IMPROVED BREECH-LOADING CANNON.

The gun here represented was invented by Captain Charles F. Brown, one of the most fertile and enterprising inventors of the age. It is protected by two patents, the one for the wheel dated July 10, 1860, and the one covering the several combinations in the gun, on the 18th of September, 1860. Both inventions have also been patented in England and France. Mr. Brown has all of his large patent business done through this office, and among all of our thousands of clients, there is no one that we value more highly than our good-natured jovial friend, Captain Brown.

Fig. 1 is a perspective view of the whole gun, and Fig. 2 is a horizontal section of the breech. The bore, A, is carried right through the gun, and is enlarged at the breech by the counter-bore, B. A hollow breech-pin, D, is made to fit the bore of the gun snugly, but easily, with a flange, *e*, to fit the counter bore. A spiral spring, *c*, presses back the breech-pin which is carried forward at each revolution of the cam, F, a roller, *g*, being interposed to diminish the friction; the plan being to push the breech-pin forward and fire the gun at every revolution of the cam. Forward of the breech-pin an opening, H, is made in the gun for the reception of the cartridges. A ball cartridge being dropped into this opening, the breech-pin moves forward, pushing the cartridge before it and closing up the bore in its rear, when the movable plunger, J, is driven forward, so as to strike some percussion powder in the rear end of the cartridge and discharge the gun. The action of this plunger is automatic. It is pressed forward by the spiral spring, J; but as the breech-pin is carried forward, the pin, *i*, which is rigidly secured to the plunger and passes through slots in the breech-pin and gun, and enters a slot in the lever, K, is arrested by coming to the end of this last-named slot. But as the shaft, L, continues its revolutions, the cam, M, presses the end of the lever, L, inward, carrying out the opposite end of the lever and releasing the pin, *i*, when the plunger is driven forward by the spring, J, discharging the gun.

By placing a crank upon shaft, L, the gun may be fired with great rapidity by simply turning the crank; the cartridges being fed in at the time through the opening, H. In retreat, the cam being placed on the same shaft with the rear wheel, the firing of the gun may be effected by the simple revolutions of the latter, resulting from the onward motion of the carriage.

Further information in relation to this invention may be obtained by addressing Charles F. Brown, at Warren, R. I.

Fig. 1

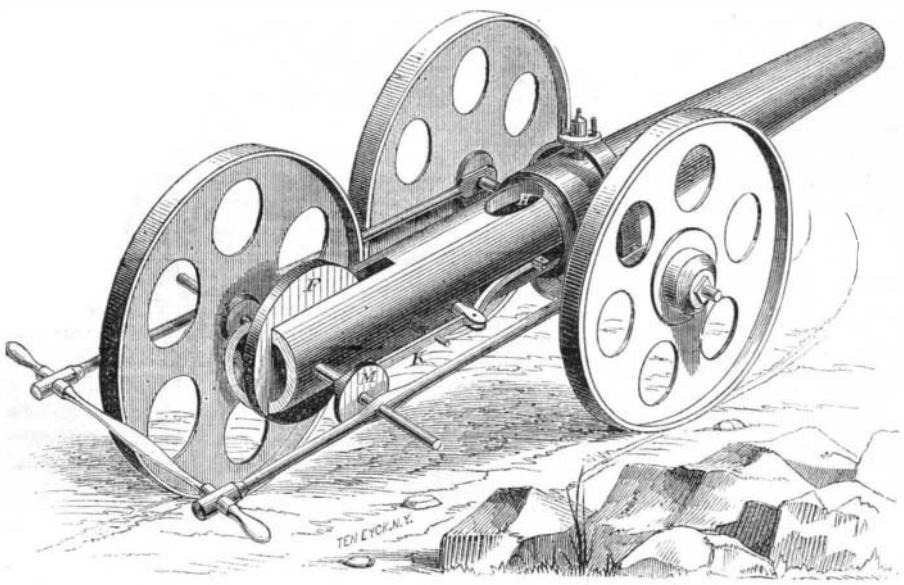
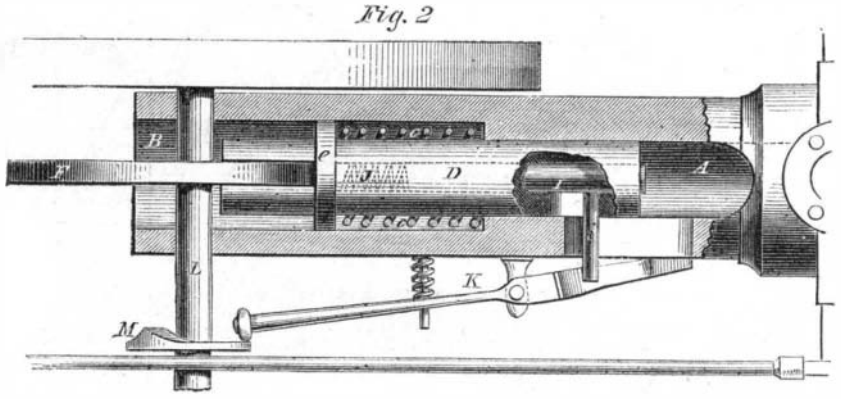


Fig. 2



BROWN'S IMPROVED BREECH-LOADING CANNON.

A NEW TERM.—The SCIENTIFIC AMERICAN. in describing a new balance valve, says the steam chest is full of "live steam.' This we suppose is evaporated from the "waters of life."—*The Engineer.*

[If the editor of the *Engineer* had come much in contact with the practical engineers of London while he was in that city, he would not have published his ignorance of a term so old and well-known as "live steam." It has long been in general colloquial use to designate the steam which has not done its work in contradistinction to that which has.

A CANNON BALL AND A LOCOMOTIVE.—According to the experiments of Dr. Hutton, the flight of a cannon ball was 6,700 feet in one quarter of a minute, equal to five miles per minute, or 300 miles per hour. It follows, therefore, that a railroad train, going at the rate of 75 miles per hour, has the velocity of one-fourth that of a cannon ball; and the momentum of such a mass, moving at such a speed, is equivalent to the aggregate force of a number of cannon balls equal to one-fourth of its own weight.

WAGES IN ENGLISH MANUFACTORIES.

The manufactories of England are inspected regularly by government officers, who make annual reports. From the report just issued, we extract the following statement of the average wages in the Manchester district, in 1839, when the hours of work were 11½ hours per day, compared with the present 10 hour system. We reduce the shillings given in the report to American currency:—

COTTON SPINNING.

	Weekly wages— 1839.	1859.
Hours of work per week	69	60
Occupations.		
Steam engine tender	$5 81	$7 26
Warehouse boys	1 69	1 94
Warehouse men	4 36	5 32
Carding department—Scutchers (young women and girls)	1 69	1 94
Skippers(young men)	2 66	3 39
Overlookers	6 05	6 77
Card-minders (boys from 14 to 18)	1 45	1 70
Drawing frame tenders (young women)	1 57	1 94
Spinning department—Spinners on self-acting mules	3 87 to 4.36	4 84 to 5 32
Piecers (women and young men)	1 94	2 42
Overlookers	4 84	4 84
Doubling department—Doublers (women)	1 69	2 18
Doffers (girls)	97	1 21
Overlookers	5 81	6 77
Jobbers (young men)	2 42	3 15

CALICO PRINTING, DYEING, BLEACHING.

	Weekly wages— 1839.	1859.
Hours of work per week	60	60
Occupations.		
Color mixers	$8 47	7 74
Machine printers	9 68	9 20
Foremen	9 68	9 68
Block cutters	8 47	6 05
Blockprinters	9 68	6 77
Dyers	4 36	3 87
Washers and laborers	3 87 a 3 63	3 87 a 3 63

FUSTIAN DYEING.

	Weekly wages— 1839.	1859.
Hours of work per week	61	61
Occupations.		
Dressers	$4 36	5 32
Bleachers	5 08	4 36
Dyers	5 08	3 87
Finishers	5 08	5 32

If some manufacturer among our subscribers will send us a statement of the wages of the same classes of workmen in this country, we shall be pleased to publish it in comparison with the above.

RAILROADS IN GERMANY.

Nothing could be better illustrative of the prominent traits of the German character, caution, solidity and method, than the German railroads and the manner in which they are conducted. Built at great expense, and with great care, they seemed destined to outlast time itself. Taunus Railroad, between Frankfort-on-the-Main and Wiesbaden, cost $260-907 per German mile (the German mile equals 4¾ miles English); the Baden road cost $309,177; the Dusseldorf and Elberfeld, $432,352; the Cologne and Minden, $450,000; and the Rhine road, $569,250 per German mile. As might be expected, the work is done with thoroughness; the bridges are built throughout of stone, and even the smallest viaducts are handsomely arched over; everything is smoothed off; there are no rough, ragged-looking places to offend the eye.

The depots at the stations are universally built of sandstone, and are excellently arranged. With them are connected restaurants where one can procure refreshments similar to that of a first-class hotel.

The caution with which the roads are conducted affords an example which American roads would do well to imitate. A "railroad accident" seldom, if ever, occurs. At distances of about an eighth of a mile, throughout the length of the road, are stationed watchmen, whose duty it is to see that the track is clear, and to prevent people from walking on the premises. It is a punishable offence to walk along the track. Wherever the railroad crosses a highway a gate-keeper is placed, who inexorably closes the barriers the moment he sees the smoke of the advancing train, and will not permit even foot passengers to cross until it is past. The precautions taken to prevent accidents seem excessive to one who is inured to the American system.