Improved Breech-Loading Gun.

The accompanying engravings represent a very effective breech-loading gun, recently invented by Henry Berg, of Davenport, Iowa; Fig. 1 being a side elevation, Fig. 2 a vertical longitudinal section, and Fig. 3 a horizontal section. A is the stock and B the breech, which are rigidly connected together. Movable face plates, C, cover the breech on each side. D is the barrel, provided with arms, *d d'*, by means of which it is pivoted to the breech. E is a horizontal bolt, passing through a slot in the breech, which slot is narrow horizontally, so as to confine the bolt endwise of the gun, but wide vertically, to allow play to the bolt in that direction. *e e* are flanges formed upon the bolt, E, near its ends, and fitting in eyes at the ends of the arms, *d d'*; the said flanges being eccentric to that portion of the bolt which fits within the slot of the breech, a rotation of the bolt will move the barrel forward or backward.—This rotation is effected by means of a lever or crank, F. *f* is a spring catch, which retains the lever, F, in either position. The front of the breech is formed with a circular flange, *b*, fitting in a corresponding annular groove or socket in the rear of the barrel, in order to form a tight joint when the barrel is drawn back into position for firing.

Fig. 1

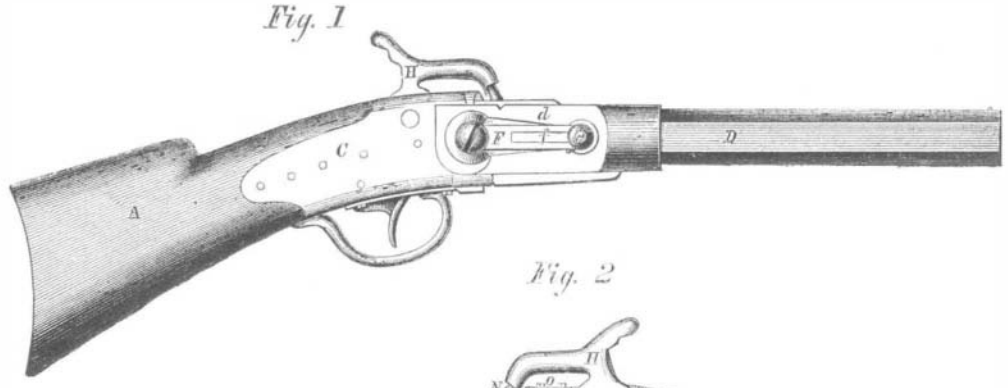
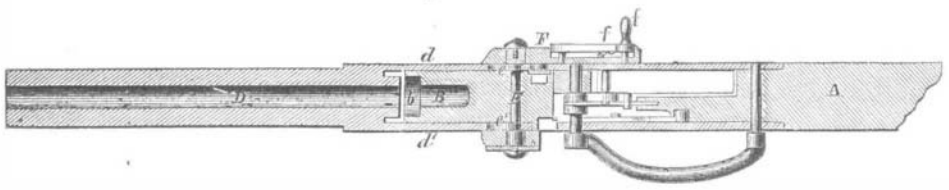


Fig. 2

Fig. 3



BERG'S BREECH-LOADING GUN.

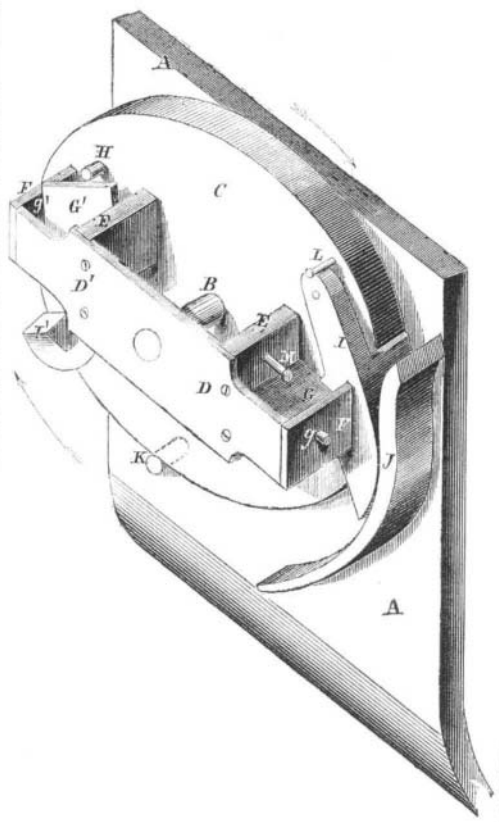
The main portions of the lock being of common construction require no description. The hammer, H, is also of common construction, but is provided with a stud or pin, *h*, projecting horizontally from it, for the purpose of raising it by the action of the barrel. G is a chamber to contain tape priming, which extends up through a passage, M, to the nipple, N. L is a feed band, pivoted to the lower part of the hammer stock, and employed to forward the priming up the passage, M, at every elevation of the hammer. *m* is a cutter upon the hammer, which severs a suitable piece of the priming at each stroke. O is an adjustable-elastic plate, fitting over the orifice of the passage, M, but movable, so as to permit the withdrawal of the priming when desired.

The manner of using the arm is as follows:—The parts being in the position shown in Figs. 1 and 2, (which is the position for firing) if it be desired to load the piece, the finger and thumb are applied to the pin, *f'*, of the crank lever, F, and the catch, *f*, at the same time is retracted by a slight pressure. The lever is then drawn up and over to the position shown in Fig. 3, which, by the action of the eccentrics, *e e'*, throws the barrel forward. The barrel is then allowed to fall back over the shoulder of the operator, in a position at right angles with the breech, the latter being held in a vertical position to receive the charge. The charge being inserted in the breech, the latter, with the stock to which it is attached, is restored to a horizontal position, and the barrel falls by its own weight to a line with the breech, in the position shown in Fig. 3. This descent of the barrel raises the hammer to full cock, through the medium of a lever engaging beneath the pin, *h*, of the hammer. At the same time the feed band, L, being, by the motion of the hammer, driven up the passage, M, carries forward the tape priming, causing it to project over the nipple. The hammer may be cocked by hand, in customary manner, if preferred, and, by means of a sliding catch, the parts may be disconnected so that the movement of the barrel will not act upon the hammer. The tape priming can be withdrawn at any time and percussion caps used in its place.

With this invention the entire operation of loading and firing can be readily performed with one hand, by resting the barrel over the arm or shoulder; it is, therefore, of great value in carbines for mounted service, but is applicable, also, to other arms. It is claimed to excel both in rapidity and accuracy of firing.

A patent for this invention was procured through the Scientific American Patent Agency, March 25, 1862. Any information as to the sale of rights, or other matters relating to the invention, may be obtained by addressing the inventor, Henry Berg, Davenport, Iowa.

KEPNER'S FEATHERING PADDLE WHEELS.



Various expedients have been devised to relieve the buckets of paddle wheels from the injurious vertical resistance experienced from the water at the back part of the stroke. The annexed cut represents a simple and effective device involving less waste of power than most contrivances for this purpose. It operates in connection with a pivoted bucket holding the said bucket rigidly during its downward and backward movement and relieving it the instant it begins to ascend, so as to permit it to assume a position in which it will pass through the water with the least possible resistance.

A represents a portion of the side of a vessel. B is a shaft carrying a disk, C, and radial arms, D D, connected to the said disk by bars E and F, which are parallel with the shaft but at different distances therefrom, the bars, F, being at the extreme periphery of the wheel, as shown. G G are buckets adapted to turn upon radial pivots, *g g*, which pivots are placed somewhat nearer to the arms, D D, than the disk, C. Pins H (one shown) project from the face of the disk, C, in such position as to receive and sustain the inner or longer ends of the pivoted buckets as they fall into position on the descending side of the wheel. I I are gravitating latches by which the buckets are held in their closed position during a proper part of their revolution. J is a segmental cam fixed to the vessel's side concentrically with the wheel and employed to hold the gravitating latches, I I, inward upon the buckets. K is a stationary pin employed to throw the latches outward in order to release the buckets at the proper time. L are pins (one shown) which support the latches, I, when thrown off the buckets. M are pins (one shown) which support the buckets so as to prevent them falling too far outward to admit of their returning to a closed position by their gravity, at the proper moment.

The operation of the wheel is as follows:—As each bucket begins to descend it falls into a closed position and its latch, I, falling over it and passing within the segmental cam, J, secures the bucket firmly against the action of the water. The bucket is thus held in the most effective position during such part of its revolution as it can act advantageously, but immediately that it begins to ascend, or reaches a position where the force exerted upon the water will not be so directly applied to the propulsion of the vessel, the latch, I, passing under the fixed pin, K, is thereby thrown from the bucket and the latter swings back to such a position as to adapt it to pass upward through the water with the least possible resistance. The pins, L and M, are so placed as to prevent the latches and buckets falling back too far and to support them in such positions that the buckets first and the latches immediately after, will return to the closed position by their own gravity as they begin to descend. The bucket, G, and latch, I, show the closed positions and the bucket, G, and cord, I, the open. The constant lubrication afforded by the water causes the device to operate with less friction than might appear at first sight. In the engraving but two arms and buckets are shown. In practice they will of course extend completely around the wheel. Arms may also be substituted for the disk, C, if preferred.

A patent for the above was procured through the Scientific American Patent Agency on the 15th of April, 1862. It is the invention of Solomon Kepner, of Pottstown, Pennsylvania, of whom further information may be obtained.

REMEDY FOR BRONCHITIS.—The following is given as an excellent remedy for bronchitis:—Take common mullin leaves, dry and rub fine, and smoke them three or four times a day in a new pipe, taking care to draw the smoke well into the throat.

WITHIN the past ten years 1898 new streets have been opened in Paris.