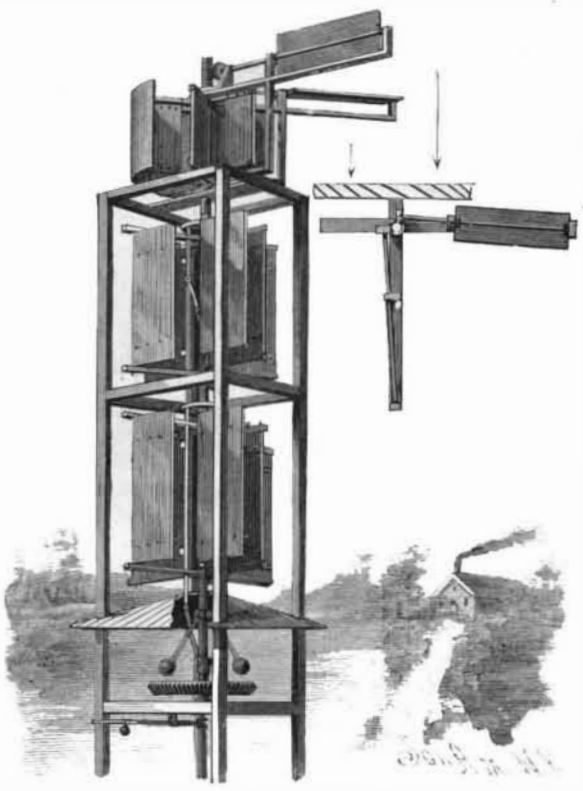
IMPROVED WINDMILL.

The main tower consists of an open framework within which the floats of all wheels, except the upper one, revolve. In the center of the frame is a hollow shaft, to which the arms carrying the floats are rigidly secured; each float is formed with trunnions which are mounted in bearings in the ends of the arms, and each has two strips which project somewhat beyond the inner face of the float, and engage with stops carried by vertical rods arranged to move in apertures in the arms. The position of these rods is regulated by a governor. When the mill is revolving at too great speed, the governor arms are thrown out, thereby raising the vertical rods, so that their stops will be raised out of the paths of the projecting ends of the strips, and the floats will be free to swing upon their pivotal connection with the arms. The floats are then inoperative. As the speed decreases, the governor arms drop, the stops are lowered, and the floats become operative. The upper section of the mill is formed with a series of stationary floats carried by arms rigidly secured to the hollow shaft. These floats are partially surrounded by a curved shield carried upon a frame formed with two projecting arms, upon which are mounted vanes supported by shafts, having at their inner ends pinions that are engaged by a cylindrical rack formed upon the upper end of a central shaft. Upon the lower end of this shaft is a grooved collar engaged by the projecting end of a lever, whose position is controlled by a weight or by a pin inserted in one of a series of holes in the frame.



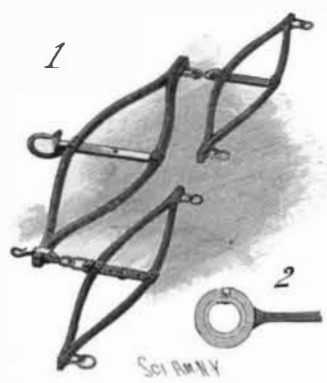
WOOD'S IMPROVED WINDMILL.

The vanes are so arranged that when one is horizontal the other will be vertical. When the first vane is in a vertical position, the shield will be so held that the floats upon one side will be shielded from the action of the wind, while those upon the other side will be exposed. Now, as the speed of the mill increases, the governor arms are thrown out, the shaft and its cylindrical rack will be raised, and each of the vanes partially rotated, thereby cutting off the wind from the exposed side of the wheel. To stop the mill, the lever is so moved as to cause the shield to be thrown in front of the floats, and raise the stops so that the lower floats will be free to swing. The hollow shaft carries a gear to transmit the motion of the shaft to the machinery to be operated. This arrangement of vanes may be easily applied to the ordinary wheel, as will be understood from the plan view.

This invention has been patented by Mr. David B. Wood, of Sibley, Iowa.

IMPROVED WHIFFLETREE.

This light, strong, and easily made whiffletree is the invention of Messrs. M. A. Gerber and E. J. Nicholas, of Lost Creek, Pa. The pipes of which the whiffletree is formed are flattened at their ends and secured together by rivets or eyebolts. The pipes are bent away from each other, and a cross bar having transverse holes, as shown in Fig. 2, is secured on them. The rear end of the cross bar is provided with a hook having a latch closing its open end, or is provided with an eye for receiving a ring. When it is desired to secure the traces directly to the whiffletree, the flattened ends of the pipes are turned upward and notched in opposite sides to receive the traces, or apertured to receive the whiffletree bolt. When the cross bar is made of a single piece of iron, the pipes are placed in the holes thereof before the ends are flattened; the bar may be made in halves and secured together by rivets when applied after the whiffletree has been formed. The whiffletree formed as described possesses great rigidity, with little weight of material.



GERBER & NICHOLAS' IMPROVED WHIFFLETREE.

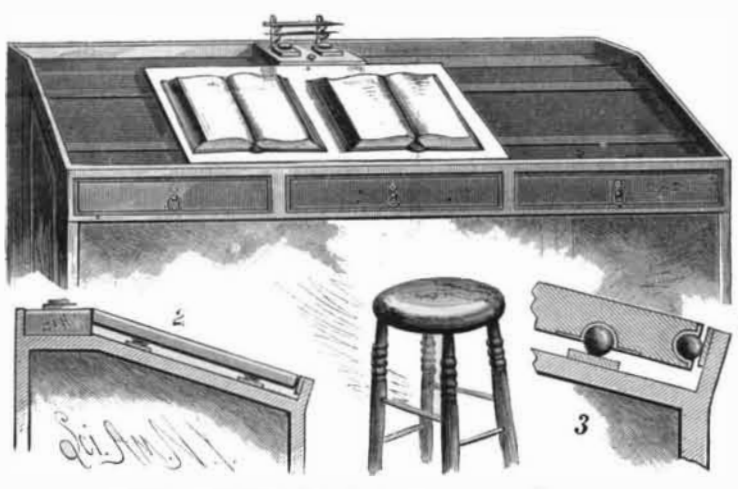
The New Bridge, London.

The Prince of Wales, representing Her Majesty the Queen, recently laid a memorial stone as a commencement of the new bridge the Corporation of London are building across the Thames, immediately below the Tower. The total width of the river at the point of crossing is 880 feet, which will be divided into three spans, the two outer being each 270 feet, and the center one 200 feet. The central span of the bridge is on the bascule principle, that is, it consists of two arms or leaves, one pivoted to each of the piers, and capable of turning on a hinge. When a ship is about to pass the bridge, each leaf will be raised into a vertical position, after the manner of a medieval drawbridge, and then, after the vessel has passed, it will be lowered until it is approximately horizontal, and will be locked by strong bolts to its fellow leaf. But although the central span may be open, the foot traffic will not be suspended. The piers are to be carried to a great height, and about 135 feet above Trinity high water a light bridge will be thrown across them. Access will be provided to this elevated road by staircases in the piers, and also by hydraulic hoists capable of carrying a large number of passengers simultaneously. This is the first bridge, we believe, in which the central span has been crossed by two roads, a permanent one at a great elevation and a movable one at a lower level. In the SCIENTIFIC AMERICAN of October 24, 1885, we gave an engraving of the new bridge.

IMPROVED DESK ATTACHMENT.

This desk attachment is designed to aid an accountant or bookkeeper to post his books. Upon the inclined top of a desk of the ordinary form are arranged two metallic strips, a third strip being fixed upon the upper face of the ridge secured to the lower edge of the top. To the under side of an auxiliary top are secured casters that roll along the strips. Back of the top there is a block provided with an inkstand, which is on a level with the auxiliary top. The journal and ledger are placed upon the top, which may be rolled forward or back so as to bring either book before the accountant, who sits in front of the desk, and whose time is thus economized, and who is relieved of much unnecessary and tiresome work.

This invention has been patented by Mr. Wm. F. Fitz-Gerald, of 159 Boush Street, Norfolk, Va.



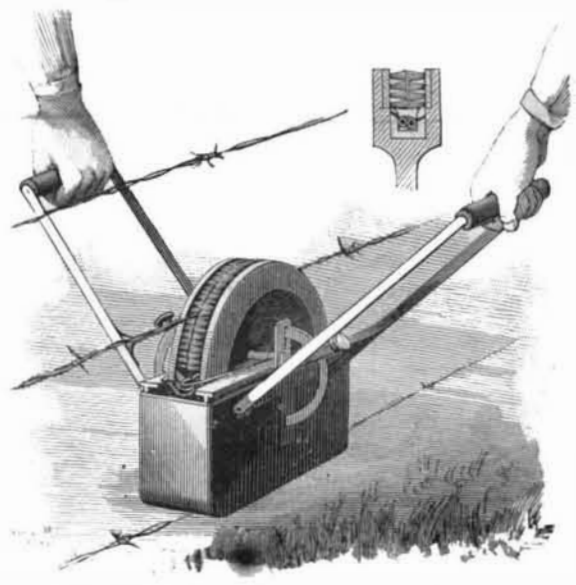
FITZ-GERALD'S IMPROVED DESK ATTACHMENT.

Pile Driving by Dynamite.

An engineer of Pesth, Mr. Pradanovic, has lately used dynamite for driving piles. A circular cast iron plate, 15 inches in diameter and 3¾ inches thick, is fixed on the pile to be driven in a perfectly horizontal position. A dynamite cartridge made in the form of a disk, 6 inches in diameter and three-fourths of an inch thick, and containing 17½ ounces of dynamite, is placed upon the cast iron plate and exploded by electricity. It is stated that the depth to which the pile is driven by each explosion is equal to five blows of an ordinary pile engine weighing 14¾ Vienna cwt. falling 9 feet 10 inches. A cast iron plate, on an average, resists 25 explosions.

WIRE PAINTING MACHINE.

While the machine shown in the engraving is designed more especially for painting the wires of barbed wire fences, it is also applicable for painting wires or strands passing to or from a reel. The vessel in which the paint is placed is carried by two handles, which may be raised or lowered, and held in any desired position, according to the height of the wire to be painted. The wheel is journaled in bearings which may be set higher or lower, as the quantity of paint in the vessel may require. In a groove in the periphery of the main body of the wheel are teeth upon which the barbs of the wire catch, thereby rotating the wheel. Beyond these teeth are fixed annular brushes. The surplus paint is removed from the brushes by a properly arranged wire, and paint from the sides of the wheel is removed by wipers, which prevent the paint from being wasted by adhering to the sides, or by being thrown from the vessel by centrifugal force as the wheel revolves. The machine is carried along the wire, the operators simply walking along the fence, one at each side, when the wire is thoroughly painted by the revolving brushes. Should the bristles of the brushes become set or inclined to one side, the wheel may be reversed in its bearings, so as to operate the other way. It will be seen that, by means of this machine, which is the invention of Mr. R. Quatermass, of Moline, Kansas, fence wires may be painted thoroughly as rapidly as two persons can walk, and with no waste of paint. Should the fence wires be placed too closely together to admit of carrying the machine upright, it may be inclined to one side.

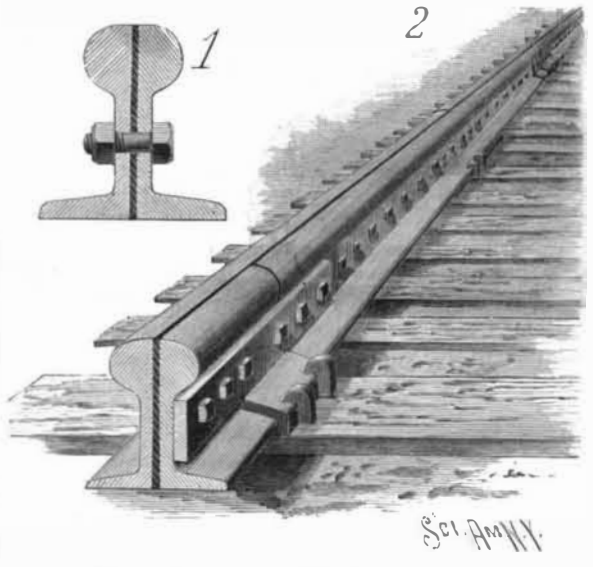


QUATERMASS' WIRE PAINTING MACHINE.

RAILWAY TRACK.

The rail is formed of two similar longitudinal sections, which are oppositely arranged with respect to each other and joined together to form a complete rail, the joints of one section alternating with those of the other, so that there is no break at any point in the length of the track. Between the sections is placed a strip of elastic material, such as rubber, leather, or wood. Each joint of the inner and outer sections is stiffened and strengthened by a plate which is applied to the web of the rail and extends each way from the joint, and is secured by bolts. The plate is provided with an arm, which extends beneath the joint and the opposite section. This arm is secured to the tie by spikes, as shown in Fig. 2. The elastic strip placed between the sections allows the rail to expand within certain limits without straining the bolts or connecting plates. It also prevents jarring of the track, and the breaking of the joints of the inner and outer sections produces a continuous rail.

This invention has been patented by Mr. W. S. Meisenheimer, of Dongola, Ill.



MEISENHEIMER'S RAILWAY TRACK.