

New Inventions.

Improved Sleigh.

The sleigh of W. H. Guiwits, of Rogersville, N. Y., for which a patent has been issued this week, is constructed with front runners, which have an independent motion, so that they have a perfect freedom to turn like wheeled vehicles, without wrenching them, as in the common way of making sleighs. The grand object is to prevent the wrenching of the runners in turning, something very desirable, and the means employed to do this are ingenious. It is not stated so in the claim—but as the forward runners are mentioned, it will be understood that the improvement refers to double runners connected with a reach, on which placed a single box or sleigh body.

Gas Regulators.

The patent granted this week to J. W. Hoard, of Providence, R. I., has for its object the maintenance of a uniform pressure of the gas on the burners at all times. The inverted floating cup mentioned in the claim to control the opening of the regulating valve is simply combined with an air spring—the pressure of the atmosphere on one side, opposed to the pressure of the gas on the other—for increasing and diminishing the resistance of the cup to the pressure of the gas, whatever that may be in the pipe, or by whatsoever means produced.

Improved Arrangement of School Desks.

The annexed engraving is a perspective view of an improved arrangement of desks in school-rooms, for which a patent was granted to Virgil Woodcock, of Swansey, N. H., on the 7th inst., and the claim of which was published in our list of last week. It embraces "the diagonal arrangement of the seats and desks," as here exhibited. The usual method of arranging desks in school-rooms, is to place them in independent rows, with an aisle between each double row. By this new arrangement two rows of desks are combined together, with a separating partition between them; or with a standard at each end, the partition may be dispensed with. Two rows of desks, A A and C C, are shown, connected to each partition board, D. The teacher's desk is represented at E; B are the seats of the scholars at the desks. *a a* are the desk standards. Each scholar's desk is arranged opposite the seat space of the opposite scholar, thus completely separating them, and preventing playing and whispering, excepting by the agonizing method of wriggling their heads, as shown by the attempt of the two little fellows in the middle of the room. An aisle is left between each double row of desks.

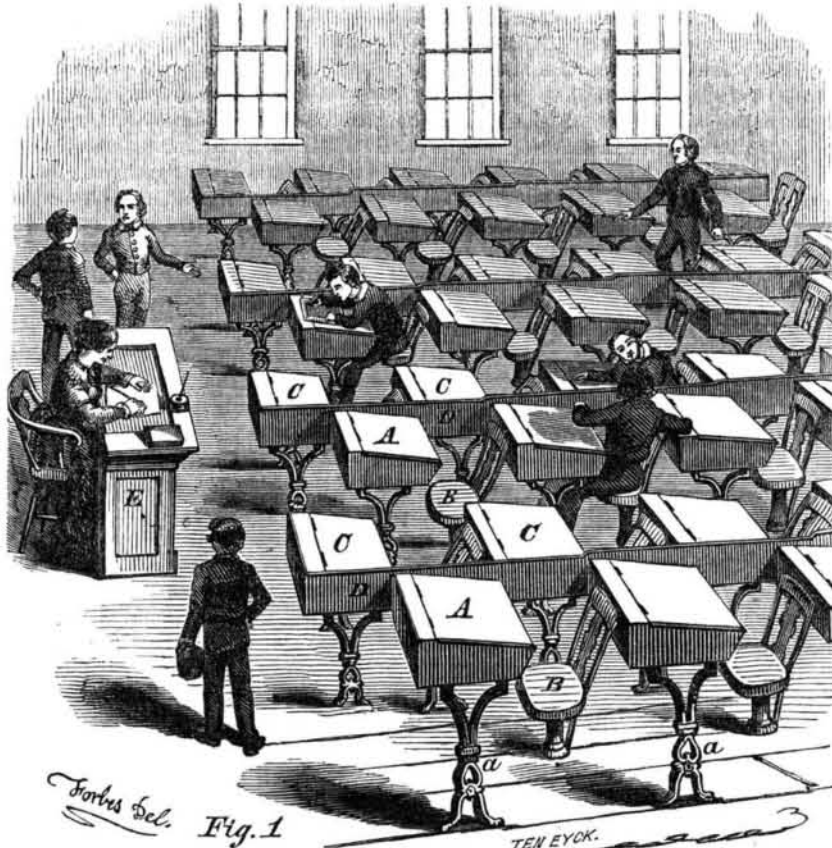
The engraving represents the plan so plainly that very little more is required to be said respecting it.

By this arrangement as many scholars can be seated at single desks as at double desks, and they will only occupy the same floor room. There is also a gain over single desks as arranged in the common way in schools, by seating forty-eight scholars with these desks in the same space as thirty-six are commonly seated. The desks and chairs are arranged diagonally on the floor, so that no one scholar can see the face of another without one of the two being at right or left half face.—When the school is called to procession all can rise at once, and step into files in the aisles without coming in contact with one another. Scholars are more directly under view of the teacher, and can therefore be kept in better order.

This improved arrangement of desks and seats has been introduced into the "high school" at Bellows Falls, Vt., of which P. B. Goodsell is principal, from whom we have a communication on the subject. The house is large, containing 285 of these desks. He says, "the beauty, simplicity, and utility of this plan is apparent at first view. After a fair trial, I am convinced that a school of one hundred scholars can be as easily controlled in a room thus arranged, as sixty by the old methods of single or double desks.—

The improved desks of Mr. Woodcock greatly diminish the labor of the teacher." The States School-room."

IMPROVED ARRANGEMENT OF SCHOOL DESKS.



More information may be obtained by letter addressed to the patentee at Swansey.

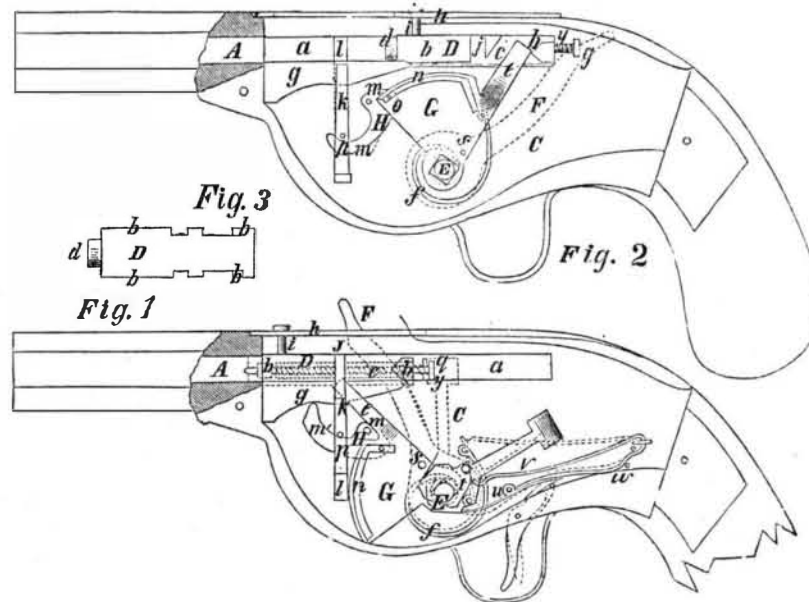
NEWTON'S BREECH-LOADING FIRE-ARMS.

The annexed engravings represent an improvement in fire-arms, for which a patent was granted to Abner N. Newton of Richmond, Ind., on the 27th June, 1854.

Fig. 1 is a side view of a pistol, having one side of the shank, which unites the barrel with the stock removed, in order to show the block and the mechanism by which the breech pin and cock are operated. Fig. 2 is a similar view, showing only the mechanism for operating the breech-pin, and in a different position to fig. 1. Fig. 3 is a top view of the breech pin. Similar letters refer to like parts. The improvements relate to a method of

operating a sliding breech pin, and in the arrangement and means of operating the cock, whereby the repetition of charging and firing can be performed with great rapidity and ease.

The barrel, A, is united with the stock by means of a hollow iron shank made in two parts or sides, C, of which one is capable of being readily detached, for the purpose of exposing the interior, and in each part or side of this shank is a groove, *a*, to receive a tongue, *b*, on either side of the sliding breech pin, D, and direct the movements of the said pin in a line with the barrel. The breech



pin has a part, *d*, capable of fitting closely in the back part of the chamber, and when it, *d*, is in the chamber, the part behind it fits to the rear of the chamber with a shoulder. It has a recess, *c*, in either side, to receive one of the prongs of a forked lever, *e e*, which is firmly attached to an arbor, E, which corresponds with a tumbler shaft of an ordinary fire arm, and protrudes through the side, C, of the shank far enough to receive, outside the shank, the thumb lever, F, which is firmly attached to the arbor, for the purpose of drawing back the breech pin to load the piece. The arbor, E, has a spring, *f*, attached to it, and to the side, C, of the shank in such a way that after the breech pin has been drawn back by the action of the forked lever, *e e*, and the lever, F, has been released, it will be returned to its place (as shown in fig. 1.) by the action of the spring. The charge, which is employed in the form of a

cartridge, is placed upon a shelf, *g*, which is fixed close in the rear of the chamber, and is left uncovered when the breech pin is drawn back. The breech pin is covered when in place, as shown in fig. 1, by a plate, *h*, which is attached to it by a screw pin, *i*, so as to slide back and forth with it in grooves provided to receive it. The breech pin has two other recesses, *j j*, one on each side, to receive the two sides of the lock pieces, *k k*, which is of forked form, and slides in upright grooves, *l l*, in the sides, C, of the shank. This lock piece is drawn far enough to set free the breech pin when it is desired to be drawn back, and is raised to lock it when thrown forward, by the action of a slotted plate, G, attached to, or forming a portion of the forked lever, *e e*, under a small lever, H, which swings on a fixed fulcrum, *m*. The greater portion of the slot, *n*, in the plate, G, is in the form of an arc described from

the center, E, but a short piece at the back part is straight. One arm of the lever, H, is furnished with a pin, *o*, which plays freely in the slot, and its other arm, *m'*, which is curved, plays between the bottom of the lock piece and a transverse pin, *p*, attached to the same. When the drawing back of the thumb lever commences, the action of the straight part of the slot upon the pin is such as to raise it, and throw down the part which acts upon the lock piece, thus throwing down the latter and unlocking the breech pin. When the arc unlocked part of the slot receives the pin, no further motion of the lock piece takes place, but the breech pin is kept unlocked. In drawing back the thumb lever the straight part of the slot must act before the drawing back of the breech pin commences. When the thumb lever is set free to allow the breech pin to be thrown forward, the straight part of the slot does not act till the breech pin is in place. The two sides, *k k*, of the lock piece are made of slightly tapering form, that they may act as wedges in driving home the breech pin. The cartridge to be employed contains some detonating composition, and is exploded by being pierced with a needle in the rear.—The needle, *q*, is fitted to slide freely through the breech, and is held back by a spring, *y*, so that its point does not protrude through the breech pin until the head at its back end is struck by the cock. The cock, I, is like the cock of other guns, except that it is attached directly to the tumbler, and is within the shank instead of outside the piece. It is fitted to work loosely on the arbor, E, and is cocked by the drawing back of the thumb lever preparatory to the loading of the piece, being thrown back simultaneously with the forked lever, *e e*, by means of a pin, *s*, which is inserted transversely through the lower part of the forked lever, and which comes in contact with the tumbler. The tumbler is represented as composed of two plates, *t t*, which both fit the shaft and receive between them the hub of the forked lever, *e e*, and plate, G. The cock is held back by a catch, *u*, and feather spring, *w*, in the usual way, which are set free by the trigger, J, and it is made to strike when set free, by a main spring, *r*, like that commonly employed.

The loading and discharging of the piece is performed in the following manner:—The piece is held in the right hand, in the usual way, and the thumb lever, F, which occupies the place usually occupied by the cock, is drawn back until the tongues, *b b*, on the sliding breech pin arrive at the back of the groove, *a a*, as shown in fig. 2, and the lever can move no further. During the early part of the position shown in fig. 1, the straight part of the slot, *u*, in the plate, G, is in operation on the stud, *o*, is drawing down the locking pieces, *k k*, to unlock the sliding breech pin, and by the time that is free, the prongs of the forked lever, *e e*, have reached the back of the recesses, *c c*, and will commence moving back the breech pin. The cock at the time the drawing back of the thumb lever commences, is in the position represented by dotted lines, fig. 1, but about the same time as the breech pin commences moving, the pin, *s*, comes in contact with the tumbler, *t t*, and commences throwing back the cock, which is secured by the falling in of the catch, *u*, before the breech pin stops. The cartridge is placed on the shelf, *g*, with the left hand, and the thumb lever then set free, when the spring, *f*, quickly drives forward the breech pin, and drives the charge into the barrel. The piece is now ready to be discharged, which is done by pulling the trigger in the ordinary way, and setting free the hammer to strike and drive the needle forward.

A gun constructed on this plan, may be loaded and fired from twenty to thirty times in a minute. It is more free, than a gun of ordinary construction, from any liability to accidental explosion of the charge, for if the thumb lever is accidentally caught and moved while the gun is cocked, it does not affect the cock in any way.

More information may be obtained by letter addressed to him, at Richmond, Wayne Co., Ind.