OMISSION OF OATH UNDER SEC. 6. ACT OF 1836---FRAUD IN OBTAINING THE EXTENSION---THIRD PARTIES CANNOT TAKE ADVANTAGE OF SAME---LAW OF COMBINATIONS---WHAT WILL INFRINGE A COMBINATION CLAIM.

We give below the most valuable portions of a decision lately made by Judge Clark in the New Hampshire District, in the suit in equity, George Crompton *vs.* The Belknap Mills *et al.*

The respondent objects to the Marshall Patent of December 11, 1849, that the invention was neither new nor useful, and that the patentee did not, before the granting and issuing of the letters to him, take the oath prescribed by section 6th, of the act of July 4, 1836, that he verily believed he was the original inventor or discoverer of the art, machine, etc., for which he solicited a patent.

A Patent is deemed *prima facie* evidence that the patentee has made the invention. There is, in this case, no sufficient evidence to overcome that presumption, or *prima facie* case.

There is evidence that "open-shed" fancy looms were used prior to Marshall's invention, but not involving the combination of Marshall. His invention must, therefore, be taken to be new. Precisely how useful it may be, the court have not undertaken to decide; but that it is sufficiently so to support a paten , we have no doubt. Other loomsmay have been preferred by different persons, or may have found a readier sale; but that good cloth can be woven by Marshall's loom and invention there is sufficient evidence.

To warrant a patent, the invention must be useful—that is, capable of some beneficial use, in contradistinction to what is pernicious, or frivolous, or worthless. These objections to the patent cannot therefore avail. Nor can the other, th t the oath required by the 6th section of the act of 1836 was not taken, for two reasons.

1st. We are not satisfied the oath was not taken. The letters patent recite that it was. The respondent finds, among the papers on file in the case in the Patent Office, a blank form of the oath, with the jura not signed by any magistrate, and hence he argues the oath was not taken. But the oath may have been taken for all that and this negative testimony cannot overcome the direct recital of the letters patent that the oath was taken; or the presumption that the requirements of the law were complied with in issuing the patent. But suppose it were so. Suppose the oath was not taken, would the patent be void on that account? It was held otherwise by Justice Story in the case of Whittemore *vs.* Cutter, 1 Gal., 429. The taking of the oath, though to be done prior to the granting of the patent, is not a condition precedent, failing which the patent must fail. It is the evidence required to be furnished to the Patent Office, that the applicant verily believes he is the original and first inventor of the art, etc. If he take this oath, and it turns out that he was not the first inventor or discoverer, his patent must fail, is void. So, if he do not take it, and still he is the first inventor or discoverer, the patent will be supported. It is *prima facie* evidence of the novelty and originality of the invention until the contrary appear.

So the act says, on payment of the duty—that is, fees—the commissioner shall make an examination, and, if the invention shall be found useful and important, shall issue a patent. Suppose the fees should not be required or paid, would the patent therefore be void? Yet the one requirement appears to be as much a condition precedent as the other. Both directory, not to be disregarded with; but neither involving the validity of the patent when granted.

The next objections are to the reissued patent, and they are two. 1st. That the original patent was void, and the reissue was therefore so; and 2d. That the reissue was not for the same invention as the original.

The first of these objections has already been disposed of. It was maintained in the argument, that the original patent was void for want of the proper oath, and that the defect could not be cured by the reissue. But, whether the oath were taken or not, we are of the opinion, as already expressed, that such an omission would not invalidate the patent, nor would it affect the reissue. The second objection to the reissue is a more serious one, and for its proper determination requires a careful examination and comparison of the original patent to Marshall, and the reissue to Crompton.

We think that substantially the same invention is described in the two patents.

But if it should be held that the original patent to Marshall, and the reissue to Crompton, assignee, were valid, it is contended that the extension to Marshall, was not, for three reasons, to wit:

1. That as Marshall never had any interest in the reissued patent, it could not be extended to him.
2. That no sufficient notice was given to the public of the application for the extension of the patent; and
3. That the extension was obtained by fraud.

To the first objection, to wit, "that as Marshall never had any interest in the reissued patent, it could not be extended to him," it is a full answer, that, in judgment of law, the reissue is only a continuation of the original patent. So held in Read *vs.* Bowman, 2 Wallace, 604; and as Marshall was the original patentee, the extension was legally and properly to him. The extension enuring, under the statute, to the assignees and grantees to the extent of their respective interests.

The second objection is that there was no notice ever ordered, or given of any application to extend the reissued patent. There was of the application to extend the original patent, and the objection stands upon the supposition, or idea, that they are two distinct patents, while in judgment of law they are one. If the reissue was only a continuation of the original patent, then a notice to extend the original would seem to have been sufficient.

Again, under the act of 1836, the Secretary of State, the Commissioner of Patents, and the Solicitor of the Treasury were a board of commissioners to "hear and decide upon the evidence produced before them, both for and against the extension." It has b en held that the functions of this board were judicial, and that their judgment settled conclusively all questions of notice.

The statute of May 27, 1848, 9 Statutes at Large, 231, section 1, provided that the power to extend patents then vested in the board of commissioners "Should be vested solely in the Commissioner of Patents; and in Clum *vs.* Brewer, 2 Curtis, 506, it was held, that the act of the commissioner in extending a patent was conclusive of the facts, which he is required to find, in order to grant such extension, in the absence of fraud or excess of jurisdiction. But here, third, it is said, that the extension was procured by fraud. We do not, however, think this objection is open to this respondent. He stands before the court, accused of infringing the complainant's patent. He may, undoubtedly, show that the invention claimed by the complainant was not new, or useful, or that it had been dedicated to the public. Or that there was no sufficient specification or description, and so that there was in fact no infringement for which he should answer, but we think he cannot attack the granting and validity of the patent in this collateral manner.

If there was fraud practiced in obtaining the patent, that is a matter between the Patent Office and the patentee; and can, perhaps, be inquired into by some proper proceeding of the officers of the Government to vacate the patent. But in this particular, like a judgment, it must be respected and enforced, until reversed or annulled by some proceedings directly for that purpose. It is not exposed to the attacks of strangers or third persons for such reason.

The question then is, whether the Thomas loom, as it is called, infringes the Marshall patent as reissued and extended? The original patent to Marshall, December 11, 1849, claimed the movable spring rests to hold the jacks of the harness, and the "evener," and the combination of the rotating, lifting, and depressing bars, so as to revolve, etc. As reissued to Crompton, the claim was for combining with the jacks and with the lifter and depresser and pattern chain, or any equivalent mechanism for determining the pattern, a mechanism for holding the jacks either in their elevated or depressed position when not required to be operated, substantially and for the purpose specified.

The language is "a mechanism for holding the jacks." This is broad enough, upon its face, to cover any mechanism, and if it stood alone and unaided it would be so general and uncertain as to be entirely void, but in the specification the holding mechanism is described particularly and precisely, and the claim is limited by such specification. Here, then, are combined five elements, to wit: the jacks, the lifter and depresser, the pattern chain, and the holding mechanism; and any machine combining, substantially in the same manner, substantially the same elements, or well-known substitutes for the same, must be regarded as an infringement of this r issued patent. But it would not be infringed by a combination which dispensed with one of the elements and substituted therefor another element, substantially different in construction and operation, but serving the same purpose; nor by any and every combination of the same elements, which may produce the same result, but only by the peculiar combination of the elements described, or one substantially the same.

The elements here combined are old, the patent is for the peculiar combination, and the doctrine of mechanical equivalents does not apply.

The identity or diversity of two machines depends, not on the employment of the same elements or powers of mechanics, but upon producing the given effect by substantially the same mode of operation, or substantially the same combination of powers.

Following these principles and adjudications, we proceed to the examination and comparison of the Marshall and the Thomas looms. In both we find, substantially, the same jacks, differing in form, but performing, substantially, the same office. In both we find, substantially, the same elevator and depresser; arranged in the Marshall loom in a rotating, endless chain, so that the same bar in going up is an elevator, but in rotation or revolution, going down, becomes a depresser.

These three elements are substantially the same, but when we come to the holding mechanism we find a marked and substantial difference in the two machines. In the argument of the respondent's counsel, it was contended, that the holding mechanism of the Marshall loom was not only the "series of horizontal spring latches, or catches," and the shoulders on the two prongs of the jacks, but that it included the connecting mechanism of the jacks with the heddle lever, the pattern mechanism, and the "evener." Now, although it be true that the connecting mechanism and pattern mechanism of the jacks hold the jacks securely upon the spring latches, as upon a seat, until they be forced or allowed to come off by the pattern mechanism, and although in the operation of the machine there is a point of time after the jacks are forced off the springs, when the heddle levers are firmly held by the evener, so that the jacks cannot move, nor the sheds close, until allowed to do so by the removal of the evener, yet we have considered the holding mechanism to be as described in the patent, to wit, the series of horizontal spring latches or catches, and the notches on the prongs of the jacks, and still we find the holding mechanism of the two machines to be substantially different.

In the Marshall machine, the elevator carries upward a particular jack, the beveled face on the projecting notch on the prong of the jack meets the beveled face of the spring, presses it back, and passes it. Then the spring flies out under the shoulder of the jack and the jack rests upon it, in a manner similar to a window sash raised and resting on the old and familiar window spring. Here it sits or is held until the pattern mechanism forces it off the spring and allows it to descend. When a jack is carried down by the depresser, it is held by a similar spring; being kept on its seat by the pattern mechanism, until allowed to be drawn off by the oblique connecting mechanism.

Now in the Thomas loom there is a very different mechanism or device. There is a jack which is carried up and down by an elevator and depresser. On one side of this jack there is a gearing connecting it with and operating sector. As the jack goes up and down, it rolls or rocks this sector forward and backward as if you should turn a wheel part of the way round, say one fourth, and then bring it back again, and so continue.

In or near this circumference of this sector, there is a cam groove, and playing in this cam groove, forward and backward, as the sector moves, a projecting stud or friction roller connected with an arm of the heddle lever. This heddle lever rocks upon its fulcrum, and as the arm, guided and controlled by the projecting stud in the cam groove, is carried upward or downward by the cam groove, the ends of the rocking heddle lever are carried backwards and forwards, elevating or depressing, or holding stationary the harnesses. In the one end of the cam groove is a conce tricinto which the projecting stud or roller falls, which it is contended by the complainant's counsel is a substitute for the spring latch or catch of the Marshall loom; but we are of the opinion it is not so; but that the whole cam groove, of which the concentric makes a part, is more correctly a substitute for the cam; and that this device of the Thomas loom much more resembles in principle and operation the old Middlesex cam loom than it does the Marshall loom. It cannot be conceded that the Marshall and the Thomas holding devices are the same, because the operation in both cases is performed by a surface of metal passing under or over another surface, and that therefore one infringes the other. In the old Middlesex cam loom one surface passed over another, to wit, over the cam, and was elevated, depressed, or held stationary by it; yet it was very different from the Marshall device. We cannot give the Marshall holding device any such latitude of construction.

There is also in the Thomas loom a brake connected and operating upon the periphery of the sector, retarding, regulating, and governing its motion. And whether we regard this brake as a part of the holding mechanism or not, we think and conclude that these two elements are substantially different, and that one is not a well-known substitute for the other.

We now come to the last element or device, to wit, the pattern mechanism. Had the pattern to Marshall not been surrendered, and a new one issued, the question of infringement, if it arose at all, must have arisen between the holding mechanism of the two looms; but that patent having been surrendered, and a new one issued, claiming a combination of elements, that new one is liable to be avoided, by showing that the Thomas loom uses a substantially different element from any one of those combined.

To return to the pattern devices. These two mechanisms or devices are very different in their construction and in their operation. H. B. Renwick, one of the complainant's experts, says: "I think the pattern chain in model B" (the Thomas loom) "is, considered by itself, a substantially different species of pattern chain from that specially described and represented in the drawing of the Marshall reissue, and differing from it in the fact that it requires motion in two directions in order to cause it to operate upon the jacks, while the chain represented in the dra ings of Marshall requires motion only in one direction." Precisely in the sense mentioned by this expert we are now considering these two devices or mechanisms, that is, by themselves; and in that view they are substantially different, in principle, construction, and operation. But if we consider them in regard to the functions they perform, we shall find as great and substantial difference. Both select the jacks to be operated, but the pattern chain, in addition to this, in the Marshall loom, forces the jacks off the upper series of spring catches, and holds them on to the lower series, in both instances in opposition to the force supplied by the oblique connection of the jacks with the heddle levers. Both these devices are said to be old. That is true in a limited sense. The Marshall chain is old. The Thomas mechanism is old in the fundamental principle. It is that of the Jacquard pattern; but Thomas has made two improvements upon it, which are not old. They are also said to be well-known substitutes for one another; but it is very evident, both from the testimony of the experts, and an examination of the machines, that, though the Marshall pattern mechanism might be applied to the Thomas loom, there is no apparent practical mode of applying the Thomas pattern mechanism to the Marshall loom, with its present method of holding the jacks. Can one device be said to be a well-known substitute for another which cannot be used for it? Thus much for the elements of the Marshall combination. We now pass to the combination itself. Is the combination in the two machines substantially the same? It may be said they cannot be, if the elements are not the same, as gold and copper is not the same combination as silver and copper. But the inquiry is to another point. Is the method or manner of the combination the same? We think not. Indeed, there seems to be as wide and substantial a difference in the mode of combination as in the things combined. Take, for instance, the combination of the jacks with the holding mechanism in the Marshall loom. By the lengthening of the lower heddle lever, giving an oblique direction to the connection of the jacks with the upper lever and lower, the protuberances upon the prongs of the jacks are held upon the upper series of spring catches. There is no such connection, device, office performed, or combination that we can discover in the Thomas loom.

Again, take the combination of the pattern mechanism in the Marshall loom with the jacks. It is so arranged as to hold the protuberances of the jack upon the lower series of spring catches, there performing substantially the same office that the oblique connection of the jacks with the heddle levers does in regard to the upper catches. There is nothing like this in the Thomas loom.

Again, take the combination of the holding mechanism, with the pattern mechanism and jacks, and there we find a substantially different combination, or mode of combination, in the two looms. In the Marshall loom the jacks are combined with the holding catches, by their oblique connection with the heddle levers, keeping the jacks seated upon the upper catches, until forced off by the pattern cams, and pulling the jacks off the lower catches when not held on by the cams. Is there any such arrangement in the Thomas loom? We do not find it, nor anything nearly approaching it. In the Thomas loom the jack is connected with the rocking sector by a gearing, rocking the sector backwards and forwards as the jack goes up and down. In the circumfe rence of this sector is a cam groove, or slot; in this groove plays a stud or friction wheel attached to an arm of the heddle lever.

This stud is guided and held by the cam slot, thus elevating, depressing, or holding the heddle lever as it comes into one or the other part of the slot. The pattern mechanism has nothing whatever to do with this holding, elevating, or depressing, further than to select the particular jack. We leave out of this combination the brake purposely, though that device in the Thomas loom, and the "evener" in the Marshall, play very important parts, both in holding the shed open, and in preventing its closing too quickly.

We might pursue this examination and comparison further, but have gone far enough to warrant the conclusion to which we have come, that the respondents have not infringed the complainant's reissued patent. To constitute an infringement of a patent for a combination, the defendant must have used the same combination, constructed and operated substantially in the same way.

A patent for a combination is not infringed unless all the essential parts of it are substantially imitated. The patenee of a combination cannot treat another as infringer, who has improved the original machine, by the use of a substantially different combination, though it produce the same result.

A patent for a combination of three distinct things is not infringed by combining two of them with a third, which is substantially different from the third element described in the specification.

In Morris *vs.* Barrett, 1 Fish, 461, it was held, that in an action for an infringement, the machines themselves, as shown by the models, were evidence entitled to the highest credit.

We have examined the models in this case very carefully and repeatedly: and they have very materially aided us in coming to a satisfactory conclusion; particularly in determining how much weight was to be given to the opinions and explanations of the experts, two of which appeared on each side, swearing with equal confidence and apparent intelligence in opposite directions.

The complainant's bill must be dismissed with cost.

B. R. CURTIS & CAUSTEN BROWNE, for Complainant.
T. A. JENCKES & JOSHUA D. BALL, for Defendants.

MANUFACTURING, MINING, AND RAILROAD ITEMS.

The first annual fair of the Lake Shore Grape Growers' Association will be held at Erie on Friday and Saturday, October 15 and 16.

The Titusville *Herald* says that the petroleum production for August was considerably increased by the opening of the new wells.

The Central Park Commissioners have defined the lines and filed the maps for the widening of Broadway from Thirty-second street to Fifty-ninth street.

The mean rate of discharge of the Mississippi into the Gulf of Mexico is upwards of thirty-eight million six hundred thousand pounds of water per second.

A new granite quarry has been opened in Jamesport, Washington county, Maine. The stone has a beautiful pink color, which, if durable, will render the stone very valuable for building purposes.

Twenty-two States were represented at the meeting of the American Pomological Society, at Philadelphia. The exhibition of fruit was very attractive and comprised a great number of specimens.

About 100 feet of embankment of the Erie Canal at Pool's Brook, near Kirkville, were carried out on the 21st of September, and the flood covered the Central Railroad track, temporarily suspending travel. One track is now in use. It will require several days to repair the break.

A huge chimney has been completed at the Earl of Dudley's estate at Coneygre Works, near Dudley, England. Special arrangements for the consumption of fuel necessitated the carrying of the stack to a hight of 190 feet. It is strengthened by iron-work for a distance of 100 feet above the ground.

The Croton Water Works in process of erection at High Bridge are now well advanced, and by next spring the inhabitants of Washington Hights are promised all the water they want. The reservoir is nearly completed, requiring only some grading of its banks, coping, and further work on the western gate.

Herr Krupp must look to his laurels. A larger block of steel than has ever issued from his works is now in progress of casting at Osnabruck. It weighs 200 tuns, whereas the block with which Krupp astonished the world at the Great Exhibition of 1862 weighed only twenty, but he has surpassed this feat in later years.

Dr. Koller recommends concentrated glycerin as a substitute for spirits of wine for the preservation of zoological and anatomical preparations, on the ground that it is not liable to evaporation, that it is not combustible, and that moreover, it preserves better the natural color of various preparations usually kept and preserved in spirits of wine

The contractor for the erection of the railroad bridge over the Missouri river, which is intended to connect the Missouri and Iowa railroads directly with the Union Pacific is said to have received notice from the Irish laborers of that locality that he will not be allowed to employ Chinamen on the work. He has, nevertheless, made contracts in California to obtain Chinese laborers, and he intends to bring them to Omaha soon. It is very probable that we shall soon hear of some fighting.

M. Pollack, of Boutzen, Saxony, states that he has used for several years, a paste made of pure oxide of lead, litharge, and concentrated glycerin, as a cement to fasten stone to stone, and iron to iron. This mixture hardens rapidly, is insoluble in acids (unless quite concentrated), and is not affected by heat. He used it successfully in joining different portions of a fly wheel; and when used as a cement for stone, it was found easier to break the stone than effect a separation at the joint.

As a new method of fusing difficultly decomposable minerals, it is recommended that 1 part of the mineral, previously very finely powdered, should be mixed with 3 parts of fluoride of sodium, and that this mixture, after having been placed in a platinum crucible, should be covered with 12 parts of powdered bisulphate of potassa. Chrome iron ore, hard hematite, tin ores, and rutile corundum, and the like, are very readily brought to fusion and disintegrated by this flux, even with no more heat than that obtained by a good Bunsen gas-burner.

The *Shipping and Commercial List*, of New York, in alluding to the amounts paid to passengers by the different railroad companies as compensation for damages, says that probably not one of all the accidents which inflicted the injuries that had to be paid for was the result of a natural cause. Most of them were attributed by the verdict of the coroners' juries to broken rails or the carelessness of employés. Experts have declared that accidents from broken rails would be practically done away with, were the rails made in two or three continuous parts, and the expense of this in the manufacture could not be great.

In the year 1868 there were 3,991 applications for letters patent filed in the British Patent Office. The stamp duties received in respect of patents amounted to 119,271 pounds. After deducting expenditure, there is a considerable yearly surplus income; and the aggregate surplus from 1852 to the end of last year exceeds 726,000 pounds. The Commissioners complain of the insufficiency of the building for the requirements of the office. Complete sets of the Commissioners of Patents' publications—each set including more than 2,500 volumes—have been presented to the most important towns in the kingdom, to be accessible to the public free of charge.

M. Reinsch, having experimented with various salts in order to determine which was best suited to prevent timber bursting into flame has come to the conclusion that impregnating timber with a strong solution of rock salt is as good (if not a better) preservative against its bursting into flame, as water-glass (silicate of soda). Bock salt costs much less than water-glass, and it has also the effect of keeping the timber free from dry-rot and noxious insects. He also says that the use of a solution of salt in extinguishing a fire with fire-engines would be very effective, but it is questionable whether the engines would not soon become worthless from the effect of the salt.

The recent terrible coal-mine accident at Avondale, says the Easton *Free Press*, calls to mind a former great accident in Pennsylvania mines, which occurred in Carbondale in 1850. A large mine caved in, destroying over a hundred lives, and ruining the mine. When the cave-in occurred the pressure of air from the falling mass was so great that it blew a boy and a mule an eighth of a mile out of the narrow entrance to the mine. A few of those entombed worked their way out through all the dangers of fire-damp and foul air, but the most of them perished by starvation, or fell a prey to the rats, which in coal-mines grow to an enormous size. One man was seven days in digging his way to the surface.

A bituminous composition, which may be used in the shape of bricks or as a coating on any desired foundation, has been invented, and is said to be suitable for the bottoms of reservoirs, for pavements of streets and terraces, and many other applications. It is composed of the following ingredients in the proportions stated: For every 100 pounds weight of bitumen—sulphur, 37½ lbs; galipot (or in case of necessity colophony), 25 lbs; lamp-black, 12½ lbs; sand, 25 lbs = 100 lbs. For bitumen to be applied on wood the quantity of sand may be reduced by about 5 lbs weight, and it is preferable that the wood be rough. In preparing this bitumen the sulphur must first be thoroughly melted in a sheet iron caldron or in an earthenware pot; the galipot is then added, and when this is almost entirely melted the lampblack is introduced, and, lastly, the sand. The whole is carefully mixed over a moderate fire.

A charcoal flower-pot has been patented in England. The charcoal is molded into the approved form in such a manner that its peculiar porosity may be in no way interfered with. By this means, not only is the oxygen of the air allowed free access to the soil within the flower-pot, but the water with which the soil is moistened is, by the filtering and purifying powers of the carbon, deprived of all those "hard" qualities which are known to be so deleterious to the growth of plants. Further, the sulphurous vapors, which are usually present in the atmosphere of large towns and constitute the principal reason why floriculture is attended with so much difficulty in all cities heated with coal and lighted with gas, are, by the use of the charcoal flower-pot, fixed in the pores of the carbonaceous sponge. Hence, not only are pure air and pure water insured to the plant; but, all noxious vapors being removed, it follows that a healthy and vigorous growth and luxuriant development cannot but ensue.

NEW PUBLICATIONS.

MAN IN GENESIS AND GEOLOGY; or, the Biblical Account of Man's Creation, Tested by Scientific Theories of his Origin and Antiquity. By Joseph P. Thompson, D.D., LL.D. New York: Samuel R. Wells, Publisher, 389 Broadway.

The kind of discussion contained in this book is of very little interest to us, and we regard it as of very little value to the world. The statement made in the first paragraph of the preface begs every disputed question at the very threshold of the book. This statement is in the words of the author as follows: "No fact declared by science can be accepted as true if it conflicts with any statement of the Bible." That an author starting with such a proposition could ever arrive at truth is morally impossible. Therefore it is not surprising that the book instead of being a candid research after truth, is a weak attempt to make all known facts coincide with the writer's interpretation of the Scriptures. Not that the facts of science necessarily conflict with the Mosaic record. All we can say is, that in some cases they *seem* to conflict with *our* understanding of that record. But to start out properly in a search for truth, one must divest his mind of preconceived notions—a standard of candor to which the author of this book has been evidently unable to attain.

THE METALLURGY OF IRON AND STEEL, Theoretical and Practical, in all its Branches, with Special Reference to American Materials and Processes. By H. S. Osborn, LL.D., Professor of Mining and Metallurgy in Lafayette College, Easton, Pa. Illustrated by 230 Engravings on Wood, and 6 Folding Plates. Philadelphia: Henry Carey Baird, Industrial Publisher, 406 Walnut street. London: Trubner & Co.

This is a voluminous and exhaustive treatise, rivaling in extent the celebrated work of Crookes and Röhrig on the same subject, but having, as stated in the title, more especial reference to American materials and processes. We will give a review of this important work as soon as we have time to give it the examination it merits.

WE are also in receipt of the Annual Report of the State Engineer and and Surveyor on the Canals of New York, for the Year 1868, and also the State Engineer's Report on Railroads for the same year; able documents containing much information, abstracts of which we will lay before our readers in due time