

proprietors of large machine-works in this city, conceived the idea of founding a "Mechanics' Library"—one that should be such in reality—a place where all the best works relating to the advancement of the trade could be studied by workingmen, free of charge, or at least at a merely nominal fee, for membership. It is not intended to stock this library and reading-room with modern novels, but with the foreign and domestic scientific journals and books relating to art and the practice of it. Should the scheme be carried out, as we trust it may, it will be of incalculable advantage to the mechanical interests, and a credit to the energetic and benevolent originators of the idea. The sum of \$8,000 has been subscribed already; the principal engineering firms are directly interested in the enterprise, for they will reap substantial benefits in the future from the generations of educated men which are sure to arise from such an advantage as this institution will afford.

BREECH-LOADING RIFLES FOR THE ARMY.

We have long been of opinion that one regiment of soldiers armed with good breech-loading rifles would be more efficient than three regiments, perhaps superior to ten regiments, armed with muzzle-loaders. With a breech-loader the soldier consumes but one or two seconds of time in the labor of loading, and he can pour an almost constant stream of balls into the ranks of the enemy. It has been objected that when a soldier could load with so much facility, he would throw away his ammunition in careless firing; but we have never doubted that this difficulty might be overcome by a proper drill. In the case where the soldier can load so quickly, he may be taught to make all of his movements slowly and to take a much cooler and better aim than he will when he hurries through the operation of loading.

Our attention has been called to this subject anew by the reception of a pamphlet written by W. C. Dodge, Esq., Acting Examiner, United States Patent Office, in which the advantages of the breech-loading rifle for army use are very ably set forth. Mr. Dodge cites more than forty officers in our army, including Major-generals McClellan, Hooker, Fremont, Rosecrans, Burnside and Sigel, who approve of the introduction of this class of arms. He also gives the following letter from Col. Wilder, who has tried the guns in actual warfare:—

DEAR SIR:—Your letter of Dec. 25, 1863, is just at hand. In reply, I am ready to urge the expediency of arming all the mounted troops of this army with the "Spencer Repeating Rifle." It is a most perfect weapon, when used by cool men, and I have no hesitancy in saying (after commanding a brigade armed with them for nearly a year) that men so armed can always defeat at least double their number, and my command have repeatedly driven three times their number of rebels. Since using this arm my command has never failed to break any column of troops they have attacked, and have never been driven by any force, no matter how heavily they were massed against them.

At Farmington, Tennessee, in the late raid of the rebel General Wheeler within our lines, four of my regiments broke through and scattered two entire divisions of mounted rebel infantry; fighting on foot and formed in three lines, my men captured their battery and dispersed their entire force. I would respectfully refer you to Brigadier General Crook, commanding the second division of cavalry in this army, who witnessed this fight, and can vouch for its correctness.

At Chickamauga on the 20th of September my brigade of five regiments drove back the rebel column that had driven the 20th army corps, and, alone and unsupported, held the entire left of the rebel army for four hours, and were withdrawn without being pursued.

I could enumerate at least thirty fights in which the "Spencer Rifle" has triumphed over other arms in such apparently overwhelming numbers as to almost appear incredible. They should be made with a ring in the side of the breech-piece, so as to be carried as a carbine. The ammunition being water-proof, is not worn out or destroyed like other kinds.

I believe that if the Government would arm ten thousand mounted infantry with these guns, and put them under a good enterprising officer, they could destroy all the principal railroad lines in the South, and do more damage to the rebellion in three months than fifty thousand ordinarily armed infantry could in a year.

I wish I could see those having authority in this matter, that I might impress upon them the great importance of using these arms.

I am, sir, very respectfully, your obedient servant,
J. T. WILDER.

Nashville, Tenn., Jan. 7, 1864.

A PLAN is being rapidly matured for the establishment of a woolen factory in Milwaukee, on a scale heretofore unknown in the North-west. Such a manufactory, besides being a profitable investment for the manufacturers, will greatly aid in the development of agricultural resources by furnishing farmers with a better market.

HOW THE STERNS OF SCREW SHIPS ARE BORED.

Many mechanics are aware that the hole in the stern of a screw ship is bored out after the ship is planked, caulked, and nearly ready to launch, so that no disturbance of the proper direction of the hole or bore may occur from the fastening of or strain caused by the completion of the rest of the vessel. The operation of boring is thus accomplished: The hole is first roughly cut out by the carpenter through the "dead" (or solid) wood of the stern. The length of this dead wood varies according to the dimensions of the ship. In this rough hole a long iron boring bar is placed, supported by bearings at either end; the bar has an ordinary boring head upon it, which is a circular cast-iron wheel, driven from end to end of the hole by a screw; the cutters are fixed in this head and the bar is driven by a spur-wheel and pinion; sometimes a small engine furnishes the power, at other times "muscle" does it.

The time required to bore out the stern varies with the nature of the job. Sometimes the copper and iron through-fastenings of the timbers run into the hole and cause a great deal of trouble. In the *Dunderberg*, the huge iron-clad now building by Mr. Webb, the length of the dead wood is 24 feet, 7 inches, and the diameter of the hole when finished is 25 inches. This length is run in two hours, cutting one inch on a side at the ends; inside the cut has to be lessened as the bar springs too much to carry it. This is remarkably fast work—about $2\frac{1}{2}$ inches, lineal speed, per minute for the cutter. After the hole is bored, the shaft pipe, made of brass, is inserted; on the inboard end of this pipe there is a stuffing box and gland, and out-board the pipe has a lining of lignum vitæ inside of it, constituting a bearing on which the main shaft works; the shaft is also fitted with a brass sleeve, shrunk on where it passes through the pipe so that it may not be corroded by the action of salt water leaking through. In iron ships, of course, the construction is different and no hole has to be bored; these details relate only to wooden vessels.

REVIVAL OF THE COTTON MANUFACTURE.

In the debate which followed the presentation of the Queen's address, on the opening of the British Parliament, on the 4th of February, Lord Derby endeavored to show that the distress in the manufacturing districts had not been relieved to the extent asserted in the address. But in the course of his remarks he made the following admission:—

"I venture to entertain a hope that the worst and heaviest of the pressure is at an end, and that in the course of a few months we may date a considerable increase in the industry of the manufacturing districts. [Hear, hear.] I may be permitted to say that the anticipations which were formed last year of the expected supply of cotton have been realized to the letter, and therefore we may look with greater confidence at the anticipations put forth by those who say that, towards the beginning of April or May, we may calculate upon a supply of cotton which will be sufficient to maintain the mills in working order for five days in the week throughout the manufacturing districts. . . . I may venture to say this is a proof of the hopeful spirit which animates the people in these districts, that there are no less than one hundred new mills in the course of erection and being prepared for a start on the revival of the cotton trade, and one of these mills will have no less than 5,000 looms in it."

The same revival is taking place in this country. The *Woonsocket Patriot*, which is published in the heart of the manufacturing district of New England, remarks that there is great scarcity of labor to supply the mills which are resuming operations.

It seems that the high prices of cotton, caused by the war in this country, have so stimulated the cultivation in other places that, in the course of only three years, the product is sufficient to supply five-sixths of the machinery of the world.

In this country, as well as in England, the opportunity of the suspension of manufactures has been employed by mill-owners in the repair and extension of their works, and in the construction of new mills and machinery. The cotton manufacture will soon be in full activity, and on a larger scale than ever before.

RECENT AMERICAN PATENTS.

The following are some of the most important improvements for which Letters Patent were issued from the United States Patent Office last week; the claims may be found in the official list:—

Foot Shield for Skates.—Straps are considered by experienced skaters to be the most efficient means for securing skates to the feet, as they insure a firm connection between the foot, boot and skate. There is one disadvantage, however, attending their use, which consists in the pressure of the straps upon the foot, preventing the free circulation of blood, and thereby causing cold feet—a great inconvenience; and in case the wearer has corns, causing a great deal of pain. This invention is designed to obviate this difficulty, and it consists in the employment of a shield constructed of metal or other suitable material, and of such a curved form that it will encompass the foot like an arch, while its ends will rest upon the edges of the sole of the boot or shoe, and the strap or straps pass over the shield and press thereon when the skate is secured to the foot, thereby relieving the same of all pressure of the strap or straps. De Witt C. Wians, of New York city, is the inventor of this improvement.

Machine for cutting Tobacco.—The object of this invention is to produce a simple, compact and cheap machine for cutting tobacco or other material of any desired fineness, so that every small manufacturer is enabled to cut up his own tobacco to suit himself and his customers. The invention consists in the application of one or more oscillating adjustable levers acted upon by eccentrics or cams, and acting on rising tappets in combination with the cutter wheel and with a lever spring catch which acts on the teeth of a ratchet wheel secured to the end of a screw spindle which imparts motion to the follower moving in a suitable box, and through it to the tobacco or other material to be cut, in such a manner that, by the combined action of the adjustable lever, tappets, ratchet wheel, screw spindle and follower, an intermittent feed motion is imparted to the tobacco or other material in the box, and said material is cut up to such a fineness as may be determined by the position of the oscillating levers. The invention consists, also, in the employment of a laterally-sliding nut in combination with the screw spindle, follower and box, in such a manner that by imparting to said nut a lateral motion, the end of the box is thrown open for the purpose of removing the follower and introducing a fresh charge of tobacco or other material to be cut. E. W. Ritterhoff and C. A. Colquitt, of New York city, are the inventors of this improvement.

Machine for stamping Carpenters' Squares.—This invention consists in the employment of one or more rollers, each provided with a series of dies representing the figures and the graduation of the squares or other articles to be stamped, in combination with a smooth reciprocating bed, in such a manner that by the action of the dies the article to be stamped is pressed down flat upon the bed and prevented from springing or bending. The invention consists, further, in the arrangement of a bed resting in a semi-circular cavity or otherwise supported in such a manner that said bed is rendered self-adjusting in a transverse direction, and the inequalities in the thickness of the article to be stamped are compensated. The invention consists, finally, in the employment of an eccentric cam acted upon by an adjustable weight or spring, in combination with the reciprocating bed and stamping rollers, in such a manner that the article to be stamped is pressed up against the rollers with a uniform yielding pressure, which can be regulated according to the nature of the work to be accomplished. H. K. Jones, of Kensington, Conn., is the inventor of this improvement.

Plates for Bank-note and other Engraving and Printing.—Much of the engraving on bank-note plates is produced by what is called transferring impressions from the surfaces of hardened steel rollers, the face of the plate being passed under the roller or the roller passed over the face of the plate several times back-and-forth, while applying a heavy pressure. To enable this to be done successfully it is desirable that the face of the plate have a mellow softness and yet the plate be hard and strong enough to resist the heavy pressure. The plates made of fine iron sometimes used are frequently so stretched in the roll-