

Little Things that Count.

In every line of business, no matter whether conducted upon a large or small scale, it is the little things that count. The little expenses, the little wastes, the little economies, are the ones that turn the balance of accounts, either for profit or loss, and it is these little things that need the closest attention. The larger, more important details of every business are carefully looked after; there is very little chance for neglect, carelessness or oversight. The workman who spoils a costly piece of machinery, or causes a loss of any considerable account, is held responsible, and is generally very careful in this respect, but in little things he is not as prompt in exercising care and economy, and these little things are looked upon as of no consequence, and as having no real value.

We have heard it asserted by a man who, beginning on barely nothing, succeeded in building up a large and profitable business, and retiring with a considerable fortune, when asked how he had managed, what was the secret of his success, he replied, by saving what other people wasted, looking after the little things and seeing that not a thing was thrown away or cast aside as too small or insignificant to be of any value. A few cents here and a few there make up quite a sum in the course of a year, and it is by paying careful attention to the little details, by looking after the cents, that I have made my dollars.

There is a great deal more in this than most people would be willing to admit. They are in too much of a hurry to make dollars to look out for the cents.

A poor and incompetent or disinterested workman is not only a poor man to employ because he is this, but because he is wasteful and careless about small things. Take some of our very large manufactories, where hundreds of employes are engaged, and, unless the most watchful care is exercised, the amount of waste that is lost would go far toward paying running expenses.

In these times of close competition, when it becomes an absolute necessity that every possible item be carefully turned to account, the exercise of economy in small things is being more rigidly cultivated. Profits at best are only small, and these are made considerably less by the wastefulness of careless and unthoughtful men.

Nor is it alone in the factory or workshop where the necessity of looking after these little things makes itself apparent. The workman of to-day, with his wages scarcely sufficient to provide for the comforts and necessities of life, has the most need to practice economy in small things, and it is surprising to note what an amount of waste is made by those who have the most need to practice economy. A few cents here and a few there seem mere trifles, and are not regarded as of any particular consequence, or as having any material relation to the annual expenses, but if a careful account were kept for a single year, the result would be astonishing, and just here is where the difference lies between individuals and corporations. The latter have learned by a comparison of the strict accounts which are an absolute necessity with them, the lesson of economy in small things. Everything is put down and can be looked over and studied, and its effect upon the total noted, and this is a lesson which should be learned by individuals, and workmen especially. By them, as a rule, no account of daily expenses, or even any expense, is kept. They receive their money, and it is spent. At the end of the year not one of them can tell where his money has gone, or for what purpose, whether he has made a profit from the time and labor expended, or not; and for this reason, as well as that he may see where and how he may economize and save something, even if only a small amount, the workman should keep a strict and careful account of daily expenditures and receipts.

Such a course would not only result beneficially to him personally, but would make him a more careful, painstaking and valuable employe. Carelessness at home or of one's personal interests breeds carelessness of others' interests, and there is nothing which an employer notices more quickly, and is more willing and ready to appreciate and reward, than the display of care and interest in the little details by a workman.

It cannot be expected that a man who is careless of his own welfare and interests will exercise any more care than he is obliged to do under the watchful eye of the foreman or proprietor, or care for those of his employer.

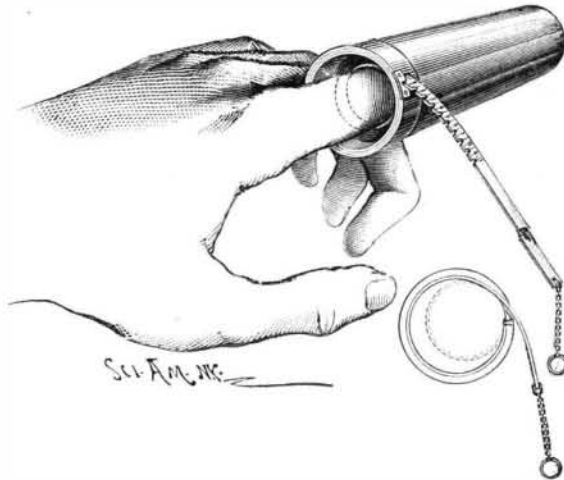
It is, then, all-important that every individual exercise this watchfulness of the small things in business and in private life. The employer must guard himself against loss by the carelessness and wastefulness of his employes. The employe should be equally vigilant in his own personal interests, and all should remember that it is the little things that count.—*Manufacturers' Gazette.*

THEY are making excellent wool out of the fiber of the fir-tree by means of electricity. The time is now come when the lamb may as well lie down with the lion.

NOVEL FINGER RING GAUGE.

The common method employed by jewelers for measuring the finger to be fitted with rings is to apply a number of independent rings to the finger until one is found of the required size. This operation, of course, occupies considerable time, and is not perfectly accurate.

We give an engraving of a new ring gauge recently patented by Messrs. Ethelbert Wareham and W. F. Doll, of Winnipeg, Canada. This gauge consists of a conical metal cap of convenient size to be held in the



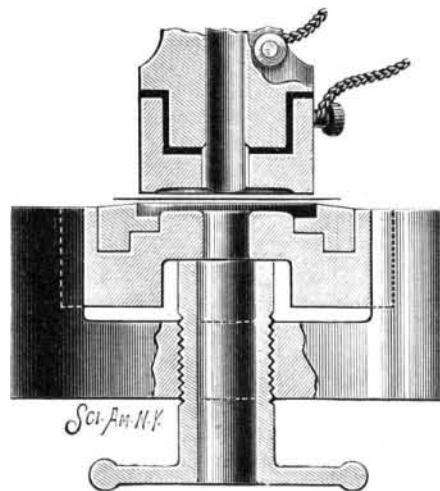
NEW RING GAUGE.

hand, and of larger diameter than the largest finger to be measured. In this cap is placed a string tape measure, with one of its ends attached to the interior of the cap, while the other end projects through a slot in the cap, and is provided at its extremity with a chain and ring. The tape measure is provided on its outer surface with a scale, and with notches in its edge corresponding with the graduations of the scale. To the surface of the case at the side of the slot is attached a stop plate, which is received in the notches of the tape measure.

The finger to be measured is inserted in the case, as shown in the larger view of the engraving, and the tape is drawn out until its inner portion encircles the finger, when the graduations appearing opposite the stop plate will indicate the number of the ring required.

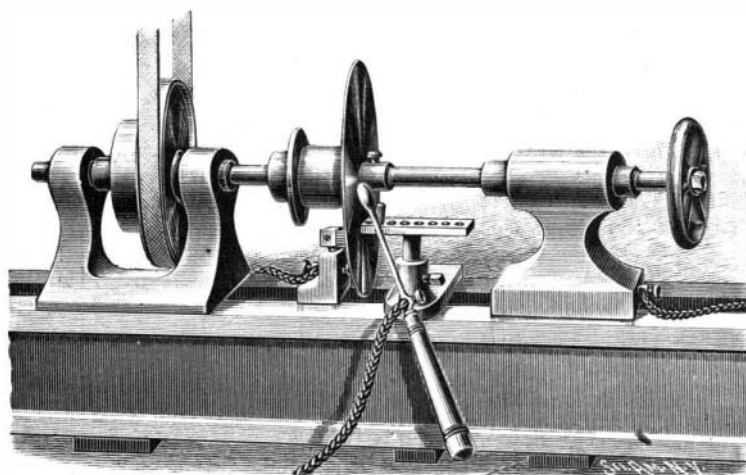
IMPROVEMENT IN THE ART OF SHAPING SHEET METAL.

In spinning or stamping sheet metal, most metals require frequent annealing, while it is necessary to work some of them, such as zinc, while warm. To obviate



ELECTRICAL DRAWING DIES.

the necessity of frequently heating the work, Mr. Mark W. Dewey, of Syracuse, New York, has devised improvements by means of which heat can be locally applied. The invention is designed to be adapted to metal-spinning lathes, to drawing dies, and to other sheet metal working machines. The source of heat is a



DEWEY'S IMPROVEMENT IN METAL SPINNING.

current of electricity, which must of necessity have a large volume and low electromotive force.

In the case of a spinning lathe, the current is applied to the work through the mandrel, in case it is of conductive material, or if it is of wood or other non-conductor, it is applied through a brush which touches the back of the plate. A conductor also extends to the spinning tool, so that the current must pass into the plate at the point of the tool. The resistance of the contact and of the material of the plate is sufficient to produce the heat necessary to anneal the metal, so that the process of spinning can be carried forward without interruption until the work is completed.

In the case of the drawing dies, the lower portion of the upper die is insulated from the other part, and connected with an electrical generator, so that when the die touches the metal sheet, it forms an electrical connection. The punch by means of which the drawing is done passes through the upper portion of the die, which is connected electrically with the other conductor of the generator, so that the current flows through the lower part of the die, through the plate, through the punch and back to the generator, thus producing at the point of contact between the punch and the plate the heat necessary for annealing.

This invention is particularly adapted to the manufacture of cartridge shells and the drawing of tubes.

The Atmosphere of the Sun.

Mr. J. Janssen, on the 22d of September, gave the French Academy of Sciences an interesting account of his recent excursion to Mont Blanc, the object of which was to solve the much controverted question of the presence of oxygen in the solar atmosphere. This question is one of the most important that celestial physics can propose, by reason of the immense role that oxygen plays in geological and chemical phenomena, and especially in those upon which depends life in all its forms. Therefore, much attention has been paid to it for a long time, but, as is well known, it has always remained undecided.

Summing up the spectroscopic observations made during this ascension to the summit of Mont Blanc, Mr. Janssen states that they complete and confirm those that he began two years ago at the station of the Grands Mulets at an altitude of 3,050 meters, and that these observations as a whole, that is to say, those made between the Eiffel Tower and Meudon, those of Mr. De la Baume Plurinel at Candia, those of the laboratory, and finally those of this year on Mont Blanc, unite in leading to the conclusion that there is no oxygen in the gaseous solar envelopes that surround the photosphere, at least no oxygen with a constitution that permits it to exert upon light the phenomena of absorption that it produces in our atmosphere and which are shown in the solar spectrum by the system of rays and bands that are known to us. Mr. Janssen considers that this is a definitely determined fact, whence may be drawn certain conclusions touching the constitution of the solar atmosphere.

It is certain that if oxygen existed simultaneously with hydrogen in the external envelopes of the sun and accompanied it to the remote limits where we observe it, that is to say, to the coronal atmosphere, the ultimate cooling (in a period of time that we cannot yet estimate, but which it would seem must inevitably occur when our great central furnace begins to exhaust the immense reserves of force that are still at its disposal) would have the effect, if the oxygen and hydrogen were in presence, of bringing about their combination. Aqueous vapor would then form in these gaseous envelopes, and the presence of this (from what we know of its properties) would have the effect of offering quite an obstacle to the sun's radiations, chiefly its heat radiations. Thus, the reduction of the solar radiation would be further accelerated by the formation of such vapor.

Volcanic Silver.

The existence of silver in volcanic ashes is of rare occurrence. Only in two cases have argentiferous ashes been met with. The first sample was obtained during an eruption of Cotopaxi, in July, 1885, in the ashes of which Mr. J. W. Malet proved the existence of one part of silver in 83,000 parts of ashes. In the following year the same investigator was able to add a second instance. In January, 1886, a violent eruption of Tunguragua, in the Andes of Ecuador, between 50 and 55 miles from Cotopaxi, took place, the eruption continuing at longer or shorter intervals up to November of the same year.

The ashes thrown up by this volcano, which had been at rest for over a century, contained silver to the extent of one part in 107,200 parts of ashes. This appears, at first sight, to be only a very small percentage of the metal. But when it is considered what enormous quantities of ashes are erupted, and what a vast extent of area they cover after an eruption, the quantity of the silver thrown up with them must be considerable.