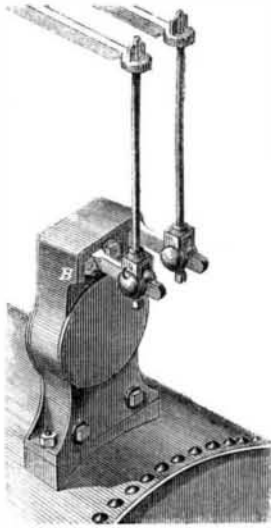


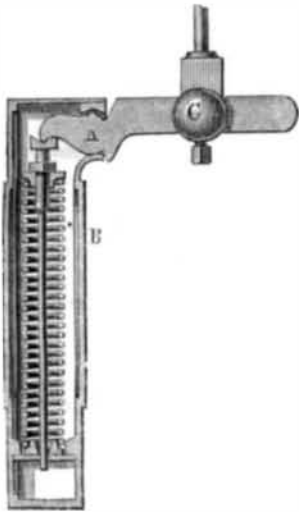
CAMERER'S SAFETY-VALVE BALANCE.

This simple and durably-constructed balance, illustrated in Figs. 1 and 2, was originally intended for locomotive engines, but can also, with great advantage, be used on marine engines, or any place where a dead weight is objectionable.

It is well known that a dead weight on a safety-valve lever is the most desirable and safest, wherever it can be applied; but on locomotive boilers, which rest on springs, it cannot be used, as its action on the valve would be influenced by the vibrations continually occurring. On marine boilers, where weights are still in use, the rolling of the ship occasionally makes it necessary to lash the levers down until the weather moderates, thereby destroying the only virtue of the valve. Spring balances, as generally made,



are more or less objectionable, on account of the springs becoming stiffer as the valve rises. Various plans have been adopted to overcome the defect by regulating the strength of the springs, thereby depending on the vigilance of the engineer to prevent the pressure from getting too great; whereas, the balance here illustrated, requires no attention whatever when in use, as an increase over the allotted pressure cannot take place.



The arms, A A, can rise as much as the safety valves may require, without additional pressure, which makes this balance equal in efficiency to a dead weight. An example will make the disadvantages of spring balances now in use more apparent. For instance, if a safety-valve lever is held down by a spring, the other end of which is fastened to the boiler or some other fixed point, the lever cannot rise without increase of power over and above the pressure it was calculated for; and if the proportions for length of lever are as 1 to 10, then the valve cannot be lifted one-eighth of an inch without raising the end of the lever ten times one-eighth, or $1\frac{1}{4}$ inches—which distance is, on the ordinary spring balance, equal to 28 lbs.; and ten times 28, or 280 lbs., on the valve. Now, if we have a valve of $2\frac{1}{2}$ inches diameter, or 4.9 square inches area, the additional pressure would be 57 lbs. per square inch to lift said valve only one-eighth of an inch off its seat. Under such circumstances it ceases to be reliable, and re-

quires watching and regulating to avoid over-pressure or accident.

The advantages of this improved balance are in the peculiar lever arrangement, by which the above enumerated faults are avoided. The arms of the levers, A, inside of the casting, B (see Fig. 1), from the fulcrum to the springs, are at an angle with the outside arms; and an upward movement of these outside arms is accompanied by a corresponding downward, and also an inward movement, of the inside arms resting on the springs; therefore, the more the springs are compressed the shorter the effective length of the inside arms will be, thereby increasing the power of the outside arms in the same proportion as the springs get stiffer from compression, thus enabling them to rise the required distance without increase of power. The rod, C, is fastened by a set screw to any distance from the fulcrum, according to the pressure required. Close behind this rod a small pin can be put through the arm, to prevent the engineer from increasing the pressure beyond what the boiler was intended to carry; but as much of the arms as is not in the way of anything, may be allowed to protrude, for the purpose of decreasing the pressure, should any accident to the boiler make it desirable to do so. To keep up a uniform pressure of steam is considered far less injurious to a boiler than the sudden changes, produced by slacking or screwing down safety-valve levers. Such changes will not take place where the improved balance is used.

The springs are made of hard brass wire, expressly drawn for these balances, and are not liable to corrosion, as is the case with steel springs; and, being compressed when working, are far less liable to break or to lose their elasticity.

These balances have been in use for more than a year on several of our leading railroads, where they give entire satisfaction. Patented March 1, 1864. For further particulars address the inventor, Wm. Camerer, Reading Pa.

NEW FORM FOR COINS.

We have seen a sample of a new plan for coins, which consists in making them in the form of the numeral of the denomination which they represent. For example, the one, two, three, four and five-cent coins have the form, respectively, of the numerals

1, 2, 3, 4, 5.

This novel style for coins presents a handsome appearance, and as each piece has its own distinctive form, no confusion in the use can take place. This is more than can be said of the new three-cent coins now being issued by the Government, which are so much like the one-cent pieces that after a short time it is difficult to perceive the difference.

Preservation of Flowers with their Natural Colors.

Dried flowers, in their natural colors, have, for some time past, appeared for sale in the shops. The mode in which the operation is effected is this:—A vessel, with a movable cover, is provided, and, having removed the cover from it, a piece of metallic gauze of moderate fineness is fixed over it, and the cover replaced. A quantity of sand is then taken sufficient to fill the vessel, and passed through a sieve into an iron pot, where it is heated with the addition of a small quantity of stearin, carefully stirred, so as to thoroughly mix the ingredients. The quantity of stearin to be added is at the rate of half a pound to one hundred pounds of sand. Care must be taken not to add too much, as it would sink to the bottom and injure the flowers. The flowers thus become dried, and they retain their color perfectly.

Patent Pin.

The Union Pin Company of Boston, are now extensively manufacturing Tower's patent pins. The improvement consists in making a couple of nicks or indentations on the pin, which cause it to hold more firmly when the pin is inserted in any cloth or fabric. In other respects these pins are similar to those in common use. The improvement finds general favor.

Librarian of the Patent Office.

Prof. W. E. Jillson leaves his position as Librarian of the Patent Office to take that of Assistant Superintendent of the Boston Public Library. He has

given general satisfaction in the position from which he is retiring, and his attainments as a linguist and bibliophile, and his invariable courtesy, make his resignation a loss to the department. He is succeeded by Dr. George C. Schaeffer, who was formerly an Examiner in the Office.

BOSWELL'S MUCILAGE BOTTLE.

Persons who have occasion to use mucilage must have been annoyed by the inconvenient brush as generally made. When the bottle is nearly full, the brush becomes overcharged with the liquid, so that a greater quantity than is necessary is smeared on the paper. The handle of the common brush screws through the cap so as to lengthen or shorten it; but this is of no benefit so far as overloading the brush is concerned.

The engraving published herewith shows a neat device for keeping the brush out of the mucilage, or allowing it to be inserted to a greater or less depth, as desired. The attachment consists of an elastic band of rubber, A, applied to the brush and cap in



such a way that a free movement of the brush is obtained up and down when the handle is pressed upon. So soon, however, as the hold is relaxed, the brush remains at the top of the bottle out of the mucilage entirely.

This is a very neat little affair, and one that will render the use of such things much more agreeable.

It was patented through the Scientific American Patent Agency on August 1, 1865, by E. H. Boswell. For State rights to manufacture, apply to him, at south-east corner of Walnut and Eighth streets, Philadelphia, Pa.

A NOVEL ENGLISH INVENTION.—The last number of the London *Artizan* has an illustration of an air engine, which it calls Messer's air engine. It is precisely the same in principle, and very closely similar in all its details, to the air engine invented by S. H. Roper, of Boston, Mass., which was fully illustrated in this paper on the 14th of February, 1863.