

superior to one whose chief recommendation is mere solidity.

The first cost of the improved wood pavement and the asphalt pavement in London is the same, namely, \$4 to \$4.50 per square yard. Cost of repairs per annum also about the same, namely, 50 cents per square yard.

A PRIZE PLAN FOR A FIREPROOF HOUSE.

On page 280 of our volume XXXI., we announced the offer, by the Merchants', Farmers', and Mechanics' Savings Bank, of Chicago, Ill., of a premium of \$1,000 for the best set of plans and specifications for a fireproof dwelling house, of not less than five rooms, and a total capacity of at least 5,500 feet. Up to the end of last year, thirty applicants for the prize had put in an appearance, and a committee have since been occupied in investigating the merits of the designs. They recently awarded the prize to Mr. A. J. Smith, of Clark street, Chicago, whose plans were for a one story house, 20x43; a two story house, 18x26½; and a two story store and dwelling, 22x57. The cost of these buildings, respectively, is to be \$1,200, \$1,700, and \$3,600.

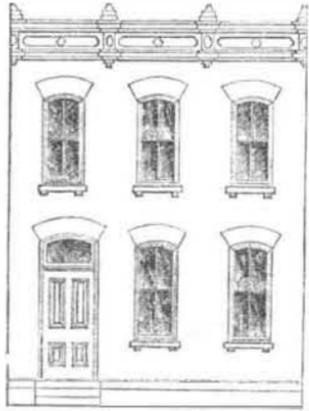


Fig. 1.—FRONT ELEVATION.

The one story dwelling house is a building 43x20, of five rooms, consisting of parlor 13x10½, and two bed rooms 10x8½ each. The height of each room will be 10 feet in the clear between floor and ceiling. An important feature in this plan is that, should a fire occur in the front part of the building, the rear portion may be preserved intact, and vice versa. The outside walls are hollow from foundation to roof. The floor, beams, and rafters are wood, protected from fire by concrete, one and one half inches thick on the ceilings and underneath the floors; and the roof is covered with tin on the

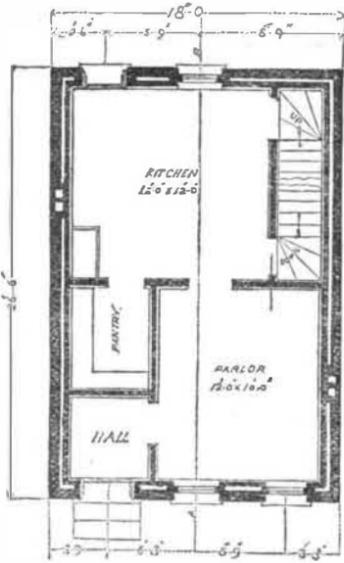


Fig. 2.—PRINCIPAL STORY.

top of the concrete. Thorough ventilation is provided by flues adjoining the fire flues, and topped out in the chimney. There is a ventilated air space underneath the ground floor, preventing dampness from arising; and there is also a ventilated air space between the ceilings and roof, to prevent the

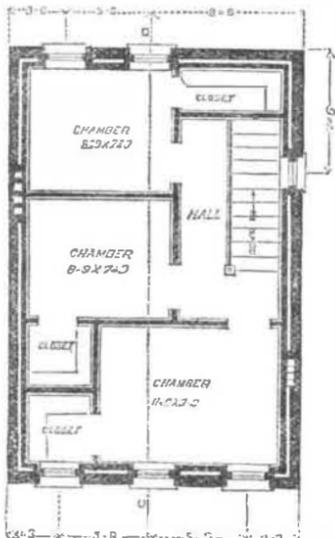


Fig. 3.—SECOND STORY.

heat of summer from affecting the rooms. The fire flues will be lined with flue pipes eight inches square. There will be a drain pipe, connected with sinks and closets and with main sewer, to carry off all surface water, slops, etc.

The two story dwelling, of which we present a front elevation, Fig. 1, and the ground plans, Figs. 2 and 3, is a building 26½x18, with five rooms, two on the ground or principal floor, and three on the upper floor, the sizes of which are: Parlor 12x10, and kitchen 12x12. The three upper rooms are for bed rooms, the sizes of which are, respectively, 11x9,

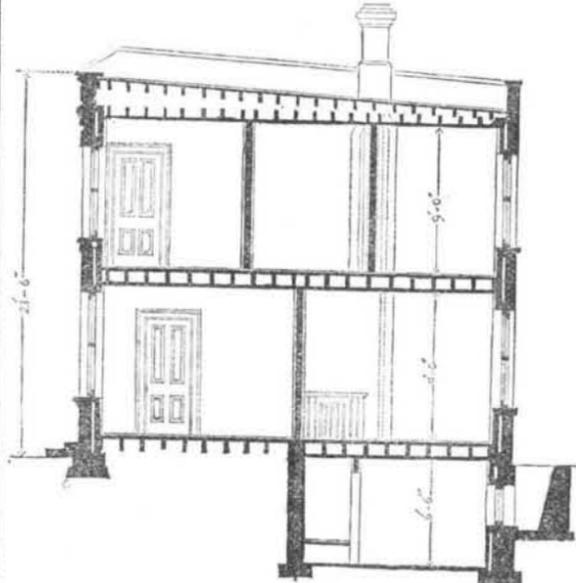


Fig. 4.—SECTION AT A, B, C, D.

8½x7½, and 8½x7½. This building has a cellar for coal and wood, fitted up with water closet. The size of cellar, within walls, will be 12x20. The upper story and the principal story will be each 9 feet in height, and the cellar 6 feet 6 inches.

The building with store and dwelling combined is 22x57. The entire principal story is occupied with store room. The upper story is divided into seven rooms, consisting of two parlors, 11x12 each, bed room 11x11½, bed room 13x9½, bed room 10½x9½, kitchen 13x11, dining room 13x11.

The three buildings are similar in construction. The cheapness of the structures is unquestionable, and we trust it will be long ere their fire-resisting qualities are put to the test.

A Water Rat taking an Artificial Fly.

A correspondent writes to *Land and Water* as follows: "In Mr. Buckland's chapter on 'The Rat,' he mentions the catching of a rat by one of the flies of a friend while fishing, hooked by chance; but I remember fishing with my father for trout in the May fly season, in one of the Derbyshire streams, when a water rat dashed out from his hole in the bank and took the fly in his mouth (the fly was the natural drake or May fly). After playing with him some time, he swam to the side, became entangled in some dead branches, and, breaking the hook away, escaped. Although I have been an ardent fisherman, this is the only instance I have known of the rat actually seizing the fly."

A SHAFT has been sunk at Lawton, England, for the purpose of pumping up brine, to be conveyed by pipes to the coke ovens in connection with a colliery, a distance of two or three miles, there to be converted into salt by means of the waste heat from the ovens. The cost of the undertaking will, it is said, exceed \$200,000.

DECISIONS OF THE COURTS.

United States Circuit Court.—Southern District of Ohio.

PATENT LUBRICATOR.—WILLIAM W. PELTON AND HIRAM TAYLOR vs. GARDNER WATERS, JOSEPH J. STARR, AND CHARLES D. JOHNSON. [In equity.—Before EMMONS and SWING, JJ.—December, 1874.] STATEMENT OF FACTS.

Gardner Waters filed an application for letters patent for an "Improvement in Lubricators," March 31, 1868. On the 21st of April, 1868, Hiram Taylor made an application for a patent for substantially the same improvement. Both applications were rejected by the examiner. Waters narrowed his claim, and thereupon received a patent of limited scope; but Taylor persisted in his claim, and upon appeal secured his patent, which was issued to him June 29, 1868.

When Waters learned that a patent had been issued to Taylor with a "broad claim," he filed a second application, asserting therein a claim for the invention substantially as covered by the Taylor patent, and demanded an interference. This was granted him; and upon the final appeal to one of the judges of the Supreme Court of the District of Columbia, he was adjudged the prior inventor; and accordingly letters patent were issued to him June 29, 1869.

The present suit under the Taylor patent had been begun in November, 1863, complainant's testimony being duly taken after the issue was joined.

In December, 1869, defendants filed an amended and supplemental answer, claiming that Waters was the first inventor, and setting up the interference decided upon the answer, and testimony for defendants, and rebutting proofs for complainants, taken and filed in 1870.

This hearing was had at the October term of 1874. At the hearing the defendants objected to a certified copy of an application for a patent made by the complainant Taylor in September, 1867, which, it was claimed, described the device in controversy, on the ground that the copy of the application referred to drawings as being a part of the original application, no drawings, however, being attached to the copy. The objection was sustained by the court.

EMMONS, Circuit Judge, delivered the opinion of the court. The patent of the complainant, Taylor, antedates that of the defendant, Waters, and he is entitled to the presumption that his invention is novel. This presumption is of importance only where the testimony is conflicting, and any considerable doubt is involved as to who is the first inventor. It is of but little consequence in this case. It has, however, been much argued.

The defendant insists that his application was made earlier than that of the complainant, and therefore his patent is to have relation to the date of its filing. As a general rule, this is undoubtedly true.

We do not intend to question, or even qualify, any of the cases on the subject, which we recently considered and applied in the case of the Dental Vulcanite Company vs. Willis. These judgments assert several exceptions to the application of the rule.

If, intermediate the first and second application, the patentee manifests an actual intention to abandon the first, his patent will have relation to the last one only. His actual intention severs the proceeding. The law deems the application terminated and as bearing no relation to the patent, which rests solely on the last one.

A withdrawal of a first application, and the reception of the fee paid back from the department, under the statute, is also a severance of the proceedings. The application so withdrawn is not deemed part of any proceeding, under a subsequent proceeding for a patent.

These are but illustrations of exceptions to the general principle, which deems the first in a series of applications for a patent as that upon which a patent depends.

We think the case before us comes within the reason of these exceptions. Under the first application of the defendant he actually received a patent, after having amended his specifications so as to exclude the present device. We think the act wholly terminated the first proceeding. It was ended in the accomplishment of its object. The decision of the department was acquiesced in, and its final judgment obtained.

The subsequent application in such circumstances must be deemed the commencement of a new proceeding, and as that alone upon which the patent is granted in pursuance of it depends.

This last application was subsequent to that of complainant's patent; and, as they are both for precisely the same device, the presumption is in favor of priority of invention on the part of complainant.

The complainant swears that in the fall of 1866 he cast an impervious joint upon the neck of a bottle. He proves his statement by a blacksmith, who came to present an account, and saw such a bottle in his shop; and the complainant's brother testifies that he also saw it at subsequent period.

If his rights depended upon our adopting the theory that he completed his invention at that time, by such means, we should dismiss the bill. Positive as the testimony is, the fact of success at a period so early is too inconsistent with his subsequent conduct, manifestly evincing an entire ignorance of the thing we think he subsequently invented. Such singular stories are incident in nearly all these controversies in reference to priority of invention.

Parties frequently prove the making of some fixture which is destroyed; of some model which is lost; and some conversation which has never been acted upon sufficiently early to antedate his opponent. We could give many reasons why we fear the history of this castor bottle finds its origin in the fact that the defendant in his testimony places his discovery about a year earlier than we think it was invented by any one.

Far more satisfactory and convincing is the proof that the complainant, in the latter part of 1867 and subsequently, was making and vending, in large quantities, the patented device. The defendant's agent, Pelton, who was selling at that time a different article for the defendant, in the fore part of 1868, bought of the complainant a number of lubricators of the kind in question, to supply the place of an inferior article, manufactured by the defendant, which he had sold for him, and which, on account of their leaking, had to be supplied by a better.

It is needless to recapitulate the proofs; they are abundant and uncontradicted, to show that, from the latter part of 1867 forward, the complainant was in the full manufacture and sale of the patented device. There is no satisfactory evidence of its invention before that date. It is with this concession that we grant him a decree.

To overcome this case and prove the defendant to be a prior inventor, he himself swears that, in the latter part of 1866, he too made an impervious joint upon the neck of a glass globe, tested it with steam, and placed it upon the crosshead of an engine, where it worked successfully, as he proves by Henderson, the colored engineer, for three successive years. The witnesses, Reynolds and Phillips, with more or less confirmation, sustain Henderson.

We are absolved from the duty of contrasting this proof with other unquestioned facts in the case, for the purpose of ascertaining whether it was not 1867 instead of 1866 that this successful lubricator was made, because the defendant's own statement as a witness renders it wholly unnecessary. He says most explicitly, that though he did succeed accidentally in making one close joint upon the neck of that single globe, he tried in vain, for five months thereafter, to make another. He says he broke many bottles in the attempt; that he did not even partially succeed but in a single instance during the five months; and that one leaked so badly it was unfit for use. It was not until 1868 that he learned how to produce a close joint, and a time considerably after complainant was publicly manufacturing them. The accidental making of this one joint without any knowledge on his part of the producer of how to accomplish it, with utter inability on his part to produce another like it, is not invention. His ignorance was so complete concerning the mode of its production that he himself swears he not only did not attempt their manufacture, but laid aside a large stock of material during the period for the making of a wholly different article. These he did manufacture, and put upon the market through Starr & Pelton, his agents. He not only had not invented a close joint, but he had so little hope of success that he prepared extensively for the making of a different and inferior lubricator. In these circumstances a single fortuitous success is by no means invention, within the protection of the patent law. He not only did not attempt to produce a close joint, but he did not possess it himself. It might as well be claimed that he, that should be carrying three bottles in a basket, which being accidentally broken, their contents mixing in unknown quantities upon the earth makes some useful compound, and enters upon a series of experiments for the purpose of ascertaining, if possible, its relative proportions, but who does not succeed in doing so until after another has successfully completed the discovery, can antedate him by proof of the causality by which he saw the same thing produced. When the defendant saw the first bottle on the crosshead of the engine, without any knowledge of the mode by which he could make another, he stood in no other relation to it, as far as the patent law is concerned, than if it had been placed there by somebody else.

It is not necessary to consider the many other facts in the case which tend to show that the defendant in fact obtained his knowledge of the device from the complainant. We refer to a few of them only, as illustrating the rightfulness of the principle we apply to the defendant's testimony. When Pelton, his agent for the sale of a different manufacture, as late as 1868, presented the defendant with one of the complainant's lubricators, he pronounced it impracticable. He said they could not be profitably made, and that Pelton did not know how many bottles must necessarily be broken by the complainant in making his lubricator.

Other analogous proofs exist. We refer to these single instances only to show the inconsistency of treating that man as an inventor who is so discouraged by his own failures, and the repeated breaking of his bottles, that he pronounces the attempt impracticable, and is himself at that time manufacturing a different and poorer article for sale. He is at that time and a half after the mysterious production of the close joint which the court is asked to believe was placed upon the crossheads in 1866.

We think the presumption of the law arising from the anterior patent of the complainant is consonant with the inference of the fact to be drawn from the testimony.

The complainant was the first inventor of the lubricator described in his patent. The accidental making of one in 1866 by the defendant, if everything occurred precisely as he swears it did, is not invention in any sense. There can hardly be said to be a conflict of testimony in reference to the fact that the complainant, for many months before the defendant did so, manufactured and put these articles on the market.

There may be a decree for the complainant in the usual form. [Reuben Syler, for complainants. E. W. Kirtledge, for defendants.]

NEW BOOKS AND PUBLICATIONS.

TRANSITS OF VENUS, a Popular Account of the Past and Coming Transits, from the First, observed by Horrocks in A. D. 1639, to the Transit of A. D. 2012. By Richard Proctor, B.A., Author of "Other Worlds than Ours," etc. With Twenty Plates and Thirty-Seven Woodcuts. Price \$3. New York city: R. Worthington & Co., 750 Broadway.

The subject of this volume and the renown of its author combine to render it most acceptable at the present time. The signal success of the recent observations has given a universal impetus to the public interest in the question, and there is no doubt that the transit of 1882, which will be visible in all parts of New England and the Middle and Southern States, will be watched by millions of our people, anxious to behold the strange spectacle on which the solution of so many mighty problems depends. Mr. Proctor's work is complete as a history of the phenomenon, and as a lucid and authoritative explanation of its phases, and its great import to scientific investigation; and the maps and illustrations, executed in a beautiful and very accurate manner, give additional value to a book which we unhesitatingly pronounce to be the best treatise which has yet appeared on the subject.

THE ORBITAL SYSTEM OF THE UNIVERSE. By Antony Welsch, Clinton, Iowa. Clinton: Allen & Bowers.

We have been led, by a brief perusal of this volume, to wonder upon the facility with which books get into print. Here is a work full of chaotic ideas, written in gross violation of the English language, on a subject of which the author gives us no reason to believe that he has the slightest comprehension himself, and on which he does not begin to attempt to enlighten his readers; yet 160 pages of it are printed in good style and well bound, and some hundreds of dollars must have been disbursed, which the author or his publisher will never see again, unless there comes a cataclysm of the intelligence of the human race.

THE INEXPEDIENCY OF AN IRREDEEMABLE PAPER CURRENCY. By John Stuart Mill. New York city: Henry L. Hinton, 744 Broadway.

A timely reprint of a convincing argument against unlimited and perpetual indebtedness. OUR CURRENCY, WHAT IT IS, AND WHAT IT SHOULD BE. By John G. Drew. New York city: Henry L. Hinton, 744 Broadway.

A REVIEW OF SENATOR JONES' SPEECH ON THE BANKING AND CURRENCY BILL. By Henry S. Fitch. San Francisco, Cal.: Bosqui & Co., Clay and Leidesdorff streets.

These two pamphlets are earnest protests in favor of the policy of paying an old debt with a new one, and are not above the average of their class of literature.

TRANSACTIONS OF THE AMERICAN INSTITUTE OF MINING ENGINEERS. Volume II. Easton, Pa.: Published by the Institute, T. M. Drown, Secretary, Lafayette College.

The American Institution of Mining Engineers has a high reputation among our scientific bodies, and certainly none is doing or can do more valuable work. The future prosperity of this country depends in chief on the development of her enormous and varied mineral wealth; and the profession which is to pioneer this progressive movement fortunately contains many of our most illustrious scientists. We commend this volume to the perusal of all who are interested in the present industries and the future possibilities of the United States.

ON THE ALLEN GOVERNOR AND THROTTLE VALVE, a Paper read before the Institution of Mechanical Engineers, London, by F. W. Kitson, of Leeds, England.