been quoted in the *Revue Industrielle*. Cubes of stones 6 c.c. in area were used in these experiments, and were joined together with cement mixed with water ranging from pure rain water to water containing from 2 to 8 per cent of salt. While the cement was yet fresh, the blocks were exposed in air at a temperature of 20° to 32° Fahr., after which they were kept for seven days in a warm room. At the end of this time the specimens were examined. The cement made with pure water was quite crumbled, and had lost all its tenacity. The cement mixed with water containing two per cent of salt was in better condition, but could not be described as good; while that containing 8 per cent of salt had not suffered from its exposure to the lowest temperature available for the purposes of experiment. It is possible that the salt merely had the effect of preventing the water in which it was dissolved from freezing at the temperature named, and so permitted the cement to set in the ordinary way. These results may, however, be usefully cited at this particular season, when outdoor building operations are liable to be suspended on account of frost, and the stability of green work is threatened by the same influence.

Egyptian Porphyry Quarries.

An account of a recent visit to the ancient porphyry quarries of Egypt was given at the last meeting of the British Association, by W. Brindley. Egyptian porphyry has been sought after from the earliest times, as one of the most precious building stones. Ancient writers differed as to the whereabouts of the quarries from which that stone was obtained, and in modern times they were literally rediscovered by Burton and Wilkinson in 1823, and subsequently visited by Lepsius in 1845. The information published by these visitors proving of no immediately practical value, the author determined to follow in the footsteps of Wilkinson, and, accompanied by his wife, he went to Cairo in February last. Having examined the ancient granite quarries at the first cataract, which supplied deep red, rose, and dark gray stone, which was quarried by metal wedges, and not wood (as is generally supposed), the author started from Kenah with a small caravan and supplies calculated to last three weeks. Passing the remains of several Roman stations, the author, on the fifth day, reached an excellent well in the charming Wadi Kitar, hemmed in on three sides by precipitous mountains. Soon after leaving this valley he crossed the watershed (2,400 feet above the Nile), and then traveled along the flank of the immense porphyry mountain of Gebel Dukhan as far as the old Roman station with an old fort. The morning after his arrival the author ascended to the top of a pass (3,100 feet), without having found even a fragment of porphyry; but espying by the aid of a good field glass porphyry coloring on the opposite mountain, he resolved to go there, and his delight knew no bounds when he found

the ground there strewn with pieces of the most sumptuous porphyry, and discovered a pitched way or slide, 16 feet wide, down which the blocks were lowered. Further examination led him to the locality where the Romans had extracted their grandest masses, and he found that these quarries had yielded not only the usual spotted variety, but also the brecciated sorts and green grays.

The great quarry was at an altitude of 3,650 feet above the sea, and a road led down from it to an ancient town with workshops. A path led hence to the old town in the valley, further up which are the ruins of a Roman temple. The blocks were formerly carried to the Nile, a distance of 96 miles, but they will in future be conveyed by a gentle incline to the Red Sea, which is about 25 miles distant. On his return to Cairo the author secured a concession to rework the quarries, the terms of which have since been ratified.

PHOTOGRAPHIC NOTES.

Marking Lantern Slides.—It is frequently perplexing to the amateur to tell which side of a lantern slide should go toward the screen. The general guide is to place the slide in the lantern with the film side toward the condenser, and in connection with this subject we take some practical suggestions from *The Camera*, as follows: "We all know what a distressing and common experience it is, during a lantern exhibition, to see an occasional picture placed before the audience upside down. This would be altogether avoided if the operator had a ready means of knowing which side of the glass picture must be placed next to the light, and which was the top of it. The best plan we know of is for each slide to be furnished with a white paper disk, preferably placed beneath the cover glass, so that it cannot be rubbed off. This disk should be placed on the bottom left hand corner of the front of the picture. When the slide is inverted, as of course it must be for insertion in the lantern carrier, this disk will come exactly under the thumb of the operator. It can, moreover, be well seen in the dim light of the exhibition room.

Detecting Leakage in Pipes.

Mr. W. P. Gebhard tells how those who are neither plumbers nor sanitary inspectors may locate the slightest leakage in water pipes by introducing essence of peppermint into them. The best place to do this is outside on the top of the roof, because if the odor is released in a room or around a fixture, even for an instant, it would be impossible to detect a leak afterward. Whoever applies the peppermint should remain on the roof, as he would otherwise carry the odor on his clothes into the house. As to the best means of using the peppermint, some persons pour an ounce or two of pure peppermint into a pail of very hot water, and pour it into the soil pipe, while others pour in the oil and follow it with hot water, taking care while the search is conducted below to cover the top of the soil pipe above the roof. There is thus no chance of escape, unless through leaks in the pipe, and a careful examination of every line of pipe, and around each fixture, will readily enable the investigator to determine where, if any, there is a leak. Care should also be taken that while the examination is being made none of the fixtures shall be discharged, as otherwise the air in the pipes laden with the peppermint odor might find its way into the rooms.

Antipyrin in Seasickness.

In a note presented to the Academy of Sciences (*Compt. Rend.*) M. Dupuy calls attention to the value of antipyrin as a remedy against seasickness. He states that he prescribed to some persons who had previously suffered terribly from seasickness, 3 grms. daily of antipyrin on the three days previous to embarking and the three days following, while some patients continued to take the medicine throughout the voyage, and he has been informed that all these persons crossed the Atlantic without suffering from seasickness. This experience was subsequently confirmed in a communication from M. Ossian-Bonnet (*Compt. Rend.* cv., 1028), who states that in about sixty cases occurring during a voyage to Buenos Ayres and back, he found antipyrin invariably effective in arresting seasickness, though the dose required was variable. In most cases 1.50 gramme was sufficient, the complete effect being produced in about ten minutes. In other cases the dose had to be repeated, but it was never necessary to exceed 3 grammes to produce cessation of the sickness within an hour. In a few cases, where the sickness was so incessant as to prevent absorption by the stomach, the same effect was produced by the hypodermic injection of 1 grain of antipyrin.

Chemical and Allied Industries.

We give in our this week's SUPPLEMENT a report by Professor Watson Smith upon section 3 of the Manchester exhibition, comprising chemical and allied industries. The report is remarkable for the interesting historical information it contains, as well as for the condensed but lucid descriptions of the many substances and apparatuses of which it treats.