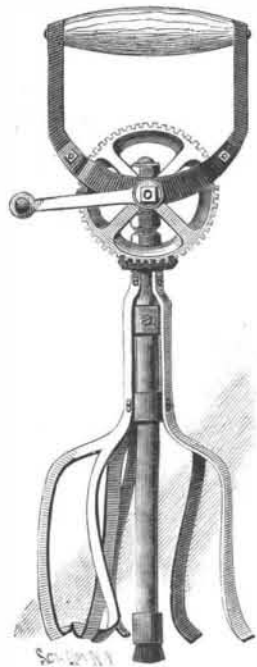


IMPROVED CAKE MIXER.

Passing through the lower portion of the handle is a rod, held in position by nuts and provided at its lower end with a socket to hold a cork. Held so as to turn in a metal plate attached to one side of the handle is a short horizontal shaft furnished with a toothed wheel



at one end and a crank arm at the other. This wheel meshes with a horizontal bevel gear secured upon a metal ring held to turn upon the rod by a collar clamped to the rod just beneath the ring. Fastened to the ring, at equal distances apart, are three arms, which are also secured to another lower ring encircling the rod above its center. From the latter point of attachment the arms extend at various angles downward, around the rod, and at different distances from it, as clearly shown in the engraving. It is evident that, when the crank is turned, the batter or liquid will be most thoroughly mixed, owing to the different inclination and angles of the several mixers and beaters,

whereby the batter will be whipped, thrown, and beaten in every direction throughout the entire mass. The beaters all have their edges inclined downward, the more readily to lift the batter from the bottom of the receptacle. The cork at the bottom of the rod is designed to rest upon the bottom of a glass or other easily destructible vessel employed to hold the batter.

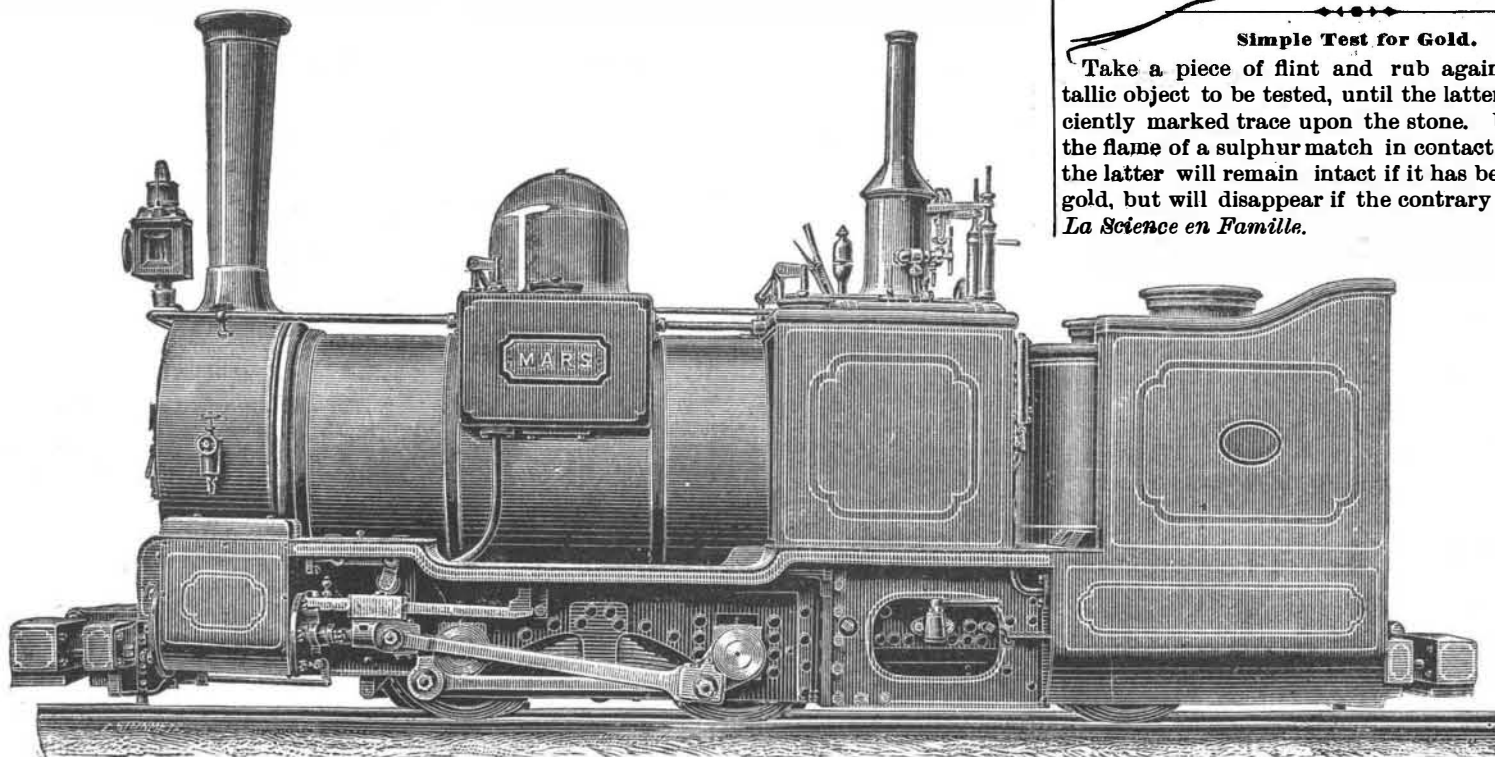
This invention has been patented by Mr. M. D. Platner, of Virginia City, Montana.

SWIVEL BOGIE LOCOMOTIVE.

We illustrate a swivel bogie locomotive constructed by the Vulcan Foundry Company, Limited, Newton-le-Willows, for use on the fortification works at Chatham. This, says *Engineering*, is the first of a pair built to the designs of Major English, R.E., to replace similar engines sent to the Soudan. The interest of the design lies in the swing bogie frame behind the firebox. The bearings of the axle are mounted on a frame which receives the weight of the rear part of the engine on a vertical pivot. This pivot is mounted on the center of a cranked bar, the ends of which are carried in bearings in the bogie frame below the center of the axle. The frame is further steadied and tied to the framing of the engine by means of radius bars connected at one end to the axle boxes and at the other end to a center on the firebox. Thus the swivel axle has the greatest facility of motion in relation to the engine.

The engine will take a gross load of 45 tons up an incline of 1 in 35 at the rate of 10 miles an hour, the working pressure being 150 lb. The following are the principal particulars:

Diameter of cylinders, 7½ in.; stroke of cylinders, 12 in.; diameter of coupled wheels, 1 ft. 8¼ in.; diameter of bogie wheels, 1 ft. 8¼ in.; rigid wheel base, 3 ft.; total wheel base, 7 ft. 6 in.; capacity of tank, 200 gals.; capacity of coal space, 6 cwt.; tubes (71), 1¾ in. in diameter, 204 sq. ft.; firebox, 18.75 sq. ft.; area of grate, 4 sq. ft.; weight (loaded), 10 tons; gauge of rails, 18 in.



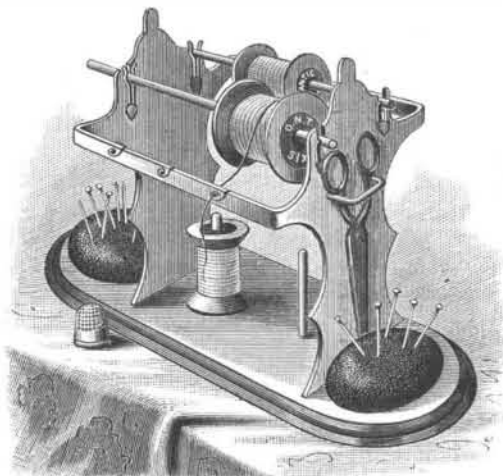
LOCOMOTIVE FOR 18 INCH GAUGE RAILWAY AT CHATHAM.

New Hydro-Oxygen Lamp.

Before the Physical Society, Berlin, Dr. Konig spoke of the disadvantages of the hydro-oxygen lamps, and demonstrated a new lamp constructed by Herr Linnemann, in which the unsteadiness in the light, arising from the fact that in the common lamp the flame burned now in the burning tube and now outside of it, was avoided. In the new lamp the coal gas or the hydrogen issued from a ring-shaped opening in the burner, while the oxygen in the center was admitted through a capillary tube, and did not come into contact with the burning gas till outside of the burner. In the middle of the blue flame was seen a bright point which gave the heat maximum. Instead of the lime cylinder, Herr Linnemann used in his lamp zircon plates, which, at the place of the bright point, gave a highly intense constant light. The speaker made use of this light in order, with the aid of the optical bench of Prof. Paalzow, to demonstrate by projection a long series of phenomena in connection with the doctrine of the polarization of light. For all teaching purposes and demonstrations this method of representing the most important optical phenomena could not be surpassed by any other.

SPOOL HOLDER.

The convenient device for holding spools of thread herewith illustrated is the invention of Mr. Wm. P. Clarke, of Winnipeg, Manitoba, Canada. The spools of thread are held upon rods received in notches in the tops of standards secured to a base. Near one end the rods are apertured and pivoted on wires bent downward and fastened to the upright. The opposite ends of the rods are received between spring clamps, as shown. To arms projecting from the sides of the standards are secured flat bars, in which are formed spiral slots, each terminating at its center in a round hole,

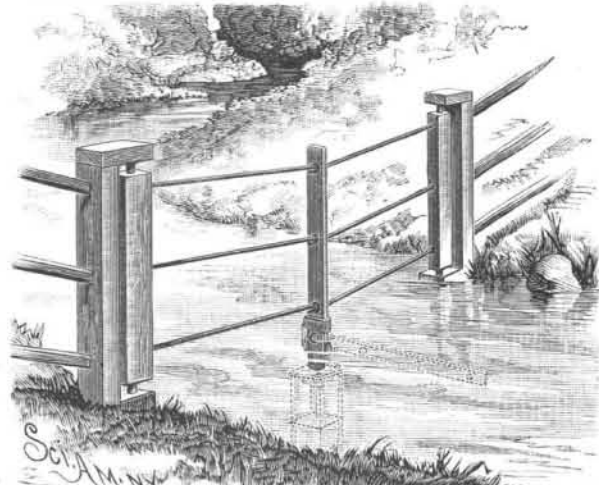


CLARKE'S SPOOL HOLDER.

through which passes the thread from the spools carried by the rods. To the outer sides of the uprights are attached oblong staples for receiving scissors. Spools are also placed on two vertical rods projecting from the base. On the ends of the base are placed pin cushions. The spools are placed on the horizontal rods by lifting them out of the spring clamps, slipping the spools upon them, and then replacing their free ends. The thread is then carried through the spiral slot to the hole in the center. By the use of this simple device the spools are never mislaid, and there is no waste of the thread.

IMPROVED FLOOD FENCE.

In building such a gate as the one here illustrated, two posts are mounted upon the banks of the stream, and each is formed with an upper and lower bracket. In these brackets supporting bars are pivotally mounted in such a way that their upper ends incline inward from a vertical line. These bars carry rods, whose overlapping free ends are supported by a post provided with holes, through which the rods pass. The post is pivoted to a foot, which may be secured in the ground in any desired manner. The upper end of the foot is concave, and the lower end of the post is also concave, and both are formed with similar ears. The



BURACKER'S IMPROVED FLOOD FENCE.

foot and post are united by a rivet or bolt, the two concave faces being placed together, from which arrangement it follows that the post will be normally held in a vertical position; but any undue pressure against it will turn it upon its pivot, so that it will lie horizontally, as indicated by the dotted lines in the drawing. It is evident that this gate will prevent the passage of cattle, but should the central part be struck by any heavy debris carried by the stream, it will be thrown down to a horizontal position. Owing to the peculiar manner in which the two sections of the gate are mounted, the rods would then immediately swing back to a position across the stream—that is, in a line parallel with the general line of the fence in connection with which the gate is used.

This invention has been patented by Mr. Ambrose Buracker, of Beardstown, Ill.

Hay Fever.

The time for hay fever to be prevalent is now rapidly approaching, and those who suffer from it will doubtless only be too glad to learn of any successful method of treatment. Dr. W. T. Phillips, of Andover, recommends belladonna, which he has found successful (*Br. Med. Journ.*, July 14, 1883). In the same journal (June 7, p. 1090) he gives the dose as 1¼ minims of the succus every hour till relieved (30 min. to 3 oz. of water). For coryza, Dr. G. E. Dobson recommends (*Lancet*, May 31, p. 978) the inhalation of the vapor of camphor and steam, the vapor being made to come in contact with the outer surface of the face, surrounding the nose by means of a paper cone placed with the narrow end downward in a vessel containing hot water and a drachm of coarsely powdered or shredded camphor. If this is continued ten or twenty minutes at a time, and repeated three or four times in as many hours, a cure is usually effected.—*Pharmaceutical Journal*.

Simple Test for Gold.

Take a piece of flint and rub against it the metallic object to be tested, until the latter leaves a sufficiently marked trace upon the stone. Upon bringing the flame of a sulphur match in contact with the spot, the latter will remain intact if it has been made with gold, but will disappear if the contrary be the case.—*La Science en Famille*.