

this reaction should always be kept in view. Phosphate of soda and chloride of barium, alternately applied, appear to yield, upon the whole, the most satisfactory results.

EXTRACTION OF OIL BY PETROLEUM.

The extraction of oil from seeds, by some volatile solvent instead of the usual hot or cold press, is constantly receiving more attention, partly because the yield of the extracted oil is found to be greater, and partly because the quality of the oil is better, without any diminution in the value of the cake for fodder. The light oils of petroleum appear to have certain advantages over bisulphide of carbon for the preparation of table and lubricating oils. In the treatment of the cacao bean, as the theobromine is not soluble in petroleum, all of the butter is removed without destroying the aroma, and the broma remains in the residue. Petroleum can be applied to the removal of fat from bones, and it leaves the bones perfectly clean and white, in which condition they are admirably adapted to knife handles, and take colors more readily. The oil and fat can at once be applied to the manufacture of soap or candles without further purification, and the yield of glue is increased. Several patents have been taken out for contrivances for extracting oils by means of petroleum, naphtha, and bisulphide of carbon; but they do not appear to be well known, as the fat boiling nuisance still continues. It is a curious spectacle to witness the wasteful and disgusting method, of recovering fat, pursued in large cities, when a cheaper and more economical way is at hand. So also in pressing linseed, a large amount of oil remains in the cake, which would be saved if the extraction were to be conducted in a chemical way. We again call the attention of inventors to this important subject.

RECENT PATENT DECISIONS.

In the matter of the application of Timothy F. Taft for the extension of letters patent No. 18,025, for shears for cutting metal, granted him August 18, 1857.

The decision first prepared in this case was as follows:

The invention sought to be extended consists of shears for cutting metal, so constructed that the upper edge of the movable blade constitutes the inclined plane on which the wheel travels, while the wheel itself is compelled in its movement of translation to follow a horizontal direction by means of a horizontal plane in the opposite side of its circumference, and a supplementary wheel interposed between them. The bearing surfaces of the two wheels and two planes are plain, and, to avoid slipping from want of proper traction, the wheels and planes have severally cogged plates attached to them which mutually interlock.

Affidavits have been filed of three intelligent and apparently disinterested persons, as well as the affidavit and statement of the patentee, and they all agree in representing the machine in question as enabling a man to accomplish one third more work in a given time, and as doing the work better and with more ease than any other machine with which they are acquainted.

The examiner in this case reports:

"After a careful examination of the application, it is believed that the invention was new at the time the patent was granted; that it is valuable, and important to the public; that the patentee has not been reasonably remunerated, and that his failure to be so remunerated has arisen from no fault or neglect on his part."

From the examination of this case, I am satisfied all the requirements of the law have been complied with, as relates to extension, and accordingly the prayer of the petitioner is hereby granted.

Subsequently this decision was recalled, for reasons which appear below, and a new one rendered, as follows:

LEGGETT, Commissioner:

Upon the hearing of this case, it appeared, upon the records of the Office, that the patentee, Timothy F. Taft, had assigned all his interest in and to said patent, including the extension, if granted, to one Lucius W. Bond, by assignment, dated November 22, 1867.

I called the attention of the attorney to this matter, and informed him that the Office would not extend patents for the sole benefit of assignees, and could not, under the law. He then said that said assignment was given to Bond in the nature of a mortgage, to secure borrowed money, and that on June 13 last, Taft had settled the matter, and on that day the patent was reconveyed to Taft; but that he had neglected to have the reassignment recorded. The attorney then took the reassignment from among his papers, and had it put upon record, and assured me that it was a *bona fide* document, and that the whole title was then in Taft, and upon this assurance and belief the decision extending the patent was made.

As soon as the decision was made, the attorney took from his pocket another assignment from Taft to Bond, also bearing date June 13, 1871, and filed the same for record, thereby falsifying the statement that the title in the extension was in Taft, and further showing the reconveyance to Taft was a mere fiction to deceive the Commissioner of Patents.

The records of the Office further show, that on the 22d June, 1871, Taft also assigned all his right, title, and interest in the extension, to one Elizabeth H. Taft. He comes to the Office for an extension, and assures the Commissioner that he has, in his own right, the entire interest in the extension, while, in fact, the records of the Office show that, in June last, he sold for a merely nominal price to two distinct persons, by two separate assignments, all his interest in the extension, if granted.

In view of these facts, the former action of the Office granting extension in this case is revoked, and the extension is refused.

DAVID H. MORRISON'S PATENT.

In the matter of the application of David H. Morrison for letters patent for an improvement in iron bridges.

CARTER, Chief Justice:

In the case of the petition of David H. Morrison for improvement in iron bridges, on appeal to this court from the decision of the Commissioner of Patents, the court have come to the conclusion to grant him a patent. The whole case is to be found in one consideration outside of the opinion of the Commissioner of Patents; or rather, is to be found inside of it.

"The applicant originally presented four claims," says the Commissioner, "and exception was taken to the first and fourth. The fourth was erased, and the first is now the only one in controversy. It reads as follows: 'The construction of the arch or top chord of the bridge by the use of the iron I beam, when arranged therein with its double flanges in vertical plane, substantially as described, for the purpose specified.' This claim was rejected by the primary examiner upon references which the board of examiners-in-chief do not think pertinent; but they go on to declare, in effect, that, the

I beams having been used in bridges or other structures with double flanges in horizontal planes, it did not involve invention to arrange them with the flanges in vertical planes."

The Commissioner proceeds:

The applicant suggests certain advantages which will arise from his new arrangement, among others that the frames and truss work can be more readily attached to the arch or top chord, and especially by this arrangement the tendency to lateral flexure is resisted without the necessity of cross timbers, while the tendency to vertical flexure, being less considerable, is not increased.

These advantages, I am of opinion, are substantial, especially the latter; and if the applicant was the first to obtain this result, the improvement might well be construed to be not for turning an I beam upon its side, but for the construction of the arch or top chord of a bridge, with a broad horizontal web to resist lateral flexure. This, if new, is useful, and I think patentable. It is, however, not new.

The arch exhibited in the withdrawn application of Penniman & McGlacklin shows a broad, horizontal web, which possesses the advantage of applicant's beam, and differs in nothing from his, except the fact that the upper flanges on each side are wanting. The web and lower flanges, as represented, perform the precise office of the same part in applicant's. The upper flanges merely strengthen the whole structure, and this reference anticipates the principle which is supposed to underlie the alleged invention, and, as the idea itself is old, reduces it to a mere application of an old device to an old purpose.

Now, the Office or the Commissioner disposes of everything connected with this patent except one reference, and that is the reference of the rejected application of Penniman & McGlacklin. He says that, inasmuch as the invention is anticipated in the one referred to, which was rejected, it is not new.

Now, this question of identity, or of difference, is a question of fact—a question in mechanics—and one to be determined by inspection. There is no other way of reaching it. The model of the rejected patent has been before us, and it has been fully examined and considered by us. From such examination, which was a careful and a thoughtful one, the court have come to the conclusion that it is not like the one for which a patent is now being sought, either in form or principle, or indeed in the mode of manufacturing. The only resemblance between the two consists in the former being made to perform, under a different arrangement, the same office that this arch is made to perform.

In the first place, the reference made here is a reference to a cast iron bridge—a bridge that could not be made of wrought iron. It is not an I beam in any sense, and could not be tortured into one. It is not the web of the I beam. Instead of the web between the flanges on either side, it is an open chamber, with links connecting it. It is not uniform in its size. The principle of that arch is a broad base at either bearing with a view of preventing lateral flexure, with a gradual withdrawal of the base until you arrive at the center of the arch. So that this support, the support of the vertical position of the arch, is designed to be maintained by this gradual spreading out of the arch to its base. Here the arch is uniform, and does not depend on such contrivance for its support.

Again, that is an arch, made in the form in which it is made, that could not be forged out of wrought iron. No machinery could make it; at least, the rolling process, by which wrought iron is reduced to shape in the I beam, could not be applied to it. It is not in the power of mechanics to roll out wrought iron in a diverging or expanding form; and grooves and dies of the roller must necessarily be uniform. Neither in the material, the form, the conception of the arch, nor the design of its peculiarities, is it identical with the contrivance in the application before us.

And that disposes of the whole case, for the Office enlightens us that, in every other particular, this application is worthy of a patent; and in this particular the Commissioner, although a very able man, an experienced patent lawyer, and a sharp, quick observer, must have come to this conclusion without looking at the reference that brought him to it.

The decision of the Commissioner is reversed, and a patent ordered to issue.

A Talking Machine.

The old talking machine of Faber is again on exhibition at Philadelphia, and is thus described in the *Post* of that city:

Previous to an experimental illustration of the wonderful powers of the machine, Dr. J. Solis Cohn delivered an exhaustive lecture upon the anatomy of the vocal organs and the formation of sound, the structure of the machine, and concluded with an historical sketch of the invention.

It was originated about thirty years ago by the uncle of Professor Faber, and exhibited at the time in that city. The present Professor Faber improved it wonderfully, although it took a great while to arrive at the present perfection. Seven years were necessary to arrive at the production of the sound of the letter "e." The exhibition last night consisted of the pronunciation of all the letters of the alphabet and elementary sounds of our language. Phrases of six and eight words in length were spoken in the English, French, and German languages. The voice is a shrill, monotonous, and unnatural one, but in the majority of instances startlingly correct. It was operated by a German lady, who does not understand a word of English, and produces the sounds simply through phonetic translation.

The happy pronunciation of a word or phrase was received by the audience with applause. If there is, in our estimation, any sound that is slurred in the slightest, it is the sound of the letter "i." It must be remembered that the basis of speech of this machine is the sound system of the German language, and that all the English words are spoken with a German accent. The machine is constructed as follows:

The machine consists of a gilded table, highly ornamented beneath which appears a bellows and a lever to put it in motion. Upon the top a lifeless face, with clammy eyes, stares on you, and behind it is arranged a mass of wires, strings, delicate wooden levers, rubber tubes, and pipes, which make up the speaking apparatus. By a compression of the bellows, the air is forced through a narrow aperture into an iron windpipe, and thence into an artificial glottis, from which it passes through a vent representing the human mouth, with movable jaws and rubber tongue. There are fourteen levers, which gives each a distinct utterance, and when moved in concert they produce the sound of any desired syllable. A separate lever causes a peal of laughter, which would be natural enough except for a slightly grating noise.

Are the Andes Sinking?

It is a singular fact that almost every successive measurement of the Equatorial Andes gives a reduced altitude. Thus:

Quito, according to	La Condamine (1745)	is 9,596 feet.
"	Humboldt (1803)	" 9,570 "
"	Boussingault (1831)	" 9,567 "
"	Bureau des longs. (?)	" 9,540 "
"	Prof. Orton (1867)	" 9,520 "
"	Reiss and Stübel (1870)	" 9,350 "
Pichincha	La Condamine (1745)	" 15,606 "
"	Humboldt (1803)	" 15,922 "
"	Prof. Orton (1867)	" 15,827 "
"	Reiss and Stübel (1871)	" 15,704 "
" crater	Moreno & Wisse (1844)	" 13,600 "
"	Prof. Orton (1867)	" 13,300 "
"	Reiss and Stübel (1870)	" 13,175 "
Antisana hacienda	Humboldt (1803)	" 13,465 "
"	Boussingault (1831)	" 13,356 "
"	Prof. Orton (1867)	" 13,300 "

This shows an apparent subsidence of Quito of 246 feet in 125 years, and of Pichincha, 218 feet. Its crater has apparently subsided 425 feet in the past twenty-six years. Antisana has subsided 165 feet in sixty-four years.

The Recent Discovery in the Arctic Regions.

A fortnight since, we informed our readers that the long cherished idea of the existence of an open sea surrounding the North Pole had been verified by the German explorers. The travelers Payer and Weyprecht have reached this region, in accordance with the suggestion of Captain Bent, by pursuing the course of the Gulf Stream, the warm current of which, he supposed, would lead to the gate of the frozen regions.

The scientific world will look eagerly for detailed accounts of this prodigious event in the history of the physical study of our globe. In the meantime, Captain Hall, in the *Polaris*, is pursuing the investigation through another channel, and, by our last accounts, was progressing rapidly towards his object.

Answers to Correspondents.

**SPECIAL NOTE.**—This column is designed for the general interest and instruction of our readers, not for gratuitous replies to questions of a purely business or personal nature. We will publish such inquiries, however when valid for as advertisements at 100 a line, under the head of "Business and Personal."

ALL reference to back numbers must be by volume and page.

J. H. P., of N. Y.—There have been stories about the late shifting of the Gulf Stream, but no such stories have been authenticated.

E. V. N., of Ohio.—General George B. McClellan, 348 Broadway, New York, is the Chairman of the New York State Commission on Erie Canal Navigation.

**HEATING SURFACE OF BOILERS.**—A. H. G. can apply the rules for measuring cylindrical surfaces (which the *SCIENTIFIC AMERICAN* has recently given with such generous profusion) to his own particular case. A slight knowledge of arithmetic only is required.—D. B., of N. Y.

**FISH IN LIMESTONE WATER.**—Trout thrive well in limestone water, and if A. B. wishes to stock his pond and keep the fish in good condition, he is fortunate in having a never failing stream such as he describes. The brook trout will not do well unless the water be constantly running.—D. B., of N. Y.

**SHAMPOOING THE HAIR.**—H. L. J. will find, if he will break an egg into his hair, and shampoo his head with it, just before going into the bath tub, that it will cleanse his scalp better than any shampoo mixture that is sold. I have used eggs for washing the hair for fifteen years. F. S. C., of Mass.

**FIREPROOF PAPER.**—In answer to C. G. A., query No. 2, Nov. 4, newspapers can be rendered fireproof by dipping in diluted 25° B. soluble glass, by first neutralizing the alkali by diluted muriatic acid of 10° B, while hot, and drying by the atmosphere. Fire cannot then destroy the texture of the paper. C. G. A. may be sure of success with a little care.—J. W. F., of N. Y.

**FIREPROOF CLOTH.**—In answer to C. G. A., query No. 3, Nov. 4, tents, awnings, canvas, etc., can be made fireproof as well as waterproof by the careful application of soluble glass. First dilute it with boiling water to 25° B. by hydrometer, before thoroughly dry, immerse in a solution of sulphate of alumina (alum cake) and sulphate of copper (blue vitriol) consisting of one part of each to ten parts of water. The fabric cannot be impaired by slowly drying by atmosphere.—J. W. F., of N. Y.

**SOLUBLE GLASS.**—In answer to W. J., query No. 6, No. 4: The article you purchased in San Francisco was the silicate of soda or liquid quartz, only used by soap boilers for cheapening and hardening their grease. The right article is soluble glass (water glass or liquid silice), of a syrupy consistency (40° B.), of clear, transparent straw color, used expressly for cements, stone, etc.—J. W. F., of N. Y.

**CLEANING BRASS.**—I saw in the last number of the *SCIENTIFIC AMERICAN* several methods for cleaning brass. I have seen no smoother, brighter brasses than those on our locomotives, and they are cleaned thus: Rub first with a piece of dirty cotton waste, and polish with clean waste and soot from the furnace door. We use bituminous coal. For the dirty waste, use that first used to wipe the dust and oil from the engine. If G. N. K. will try this, he can have bright smooth brasses at small cost. All emery and such substances scratch the brasses and destroy the hard, smooth surface which is the very thing required to be maintained.—W. C., of W. Va.

**DRYING ROOM FOR CLOTHES.**—J. J., page 282, No. 18, current volume, can easily and cheaply improve his drying room as follows: If there is an unused chimney flue in the room, cut an opening into it, of the full size of the flue, about one foot high from the floor. If there is no chimney, make a draft flue of wood, tin, or stovepipe, the larger the better, and the higher the better, but let the opening be low down in the room. At or near the level of the floor, introduce the fresh air, by any convenient opening sufficiently large to supply the draft pipe fully. This is preferably placed near the heating pipe. The lower down the heater is placed, and the cold air is admitted, the better. The fresh air, being warmed, has an increased capacity for moisture; it rises to the ceiling, is diffused there, and forces down the cooler particles of air in the room, cooling itself and being forced down in turn, and escaping, laden with moisture, through the draft pipe, as may be easily seen by holding the flame of a candle at the opening. It is a common error to make the opening of the escape flue, near the ceiling, whenever ventilation is intended to get rid of either carbonic acid gas or moisture; but in this case the hot air travels in a direct current, escaping before half its work is done, and out of the direct current, scarcely doing any work at all.—J. H., of O.