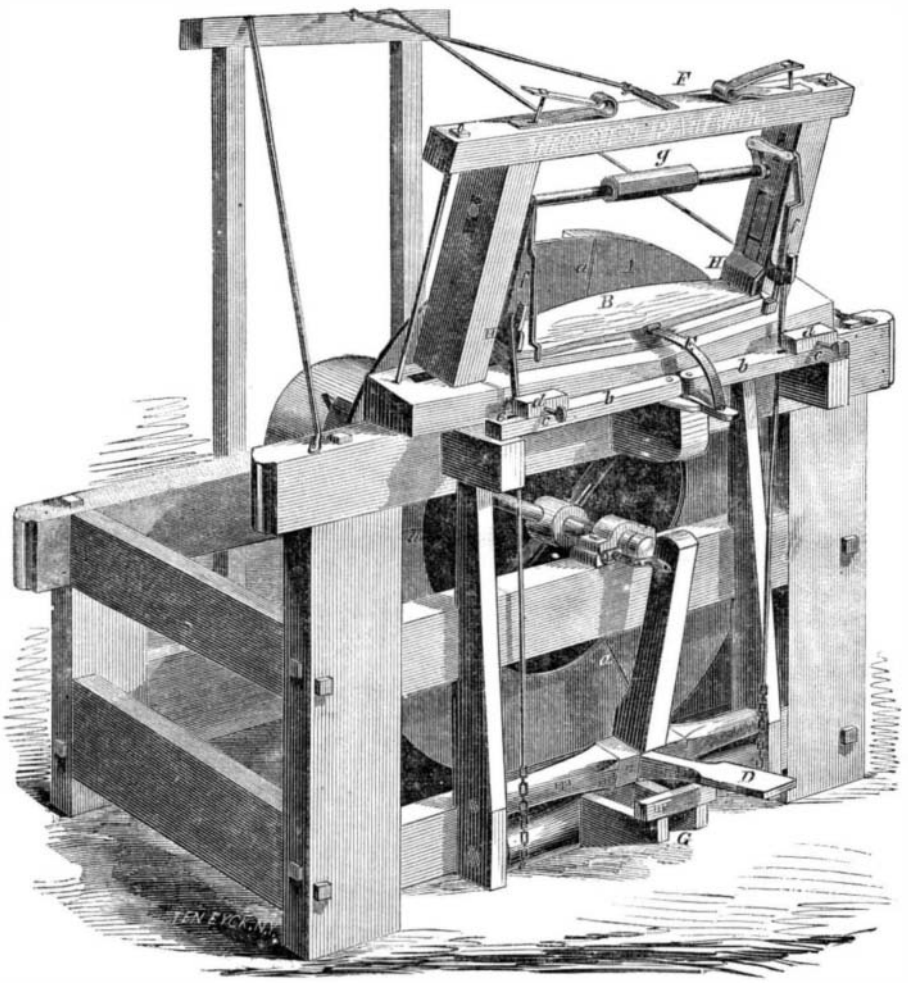
IMPROVED MACHINE FOR JOINTING STAVES.

President Pierce said, in one of his public addresses, that an English manufacturer who had been examining the industrial operations of this country remarked to him that, in the various forms of working in wood, the Americans employed a greater variety of machinery, and far less manual labor than any other people. How numerous and how important have been the improvements in this department of machinery within the few years that have passed since the Englishman made his observation! It is difficult to believe that an equal length of time in the future will witness as many and as great improvements in this line, but all past experience forces us to the conclusion that such will be the case. The many mechanical devices combined in original modes in the machine for jointing the edges of staves, which we here illustrate, is an indication of the working which is going on in hundreds of minds in our broad domain, and which will unquestionably bring forth its fruit.

A is a revolving wheel with cutters, *a a*, projecting slightly from its side in the manner of plane-irons. The stave, B, is placed upon the machine in such manner that its edge is presented to the cutters and the wheel A, which, with its shaft, has a horizontal sliding motion, is brought, by depressing the treadle, D, to the edge of the stave, which is planed away. To give the edge of the stave the requisite curved form, the frame upon which it is laid has a vibratory motion about a vertical axis which corresponds with the middle of the stave. The wider the stave, the more curving, of course, does its edge require to be, and this curvature is adjusted to the width of the stave by a simple contrivance which will be readily understood. The screws, *c c*, are screwed through the blocks, *d d*, and their ends limit the extent of the vibrations of the frame. The blocks, *d d*, are fastened upon two levers, *b b*, which work upon fulcra at their ends, *e*. The opposite ends of these levers are connected by links with a slide, C, which may be pushed into the frame and drawn out by the hand. Upon the slide, C, is fastened the spring, E, and the slide is pushed into the frame such distance as to bring the curved end of the spring against the near edge of the stave, thus moving the levers, *b b*, and the screws, *c c*, to points varying with the width of the stave.



TROOP'S IMRROVED STAVE JOINTER.

The rods, *f f*, are connected with the shaft, *g*, in such a manner as to be swung to and fro, by turning the shaft, and to preserve always positions parallel to each other. This is done to facilitate the placing of the stave upon its bed, it being necessary merely to swing the rods, *f f*, against the ends of the stave to place the latter parallel with the machine. The stave is held firmly in place by the clamps, H H, which are brought down upon it by depressing the treadle, G. When the stave is placed, the operator, with one foot upon the treadle, D, brings the wheel against the edge of the stave, and by turning with his hands the frame, F, about its axis, he planes the edge of the stave exactly in the proper curve. The proper bevel is given to the edge of the stave by inclining the frame, F, at an angle as shown.

The patent for this machine was issued to Jonathan Troop, of Sinclairville, N. Y., April 5, 1859 (through our agency); and any further information in relation to the matter may be had by addressing the inventor as above, or S. A. Heath & Co., 37 Park-row, this city.

SCREW FASTENINGS FOR SHIPS.

The naval constructor—J. W. Griffiths—of the new war steamer *Pawnee* has published a full description of this vessel in the Washington *Union*. It seems that several nautical authorities have attempted to criticise unfavorably her mode of construction. We quote his remarks in regard to her fastenings. He says:—"There are persons who have objected to screw fastenings, but some of the largest mail steamers have their engines fastened down to their keelsons with wood screws. There is no other fastening which will hold railroad cars, stages and light vehicles, for road service. They have been proved to be better than rivets for all such service, in securing iron on wood. Why is this? Simply this: whether the wood is below the water and swells, or above water and shrinks, the threads are held with increased tenacity. This is not the case with rivets; if the wood shrinks, the ring or burr of the rivet becomes loose, and many such may be found on board of every ship in the navy. If the jar of a railrord will not cause the screws to work out, surely they will not come out of a ship, where there is no such tremulous motion experienced. It is but too well known that copper bolts, however hard they may be driven, lose their original drift very soon. It is to obviate this defect in copper fastenings that copper as well as iron screws were introduced in the *Pawnee*. No man whose judgment is of any value in mechanism will dare assert that copper or iron screws are a better or safer fastening than bolts driven by hand, and depending for adhesion on the fiber of the wood."

CONTRACTION OF HORSES' FEET—CAUSE AND REMEDY.

The tendency of a horse's feet, in a healthy condition, is to expand whenever the weight of the body is thrown upon them. Being a very complicated piece of mechanism, they are very easily disarranged, and once out of order are difficult of repair; hence the necessity of preserving them in a sound condition.

Contraction is caused—1st, by cutting away the bars of the feet, which are the mainstays for the support of the quarters; 2d, by (opening the heels, as the smith calls it) cutting away a portion of the frog, in consequence of which the moisture of the frog becomes absorbed, losing its elasticity, and destroying its function, thus exposing the feet to injury by concussion; 3d, by standing upon plank floors; 4th, by improper shoeing.

An ordinary observer will, upon an examination of the common shoe, notice that it inclines from without inwards at the heels, thus forming a concavity for the feet to rest in; the consequence is a lateral resistance to the expansion of the hoofs, when the weight of the animal is thrown upon them. The effect of this resistance is to force the heels together, creating pressure upon the sensitive parts within the horny case; establishing fever, by which the moisture of the hoofs is rapidly absorbed, rendering the hoofs hard, brittle, and liable to crack, and frequently causing corns, navicular joint lameness, bony deposits to be thrown out from the lateral wings or processes of the coffin bones, rendering the animal permanently lame or unsound. These are but a few of the bad effects arising from contraction; enough, however, to serve our purpose at present.

Remedy.—Preserve a level bearing by making the shoe perfectly flat on the quarters, so as not to interfere with the expansion of the feet. Should contraction already exist to a considerable extent, bevel the shoe slightly outward at the heels, in order to facilitate expansion. Care should be taken not to bevel too much, or bulging of the lower part of the hoofs at the quarters will be the result. The shoe should in all cases be forged and not twisted, as is sometimes done to save trouble by the bungling smith. Proper applications, to soften the horny parts and promote elasticity, should also be used. Such preparations are put up in the form of hoof ointments. —*R. Jennings, V. S.*

ART OF ETCHING.

Etching is the superaddition of the chemical process of corrosion to drawing when performed on a plate of copper, over which a substance called etching-ground is laid. This etching-ground is a substance composed of wax, asphaltum, gum mastic, resin, &c., incorporated by melting over a fire, and capable of resisting the action of aquafortis. It is applied by the aid of heat, so as to lie in a thin stratum on the copper. To transfer the design to the copper, an outline is made with a black lead pencil on a piece of paper, and laid with the face downwards on the etching-ground; the whole is then passed through a rolling-press, the effect of which is to transfer an impression of the outline on to the prepared ground. After this the design is completed with the etching needles, which removes the ground from the copper wherever they pass, and expose it to the action of the acid during the process of biting in. The aquafortis continues on the plate until the fainter parts are supposed to be corroded sufficiently deep; after which it is poured off, the plate washed with water, and left to dry. The parts which are bitten in enough are then covered with what is called stopping-ground, which is a mixture of lampblack and turpentine; this is applied with a camel-hair pencil, and allowed to dry. After this the acid is again poured on, and this process of stopping-out and biting-in is repeated till the darkest parts are sufficiently corroded. Steel plates are etched as well as those of copper, and it sometimes happens that engravers are troubled to remove the oxyd formed by washing with cold water. The use of warm water instead of cold (not too hot to soften the asphaltum ground) washes out the salts of iron, and allows a clean face for the acid to bite deeper.