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STATE LAWS AFFECTING PATENTS.

power of a State to tax goods manufactured under a patent munity. -is instructively discussed in a very recent Supreme Court decision. Other aspects of the question are not unfamiliar. Every reader knows that the general subject of granting and enforcing patent rights is under the exclusive control of Congress, and that the States cannot directly interfere with a privilege which Congress has granted. But how far does this prohibition extend? Very clearly, just as a State cannot issue a patent, so it has no authority to decide whether one is valid or to punish infringements. On the other hand, authority, notwithstanding they spring in some way from a a contract about a patent.

cussion has been that the patent right itself, being a privilege right. directly granted by Congress, although a species of property, cannot be taxed by a State; for if these rights might be taxed at all, they might be taxed so heavily as practically to crush them. No authority can be conceded to the States which might result in enabling a legislature to destroy a privilege which Congress has been authorized to grant. Thus, also, a State cannot, by taxes, hinder the sale of a patent right or the exercise, under it, of the privilege of manufacturing. The combination of different materials to produce a new result or an old result better or more rapidly, which constitutes cannot be forbidden, it cannot be taxed; for to tax is to forrestriction upon the taxing power ceases. The right conmanufactured article; it does not take the tangible property in which the invention or discovery may be embodied out of

The case above mentioned, by which the authority of the States to tax the manufactured article has been established, it a criminal offense to sell anywhere in Virginia things manufactured outside the State, without obtaining a license been passed in late years, and have borne somewhat heavily drummers, and traveling salesmen sent throughout the comparatively new regions of the country to represent the large manufacturing establishments in the older parts. They have no doubt, considered a healthful encouragement of domestic manufactures and trade; while the view at the East and in the Federal courts has been that they involve an objectionable interference with the uniformity and freedom of commerce. In Virginia a traveling agent for the "Singer sewing machines," representing the Singer Manufacturing Company in New York, continued his sales without complying with the law. He was prosecuted and fined \$5). He contested this fine in the State court; one of the arguments urged in upon the sale of a machine patented under the laws of Congress. The Virginia court decided against him, and the forms a reason why Congress should pass a proper law. Supreme Court has now pronounced the decision correct, saying that the grant of letters patent for the invention of the sewing machine does not prevent a law imposing a license fee for making sales of particular machines made under it. It is, however, noteworthy that the Supreme Court pronounced the Virginia law invalid for another reason, viz., for taxing the machines merely because made in another State.*

The States have sometimes seen reason to legislate for the protection of their people against noxious or dangerous articles, and the question has arisen whether a right granted by | possesses, when properly prepared, many unique and valuable Congress for manufacture or sale exempts the article from properties. In cold water it is nearly insoluble, or dissuch laws. The course of decision has been that it does not. A patent right for making dynamite powder does not prevent any State from prescribing regulations for manufacture, storage, and sale, such as will protect the community from explosions. So, a patent right for the manufacture of a poison does not impair the right of a State legislature to control the sale and use of the article. The ownership of an invention secured to the inventor by his patent cannot be impaired by local legislation; but he must be contented to enjoy it in subordination to the general authority of the State over all actual property withinher limits. A similar question has arisen in States which forbid or seek to hinder the sale of intoxicating beverages, where liquor dealers have claimed that the internal revenue licenses granted under the laws of Congress gave them a right to sell which the local law could not gainsay. But such claims have been repudiated in the courts. Neither the patent laws nor internal revenue laws

were intended to displace what is called the "police power" Can the State legislatures exercise any control over deal- of any State; by which term is meant that general authority, ings under patent rights? This question is one of increasing necessarily vested in every government, of providing for the importance, and presents many aspects: one of which-the health, good order, peace, and general welfare of the com-

A distinct decision upon this branch of the subject was rendered about two years ago relative to the "Aurora oil." This oil was manufactured under a patent right. There was, however, a law of the State (Kentucky) which required all coal oils and like burning fluids to be inspected before sale; and punished the offering for sale of any which the inspector condemned as below the standard for safety. A dealer who sold a parcel of the Aurora oil which had been condemned, claimed that he had a right under his patent to sell the oil the great mass of ordinary contracts may come under State, in any part of the United States, and that no State could forbid him. But the Supreme Court pronounced this claim patent right; thus State courts may decide the meaning of inadmissible, saying that the patentee's right in the manuan assignment, or entertain a suit for damages for breach of factured article must be enjoyed subject to the complete and salutary power, with which the States have never parted, of As the States need to be constantly on the watch for new so defining and regulating the sale and use of property as to subjects of taxation from which they may derive revenue for afford protection to the common people. The ownership of their increasing expenses, and the development of invention, the manufactured article is altogether distinct from the right under the patent laws is steadily embracing more and more to the invention or discovery; the invention is protected by of the lucrative manufacturing business of the country, a national authority against all interference; but the use of the claim to impose taxes on patent rights and dealings under tangible property which is manufactured by means of the them has been very natural. The general result of the dis- invention is not taken out of State control by the patent

In so far as the decisions treat a patent right as superior to State laws, they evidently throw upon Congress the duty and responsibility of passing all laws which the interests of the general public demand. And it is scarcely to be denied that the subject has not received proper attention. There is one class of frauds from which farmers and dwellers in rural districts, especially foreigners not well acquainted with our language and business customs, have suffered extensively. It has been common for agents to travel through small towns and villages, offering to sell county rights, or to appoint local the invention, cannot be forbidden by the State; and if it agents, for some new and patented invention. There are various forms in which such business is done; sometimes the bid unless the tax shall be paid. But somewhere here the traveling salesman offers to furnish the manufactured article in quantities for sale; sometimes he offers a license to manuferred by the patent laws upon an inventor to exercise or sell facture within a limited territory; sometimes an agency to to another the invention he has made does not extend to the sell rights. But his negotiation always tends toward obtaining a negotiable note, or something which he can turn into a note, from one of the "solid men" of the place. Inthe operation of the general tax or license laws of the State. deed there are several instances on record in which a person who could not read has been led to sign a note by assurances that it was only a paper appointing him agent; or in which arose in Virginia, under a law of the legislature, which made one who could read has been enticed to sign a paper ingeniously printed as an ordinary contract, but capable of being changed into a negotiable note by cutting off one end of it. fee, for which a tax must be paid. Such laws have often If the note were held when it fell due, and sued by the agent himself, the honest villager who made it would have some upon all kinds of sales, such as are usually made by agents, | chance of obtaining justice; for if he could prove the fraud he would be released. But the agent never keeps the note. When it falls due, the maker finds that the agent almost immediately got the note discounted and went on his way to been enacted chiefly in the West and South, and are there, parts unknown. The note is owned by "an indorser for value and without notice." Now a familiar rule of law forbids the maker of a note to make defenses which would be perfectly good against the payee, when the note is presented by one who bought it innocently before it wasdue. Thus the swindle is completed.

Congress has taken no pains to suppress these fraudulent dealings; yet when some of the States have endeavored to protect their citizens against these traveling patent salesmen, the objection has been made that their laws are unconstituhis behalf being that the State could not impose any burden, tional; that the manner of selling a patent right is wholly within the care of Congress. This is probably true; but

WATER GLASS.

In 1640 Von Helmont discovered that when in the preparation of glass from sand and alkali an excess of alkali was used the glass dissolved in boiling water, but it was not until 1828 that water glass as now known was prepared and practically utilized by Von Fuchs, in stereochromy or solid color painting, in mural and monumental decoration, and for the preparation of various cements and artificial stones. Water solves very slowly. In boiling water it dissolves with facility and remains in solution when the latter has cooled. Water containing 30 per cent of the glass in solution is of a sirupy consistence, and may be used as a transparent varnish on many substances; on drying it forms a glassy coating that resists moisture and change of temperature very well. It has been used extensively as a vehicle for certain pigments to form paints known as silica paints. These have the advantage over all paints or varnishes of being incombustibly, and when used on woodwork serve in a measure to prevent sudden ignition of the wood by contact with flame. They are also serviceable in painting theatrical scenery, cloth saturated with a dilute water glass varnish becoming uninflammable. The pigments used in these paints are : zinc white, barytes, chrome green, chrome oxide, chrome red or orange, cobalt ultramarine, zinc yellow, ultramarine, cadmium sulphide, ocher, etc. Chalk mixed with water glass forms on drying a very compact stone as hard as marble; bone ash, zinc white, and magnesia with water glass form similar stones. Ransom's artificial stone is prepared by mixing sand with water glass solution to form a plastic mass which is pressed

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* The decision of the Virginia Court of Appeals is published as Webber's case, 33 Gratt. 898; and that of the Supreme Court as Webber vs. Virginia, 12 Cent., L. J., 488.

into the required shapes, then placed in solution of calcium chloride; silicate of calcium is formed and cements the grains He also went so far as to design sleeping cars and other rail- nucleus was well defined and the tail brilliant. It was together, the chloride of sodium formed at the same time way conveniences so far beyond the comprehension of his observed at Tombstone, Arizona, at four A.M., with the being removed by washing with water.

In connection with clay, lime, sand, cement, etc, soluble dangered. glass enters largely into the composition of many of the patented artificial stones, plastic tiles, slates, etc.

lent scouring material, and it enters largely into the composition of most of our common soaps.

Water glass is best prepared by melting together in a crucible powdered quartz or quartz sand and carbonate of soda. Usually a small quantity of charcoal is introduced, but if the motive engine for railroads, built at Pen-y-darran, in South expected to reappear in this quarter about this time. materials used are free from metallic oxides and compounds this in unnecessary.

Fine infusorial earth is nearly pure silica and makes excellent water glass. Where quartz or sand is employed it is reduced by grinding together with the calcined soda to a powder, the whole of which will pass through an eightymesh wire-gauze sieve.

materials are mixed:

1. Clear quartz	45	pounds.
Carbonate of soda, calcined	23	
Charcoal	3	
2. Quartz sand	100	pounds.
Calcined soda	4 8	61
Charcoal	5	14
3. Quartz sand, purified	65	pounds.
Anhydrous carbonate of soda	34	6 6
Powdered charcoal	4	46

The ingredients, thoroughly mixed, are put into clay pots and gradually heated to bright redness; carbonic acid and oxide escape and the mass gradually becomes liquefied. When effervescence ceases and fusion is complete, the contents of the pots are poured out on clean stone slabs to cool. When made of good materials and properly fused the glass closely resembles ordinary flint glass.

Cold water scarcely dissolves it at all, but if broken into small pieces and boiled in soft water it gradually dissolves. If the boiling is continued some time and a sufficient quantity of glass is added, a clear sirupy liquid or a nearly colorless jelly, according to circumstances, is obtained. These solutions may be diluted with hot water.

The solution containing about 30 per cent of the glass is in greatest demand. It is quoted at fifty cents per gallon, put up in barrels or kegs.

****4 THE STEPHENSON CENTENARY.

One of the notable features of the celebration of the hundredth anniversary of the birth of George Stephenson, at Newcastle, England, June 9, was a parade of locomotive engines. To this the leading railway companies contributed typical examples of the best modern locomotives for passenger and freight traffic, besides a considerable number of early locomotives, or so much of them as remained after the numerous alterations and repairs they were subjected to while in use. In the latter class was the engine called "Locomotive No. 1," built at Newcastle in 1825 by Stephen- in the northeastern sky on the morning of June 23, and league. son for the Stockton and Darlington Railway Company. Anotherwas the "Billy," fourth of its class, built by Stephenson & Uo. in 1830. This was a four-wheel coupled engine, | Dr. Gould, of Cordova Observatory in South America. It as was a similar specimen engine from the Old Hetton Colliery, which contained only the cast iron dome on top of the boiler, the steam pipes, and the feed pump of the original, center and a tail fifteen degrees long. It promises to be a the rest having been removed when the engine was rebuilt, conspicuous object in the heavens this summer. in 1874.

has been seriously questioned, and his right to the compli- Edwards, Haverford College, Pa.; E. L. Larkin, New mentary title, "Father of Modern Railroads," has been dis- Windsor, and several others. We are indebted to Mr. puted. It is true that Stephenson invented neither the rail- Thompson for a special telegram announcing his interesting way nor the locomotive engine; the distinctive features even of his successful engine may be ascribed to others; nevertheless Stephenson had so much to do with the genesis of the covery of the comet at a little before 2 o'clock A.M., June modern railway system, and his work was of such a vital character at the critical moment when the promise of the sight of the stranger, and may entitle the observer to the locomotive was being put in the way of fulfillment-at the moment when steam transit on rails was first made a practi-, thus described by the Sun correspondent: cal and profitable certainty-that he is fairly entitled to have his name placed at the head of those to whom we owe the railway as it is.

would travel from Philadelphia to Boston in a steam wagon. fellows that his reputation for sanity was grievously en-

In 1802 Trevithick and Vivian obtained a patent for im-The detergent properties of water glass make it an excel propelling of carriages, and two or three "puffing devils" were made by them that year and the year after for use in , before the first of July it will be visible all night, London. They were able to make five or six miles an hour on common roads, but the enterprise was, after all, a failure. soon determined. Professor Lewis Swift thinks it may pos-The next attempt of Trevithick was a high pressure loco-sibly prove to be the great comet of 1812, which has been Wales, in 1804. It ran well and did good service, but its | Dr. Gould, of the National Observatory of the Argentine ward quite well on a temporary track, but for some reason for some fifteen centuries. it was never put upon the road. After many years' service as a stationary engine it was set aside, and finally found an i The following are the usual proportions in which the honored resting place in the Patent Museum at South Ken-London, for exhibition purposes. In 1811 John Blenkensop patented a rack rail for a steam railway, and had constructed two double-acting steam cylinders. It was built by the en- so the newspapers state. gine firm of Fenton, Murray & Wood, of Leeds, Trevithick's running on the railway from Middleton Collieries to Leeds,

> August 12, 1812, and continued in use for many years. Here was the real beginning of practical steam railroading. Within a year after the introduction of Blenkensop's engines, three different methods of effecting steam locomotion were patented in England. The smooth-wheeled engine "Puffing Billy," now in the Patent Museum at South Kensington, was put to work in 1813. Stephenson made his first engine in 1814, departing from Blenkensop's plan mainly in using smooth wheels. Springs were introduced in 1815. But little progress was made during the next ten or twelve years, though quite a number of engines were built by point that in a pound of coal there are stored up eleven Stephenson and others. In 1827 Timothy Hackworth built the "Royal George," the first of a new type, the nearest approach to the modern locomotive that had been designed. In 1829 Robert Stephenson (not his father, as is commonly reported) built the "Rocket," in which the multitubular, thinks have been found wanting. boiler appeared for the first time. It also had an improvement in the blast pipe arrangement of Hackworth. The | and still we think it will appear that the new battery con-"Rocket," came out ahead in the celebrated competitive tains qualities and powers that promise to render it a most trial of locomotives on the Liverpool and Manchester Railway, in October, 1829; and it was the successful application of steam locomotion on this road that insured the final vic- true that the coal must have the weight of a steam boiler tory of steam transport and inaugurated the modern railway system of Great Britain.

THE GREAT COMET NOW IN SIGHT.

The comet which made its appearance to the naked eye was seen from many points between Hartford, Conn., and San Francisco, Cal., is perhaps the comet lately reported by appeared, after its perhelion passage, in the constellation Auriga, about eight degrees from Capella, with a bright:

The new comer was almost simultaneously discovered in The propriety of ascribing so much honor to Stephenson this country by P. H. Thompson, Blufton, Ga.; by T. L. observation.

> A correspondent of the New York Sun reports the dis-23, at Washington. This we believe is the very earliest Warren prize of \$200. The first appearance of the comet is

"Just before 2 o'clock this morning the writer was sumin five strips, in the following order, beginning at one edge: moned to an upper story window by a night watcher in the First, 14 inches wide; second, 8 inches wide; third and midhotel. Pointing to the horizon just east of the Georgetown Railways of a sort were in practical use before Stephenson | Heights, the watcher said: 'Don't you see that distant fire?' | dle, 28 inches wide; fourth, 8 inches wide; fifth, 14 inches wide. The belt is both wire-stitched and hand-sewn, and "Shooting up from the horizon was a bright, silvery, perbeen the dream of inventors. As early as 1698 Papin had fectly defined, and steady stream of light, fan shaped. It the arrangement of the strips, it will be seen, breaks the constructed a small model locomotive éngine. Fifty years was wholly unlike the light of a distant conflagration. The joints very effectively. It is to work considerably under its power, being intended to transmit only 600 indicated horse two open-topped high pressure steam cylinders, the piston the pole star. The boundary lines were well defined, and power over a flywheel and drums of 71 feet and 7 feet respecrods working upon the same axis. In his patent of April 28, converged. It was no fire. There were none of the waves tively. The Source of Much Noise. At Granville Corners, Mass., a couple of men began the work of drum making in 1853. Now they have a five-story factory, 110x40 feet, from which they have turned out 79,000 drums. They were mostly toy drums, and were made of wood, tin, brass, and nickel. The drumheads have used up 30,000 sheep skins. WE are informed that the bending machine made by "The cometrose rapidly and became a splendid object. At Messrs. Williams, White & Co., of Moline, Ill., and illustrated in our issue of June 11, is being extensively adopted through bad steering, it was overturned in a ditch. In the forty-five degrees north of the moon. At this altitude the in shops having considerable iron bending to do. It finds its meantime our own ill-appreciated inventor, Oliver Evans, tail was about ten degrees long. It moved apparently principal application in the manufacture of plows, cars, wagons, and wherever a number of wrought iron pieces of the same form are required.

At half past four it was seen at Bodie, Cal., where the nucleus apparently half the size of a full moon, and the tail fan shape and very brilliant.

A dispatch from London says the new comet in the northprovements in steam engines and their application to the ern heavens can be seen by the unaided eye even in the morning twilight. It is predicted by astronomers that

The identity of this remarkable body will doubtless be

weight finally broke the cast iron plates of the tramway, and Republic at Cordoba, S. A., announced, June 1, the appearit came to grief with broken axles. In 1805 a similar engine ance there of a large comet which he suspects to be the great was constructed at Newcastle. It ran backward and for- | comet of 1807, though that comet was not expected to return

Concentrating or Storing up Electricity.

We give, on another page, extracts from an able review sington. In 1808 Trevithick was running another locomo- and criticism by Mr. Geraldy, of the performances and tive-the "Catch-me-who-can"-around a circular track in claims of the new Faure battery. We also present an illustration of the use of the battery in propelling a boat on the river Seine, at Paris. The battery has also been applied to an engine in which, for the first time, there were employed drive a passenger omnibus in Paris, with promising results,

Mr. Geraldy points out very clearly that the battery is not patent being still alive. This engine (with others) began, capable of delivering such a large percentage of energy as has been claimed for it; and his conclusions seem to be well sustained. We also have a letter from a correspondent in Paris who tells us that the invention is classed there like the Keely motor, and that the most extraordinary efforts are being made to force the sale of stock shares in the patents, which no doubt accounts for the published inaccuracies which Mr. Geraldy mentions.

> In London Professor Osborne Reynolds has deemed it necessary to publish a note, cautionary to the public not to be misled by the enthusiasm with which Sir William Thomson views the new battery. Professor Reynolds makes the million foot pounds of energy, while in a seventy pound Faure battery there is only one half that amount of energy. He also reminds the public of other modes of transmitting energy, such as wires, ropes, compressed air, etc., which he

> All this is very well. Let all possible deductions be made, useful appliance in the arts. While it is true that coal is far superior in the quantity of stored-up energy, it is equally added to render it available to drive a small boat or a carriage, for example. We are inclined to think that Sir William Thomson is doing the public a better service in practically experimenting with and trying to find out how the new battery may be best applied to the wants of man, than is Prof. Reynolds in discouraging these efforts of his col-

Exhibition in Orizaba, Mexico.

It is announced that a scientific, agricultural, and industrial exhibition will be held at the city of Orizaba, Mexico, in November next, under the auspices of the Government of the State of Vera Cruz. Arrangements have been made for all necessary space in the exhibition building for exhibits from the United States, and all goods intended for exhibition are exempted by law from import duties. Reduced rates for passage and freight have been secured from points in the United States to Vera Cruz, and a cordial invitation has been extended to citizens of this country to participate in the exhibition, either as visitors or exhibitors.

-----A Large Belt.

What is described as one of the largest belts in the world was lately finished at Bingley, England. It is 132 feet long and 6 feet wide. It is two layers, the outer layer having three sections, of which the middle section is 36 inches wide and the two side sections 18 inches each. The inner layer is

was born, and for more than a century the steam wagon had later Cugnot was at work upon a steam carriage employing stream seemed to reach further and further up, pointing to 1784, Watt describes an improvement on "steam engines, of light suggesting an auroral display. The distant glitter which are applied to give motion to wheel carriages for re- of a moving electric light was the only explanation that moving persons, goods, or other matters from place to place, could be given of the singular phenomenon. Suddenly in which cases the engines themselves must be portable." there arose from the horizon a brilliant disk of light, bright In the same year (1784), when Stephenson was but three as Venus at her brightest, and fully as large as that planet years old, William Murdock made a working model of a appears. Into this disk or nucleus the fan-shaped stream of high pressure locomotive, which is said to have performed light converged. There was no longer any doubt; it was well; but he abandoned his experiments in that direction the bursting into view of a comet, the like of which has through the remonstrance of Watt. On the expiration of not been seen since Donati's comet of twenty-three years ago. Watt's patent in 1801, Richard Trevithick made a steam carriage which ran very promisingly on a common road until, 3 o'clock it was about fifteen degrees above the horizon and had worked upon the same problem with such success that rapidly in an easterly direction, and was visible until after he confidently predicted that the child was then born who sunrise."