

NEW TOOL HOLDER FOR GRINDSTONES.

We give an engraving of an improved device for holding tools - such as chisels, plane bits, etc. etc.—to a grindstone in such a way that one person can turn the stone and control the position of the tool conveniently at the same time without damaging or mutilating the cutting edge of the tool and without danger to the operator.

The device consists in tongs with adjustable jaws for holding the tool to be sharpened, the end of the tongs being pivoted in a block sliding on an upright of the grindstone frame. When not in use the tongs is supported by a ratchet bar passing through a slot in the upright.

The article to be sharpened, a plane bit or a chisel, for example, is clamped between the jaws by means of the ring which holds the shanks of the jaws together, the upper jaw



BAYHA'S TOOL HOLDER FOR GRINDSTONES.

having been previously adjusted according to the thickness of the plane bit or chisel. The sliding block is then adjusted higher or lower, according to the desired bevel of the cutting edge, for the bevel varies with the inclination of the tongs, and this inclination varies with the position of the block, on which the end of one shank of the tongs is held by a ball-and-socket joint. When the tool that is being sharpened is to be held above the periphery of the stone the ratchet bar is drawn upward a suitable distance, and the tongs is allowed to rest on the upper end of the bar.

This invention was recently patented by Messrs. George G. and Benjamin D. Bayha, of Niobrara, Neb., who should be addressed for further information.

FOUR-BARRELED HAMMERLESS GUN.

There has always been an obstacle to using a revolving gun for sporting purposes, because of the inconvenience experienced by the revolutions of the barrels. The invention illustrated, however, completely solves the difficulty.

This four-barreled gun, although constructed on the principle of the ordinary revolver, differs in that, instead of the chambers turning before each discharge, a piston-like hammer rod is made to perform a similar office by the pull of the trigger, its head being brought to bear in turn on the center of the four barrels, which are brazed together in the usual way, so as to form a square, and are fitted to a break-off, which is necessarily of double the usual height. The action may be either the "double grip" or "snap;" but, though the prong of the break-off is solid, the extra leverage brought to bear on it by the upper pair of barrels requires some top connection, and a "doll's head" is therefore used to give greater security.

To understand the construction of the lock, it must be considered as having three offices to perform: First, the simple blow necessary for the explosion of the cap; secondly, the cocking process; and, thirdly, the rotation of the hammer rod which it has to perform—the three being here placed in the reverse order of that which they go through in practice. To effect the blow a solid steel rod is firmly socketed, parallel with the axis of the barrels, and opposite the central point between the four. Its forward end is turned to a right angle, enabling it to reach a little beyond the centers of the four barrels, when it revolves in succession toward them, and is then capable of giving a blow to the selected striker, of which there are

four fixed in the usual way in the break-off. On this rod is a collar, which receives the blow of a flat tumbler placed on one side of it, and furnished with a swivel and a flat mainspring hung on the rebounding principle.

To cock this rod there is behind the tumbler another collar, by which it brings back the hammer rod to full-cock from the half-cock, where it was left by the rebound. There is only one trigger, which is either of the usual form or like a ring, as shown in the engraving. To this is hinged a lifting sear, which fits into a deep bent or notch, cut in the tumbler in such a form that as the trigger is pulled it lifts the tumbler backward over its center or axle, and at the same time compresses the mainspring.

There is a quarter revolution of the hammer rod to be effected, so as to bring its head in turn on each of the four barrels. This is done by cutting four inclined grooves or slots on the rod, as well as a corresponding number of straight slots in front of the tumbler and opening into one another. Into these slots there is fitted, on a spring plate, a stud, so placed that the hammer rod, being drawn back by the tumbler, is made to rotate one-quarter of a circle by the inclined grooves; and, this being done after each barrel is fired, the four are discharged in succession by so many pulls of the trigger. These slots are cut of different depths, the spring of the stud dropping from one to the other at the desired points, so as to effect the revolution, when in the inclined slot, and yet permit the hammer bolt to pass straight forward in striking the blow, and return to the slanting slot for the next quarter turn. By a combination of these three movements, as the trigger is pulled, it, by the aid of its lifting sear, raises the tumbler (and with it the hammer rod) to full cock. While doing this, the stud in the spring plate above mentioned has caused the rod to revolve a quarter turn, and has consequently brought its head from the center of the barrel last fired to that next in succession. The sear then leaves the bent free, when the tumbler drives the hammer rod forward to explode the cap. Immediately after this, a long straight spring under the front of the trigger carries the sear into the bent of the tumbler, ready for the next shot, in which it is assisted by a light spring between the sear and trigger.

It is difficult to imagine anything more simple than this piece of mechanism, though it requires the elaborate description we have given it to make it intelligible.

Six Cents a Piece for Wasps.

Wasps are such an obstacle in the way of English fruit growers that one of them, Mr. William Taylor, thinks it worth while to pay three pence each for queens. And last season he bought and destroyed no less than 1,192. About 230 nests have been annihilated within a mile of his premises, and still there is enough left for seed. He declares that the price named is not too high, "since it takes considerable skill to catch them," and because of their enormous fecundity, of which he says, in the *Cottage Gardener*: "Understand that every wasp seen before the middle of June is a queen, and liable to have a nest of 10,000 at least. I lately estimated the number of cells in a rather large nest, and made out 9,000 of them. A great many of the young had flown, and fresh eggs were laid in their places, and I have reason to believe that there is often more than one succession of young insects from the same cells, therefore 10,000 is a comparatively small family."

A Schooner Sunk by Rats.

The fishing schooner Addie Thatcher had a singular mishap recently. She was laid up at Wilson's wharf, Fall River, for the winter, and during the recent cold snap rats



LANCASTER'S FOUR-BARRELED HAMMERLESS GUN.

gnawed a hole through her planks just above the ice, the bottom of the hole being on a level with the ice. The hole was not noticed at the time, and the weight of snow upon the deck caused the vessel to settle until the water ran in through the hole and she sank. She has since been bailed out and the hole has been patched up. The wisecracks of the neighborhood are discussing the problem whether the rats gnawed their way out or in, there being a difference of opinion concerning the ability of the animals to fix upon the

location of the surface of the ice, if they gnawed their way out.—*Providence Journal.*

IMPROVED FIRE ESCAPE.

The engraving represents an improved fire escape recently patented by Mr. John S. Shaw, of Rosita, Custer County, Col.

The window-sill is made hollow, of cast iron or other suitable material, and is provided with a door opening downward. In the chamber of the sill is stored a folding iron ladder, the links and rounds of which are bent from one piece of wire and jointed together, as shown in the engraving.

The upper link of the ladder is attached at one end by a ring surrounding a vertical rod fixed in the hollow sill. The



SHAW'S FIRE ESCAPE.

other end of the link is attached to a short piece of chain secured to the window sill.

The ladder is compactly folded and stored in the chamber of the sill, and when desired for use it can be readily dropped at a moment's notice. This device is simple, inexpensive, and always ready.

To Prevent Plaster from Adhering.

Liquid silix, carefully applied with a small *bristle* brush, and allowed to dry before packing the flask, leaves the plate with a durable polish less liable to absorb the fluids of the mouth than is the ordinary finish, especially the palatine surface of plates with deep undercuts. Of course, a first requisite is smooth plaster casts. Keep the liquid silix in a short bottle with a rubber stopper. Wash the brush in hot water after using. Don't leave the brush in the bottle.—*Dental Register.*

Demand for Practical Men.

One of the happiest outcomes of the Atlanta fair is the demand that has sprung up, not for more money, but for more men in the South, practical men, as they are pleased to style them down there, by which they mean mechanics, not those whose trades are their masters, but who are masters of their trades; farmers who can handle a plow as well as direct some one to do it.

And this demand is not coming from those who are dazed with the cotton manufacturing craze, but from farmers, blacksmiths, tailors, machine shops, and other industries quite as much needed and vastly more profitable than cotton manufactories.

There is scarcely an operative now at work at the fair who has not had from one to a dozen proffers of employment at the South, some of which have been accepted. This demand on the part of the business men of the South

is of the utmost significance, inasmuch as it implies a recognition on their part of the fact, so patent to us here in the North, that men are needed vastly more in the South to-day than money. The future development of the wonderful natural resources of the South depends vastly more on men than on money.

The land is teeming with richness for other things besides cotton, and when they get the "practical" farmers, whether from the North or from among their own people, a radical