solid and close, and be less subject to be soaked with water, and grow spongy, than leather tanned in the ordinary manner.

This lixivium, may also be usefully applied to cables, to all sorts of ropes, sails, canvass, and the tackle of ships, made from hemp, or flax: charged and impregnated with this principle, they will support a greater weight, obtain a greater strength, will wear longer and smoother than the common tanned rope or cable. It may be transported to all parts of the United States in a perfect state of preservation, and be at all times ready for use, either for tanning, or other purposes, and thus, supersede the use of bark in the ordinary way.

JOSEPH GILES.

Specification of an improved mode of impressing figures on the rollers for calico printers, by etching; invented by DAVID H. MASON and MATTHIAS W. BALDWIN, of Philadelphia.

THE former method of making these mills was by punches, with figures of rosets, leaves, circles, pins, or other figures. The punches having on them the figure or device required, are driven into the steel cylinders or mill, and the metal raised up by the punch is faced off, and the parts united and trimmed with a graver; or the whole figure or device was cut in with a graver.

The improvement of the petitioners consists in *etching* the device on the mill, which we do in the following manner: A steel cylinder or mill is prepared, of suitable size, with pivots or journals, in the usual manner of making such mills; the mill is then coated with varnish, or etching ground, such as is used by engravers for covering their plates, in etching; the device is then traced through the varnish or etching ground, with an etching needle, or steel point: the device being thus traced, the pivots or journals are coated with a varnish made with asphaltum and spirits of turpentine, so as to prevent the acid from acting on the mill except where the device has been marked through the varnish with the etching needle, or steel point; the mill is then immersed in a prepared acid, in making which, we use the same kind of acid (*viz.* aqua fortis, or nitrous acid,) which is used for etching on copper; but are careful not to have any copper in it. Our mode of preparing the acid is as follows: we dilute the acid in the proportion of four or five of spring water, to one of acid, and then dissolve in it as much tinfoil, or block tin, as it will take up, or until it ceases to effervesce; while in this operation, it must be in a bottle with the stopper out: this mixture is diluted in the proportion of from eight to fifteen parts of water, to one of the acid used in the first instance, according to the kind of work to be etched. For coarse work, the prepared acid should be strong; and for delicate work, it should be weak. This prepared acid is managed, in all respects, as nitrous acid is managed, by engravers on copper, except that generally, in the prepared acid, there are no bubbles by its action on the steel.

This process may be performed by any of the other preparations

of acid used in biting soft steel; but that above described we found to answer best.

When the mill or steel cylinder, has been in the prepared acid a sufficient length of time, to bite in the figure, or device traced with the etching needle or steel point, to the required depth, (which is ascertained in the usual way, by scraping off the varnish from a part of the device,) it is taken out, the coating of varnish removed, and the figure, or device, is finished with a graver, in the usual manner of finishing etching; the mill is then hardened, and a transfer taken from it to another steel cylinder or mill, so that the figure, or device etched, in the first, shall be raised on the second; in order that it may be impressed on the copper cylinder, to be used in the calico printing; all which transfers are made in the usual manner, and with the usual machinery for affecting such transfers of engravings.

What we claim as our invention, or improvement, is the *etching* of figures, or devices, on steel cylinders or mills, to be transferred to copper rollers for calico printing. We claim nothing more.

In testimony that the above and foregoing is a true specification of our said improvement, as herein before described, we have hereto set our hands and seals, this twelfth day of October, in the year of our Lord eighteen hundred and twenty-seven.

DAVID H. MASON.

MATTHEW W. BALDWIN.

Specification or Description of an improved Gun Lock, for which a patent has been obtained by NATHANIEL SALTONSTALL, JR., of New London, Conn., prefaced by a few remarks on the defects of those now in use. Issued May, 1828.

VERY many of the dangers to which we are exposed from the accidental discharge of fire-arms, arises from the present imperfect construction of the lock, the trigger of which, is at all times immediately connected with the dog, and may in many cases be made to trip when only half-cocked, and has been attended with the most fatal consequences to sportsmen, horses, horsemen, soldiers, and private individuals, by the accidental catching of the trigger, the sudden jar of a holster, the pressure of a heavy finger, or the trifling of the inexperienced, when little care was supposed necessary; and with most of our locks the dog must be drawn from the tumbler so suddenly, to prevent their catching at half-cock, as to destroy the aim.

The following description of my improvement, I think, will supply these defects, and combine entire safety with durability and simplicity. When the lock is only half-cocked, the tumbler is secured by a strong steel dog, hung nearly perpendicular from the top of the plate, its screw supported on top by a bridle or cap; on the right hand side of this dog, and falling nearly perpendicular with its centre, is a tooth or wedge, with its point downwards; on a line with the bottom of this tooth or wedge is a lever, which has on the end next the