CRUICKSHANK'S IMPROVEMENTS IN CAVALRY EQUIPMENTS.

PATENT DATED 22ND MAY, 1855.

FIG. 1.

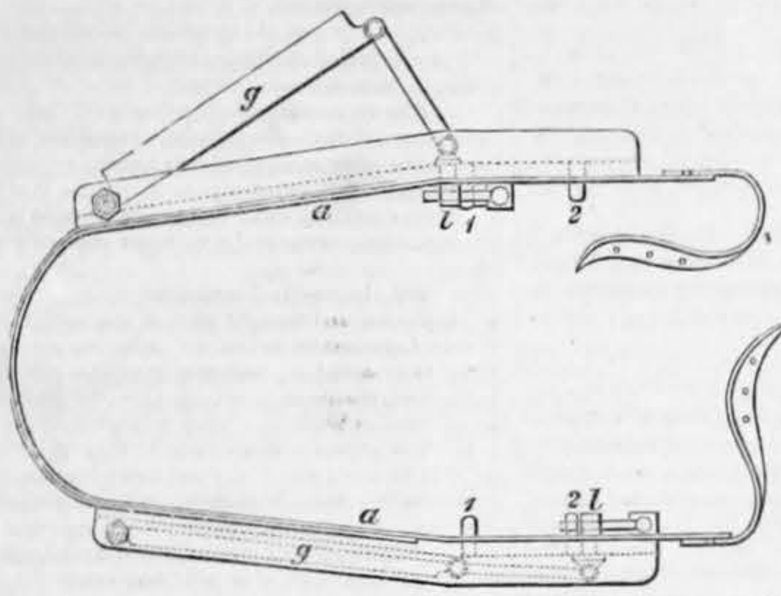

FIG. 2.

FIG. 3.

THE object of this invention is to render the attack of cavalry more formidable than hitherto, by providing horses with a means of destroying troops against which the attack is directed. For this purpose, it is proposed to surround the horse with a rigid frame or shield (adjustable as to position), which frame is supported at front by the hame of the horse collar, and at back by a strap that passes over the hind quarters of the horse. Attached to this frame or shield (which forms a defensive armour to the horse and the lower extremities of the rider) are cutting edges, which are capable of being adjusted to act as offensive weapons during an attack, and of being returned to an innocuous position when not required for action.

The accompanying illustration represents a mounted charger provided with the improved offensive and defensive armour; Fig. 1 is a plan of the shield, showing the arrangement of the cutting edges or blades; and Fig. 3 shows the hame which is employed for supporting the front part of the frame or shield. The front part of the shield marked *a*, *a*, is constructed by preference, of plates of steel, and the sides and hinder part *b*, *b*, of stout buffalo leather. The hame *c*, *c*, Fig. 3, is provided with two projecting arms *d*, *d*, one on either side thereof. The extremities of these arms enter holes made in socket plates *e*, *e*, attached to the shield *a*, which socket plates are provided with a series of holes to permit of the adjustment of the shield, both vertically and longitudinally. Keys or wedges are inserted into the extremities of the arms to make good the attachment of the shield to the hame. For securing the hinder part of the shield, straps *h*, *h*, are passed across the horse's hind quarters and attached to the crupper of the saddle. The leather portion *b* of the shield is overlaid with rods of iron, to prevent the leather from being injured with accidental contact with the projecting side blades of an adjacent horse of the troop. An opening is made in the leather portion of the shield at *i*, *i*, to enable the horseman to mount, and when he has mounted he closes the shield by means of the straps and buckles. The adjustable blades are shown at *g*, *g*; they are respectively jointed at their forward extremities to a metal bar *k*, which is riveted to the shield, and at their hinder ends are connected by means of a coupling rod to a stop piece *l*, which slides in a slot formed in the shield, and is provided with a bolt or catch for dropping over a stud pin 1, and holding the blade firmly in an advanced position, or of bearing against a stud pin 2, when the blade is drawn back, and retaining it in the position of rest. The projecting bar *k* it is proposed to cover with wood, and by making it project beyond the breadth of the blade, no accidental injury can result therefrom when the blade is returned to the position shown by dotted lines in Fig. 1.

It is proposed also to fit to the cavalry horse an improved construction of helmet. This helmet is formed of two plates of steel attached together by a central hinge, which facilitates adjustment. Sight holes are made in the helmet, as shown, and these holes are guarded by bars. The attachment of the helmet to the head of the horse is effected by straps and buckles, as shown. For the purpose of covering the sight holes of the helmet when occasion shall require, as when the horse is required to face danger, a sliding piece or blind is provided, which may be made of leather or other material. This blind is fitted with rings which run on guide rods, and by means of cords passing upwards and through guides at the top of the helmet, the soldier is enabled to raise the blind at any moment, and retain it at that position.

Mr. Cruickshank claims the application of adjustable blades or cutting edges to shields or frames which are fitted to envelope the body of a war horse, in the manner and for the purpose described.

As also the application to horse helmets of the sliding blind, as described.

ENFIELD WATER WORKS.—Amongst the many towns that have recently availed themselves of the Public Health Act of 1848 is Enfield. A Local Board of Health was formed for the purpose of establishing works for drainage and water supply, which have been successfully carried out under the superintendence of their engineer, James Pillrow, Esq., of Tottenham. The water for the supply of the town is obtained from an artesian well, bored to a depth of more than 200 feet, and lined with 12-inch cast-iron pipes, forming a syphon, the shorter leg of which discharges the water into a well, about 20 feet deep, within the engine house. The engine house is a square building, with a round chimney shaft about 60 feet high, rising from the centre; it is situated in a field adjoining the Ponder's End station, and is a conspicuous object from the Eastern Counties Railway. The engines pumps, and boilers were designed and erected by Messrs. Headly and Manning, of the Eagle Works, Cambridge, who have executed, and have in hand similar works for several other towns. The engines are a pair of 10-horse high pressure beam engines, the cylinders being 10 inches in diameter, and 2-feet stroke, making about 50 strokes per minute. The pumps are four in number, always at work, with a spare pump, which, in case of accident or repairs, can, in a few minutes, be connected and made to take the place of either of the four working pumps. The plungers are 8½ inches in diameter, and 15-inch stroke, worked by excentrics on a 5-inch wrought-iron shaft, to which the power of the engines is conveyed by a pair of spur wheels, the larger cogged with wood (to prevent noise), and both turned, pitched and trimmed. The valves are of the "double beat" construction. The valve itself being of brass, and the seats formed by an alloy of tin and lead, run into dovetailed recesses; and although the compensating reservoir is 173 feet *above*, and upwards of three miles from the engine house, the fall of the valves, when the pumps are making 18 strokes per minute, is only to be perceived by placing the ear close to the valve boxes. The air vessel is 18 inches diameter inside, and 20 feet high; it is cast in two parts, with a surface joint, and the upper half above the engine house floor is fluted, with a moulding at the top. Pressure and water gauges are attached to indicate the height of water in the main. There are two Cornish boilers, 16 feet long, by 4 feet 6 inches diameter, with flues, 2 feet 6 inches diameter. Each boiler drives both engines with ease; and in order to prevent loss of heat the boilers are covered with 3 inches of ashes, and arched over with bricks. The feed water is also heated by the exhaust steam before entering the boilers. The whole of the parallel motions, governor, pump rods, cylinder covers, &c., are got up bright. The fly-wheel is turned both sides and edge in the lathe, and the cylinders are felted and lagged with mahogany, French polished. The other parts of the engines and pumps are painted green, lined out with black and varnished. These engines and pumps are calculated to raise 150,000 gallons of water 173 feet high in twelve hours; and, from the very satisfactory way in which they perform their work, and the style in which they are finished, reflect much credit on the makers.