IMPROVED POWER FEED SANDPAPERING MACHINE.

It is now common to finish irregular objects, such as wheels, parts of carriages, and the stocks of firearms, by machinery, so that they compare favorably with similar work done by skilled operators; and, in many cases, the machine work is really more excellent. The production of plane wooden surfaces is not so easily accomplished by machinery, and it is one of the things which has not been done until quite recently; one reason for this is that little skill is required and the labor is inexpensive; but when a business of a certain character grows, so that a great number of workmen are required to perform a particular branch of labor, there arises a demand for labor-saving machinery.

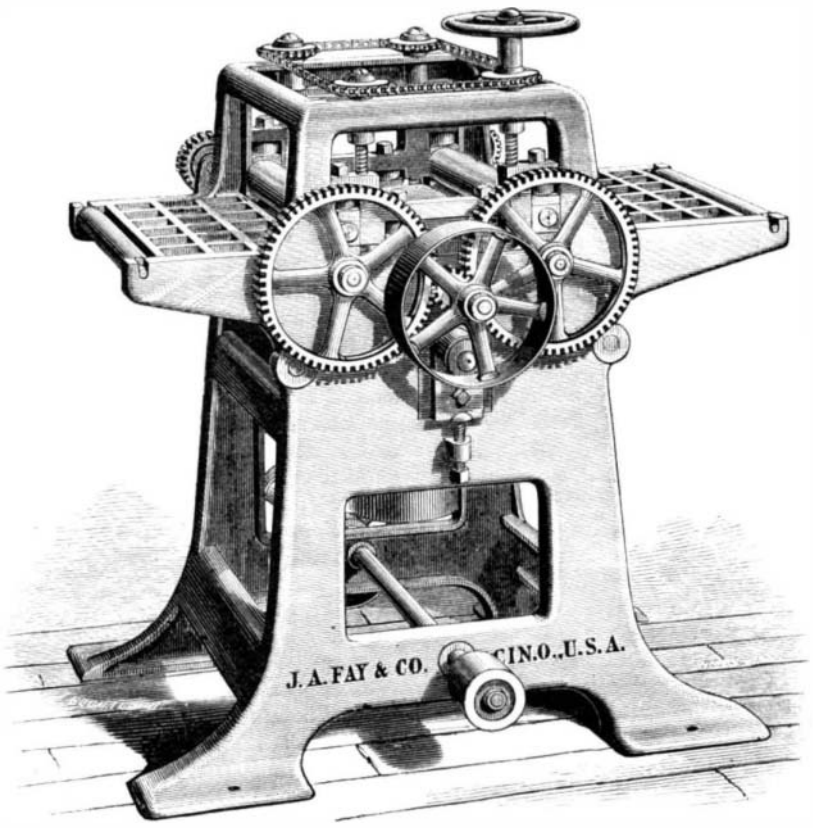
Several methods of smoothing plane woodwork with sandpaper have been tried. Some of them are adapted to special purposes and answer well for preparing surfaces for receiving paint, but where greater perfection is essential, as in the case of pianos and some classes of furniture, something better is required.

The cylinder sandpapering machines, with or without power-feeding apparatus, seem to be adapted to fine work, and are coming into use, performing excellent service when properly constructed.

We present to our readers an engraving of a power feed sandpapering machine for producing perfectly smoothed surfaces, constructed by the eminent woodworking machinery manufacturers, Messrs. J. A. Fay & Co., Cincinnati, Ohio. This machine has some peculiarities in its construction worthy of notice as tending to insure convenience in operation and perfection of product. The feeding arrangement is geared to drive from the cylinder shaft, and consists of four driven rollers, two in the table, and two supported to be raised and lowered by screws operated simultaneously by one hand-wheel. The lower and upper rollers are connected by expansion gearing to graduate for different thicknesses of stuff, one pair of rollers being on either side of the cylinder, and the upper roller having springs to give the required pressure on the material being fed through. The lumber is passed between the rollers. The sandpapering cylinder projects through the table sufficiently to give the required cut. The cylinder is adjustable vertically for more or less cut, as may be desired, and is covered by an elastic substance which gives its surface a peculiar flexibility, and keeps a comparatively large surface of sandpaper constantly in contact with the material being smoothed. This flexibility of the cylinder, in combination with the vibratory motion endwise, are elements peculiar to this machine, and seem indispensable for the work to be accomplished. All parts of the machine are easy of access, the entire feed works being hinged to the column, so that the cylinder can be reached without difficulty. As the cylinder is inclosed in a case, the dust can be conveyed by an exhaust pipe to any desired point.

In furniture, cabinet, coffin, and piano making, as well as many other branches of woodworking, this machine will prove of great utility. It is stated that one machine will do better and more perfect work than can possibly be accomplished in the old way by hand, and will save the labor of twenty men.

Further particulars may be obtained by addressing the patentees and manufacturers.



J. A. FAY & CO.'S POWER FEED SANDPAPERING MACHINE.

New Inventions.

Mr. Conrad H. Matthiessen, of Odell, Ill., has patented a Wagon Track, each rail of which is formed of three perpendicular wooden pieces, the intermediate one being sunk below the other two.

Mr. Michael E. Toomey, of Rathbone Place, England, has devised an improved Dental Tray to be used in taking wax or other impressions of the teeth, gums, and palate for dental purposes. It consists in a tray so constructed as to enable a complete impression of the mouth—that is to say, of the upper and lower jaws, the palate, and also of the "bite"—to be obtained at one operation and by the patient himself.

Mr. Ambrose P. Miller, of Hoboken, N. J., has patented an improved Handle Socket for picks, cold chisels, tamping bars, adzes, and other tools, which is so constructed as to enable the tools to be made easier and cheaper than in the usual way.

An improvement in Brushes has been patented by Mr. Frederick Sprower, of Brooklyn (E. D.), N. Y. The object of this invention is to secure the ends of the bristles, so that when the brush is bent or the point is struck against an object they will be held in place and prevented from slipping up and becoming loosened on the handle.

Mr. Charles O. G. Kennel, of New York city, has patented a Chimney Cowl or Ventilator designed to deflect the natural currents of air so that a draught in the chimney or ventilating shaft is continually maintained; also, to protect the chimney or ventilating shaft from downward currents and from rain or snow.

Teredo-Proof Trees.

Dr. Kellogg, in the Proceedings of the California Academy of Sciences, states that there are but two trees known to him which are perfectly proof against the teredo, or pile borer (*Teredo navalis*) of tidal water. These are the palettmo and the Australian *Eucalyptus rostrata*. The teredo will attack the wood of *Eucalyptus globulus*, as well as other species.

Archæology.

From our late foreign exchanges we learn that renewed interest is awakened in the East for prosecuting excavations in various parts for archæological treasures. Favored by the authorities at Constantinople, Dr. Schliemann is again busily excavating at Troy; and Mr. Rassam has permission to dig anywhere in Mesopotamia. With such a comprehensive grant, districts will be opened that have not hitherto been searched, and we shall hear of fresh discoveries at Nineveh, of explorations in the long hidden ancient city of Assur, and of endeavors to find the famous royal "record office," or "Babylonian Bank," as some Assyriologists call it, in which were stored a large collection of mercantile tablets, representing the monetary transactions of a firm trading in the name of Egibi & Sons. It is curious to have bills for corn and fruits, and woven goods, and invoices and vouchers from the days of Nabupalassar and Artaxerxes in the form of baked clay; but they are to be seen at the British Museum. The Arabs and Jews from whom they were obtained have kept the secret so well that the place in which they were discovered is not yet known to Europeans.

Kutha, now a group of great mounds, was the sacred university city of Babylonia, and had an extensive library, which is frequently referred to in mythological tablets discovered in other parts of the kingdom. It was from that storehouse of learning that the tablets giving an account of the creation were originally taken; and it is hoped that discoveries of other documents not less interesting will there be made.

In the mound of Nebbi-Yunus, search will be made for the palace of Sennacherib, in the expectation that some records of the latter years of that monarch may be found, "and possibly some accounts, however meager, of the second campaign against Hezekiah."

But besides all this, Mr. Rassam will make explorations in the country of that ancient people, often mentioned in Scripture—the Hittites. The existence of mounds along the bank of the Euphrates has long been known; and under a certain group known as the mounds of Jerabolus, it is supposed that Carchemish, the Hittite capital, lies hidden. Inscriptions in an unknown character were found in that neighborhood a few years ago; and it is hoped that some key thereto may be met with in the course of the excavations now to be undertaken, and furnish to scholars the link wanting to connect Assyria with Western Asia. As the firman granted to Mr. Rassam extends over a number of years, we may trust that the interesting enterprise will be carried to a successful issue.

HARD ROLLED IRON AND STEEL RIM PULLEYS.

In every branch of constructive art, from the simplest implement to the most powerful and complicated engine, American workmanship is specially characterized by a skillful adaptation of material, in kind, quality, and weight, to the duty it is to perform. The aim is to employ, in every part of every implement or machine, just so much material of the most suitable sort as may be needed, and not an ounce more. Thus intelligent design is visible in every part of every truly American product, and, as a rule, the lightness of American machinery is not less noticeable than its strength and durability. This appears in the accessory parts as well as in the more essential; and very frequently the lightening of the accessories makes possible a corresponding reduction in the weight of the parts which have the main portion of the work to do.

An illustration of this tendency of American workmanship, and the advantages of it, is seen in the recently patented pulley shown in the engraving. By its structure and the allotment of its material, this pulley is designed to give the greatest strength with the least weight consistent with the duty which a pulley has to perform. Its advantages over any cast pulley are found in its superior strength, due to the absence of shrinkage strains in the arms; to its more perfect balancing, the metal in the rim being uniform in section, and every part equidistant from the center; to the fibrous character of the steel rim, the fibers running in the direction of the strains; also to its diminished weight, allowing it to be safely run at much higher speeds than the common cast iron pulley, and on lighter castings, with a greatly diminished weight of metal in hangers, framings, and so on.

The weights of these pulleys range as follows: 48x9 inches, 110 lbs.; 36x8 inches, 75 lbs.; 36x6 inches, 62 lbs.; 24x6 inches, 36 lbs.; 18x4½ inches, 20 lbs.; 15x4½ inches, 17 lbs.; 12x4 inches, 10 lbs.; 9x2½ inches, 4 lbs.

For driving cotton and woolen machinery, blowers, and in the construction of milling and agricultural machines, this combination of strength with lightness is a manifest advantage. Economy in freightage, when shipped to a distance, is another item worth noticing. These pulleys can be made in any good establishment at a cost, the patentee claims, not exceeding half that of an all cast pulley. The patent is for sale. For particulars inquire of Geo. W. Fisher, Superintendent Fulton Iron Works, St. Louis, Mo., or of Philip Medart, 107 Market street, the same city.

HARD ROLLED IRON AND STEEL RIM PULLEYS.