

have referred to are found in the heaps of old iron awaiting remelting at the foundry or in the junk shops, where many of these inoperative machines ultimately find lodgment. Many of these machines evince mistakes and miscalculations which can be accounted for only on the ground of incapacity or an almost entire lack of thought.

Of course every one exercises a certain amount of forethought previous to any act; but we refer to that intense and systematic application of the mind to a subject which revolves it, analyses it, and puts it in all possible forms, and finally perfects it, so that when it is put into tangible form it will fulfill the expectations of the originator, without the necessity of reconstruction or material alteration.

**SENATE BILL NO. 300.**

At the request of Mr. W. C. Hill, Clerk of the Senate Committee on Patents, we take pleasure in saying that copies of Senate bill No. 300, with amendments, can be had by applying to him at Washington. We trust that our readers will not neglect to make themselves familiar with the changes therein proposed in our patent law, and their probable effects upon the industries of the country. With all its amendments the bill is, in our opinion, open to serious objections on several points; and it is to be hoped that all who have the integrity and usefulness of the system at heart will be prepared to lend a hand in the struggle over it, pretty sure to come off next winter in the committee room, if not in Congress.

The enemies of the system can hardly find a Congress so ill prepared to appreciate the object and character of patent legislation as that which threatened so much mischief to the industries of the country last winter. Still the risk is not small; and our inventors, farmers, artisans, and manufacturers should see to it that their representatives are properly instructed with regard to the nature and use of the Patent Office, before they return to Washington. Especially should they be made to see the criminal folly of any changes calculated to increase the cost of patents, to shorten their life, or to make them less easy to get.

**THE BRITISH ASSOCIATION.**

The forty-eighth annual meeting of the British Association for the Advancement of Science was held in Dublin, the week ending August 21. Though there was nothing in the matter brought before the meeting calculated to make it specially memorable, it was above the average in general interest.

The President, Dr. Spottiswoode, seems to have pitched the keynote of the meeting in his very able address, and throughout the proceedings there was a notable absence of everything sensational or provocative of controversy. Among the more important papers and addresses may be mentioned Professor Huxley's in the department of Anthropology. His review of the progress of thought—indeed the revolution in modes of scientific and popular thinking—in regard to man's nature, origin and history, was, to say the least, very encouraging. It does not take anything like so long now for men to become reconciled to new ideas as it used to.

The opening address of Professor Maxwell Simpson in the chemical section, on the educational influence of chemistry and the material advantages arising from its study, was decidedly forcible. The need of proving all things, of being exact, careful, circumspect, and rigorously honest in all one's chemical work, gives that science, properly taught, the highest rank for cultivating scientific habits of thinking. Professor T. Sterry Hunt's paper on the succession of the crystalline rocks is based on the results of many years of study of the crystalline rocks of this country. Professor C. Wyville Thomson's address before the geographical section; President Edward Easton's address before the mechanical section, on the Conservancy of Rivers and Streams; Mr. George J. Romaine's paper on Animal Intelligence; Sir John Lubbock's on Ant Life, and other papers of interest, we shall refer to hereafter.

**Asking Impossibilities.**

It would undoubtedly be a good thing for inventors if the Patent Office could be so omniscient and infallible in its action as to make its decisions in all cases indisputably correct and absolutely just. But seeing that human agencies are not apt to be blessed with such transcendent powers, it seems to us much safer for all concerned to have the Office play the more modest part now assigned it, leaving it to the courts to decide upon disputed points of priority and the like. It is true that patent litigation is tedious and expensive; but that, so far from being a valid reason for the Patent Office taking upon itself the work of the courts, as a correspondent insists it should, is a most cogent reason for its letting such work alone.

Our correspondent says:

"The poor inventor, after having, at great outlay of his time and money, perfected an improvement and demonstrated its utility, is almost sure (especially if it relate to any of the larger manufacturing interests) to have it seized upon by some unscrupulous party, who proceeds, in defiance of the patentee's rights, to reap the benefits of his labor and study, relying on his greater means and the profits accruing from the infringement to defend himself in law and stave off final judgment until the plaintiff shall seek a compromise or become discouraged and give it up altogether. Should the latter, however, be so fortunate as to win his case, he will, after all, have obtained only what he should have had at first, namely, a valid patent."

The writer labors under the very common misapprehen-

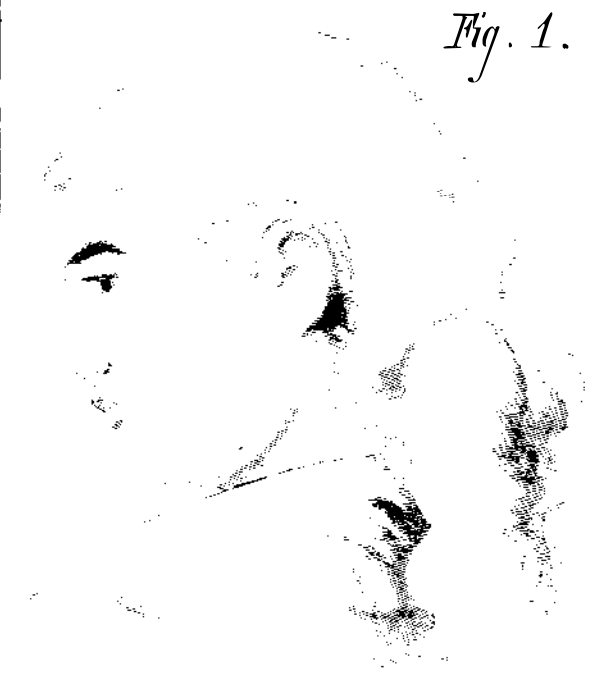
sion that it is the business of the Patent Office to confer property rights; when the truth is, its duty is rather to record claims for such rights, making such examinations as may establish the probable justness of the claims.

To undertake, as our correspondent advises, to give to each application for a patent "the most searching and exhaustive examination as to novelty and scope of claims that it is possible to make, so that the patent once issued could never have its validity questioned," would be to load the Patent Office with duties as irrelevant to its true function as the conduct of Indian affairs, the trial of pickpockets, or the management of the army and navy would be.

With two or three hundred patents a week to pass upon, any attempt of the Patent Office to usurp the functions of the courts would put it hopelessly in arrears inside of a month.

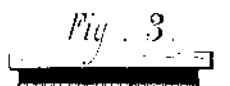
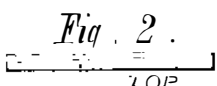
**THE IMAGINATION IN THE CONSTRUCTIVE ARTS.**

Without the imagination art would have no soul, and we would have nothing beyond the visible and tangible, nothing



but the gross and ponderous. The accomplished artist, with a few skillful brush strokes, places shade here and light there, until to the unimaginative there are only a few patches of color which mean nothing, while in reality there are masses of light and shade which, to the artistic, are suggestive not only of the bolder elements of the picture, but also of detail which may be supplied by the imagination. In a really artistic picture there is no outline, no rigid delineation of any part, but everything pertaining to contour is soft and mellow, more suggestive than definitive, leaving much to be supplied by the creative faculties.

The portrait, Fig. 1, is composed of masses of light and shade; there are no rigid outlines, no arbitrary guides for giving form or expression to the face, yet it has form and expression, for we imagine the lines that define the face. Each person has individual, natural, and peculiar tastes which govern the imagination, and thus control the characteristics of the picture, so that two persons cannot see in it the same face, but each sees a visage that is more or less beautiful according to the bent of his fancies.

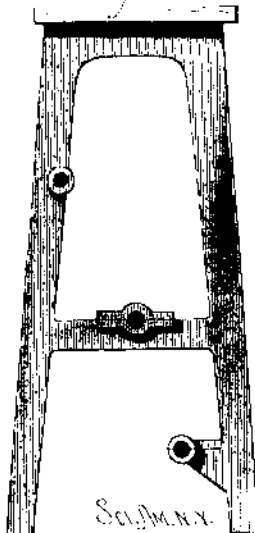


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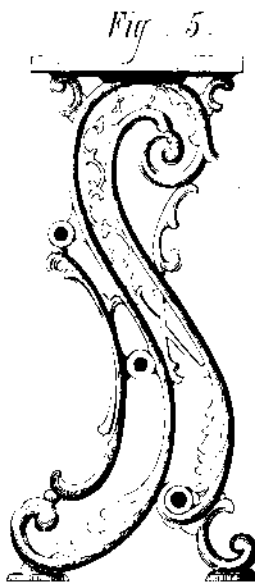
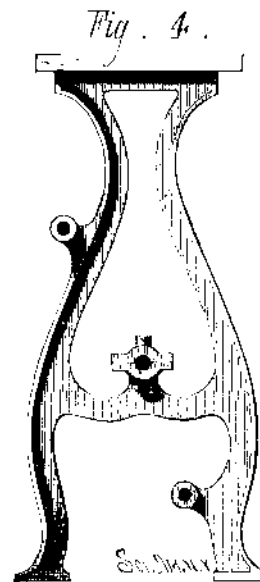
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BASE



It is not in the fine arts alone that the imagination plays such an important part, for in the constructive arts this faculty is positively required. Elegance of design in architectural or engineering structures, or in machinery, is as essential as good materials or good workmanship. The builder who, through the exercise of his imaginative powers, plans and executes a beautiful structure, of necessity takes a leading position and commands his proportion of patronage; and the machine manufacturer who mixes art with his iron has the long arm of the lever when compared with others who regard weight and strength as the only requisites. To

illustrate this, we will take a machine in which certain points are necessarily fixed by the location of the shafts, the base, and the top. The inartistic and unimaginative would design a frame which, for practical purposes, might answer equally as well as any other, but it would not have that comely form which results from an artistic taste and an exercise of the imagination, and which goes a long way in making a machine popular.



The three shafts, the top, and base of the machine under consideration are the arbitrary points. The frame must be made upon the most obvious straight lines, or the imagination must supply such a design as would, while it comprehended the bearings of the shafts, the support of the top, and the proper width of base, be also pleasing to the eye. Even though it be a thing of iron, it should have symmetry; harsh straight lines should be avoided, and angles should be rounded; in fact, it must be, in a sense, beautiful, as well as subservient to the purposes of the machine.

There are certain features peculiar to every machine which must control its design to a greater or less degree, but there is opportunity on every machine to exercise skill in this direction. There are undoubtedly extremes in the matter of design—a thing may be too ornate as well as too plain.

Fig. 2 of the example which we illustrate shows the controlling points of the design; Fig. 3, the most obvious form of frame; Fig. 4, a frame of graceful shape; and Fig. 5, a frame of scrolls. In all of these the arbitrary points are precisely the same, but the frames differ materially. That shown in Fig. 3 would answer the purpose, but who would not prefer the design in Fig. 4? The design shown in Fig. 5 might properly be considered out of character for a machine, still its appearance is pleasing.

**THE BAG-WORM'S MOTHER.**

In the SCIENTIFIC AMERICAN of August 24 attention was called to an article in the SCIENTIFIC AMERICAN SUPPLEMENT, of the same date, describing a curious insect. The writer, Mr. Wm. H. Gibson, after much study of the insect—variously known as house-builder caterpillar, basket worm, drop worm, bag-worm, etc.—had come to the conclusion that the female was never transformed into a moth, and never had any connection with the male.

In the next issue of the SCIENTIFIC AMERICAN SUPPLEMENT will be found an article by Professor Riley giving the true natural history of the insect—*Thyridopteryx ephemeraformis*—with a full description of the manner in which the mysterious fertilization takes place. Professor Riley has been making experiments with the silk of this moth, which lead him to the belief that the insect, now a real pest, may some day prove valuable as a silk producer.

**The Supposed New Metal Mosandrum.**

It will be remembered that under the name of mosandrum Mr. J. Lawrence Smith recently described the radical of an earth that he had isolated from certain American gadolinites. The French chemist, M. Marignac, a high authority in these matters, having examined specimens of the supposed new metal, sent him by Mr. Smith, pronounces them nothing but terbium. At the same time he acknowledges the fact that from the spectroscopic studies of M. Soret there must be recognized in these minerals a metal which appears to be new to science. It is not the "mosandrum" of Mr. Smith, however, but the radical of an earth isolated by M. Delafontaine, and rightly considered by him entirely new.—*La Nature.*

**New Fish.**

The Gloucester fishermen are rendering Professor Baird and the cause of science very valuable aid by bringing in from the fishing banks many curious kinds of fish, heretofore thrown away as of no value. In this manner much is learned concerning the presence on the grounds visited by fishermen of Arctic and European fish. The schooner Marion, Captain Joseph W. Collins, lately arrived from a bank trip, brought in three strange fish. Two were sharks, entirely new to North America, if not, indeed, to science. The other was a fish of the genus haloporphyrus, but of undescribed species.