

and that those of us who so earnestly advocated the change, have reason to feel specially gratified with the result.

In Vol. 8, page 5, of the SCIENTIFIC AMERICAN, may be found a communication of mine, dated Dec. 20th, 1862, in which I advocated these three points, giving my reasons therefor, viz. 1st, reducing the bore of the gun so as to reduce the diameter of the ball and thereby lessen the resistance of the atmosphere to its flight—2d, elongating the ball so as to retain the proper weight of metal, and thus give it momentum—and, 3d, chambering the barrel so as to burn a greater quantity of powder, and thus secure a propelling power proportioned to required velocity and weight of projectile. I now have the satisfaction of knowing that these ideas have all been adopted by the Ordnance Department, and are to be applied to the guns now being built. Without claiming any special credit for my ideas on this subject, I think I may properly feel special gratification at this official confirmation of the correctness of the views I then advocated.

So, too, on page 70, of Vol. 9, I stated the reason why our monster cast iron guns were comparatively a failure; and I now have the satisfaction of seeing my ideas on this subject fully sustained by the wonderful result of the Ames gun at its recent trial.

While on this subject I wish to place on record this prediction—that the improvements now making and yet to be made in artillery, will enable us to pierce any iron clad that can be made to float, as easily as the old thirty-two pounder did our wooden vessels. Of this I have not the least doubt; but such results will never be obtained by guns of cast iron.

This whole subject has been to me one of the greatest possible interest, and all that I have done in reference to it has been to me a work of love; for I have never had one cent's interest, direct or indirect, in any gun, factory, or contract. I did want to see our government avail itself of all the means in its power to crush the rebellion; and I felt certain that our inventors were capable of furnishing the means in the way of arms, if the government would only adopt them; and sometimes, when I saw the reluctance of those in authority to move in these matters, it did seem to me that they acted as though they were afraid we would be too successful; I have often thought that if our country survived, in spite of the combined energy of the rebels, and the want of it on our own part, it will be proof against anything that can assail it in the future. It is, however, exceedingly gratifying to all loyal men to know, that at last we have at the head of the Ordnance Department men who can see and appreciate common sense ideas, even though they do come from civilians.

W. C. DODGE.

Washington, D. C., Dec. 26, 1864.

[We wish it to be understood that we do not endorse our correspondent's opinions in relation to cast-iron cannon. The problem in regard to the best material for heavy ordnance is not yet definitely solved.—EDS.]

#### RECENT AMERICAN PATENTS.

The following are some of the most important improvements for which Letters Patent were issued from the United States Patent Office last week; the claims may be found in the official list:—

*Devices for Stopping Leaks in Boiler Tubes.*—This invention consists in the application to a leaky boiler tube of a split ring, with or without a bead, in combination with one or more expanding wedges, in such a manner that by the action of said wedge or wedges the ring can be secured in the interior of the tubes, and the leak be stopped. If the ring is to be applied to the end of the tube near the tube sheet, it is provided with a bead to fit into the cavity of the tube, close behind the tube sheet, and the leak can be stopped simply by expanding the tubes, or an open cap may be attached to the ring by screw bolts or other suitable means secured to the ring by ears or large projections from its inner surface, in such a manner that by introducing suitable packing between the inner surface of said cap and the tube sheet the leak is stopped without interfering with the draught, and the cap can be secured in its place at any moment, and without the necessity of boring holes in the tube sheet. These improvements are covered by two patents in the United States, and applications

have also been made for patents in Europe. R. Lavery and S. Stuart, of South Boston, Mass., are the inventors.

*Sand-papering Pencils, Etc.*—This invention consists in the employment or use of one or more racks provided with slots, each capable to receive a pencil or other similar article to be sand-papered, in combination with a revolving disk, the surface of which is covered with sand, emery, or other suitable polishing material, in such a manner that by the rack or racks the pencils or other articles are held in the proper position while they are whirled round by the motion of the polishing disk, and their surfaces exposed to the action of the polishing material; and for the purpose of keeping the pencils or other articles down upon the polishing surface with a uniform and yielding pressure, the racks are provided with covering plates, resting loosely on the articles to be sand-papered. Furthermore, by imparting to the racks a reciprocating motion the operation of sand-papering is executed with superior uniformity. A cover placed over the racks and the polishing disk prevents the escape of dust except through the spout through which it is expelled by the action of fans or wings at the under sides of the arms supporting the polishing disk, and which conducts the same off and prevents it producing an injurious effect on the health of the operative or operatives. Phillip Schrag, of New York City, (assignor to Eb. Faber, No. 133 William street), is the inventor.

*Thrashing Machine.*—This invention relates, first, to an improvement in the discharging device of the machine for carrying the straw over the riddle after the former has passed between the thrashing cylinder and concave. The object of this part of the invention is to cause a thorough separation to be made of the thrashed grain from the straw by regulating the passage of the straw over the riddle so as not to admit of its being discharged too quickly over the latter, and before the grain is separated from it, and, at the same time, insure its passing along sufficiently quick to prevent the thrashing cylinder becoming clogged or choked. The invention relates, second, to a novel and improved manner of hanging the grain receptacle or carrier, whereby the same is made to operate more efficiently than hitherto. The invention relates, third, to an improvement in the construction of a wooden shaker whereby the journals of the same are protected from wear. The invention relates, fourth, to the combination and arrangement of the several parts as herein shown and described, whereby the operation of thrashing the grain from the straw and the separation of the former from the latter is effected in an expeditious and perfect manner. George Westinghouse, of Schenectady, N. Y., and Lorenzo Smith, of Sharon Springs, N. Y., are the inventors.

*Gaveling Attachment for Harvesters.*—In this machine provision is made against stopping, each standing attendant being able to maintain an erect position while at work, either raking or binding. The grain is raked from the "grain platform" on to a hinged platform which receives an upward movement with each revolution of a rake. By the latter the grain is raised to an elevated position up against the side of a stationary concave corresponding in form to the arc described by the teeth of the revolving rake. After the grain, in being raised upward, passes the upper edge of the stationary concave, it is sustained by the teeth of the revolving rake and a series of flexible arms. At this point a set of gaveling fingers, operated by a very ingenious contrivance, embrace the grain and hold it firmly until the revolving rake, by bending and continuing to move round, disengages itself from the grain. The fingers, with the grain thus gaveled, move backward, in doing which the flexible arms are bent down, they offering little resistance but assuming automatically an upright position as soon as the vibrating fingers stand over the dumping platform, where the bands are made and applied by the attendants. James W. Harvey, of Marshalltown, Iowa, is the inventor.

*Exercising Machine.*—This invention consists in the employment or use of one or two platforms provided with adjustable or sliding counterpoises or weights, and arranged on hinges in a suitable framing in such a manner that the portions of the body may be exercised in a greater or less degree, as the condition of the patient may bear, for the purpose

of exercising the spinal and abdominal muscles. The invention further consists in the novel application of slides to the platforms, as hereinafter set forth, whereby the slides are made, during the oscillations of the platforms, to move or slide to conform to the movement of the body, and prevent any friction between the latter and the platforms. Dr. Charles F. Taylor, of New York City, is the inventor.

*Truss and Supporter.*—This invention relates to an improvement in the back braces of trusses or supporters, and it consists in combining with such back braces a staple which straddles the body spring so as to allow sufficient play for any movement of the body. The four pads which are secured to the ends of the back braces and intended to bear on either side of the spine are of an oval or any other convenient form, and they are capable of being moved to any angle best suited to the conformation of the back. The invention consists also in the application of an adjustable spring in combination with a ball and socket joint, which connects the front part to the body spring, and with a friction plate connected to the lower margin of said front part in such a manner that by said spring any pressure desirable can be given upon the lower margin of the front pad, imparting to said pad an upward or backward motion, and by the friction plate free play is given to the spring and said spring is prevented wearing and cutting the pad. G. W. Taylor and A. E. Wright, M. D., of Philadelphia, Pa., are the inventors.

*Machine for Pressing Hats.*—This invention relates to a machine in which each hat is pressed by two operators, one half at a time with solid or non-expansile dies in such a manner that the same serves to press bell crowned and other hats; the male die used in this operation is made of wood so that the same when applied in combination with a steam die, will absorb moisture and by its forward motion in the die will produce the gloss which can not be obtained by the use of an expansion die. In order to save time in working the screw spindle which serves to impart motion to the male die, said spindle passes through a clutch nut which can be speedily thrown open in order to allow of moving the die by hand. Samuel G. Langdon, Mansfield, Mass., and Daniel C. Mowry, Milford, Mass., are the inventors.

*Cartridge and Projectile for Fire-arms.*—This invention relates to a mode of preventing or reducing the recoil of ordnance and fire-arms. It consists in fitting the chamber or rear part of the bore with a piston having one or more strong springs applied behind it. When the discharge takes place this piston gradually yields to the excessive force of the gases and so prevents their sudden action on the breech and greatly reduces the recoil. The springs employed in rear of the piston may be composed of india-rubber or of metal, but in breech-loading ordnance and fire-arms it is preferable to employ directly in the rear of the piston, springs composed of rings, disks or cylinders of india-rubber which, by their compression lengthwise of the bore are caused to be expanded circumferentially and thereby made to serve as a packing to prevent leakage of gases at the breech, and this part of the invention also consists in such use of india-rubber as a breech packing or breech-loading ordnance and fire-arms. John F. Cleu, of New York City, is the inventor.

*Governor.*—This invention consists in combining with the governor and governor valve a weighted lever, so that by said weighted lever the valve is closed when the motion of the governor stops; further in the application of a self-releasing stop or catch in combination with the governor and governor or throttle-valve, in such a manner that by the action of said stop or catch the valve is held open and in position for starting the engine, and after the governor has reached or approached its proper speed the stop or catch is released automatically and the operation of the governor proceeds as usual; it consists also in the use of set saw and elastic seat for regulating the partial closing of the valve, and adjusting the same for wear as may be requisite and desirable. Robert W. Gardner, of Quincy, Ill., is the inventor.

THERE is an old woodman in the Windsor forest, England, who has spent a century in the forest. He has planted over 5,000 oaks with his own hands which are now huge trees.