

Effects of a Ninety-pound Charge.

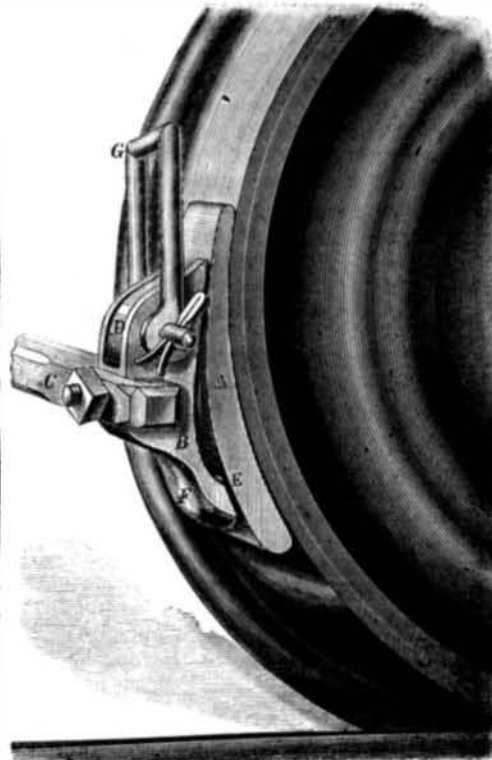
The following account of the most powerful shot yet made is from the London *Times*. The gun is of wrought iron with a caliber of $13\frac{1}{2}$ inches, just about the same as that of Ericsson's wrought-iron guns which are to be used in arming the *Dictator* and *Puritan*:—

"A curious and important experiment took place at Shoeburyness last week, to test the powers of the greatest gun yet forged by Sir William Armstrong against one of the thickest plates which Messrs. John Brown & Co.'s eminent firm have yet produced for actual armor-plating. The gun was the celebrated "Big Will," the 600-pounder, about which so many *canards* have been in circulation as to its having given way at the breech, &c., for all of which there has not been the slightest foundation. This magnificent piece of ordnance had only been fired twenty times, each time with the most prodigious result, and after the great experiment of Thursday it was as perfect inside and out as the day it left the factory at Elswick. The mass of iron, for it can hardly be called a plate, against which it was tried on Thursday was no less than 11 inches in thickness—a sample of one of many of the same enormous strength made by Messrs. Brown & Co., for the Russian Government, to plate the sea faces of some of the most important and exposed of the Cronstadt forts. According to the theory of the iron plate committee, that the strength of an iron plate increases as the square of its thickness, the 11-inch mass, tried on Thursday, was equal in strength to no less than six plates of the famous *Warrior* target; yet before the experiment commenced, not the slightest doubt was entertained that the 600-pounder would utterly smash it, if fired with a 600 lb. shot. The real interest of the experiment consisted in ascertaining—first, whether the same destructive result would be gained by using the gun as a smooth-bore, with a steel shot of half the weight; secondly, how the gun would stand the tremendous charge of 90 lbs. of powder; and thirdly, whether the fracture of the plate would show that even Messrs. Brown could manufacture one of 11 inches in thickness perfect throughout. These were the three points really at issue, and the solution of these was looked forward to with keen interest by all the officers on the ground. The first and only shot, we are happy to say, settled them all in the most satisfactory manner, and proved the enormous advantage of steel shot, the strength of the gun, and the excellent manufacture of the plate. The plate or slab of iron was 4 feet long by $3\frac{1}{2}$ feet wide, and was unimpaired in its strength by a single bolt-hole or fastening. It was held up vertically against two 12 inch beams of solid oak, to which it was fastened by railway iron, passing up its face on either side. Behind it, and in support of the oak beams, was the Fairbairn target of 5 inch plates and a 1 inch inner skin, with the usual massive framework of iron rib beams. This target, however, did not support the plate to be fired at, but only the beams of oak which held it in position. There was an interval of 12 inches between the plate and the Fairbairn target, which was left purposely that the former might do its own work, if it could, unaided. The proceedings were commenced by firing two cast-iron round shot of 300 lbs. weight, levelled at 200 yards range, against a "dummy" target placed close alongside the 11-inch plate, for the purpose of determining the exact degree of elevation to be given to the gun. Both these were fired with the enormous charges of 90 lbs. of powder. Such charges, even with 600-pounders, would not be used in actual warfare, and for experimental purposes like that of Thursday were objectionable, as it seemed to make it almost as much an effort to destroy the gun as the target. To load "Big Will" with a sack of powder, such as two men could scarcely lift into its muzzle—such a sackful as it was never built to withstand, and such as it would not be loaded with in service—seemed, as an experiment, almost childish. The gun stood it perfectly to all outward seeming; but those conversant with the nature of wrought iron knew very well that the piece is so much the worse for the ordeal through which it has now been forced, and that they have, if anything, less confidence in "Big Will" after such a straining than they had before it was tested at all. Our system of testing wrought-iron guns is condemned, without an exception, by the artillery officers of all other nations in

the world. The precise range having been ascertained, "Big Will" was again stuffed with a sackful of powder, but, instead of a cast-iron projectile, was loaded with a steel round shot of 344 lbs. weight, and levelled against the target. This shot struck the very center of the plate with a terrific crash, at a velocity of 1,560 feet, and at one blow closed the experiments for the day. Nothing further remained to be accomplished, for the target was gone. Never, probably, has a more tremendous blow been struck by human agency. The mass of steel driven by the tremendous charge of powder must have struck the target with a power almost inconceivable, for everything went down before it. The solid oak beams behind the plate were crushed into splinters, and the plate itself hurled bodily back against the Fairbairn target and split into two pieces—one huge piece being flung away to the right and the other to the left, and all this before the shot had time to penetrate to a greater depth than $4\frac{1}{2}$ inches. The 11-inch plate, in fact, had not sufficient stability to receive the blow aimed at it; it was torn apart by the tremendous force with which it was jammed against the Fairbairn target behind, and an examination of the fracture showed that its manufacture was admirable. Fourteen feet in front of the target lay the steel shot, much flattened, and cracked, but evidently as good metal of its kind as Mr. Brown's plate itself. A close examination of the gun was next made by the Inspector of Artillery, and it was found to be wholly uninjured. Notwithstanding the use of steel round shot in a rifled gun, the grooves of the rifling remained as sharp and fine as ever, and only one feeling seemed to be entertained on the ground as to the strength of the gun and the excellence of the plate."

BING'S BRAKE SHOE.

This engraving represents a new shoe for car brakes; it is designed to act more efficiently than those ordinarily in use, to wear much longer and require less attention and repair. The construction of



it is simple and its operation is said to be satisfactory. The shoe, A, itself is of metal and is carried in a bracket, B, to which the brake beam, C, is attached. It will be seen that the lug, D, on the shoe is tapered where it enters the bracket, and that the shoe has a spur at E, which fits in a recess in the under part of the bracket at F. From this peculiarity the shoe always accommodates itself to the cone-like face of the car wheel, and acts as efficiently when rounding curves as when running on a straight line. This is not the case with the old brakes, which are rigid or fixed and at times present but a small portion of the bearing surface to the tread of the wheel. The clevis, G, is attached to the car as usual, and the bolt that runs through it is easily fitted so as not to cramp it. These shoes are made right and left to suit different sides of the cars, and are highly spoken

of by those who have used them. The inventor says:—

"In the manufacture of my shoe there is a saving of at least fifty per cent; it can be secured in its place, or removed, in two or three minutes, and will wear much longer than the ordinary shoe, as it bears with its entire surface against the face of the wheel the moment the brake is applied. As the shoe is capable of a slight vibration, much of the strain is removed from the bolt which secures it to the brake beam, and the bolt does not therefore work loose as in ordinary shoes. This shoe has been tried on the West Chester and Philadelphia Railroad, and also on several of the passenger railroads in Philadelphia. The engineers on all the roads speak of it very highly and are about to place it on all their cars. In four months' trial on the Pennsylvania Central Railroad, my shoe outlasted two of the ordinary shoes. After the trial my shoe had worn away to five pounds, whereas, when the ordinary shoe had to be replaced by a new one, its weight was twelve pounds, the difference being that with my shoe but five pounds of waste iron were left after four months' trial, while in the other case, during the same time, twenty-four pounds of waste iron were left."

The patent for this invention was procured Oct. 6, 1863, by James Bing, of Philadelphia, Pa.; for further information address him at No. 2,222 Mt. Vernon street, Philadelphia.

How to prevent Wet Feet.

A writer in the *Mechanics' Magazine* says: "I have had three pairs of boots for the last six years, and I think I will not require any more for the next six years to come. The reason is that I treat them in the following manner: I put a pound each of tallow and resin in a pot on the fire; when melted and mixed, and apply it hot with a painter's brush until neither the sole nor upper will soak any more. If it is desired that the boots should immediately take a polish, dissolve an ounce of wax in a teaspoonful of turpentine and lampblack. A day or two after the boots have been treated with the resin and tallow, rub over them this wax and turpentine, but not before the fire. Thus the exterior will have a coat of wax alone and shine like a mirror. Tallow and grease become rancid, and rot the stitching or leather; but the resin gives it an antiseptic quality, which preserves the whole. Boots or shoes should be so large as to admit of wearing cork soles. Cork is so bad a conductor of heat that with it in the boots the feet are always warm on the coldest stone floor."

Sensible Maxims.

- Never taste an atom when you are not hungry; it is suicidal.
- Never hire servants who go in pairs, as sisters, cousins, or anything else.
- Never speak of your father as "the old man."
- Never reply to the epithet of a drunkard, a fool, or a fellow.
- Never speak contemptuously of womankind.
- Never abuse one who was once your bosom-friend, however bitter now.
- Never smile at the expense of your religion or your Bible.
- Never stand at the corner of a street.
- Never insult poverty.
- Never eat between meals.

SPECIAL NOTICES.

THEODORE ALTENEDER, of Philadelphia, Pa., has petitioned for the extension of a patent granted to him on July 16, 1850, for an improvement in joints for compasses for measuring.

It is ordered that the said petition be heard at the Patent Office, Washington, on Monday, June 13, 1864.

FREDERICK M. BUTLER, of New York City, has petitioned for the extension of a patent granted to him on July 22, 1850, for an improvement in truss pads.

It is ordered that the said petition be heard at the Patent Office, Washington, on Monday, July 11, 1864.

All persons interested are required to appear and show cause why said petitions should not be granted. Persons opposing the extensions are required to file their testimony in writing, at least twenty days before the final hearing.