SOME NEW WORKSHOP APPLIANCES.

Most mechanics have experienced difficulty in setting work in a planer vise because of the liability of the work to lift when the vise screw is tightened. To obviate this, Mr. Babbitt, of the Harris-Corliss Engine Works, has designed for those works the chuck vise shown in Fig. 1.

In this chuck, instead of gripping the work with the vise jaws direct, two pivoted plates are interposed, which incline from the pivots towards the work. A and B represent these plates, and C represents the work, so that the strain of the plates upon the work is in the direction denoted by the respective arrows, so that the work is forced downwards upon the tops of the pins. The plates are made to bear, at the back of the hinge, upon the hollow curve in the chuck jaws, as shown, which relieves the pivot of the strain due to screwing the chuck tightly.

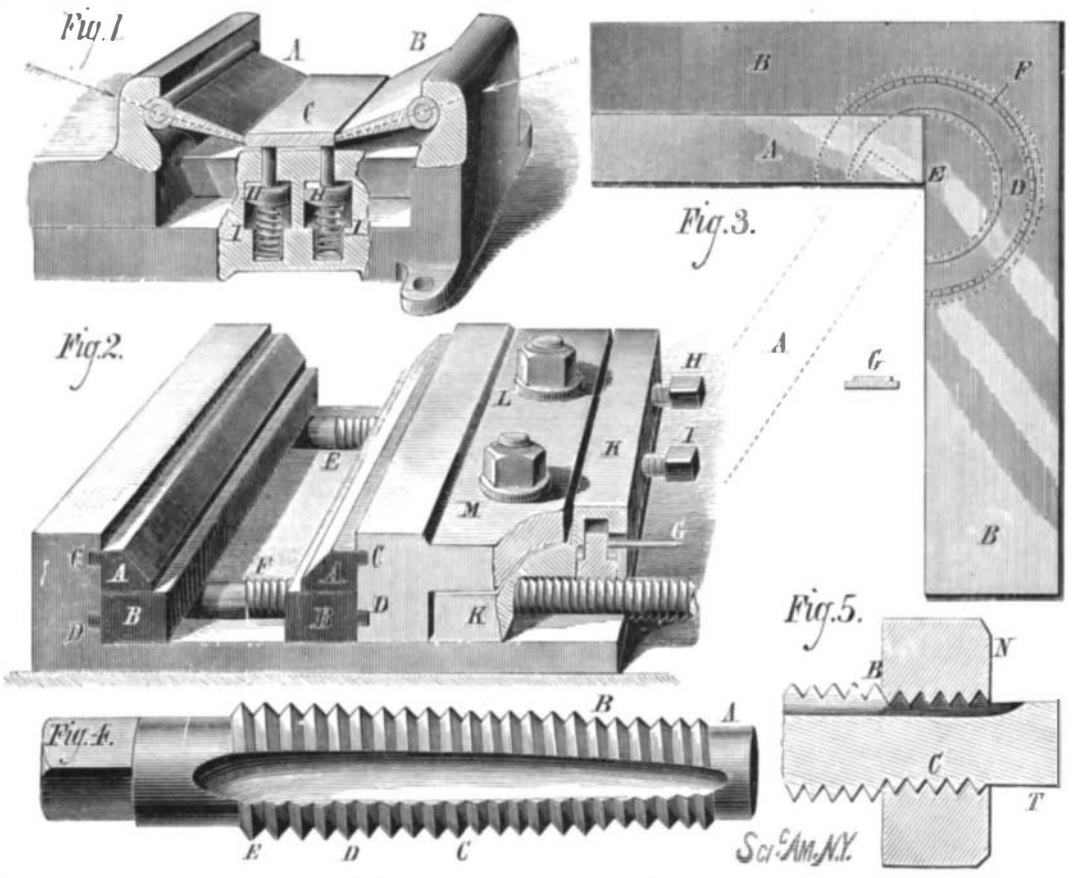
The pins are made adjustable for height to suit the work, being screwed into the disks, H, which are attached to spiral springs, which depress until the disks, H, meet the shoulder at I, resting solidly upon them.

A chuck recently constructed by Mr. Thomas, at the Freeland Tool Works of this city, has an excellent provision for holding thin work, either parallel or taper, true and level between the jaws. In each jaw of the chuck there is cut a small square recess, shown in Fig. 2 at C D. A is a strip containing a projecting piece fitting into either of these recesses, according to the height required for A, the pieces, B, serving for packing pieces. The work rests upon the narrow upper surface of B, which projects beyond A, while A grips the work. Now it will be noted that the jaws of the chuck act upon A to tighten the work, and the contacting surface between A and the jaws is mainly above the horizontal level of the part of A that grips the work; hence the force holding the work is in a direction to bind the latter close down upon the pieces, D, which, being parallel and true, adjust the work true of themselves, whether it be taper or parallel. It will be noted, however, that the work may rest upon the upper surface of A A, and be gripped by the vise jaws themselves.

The holding of thin work has long been a matter very difficult to accomplish without springing, and any application of the hammer not only penes the upper surface, but the rebound of the metal causes the work to lift in the chuck. By the construction shown in Fig. 2, the work will be set true whether the jaws of the chuck are worn untrue or otherwise. The movable jaw is operated by the screws, E F, the thread having one V and one square side. The nut lifts and falls by operating the lever, G, enabling the throwing out of gear of the nut so as to move the movable jaw quickly. The movable jaw, it will be noted, receives the pressure of the screws, H I, above the horizontal level of either A or B; hence the tendency is to close its jaw surface down upon the chuck face; but since this jaw slides upon the piece, K, and K slides upon the surface of the chuck, the bolts, L and M, bolt K and the movable jaw firmly to the chuck. The whole of the parts comprising the movable jaw will swing to suit taper work.

In Fig. 3 is shown a new protractor, designed by Mr. Swasey, at the Pratt & Whitney Co.'s Works. The set screws, by which the movable blades of ordinary protractors are secured, are often in the way, preventing the face of the instrument from lying flat upon the face of the drawing board or upon that of the work. In Mr. Swasey's protractor the blade, A, is attached to the circular piece, D, the latter being recessed into the square, B B, and marked with the necessary degrees of angle, as shown, while the mark, F, upon the square, B, serves as an index point. The faces of A, B B, and D are all quite level, so that the edges will meet the lines upon the work and obviate any liability to error. The piece, D, is of the shape shown in section at G, which secures it in B B, the fit being sufficient to permit of its ready adjustment and retain it by friction in any required position. The dotted lines indicate the blade as it would appear when set to an angle, the point, E, being the center of D, and hence that from which the blade, A, operates.

In Fig. 4 is a form of tap that is finding much favor for use in large tools. The thread is cut in parallel steps, increasing in size towards the shank, the last step (from D to E in the Fig.) being the full size. The end of the tap at A being the proper size for the tapping hole, and the flutes not being carried through A, insures that the tap shall not be used in holes too small for the size of the tap, and thus is prevented a great deal of tap breakage. The bottom of the thread of the first parallel step (from A to B) is below the diameter of A, so as to relieve the sides of the thread of friction and cause the tap to enter easily. The first tooth of each step does all the cutting, thus acting as a turning tool, while the step within the work holds the tooth to its cut, as shown in Fig. 5, in which N represents a nut and T the tap, both in section. The step, C, holds the tap to its work, and it is obvious that, as the tooth, B, enters, it will cut the thread to its own diameter, the rest of the teeth on that step merely following frictionless until the front tooth on the next step takes hold. Thus, to sharpen the tap equal to new, all that is required is to grind away the front tooth on each step, and it becomes practicable to reverse the tap a dozen times without softening it at all. As a sample of duty, it may be mentioned that, at the Harris-Corliss Works, a tap of this class, 2⅞ inches diameter, with a 4 pitch, and 10 inches long, will tap a hole 5 inches deep, passing the tap continuously through without any backing motion, two men performing the duty with a wrench 4 feet long over all, the work being of cast iron.



NEW WORKSHOP APPLIANCES.

Transit of Mercury.

The arrival in New York city of the two French scientists, MM. André and Angot, who are sent officially to make observations on the transit of Mercury, indicates the interest with which that event will be regarded. They are to proceed to Ogden, Utah, there to make observations on May 6. Ogden has probably been selected for two reasons: It is upon very elevated ground, being nearly on the "divide" of the continent, and offers great advantages in dryness of climate and purity of atmosphere. It is also a point where the center of the transit will be nearly at local noon. The transit will occupy about seven and a half hours. Observations will be of service in determining the orbit of Mercury, and thus throwing more light upon the question of an intra-Mercurial planet, and also in furnishing data for fresh estimates of the distance of the sun.

Museum of Trade Patterns.

Steps have been taken for the formation of a Museum of Trade Patterns and Industrial Examples in Manchester, for the use of workmen and managers of factories, and to aid the great national requirements of technical education.

The promoters of the above scheme, in indicating the great advantages which must result from a large collection of trade patterns in an industrial center, to which masters and men alike can have access at times of doubt or difficulty, point out that no more striking example could be furnished of the value of models or patterns to manufacturers than that to be found in the case of Wedgwood, who produced accurate copies of the specimens of ancient art lent him by Sir William Hamilton, of vessels from Herculaneum, and the Barberina vase lent him by the Duchess of Portland, who, when it was offered for sale, outbid him for it by a hundred guineas. As a result of Wedgwood's work, pottery, from being one of the least understood of the fictile arts in the kingdom, has become one of the best and most successful; and, instead of now being obliged, as formerly, to import the bulk of our common pottery in domestic use from Delft, in Holland, we are now large exporters to other countries.

Many solid advantages are to be obtained from the inspection of a collection of patterns of the complete nature of that designed, which no amount of verbal instruction could furnish. The best informed person, thoroughly acquainted with all known processes of manufacture in which he may happen to be engaged, could take a useful hint from some other classes of goods out of his particular sphere, and appropriate it to his own benefit; which course would result in improvements in various branches.

There are many raw fibers of great value, which are not nearly so well known as they ought to be, and upon which we have repeatedly treated. There are also fibers which could be put to a more extended use and application. For instance, jute, long a neglected article, the extreme cheapness of which at length forced it into notice, has now become a valuable item among the staples of commerce. Up to the present time its chief application has been confined to the production of the most inferior substitutes for flax and hemp. It has lately been found, however, that jute takes color better than any other vegetable fiber, and, as a textile, in this respect ranks next to silk and wool. Ramie fiber will doubtless take an equal rank, but of this we cannot so positively speak, as we have been shown some beautiful specimens of dyed jute in various bright colors, and it may confidently be predicted that these will be largely resorted to in future.

A new application of jute has already been shown from abroad, there being now in the trade specimens of jute curtains and table cloths of a very superior description, and which are likely to be extensively sold, being at once novel, elegant, and cheap. The curtains consist of a thick plain twilled jute fabric, which is dyed to a slightly brighter tint than the natural brown color of unbleached linen. Along the edge, to form a border, is printed a suitable pattern in chintz colors, the effect of which is remarkably good, contrasting as it does with the sober colored ground. Other similar goods, although really of an inexpensive nature, could be used with perfect propriety in the handsomest furnished houses, and they would be quite in keeping with the costliest furniture, simply on account of the exquisite taste displayed in their manufacture. Although we have said the cost of the material contained in these goods is very low, yet a comparatively high price is asked and obtained for them; for they have the appearance of being intrinsically much more valuable than they are.

Now, although we have given an accurate account of these articles, and the hint is worth a good deal to jute manufacturers, we venture to say that scarcely any one could realize the fine appearance of these beautiful commodities from what we have written; people must inspect and handle the objects for themselves in order to gain the full benefit of the instruction to be derived.

The Museum of Trade Patterns will afford this opportunity, and all the minute particulars relative to certain methods of manufacture will be seen at a glance—how an article is started in the loom, the size of weft and warp used, and the method of dyeing and finishing, when these form parts of any given class of manufacture. Experienced persons will readily perceive that if jute articles were sent in the ordinary way to the printers, with simple instructions to print some nice object to form a border to a curtain or a center piece to a table cloth, in all probability some staring, vulgar object would be returned, which may fitly be included among low or common goods, which scarcely any one would tolerate.—*Textile Manufacturer.*

New Agricultural Inventions.

Mr. J. A. Shine, of Mount Olive, N. C., has invented a combined Cotton Planter and Fertilizer Distributer, constructed so as to open a furrow, drop the guano into it, cover the guano with soil, open a second furrow, drop the seed into it, cover the seed with soil, and roll the soil over it, and which may be adjusted to regulate or stop the discharge of either guano or seed, or both, and without stopping the machine.

An improved apparatus for Spraying Tobacco, invented by Mr. C. S. Philips, of New York city, is designed to secure the rapid and uniform application of the proper amount of moisture required to insure the fermentation of the leaf. The spray is distributed by steam nozzles pointing across the orifices of the supply tubes, and is applied on both sides of the tobacco from two opposite reservoirs. The whole apparatus is surrounded by a guard and is placed in a dripping pan.

An improvement in Plows, relating to the mode of adjustment of parts, has been patented by Messrs. P. H. Burns and W. C. McElhany, of Indiana, Pa. The standard is curved, having its landside part convex and the mouldboard side concave, and is notched and shouldered to receive the landside, mouldboard point, and share, in a novel manner.