

**BED BOTTOM.**

The improved bed bottom here illustrated is designed to present an elastic surface just where the same is needed and not elsewhere, and also to allow of the stretch of the canvas or cord employed in its construction being easily taken up. Fig. 1 gives a perspective view of the bedstead and bottom, and Fig. 2 is a detail longitudinal section of the same.

A is one of the side rails of the bedstead, which is of ordinary construction. Near the ends of the rails are attached the stops, B, and at the middle part, the stop, C, which is made with steps or shoulders as shown, is affixed. D and E are the head and foot frames. They are constructed by attaching the ends of ordinary slats to side bars, which side bars extend along the inner side of the bedstead rails, A, and rest upon the stops, B and C, as represented. In the head frame, D, enough cross slats are used to occupy about one foot of the length of the bed bottom, and in the foot frame, E, a number sufficient to extend about two feet of the length is used. Cords, as shown in Fig. 1, or a piece of strong canvas, as may be preferred, are secured to the inner slats of the two frames so as to form, with them, a complete bed bottom. This part of the bottom should, in practice, be about three feet in length. If desired, the two frames may be made with equal numbers of slats.

By this construction, the head and legs of the person lying on the bed are supported firmly by the slats of the head and foot frames, and the body, from below the hips to the neck, is supported by the cords or canvas. In this way, the bed bottom is given elasticity exactly in the place where the quality is desirable. Furthermore, should the canvas or cords stretch, the slack can be taken up by raising the outer ends of the head and foot frames, or either one of them, and dropping the inner ends of the side bars into the next notch or notches of the stop, C. By this means, the difficulty which has heretofore been found in taking up the stretch is stated to be completely overcome.

The invention was patented, through the Scientific American Patent Agency, July 16, 1872.

For further information the patentee, Mr. Frederick Wellhouse, of Leavenworth, Kansas, may be addressed.

**GIFFARD'S UNIVERSAL PISTON.**

The name of Paul Giffard, civil engineer, of Paris, is by no means unknown to fame, in connection with the well known injector that goes by his name; but we are inclined to think that he will hereafter be quite as well, or even better, known as the designer and inventor of a simple and ingenious form of combined piston packing and valve, which we illustrate herewith.

From the annexed engravings, it will be seen that the body of the piston is formed somewhat like a deeply grooved pulley, in diameter smaller than the cylinder, and that a ring of suitable material, leather or india rubber, fits loosely within the groove, wherein it is adjusted to act simply as a gas or fluid tight packing, or for combined action as a packing and as a valve, in suction or in forcing action.

In the latter case, *vide* Figs. 1, 2, 3, and 4, there is not only a difference in the diameters of the cylinder and piston, and in the depth of the groove and the flexible ring, but there is also a space between the inner edge of the ring and the bottom surface of the groove, as also a difference in the diameters of the two rims forming the groove, the smaller rim having numerous perforations made so as to admit of a free communication, for the fluid or gas, between the space within the groove and the cylinder space above the piston. Thus, while moving in one direction, the fluid pressure keeps the ring tight against the larger rim and the cylinder, forming a perfect joint, whereas, when moving in the other direction, the ring will be pressed against the smaller rim, leaving free communication from one side of the piston to the other through the inner groove space and the apertures.

When, however, the ring is to be used as a piston packing only, the rims are equal, and both unperforated; and thus at each stroke in either direction the fluid presses the ring firmly against the inner surface of the cylinder and one or the other of the rims, securing perfect action in the pump. The form of the groove may be varied, but it is preferably made conical in section and polygonal in plan, as most advantageous in combination with the hollow cylindrical form of the flexible ring. The details of the construction, which is very simple, are clearly shown in the engravings: the piston, *a*, is shown in elevation in Fig. 1, and in section in Figs. 3 and 4; Fig. 2 shows the plan, *c*, of the piston and perforations, *o*; and the ring, *b*, is shown in section in Figs. 1, 3, and 4, in the former at rest; in the latter respectively as affected by the up and down stroke.

This piston is wonderfully effective, leakage and friction, or in other words, waste of power, being reduced to a minimum; and apart from its adaptation to various purposes of hydraulic and air pumps, blowing engines, gas exhausters, etc., in which it will be found of great value, there are other

applications of equal or greater importance, which only await development.—*Mechanics' Magazine.*

**Extracting Poison from the Rattlesnake.**

The process of extracting the poison from the rattlesnake (*Crotalus horridus*) for medicinal purposes whilst the reptiles were still living, has been successfully accomplished by Mr. J. C. Thompson and Dr. Hayward, of Liverpool. The following was the *modus operandi*, if any of our readers care to do likewise:—The reptiles were in separate compartments of a large case, fitted with a double lid for extra security. A long staff, fitted at the end, with a thick india rubber noose which could be loosened or tightened by the hand at pleasure, was inserted through the partially opened lid, and the opportuni-

of all ages, many of which are of the finest trotting lineage. In the rear of the immense stables of this equine village are yards, exercising grounds, and a mile track for training the young animals. The whole business is as completely equipped as a commercial establishment in a large city, and the owner calculates with almost equal certainty upon the profits of his enterprise. Millions of dollars are also invested on stock farms all along the Hudson river in the breeding of trotting horses. There are similar breeding establishments in Iowa and other western States. For the last thirty to forty years, the value of trotting horses has increased even faster than their numbers and speed, the rate being at least 100 per cent every decade. In 1858, Flora Temple was sold for \$8,000; in 1862, the California Damsel for \$11,000; in 1866, Young Pocahontas for \$25,000; and in 1867, Dexter, which in that year surpassed all previous speed—trotting a mile in 2 minutes 17½ seconds—sold for \$33,000. It is now no unusual thing for fast trotting horses and fine stock horses of the best trotting blood to sell for from ten to twenty thousand dollars. This shows the immense popularity of the American breed of trotting horses, and the amount of wealth they represent. The founder of this breed seems to have been Messenger, whose lineage is traceable back to some of the finest Arabian blood in England. He was imported into New York in 1788, and was of superb form and extraordinary power and spirit. His form, with the remarkable vitality and endurance of his race, has endowed his progeny—which has been persistently used and trained to trotting—with extraordinary courage and endurance. So great has been the impress of his wonderful stamina and splendid form

upon American horses that his value to the country may be estimated at millions of dollars. His stock has been bred in-and-in to an unprecedented degree, without any of the disastrous effects generally feared from inbreeding. This success has led many to think that where sire and dam are affected with no disease, inbreeding may be resorted to with safety, the only effect being to intensify in the progeny the characteristics common to both parents.

In this connection, a few words in reference to a very remarkable auction sale of horses which took place in July last at Tattersall's, London, will not be out of place. The animals offered belonged to the stock of the late Mr. Blenkiron, of Middle Park, near London, who was one of the most scientific and successful stock raisers in the world. Many of the nobility and the most noted horse breeders and fanciers of Europe were present.

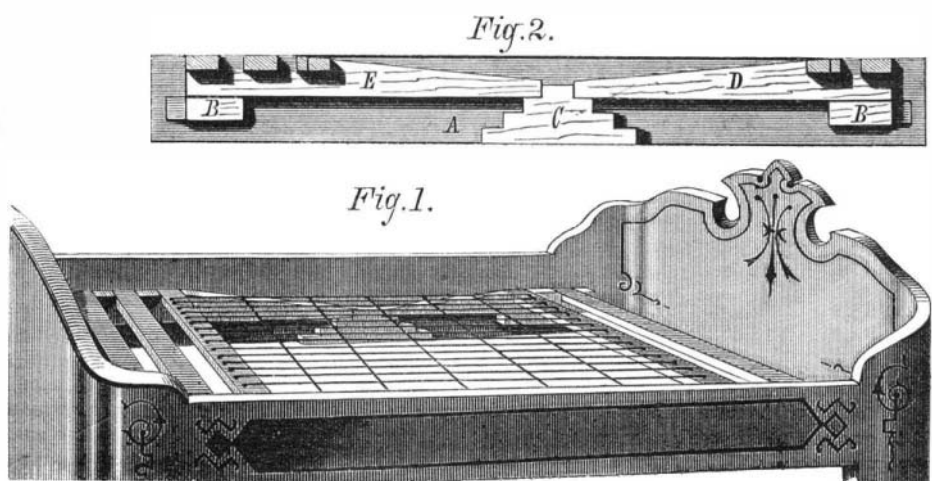
At the appearance of Blair Athol, the finest stallion in the world, the cry of "Ha's off" was raised, and the whole assemblage uncovered in honor of a horse.

The sale of this stallion was the great event of the entire auction, and the bidding was of nation against nation. Started at 4,000 guineas, the offers rose, amidst intense excitement, until, on the bid of the New Stud Company, Blair Athol was knocked down at 12,500 guineas, or the monstrous sum, in American currency, of \$65,625. This was the largest sum ever paid for a horse, and by the side of it the prices paid here in America for such horses as Dexter, however much criticised, sink into insignificance. The famous Gladiateur, the triumph of the French turf, was sold to a private buyer at \$35,000. Mandrake, who brought \$10,500, comes to America. The twelve stallions realized altogether \$182,230, an average of \$15,190 each, while the entire stud, comprising, besides these, 198 mares with foals and 63 colts, brought the astounding and unprecedented sum of 102,370 guineas, or \$536,440—over half a million dollars in a four days' sale.

The enormous prices which these animals brought are simply an index, says the *Evening Mail*, of the importance which is being put upon horse breeding as a branch of national industry. There was much criticism on the price paid for Blair Athol, but it was stated, in defence of that extreme valuation, that he has earned during his career as a stallion the immense sum of 32,000 guineas all told, or at the rate of \$16,000 a year. It is of the utmost importance to a country, from the purely industrial point of view, that its horseflesh should be of the highest quality, and experience seems to have shown that this result is obtained by the breeding of these fancy horses, in themselves so absurdly valued, as sires. How much is owed in this country to the Morgan breed, or that of half a dozen other noted progenitors, it would be difficult to estimate justly. No matter what may be the increase of other means of transportation by the extension of railroad lines, there must be more and more demand for horseflesh, and that of the best quality; and perhaps, in this light, the high prices paid for the English stallions we have named, are not, after all, as extravagant as might at first sight be thought, even from the rigidly economic point of view.

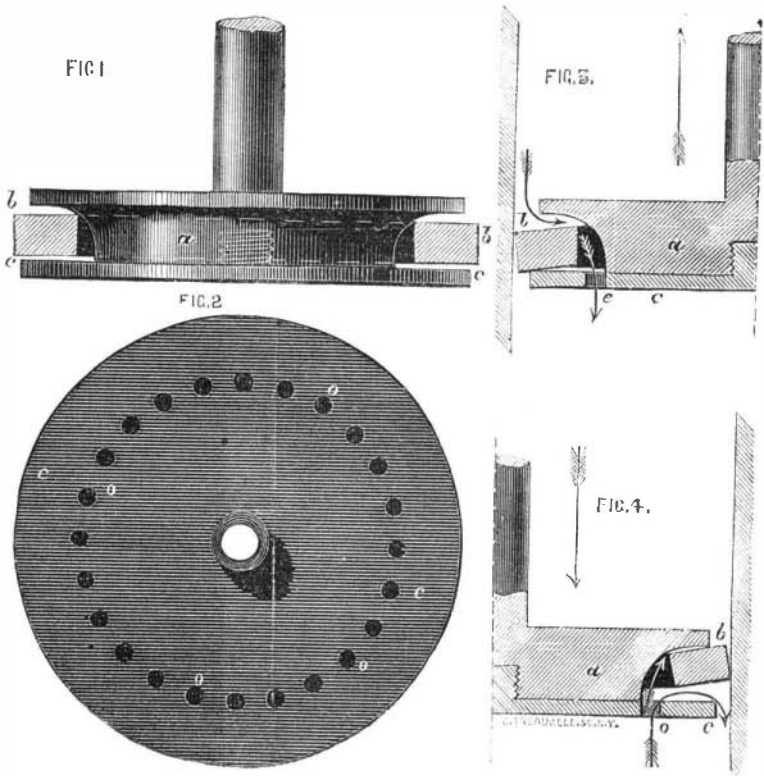
ANCIENT manuscripts were written without accents, stops, or separation between the words; nor was it until after the ninth century that copyists began to leave spaces between the words.

ABOUT 25,000 steel shuttles for sewing machines, embracing twenty patterns, are turned out monthly by the Billings and Spencer Manufacturing Company, of Hartford, Conn.



**WELLHOUSE'S IMPROVED BED BOTTOM.**

ty quickly seized of slipping the loop over the snake's head, the loop being immediately drawn tight by means of the cord attached thereto. With a similar contrivance the tail was next fastened, and the snake, being thus securely held, was lifted out of the box on to the floor of the room. A pickle bottle containing chloroform was then thrust over the snake's head, and carefully held in its place by keeping time to the animal's efforts to extricate itself. As the reptile became stupefied, the noose was gradually relaxed to enable the lungs to have full play, and when it appeared powerless, the snake was laid in a long narrow box, made for the purpose, with an aperture at one end, out of which its head projected while the after operation was performed. Its jaws were then opened and fixed, and the poison glands were pressed with forceps, then with the gloved finger and thumb, while a small blown graduated phial was held to receive the drops as they slowly oozed out through the poison fangs. Twenty drops were the average quantity yielded by each snake. The venom is of a straw color, thick and gummy in consistency,



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and decidedly acid in its reaction on litmus paper. It is readily soluble in glycerin or water, but it is precipitated by strong alcohol, the precipitate being redissolved, with the addition of a little water. Its toxicological properties were fully tried on a variety of animals. Half a drop produced death in a linnet within three minutes after being injected under the wing.—*Hardwicke's Science Gossip.*

**AMERICAN HORSES.**

Vermont has long been celebrated for its trotting horses, and the Morgan breed is so identified with that State that the name is almost a synonym for horses raised there. In New York, however, the greatest attention is paid to this business. The single county of Orange has over one hundred breeding establishments, some of which are very extensive. Charles Backman's, for instance, includes six hundred acres, where are collected upward of one hundred and fifty horses,