and the accuracy of their workmanship: and it is no small praise to aver that those made in this city by Messrs. Mason & Tyler, are equal in both respects, and reflect the highest credit upon those artists. The slide rest is applicable to other purposes than those above mentioned, particularly to the cutting of accurate screws, on work in the lathe. This application will hereafter be described.

A, fig. 1. (see plate) represents a piece of metal grooved underneath, to receive the holdfast, as in the common rest, having a circular projection at B, made flat at the top, forming a bed on which the circular base C rests, and is held fast to it by the screw-bolt D, in the centre of the base.

E, the main-bar connected to the base C by the supports F F, made perfectly flat on its upper surface, having the edges parallel and bevelled under, to fit the dove-tail groove, in the lower side of the main slide G; in the top of the main slide is the dove-tail groove, crossing the lower groove at right angles, which receives the cross slide I, on which the cutting tool is placed, and may be held by either of the screws, K.

The screw H, which moves the main slide is supported underneath the edge of the main bar by a collar, P, at each end, to protect it from chips, &c. and works in a semicircular nut, T, which is attached to the main slide. The collars P P being smaller than the screw, permit the nut to pass over them, and the slide to be taken off at pleasure; L, a screw by which the cross slide is moved; it passes through the collar M, on the end of the slide I, and works in a nut formed in the bottom of the groove. At each end of the collar piece M, is a stop screw S, used in turning grooves of uniform depth, &c.

From the foregoing description, it is obvious that the cutting tool may be moved in the direction of either slide, or in lines at right angles to each other.

For turning cones, cylinders, concave surfaces, facing wheels, &c. the rest may be turned around the centre pin D, by which it is screwed down to the bed.

It is believed that this improved rest combines all the advantages of other instruments of the kind, with greater strength and firmness; and it is adapted to the common lathe.

A description of an improved lever press, for cutting, piercing, &c.
By RUFUS TYLER, *Machinist, of Philadelphia.*

(WITH A PLATE.)

The screw press is usually employed for the purpose of piercing and cutting metallic plates, for various purposes; it is, however, more difficult to construct, and, consequently, more expensive than the lever press, whilst the latter possesses the advantage of leaving both hands at liberty, to manage the work. For the purposes to which it is applied, it is in all respects equal to the screw press, and in several, superior; the practical workman will at once perceive the excellence of the mode of fixing the bed. This was formerly regulated by screws,

it was attended, with great difficulty, and was rarely done with that accuracy, which is attained by the mode here described, with such facility as to render a trial unnecessary.

A, fig. 2, the body of the press, B, a cylindrical slide, working in the box C, which is connected to the lever D by the plates E E, a piece of steel, F, is introduced between the top of the slide and the lever, as seen in fig. 3; the use of which is to present sufficient surface to sustain the pressure, and to preserve as nearly as possible the uniform distance of the centres, which connect them.

G is a punch or cutter, the conical shank of which is accurately fitted to a corresponding hole in the bottom of the slide.

The die seat I, is a circular block of metal, expanding into a flanch at the bottom, by which the hooks K K hold it firmly down upon the flat bed upon which it rests.

By this arrangement the most intricate and delicate dies or cutters may be set with great facility, and the utmost accuracy, by any experienced person.

L is a stop screw, to prevent the cutter from entering too deep into the lower die.

The power is applied by the foot at the treadle M, which has a counter balance at N.

Bank Note Engraving.

[WITH A PLATE.]

The specimen plate which accompanies this number of the Journal, is from the office of Fairman, Draper, Underwood & Co. of this city; the kind of work which it exhibits, has long been successfully used, for the purpose of preventing counterfeiting. The whole, excepting the words, is performed in the lathe, and is therefore purely mechanical. The instrument by which it is accomplished, is denominated the *Geometric Lathe*, which was invented by Mr. Asa Spencer of Connecticut, but now of this city. An opinion, altogether erroneous, has been prevalent, that it was the product of the genius of Mr. Jacob Perkins; an intelligent gentleman in Connecticut, first suggested to Mr. Perkins its application to Bank notes, as a security against counterfeiting, and he in consequence, engaged Mr. Spencer to carry this suggestion into operation. Mr. Spencer accompanied Mr. Perkins to this city in the year 1816, when the lathe-work was first applied to the notes of the bank of the United States, by Messrs. Murray, Draper, Fairman & Co. When Messrs. Perkins & Fairman went to London in the year 1819, Mr. Spencer was induced to join them. The work was there put to the severest test, which the combined talent of that great metropolis could invent, and after having passed this trial in the most satisfactory manner, it was very generally adopted, and continues to be used by the banks and bankers of the United Kingdom.

The *Geometric Lathe* differs very materially from every other turning engine, hitherto invented. The only one, the work of which has