

NEW INVENTIONS.

Drilling Machine.

C. W. Coe, of Ashtabula, Ashtabula Co., Ohio, is about to take a patent for a new drill. There are two improvements in this invention. The first has reference to the feeding motion, and also to the mode of raising the drill from the work. The nut which works the feeding screw has on it a pinion capable of sliding up and down, but causing the nut to revolve by means of a groove and feather. This pinion gears into the driving wheel when at the upper part of the nut, a rapid motion is then given to the screw, which draws the drill quickly upwards. But when it is desired to give the feeding motion the pinion is depressed by a lever, and thus released from the teeth of the driving wheel. The pinion is then moved by two lugs or dogs attached to the inner part of the driving wheel; now, if the driving wheel has a motion given to it the reverse way to that used when raising the drill, it is evident a slow feeding motion will be given to the screw. If desirable, of course, more than the two lugs can be used.

The second part of the invention embraces a mode of holding the work to be drilled in any oblique direction. A clutch is employed for this purpose of a hollow conical shape, with a screw on the outside, this clutch is cut open in a vertical direction, so that if the work be placed within, it can be compressed by a taper nut working in the outside screw. A spring is used to open the clutch, when the nut is relaxed, and as it is attached by arms to the bed of the machine, this clutch can be set to any angle. The bed of the machine is movable so that the work can be shifted horizontally.

Locks for Safes, &c.

F. C. Goffin, of New York City, has taken measures to secure a patent for an improved lock for safes, bank vaults, &c. For this purpose the inventor has made such an arrangement that the mere shifting of the lever which holds the bolt in its position is unavailing to open the lock. He makes use of several tumblers arranged in the ordinary manner, and each having a recess placed differently in all. Now, to open the lock, all these recesses must agree in order to allow a small pawl attached to the lever before-mentioned, to fall therein, but when the door is locked, this pawl catches in teeth cut on the edges of the tumblers. To open the lock, it is first necessary to detach the pawl from the teeth; this is done by a peculiar-shaped rod. A key, with prongs of different lengths, is next used to bring the tumblers into the required position to allow the pawl to fall into the recesses when the lever can be moved. There are several other checks upon the burglar, one of which is the impossibility of his attaining any knowledge of the recesses of the tumblers. One of the main features in the lock is the impossibility of forcing it as no pressure can be obtained on the bolt.

Clock-work for Fastening Locks of Doors, Safes, Vaults, &c.

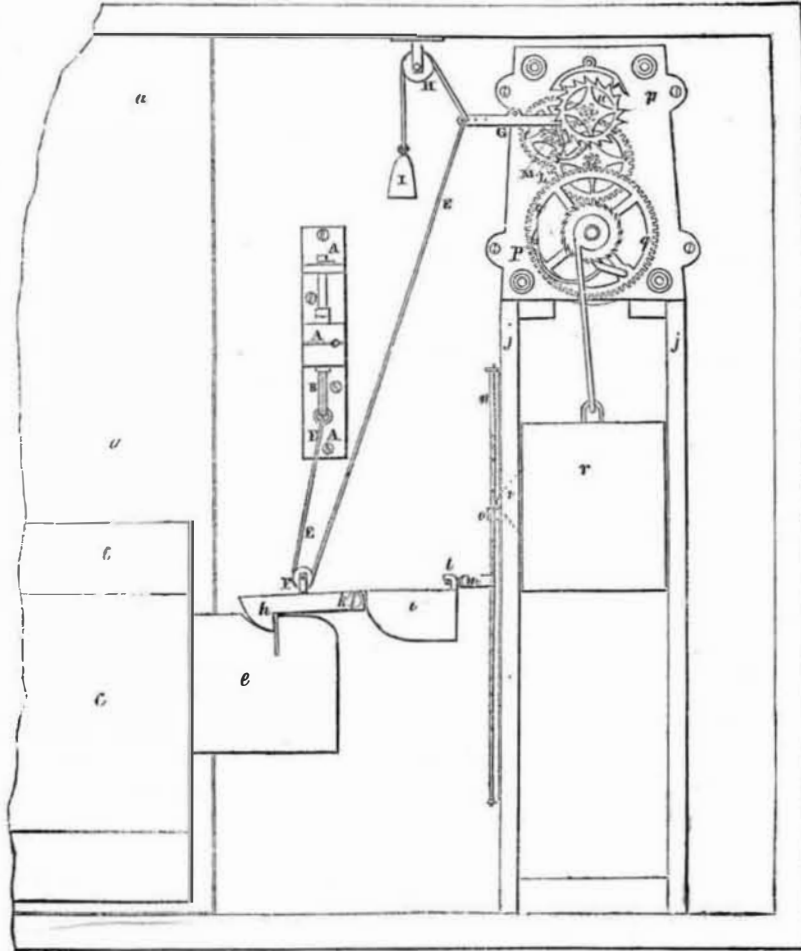
The annexed engraving is a side elevation of an improvement in fastening the locks of doors, safes, vaults, &c., invented by William L. Bass, of Boston, Mass., and which was patented in December, 1851.

*a a* is the door; *c c* is the lock or iron framework inside, in which the bolt, *e*, is moved in and out by a pinion (not shown here.) In the bolt, *e*, is a notch, into which the pawl, *h*, of the lever, *h i*, fits, the said lever swinging freely on a bolt, *k*. The peculiar features of the invention consist in relieving the pawl from the bolt, and thus allow the unlocking of the door, which is effected by means of the movements of a clock. *A A A* is a frame of metal fastened to the partition; *B* is a screw to which is affixed a chain or cord, *E*, running on pulleys, *F* and *H*, and terminating with a weight, *I*. *G* is a lever, forked at one end, to which is suspended a loop, *L* (shown by the dotted lines), under the ratchet wheel, *M*. When the clock is in motion, the loop, instead of catching in the teeth of the ratchet wheel, drops from one tooth to another, but when the clock is stopped, it catches in the teeth of the latter, and holds the lever, *G*, in its place. At the end of the pawl, *h i*, is a hook, *l*, which fits over a projecting arm, *m*, in the hinged

slotted plate, *n*, fitting against the weight-box, and in any of the slots, can be fitted the stud, *o*. The weight, *r*, as it descends, strikes against the stud by means of a projection, *v*, and thus disengages the pawl from the bolt, *e*. *P p* is the back plate of the clock; *q* is the main wheel, to which the weight is attached; *s* is the second wheel, and *u* the crown wheel, —the whole forming a time-piece with the exception of the dial-work. The weight, *r*, being wound up on its axis, the escapement on the axis of the pendulum acts upon the crown wheel, *u*, and the weight, *r*, gradually de-

scends as the gear wheels revolve. At the appointed hour, which is set by the stud or pin, *o*, in the selected slot, the knob, *v*, will strike it, and disengage the catch, *m*, thus allowing the bolt, *e*, to be withdrawn.

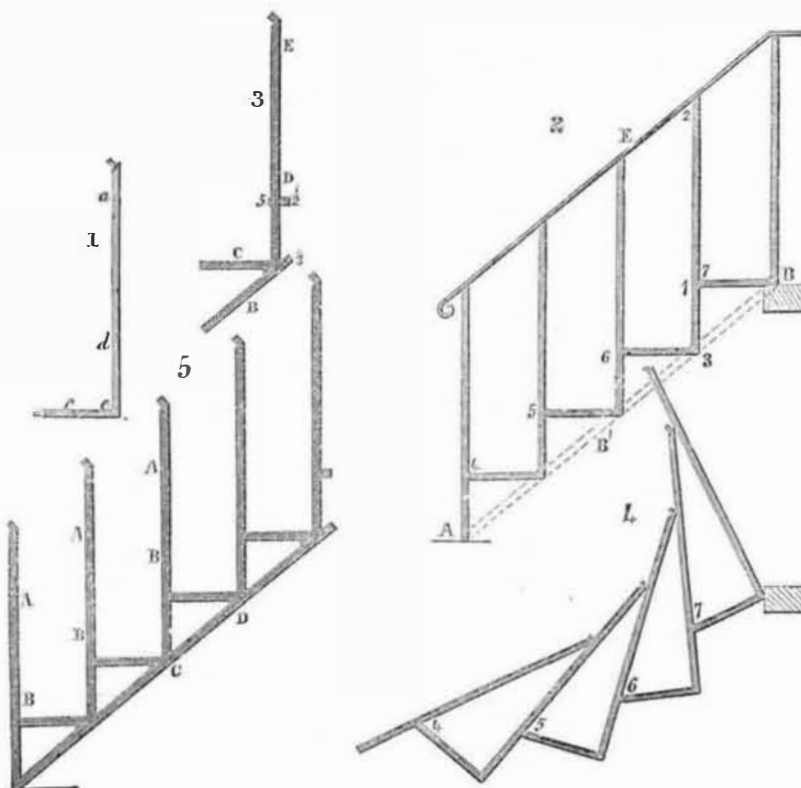
It is evident from the above that the bolt of a lock, fastened in this manner, will be a safeguard against any burglarious attempts, and it will be efficient so long as the clock is running, the limit of which can be regulated at the will of the owner. If, however, the clock should be stopped by any accident, and it is required to open the door on the outside, it is



done by applying a thumb-nut to an endless screw on the outside, which operates the vertical screw, *B*, which will raise the cord, *E*, and consequently the lever pawl, *h i*, from the bolt, *e*. The loop, *L*, (which is a kind of catch lever), when the clock is stopped, catches in the teeth of the wheel, *M*, holds the

forked lever, *G*, in its place, and thus the cord is allowed to lift the pawl, but when the clock is in motion, the ratchet wheel, *M*, moves the loop, *L*, therefore the forked lever, *G*, is not held firm, and the latch cannot then be lifted. More information may be obtained by letter addressed to the patentee.

IMPROVEMENT IN IRON STAIRS.



The annexed figures are views of an improvement in the construction of iron stairs, invented by Benjamin F. Miller, of this city, (N. Y.,) and which was patented October, 1849. The improvement consists in making use of a series of stationary bent levers made of iron bars, to form a stair. Out of a bar of

iron is formed the baluster, *a d*, (figure 1) the rise, *d e*, and tread, *c*. A portion of the bar is bent to form the tread at right angles to the part which is to form the rise and baluster. The upper end of the bar is furnished with a tennon, *a*, to fit into the rail, and there is a tennon on the other end to be inserted

into the hole in the rise of the preceding bar. The stairs, as constructed, consist of a series of these bent iron levers, attached to one another, and retained in their stationary and upright position as shown in figure 2 by the rail, *E*. The rail acts upon the long arm, *1 2*, of the lever or bar, and thus braces the whole series firmly together. When a lighter rail and additional strength is required, a brace, *B'*, figure 2 is employed. It is either made in sections, or is continuous and is riveted to the shorter arm, *1 3*, of the lever at the apex of the angle. To construct a stair of cast-iron on this principle the baluster, rise, head, and under brace, are made in one piece as shown in figure 3. It has a lug at  $\frac{1}{2}$ , to which the end of the next tread is riveted, and the end  $\frac{1}{2}$  of the under brace, *B*, projects to receive and be riveted to the brace of the next baluster, rise, and tread, and so on in succession. On the inner side of the tread, *C*, there is a ledge cast to receive the plank for forming the step; the projection, *5*, in front of the baluster, *E D*, forms a finish to the front of the step. Figure 2 shows how the rail, *E*, keeps the levers in position, and figure 4 shows the position the stairs would assume if the rail was removed, and the rivetings, *4 5 6 7*, yielded to a weight upon the treads. It is therefore plain, that so long as the rails prevent the balusters from changing their upright position, the stair will resist incumbent pressure when supported at its extremities, *A B*. In figure 5 the under brace produces a similar effect with this difference, the rail acts more powerfully on the long arm, *A B*, of the levers, while the brace, *C D*, acts on the short arms. Stairs constructed on this plan can be made in sections at the workshop, and transported to any place, and will then require only to be set up, which can be done by any handy person. By making the baluster, rise, and tread a lever, an increase of strength, with a diminution of material is obtained over stairs made in the common manner. These stairs cost very little more than wooden ones. The steps can be renewed when worn out without removing the railing. The stairs can be made ornamental as well as plain. A flight of ten steps built on this principle, weighing only 57 lbs., is in use in a dwelling house in this city, and has been tested with 1,500 lbs. Stairs on this principle have been in use in this city for two years. More information may be obtained by calling or by letter addressed to the patentee at No. 74 Trinity Place, N. Y.

Grain Separator.

Geo. B. Salmon, of Elmira, Chemung Co., N. Y., has taken measures to secure a patent for improvements in grain separators. The nature of the invention consists in cleansing and separating grain by means of a blast spout screen and trough. The object of the inventor, in the first part of his invention, is to overcome the inconvenience that is experienced by millers, from the fact that many substances, as cockle, &c., although smaller in size, have the same specific gravity as wheat, hence it is obvious that any amount of blast from the fan, capable of acting upon the cockle, &c., would also act upon the wheat. The inventor ingeniously takes advantage of the fact of the above-named substances being smaller in size than the wheat, to get rid of them at once by allowing them to pass through the finer sieve. In order to understand the latter arrangement, it should be explained that the screen consists of two sieves of different degrees of fineness, so arranged that the grain passes through the coarser one into the blast spout and trough. The necessary shake and inclination of the screen are effected by the use of an adjustable spring, operated upon by an eccentric or cam, which gives the necessary shake motion.

Steam an Extinguisher of Fire.

M. Dufardin relates, that a fire broke out a short time since at a spinning-mill at Douay. It penetrated to the carding-room; destruction seemed inevitable, and the engines were sent for, when it was proposed to fill the blazing room with steam. A steam tube traversed the apartment; it was broken by a stroke with an axe, the steam rushed out, "and in a few minutes the conflagration was extinguished as if by enchantment."