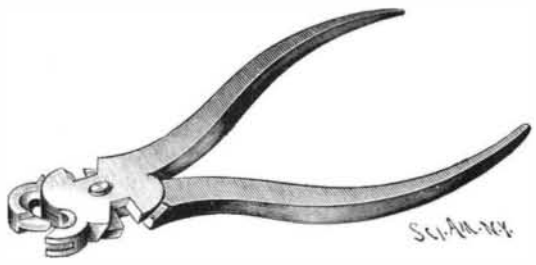
a current in the dynamo to flow through the electrode, through the rear part of the floor, and through the animal to the front part of the metallic floor, thence back to the dynamo.

If desired, the killing may be effected by the direct application of the electrode to the head of the animal.

Messrs. J. D. Miller and James A. Dofflemyre, of Gunnison, Colorado, are the inventors of the apparatus.

INSTRUMENT FOR FASTENING FUSE CAPS.

A new implement for fastening caps on giant powder fuse has been patented by Mr. Nathan W. Moodey,



MOODEY'S FUSE CAP FASTENER.

of Fresno City, Cal. This implement is made in the general form of pliers. It is formed of two similar parts connected together by a pivotal rivet. Each part has a curved handle, and with a cheek having notches with cutting edges at the sides of the notches. Upon the edges of the cheek pieces opposite the handles are formed curved jaws which, when closed together, form a circular aperture for receiving the fuse cap.

The jaws are beveled on opposite sides around the aperture. One jaw is provided with a tongue which fits into a corresponding groove in the other jaw.

The pliers are used for cutting fuse and for contracting the end of the cap on the fuse. They are well adapted to the purpose for which they were designed, and will doubtless speedily find their way into the kits of users of fuse and fuse caps.

NEW WASH BOILER.

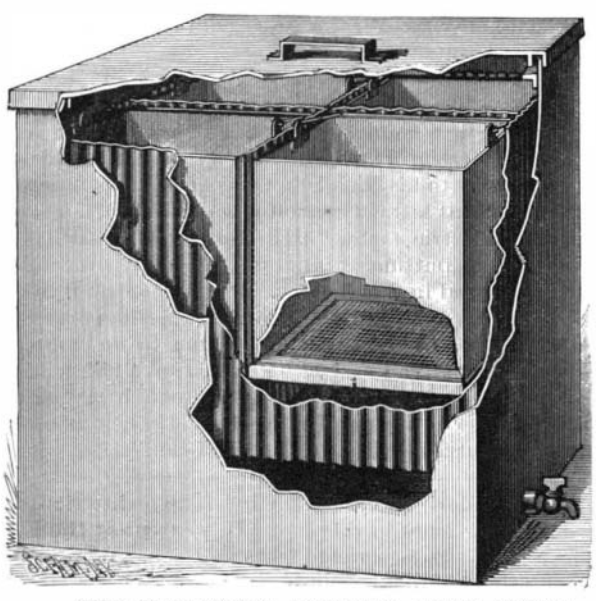
A wash boiler in which the articles to be washed may be separated, so that they may be readily sorted and classified, is shown in the annexed engraving. Each lot of articles is separately boiled or steamed and rinsed in one general receptacle. The apparatus may also be used with equal facility in bleaching.

The body or outer portion of the device is a metal vessel having a faucet at the bottom for drawing off the contents, and provided with a suitable cover furnished with a groove for receiving the apertured edge of the vessel. This vessel is divided into a series of compartments by transverse and longitudinal corrugated partitions, the partitions being attached to the inner walls of the vessel. These partitions may be either fixed or removable as circumstances may require. Within each compartment thus formed is placed a perforated bottom, and to each compartment is loosely fitted a bucket furnished with a perforated bottom and a bail for convenience in lifting it out of the boiler.

In the operation of washing, the chamber in the lower part of the vessel is nearly filled with water, and the clothes are sorted and placed in the different buckets, and the buckets are lowered into their respective compartments in the boiler. As soon as the water in the lower part of the vessel boils, it is forced by steam pressure upward between the partitions, the linings of the vessel and the buckets, and flows into the buckets, returning through the clothes by gravity, carrying with it the dirt loosened by the action of the hot water and the steam. This operation goes on continuously so long as the boiling point is maintained.

It is claimed that the clothes are not actually boiled, but that the dirt contained in the fabrics is softened by the action of the steam, and is removed by the circulation of the boiling water. As soon as this operation is complete, the different buckets may be removed and placed in another similar vessel for rinsing, or they may be rinsed in the usual manner, each class by itself.

For further information regarding this invention address Mrs. Mary White, 1541 Broadway, N. Y. City.



MRS. MARTINOT'S IMPROVED WASH BOILER.

NOVEL STEAM ENGINE.

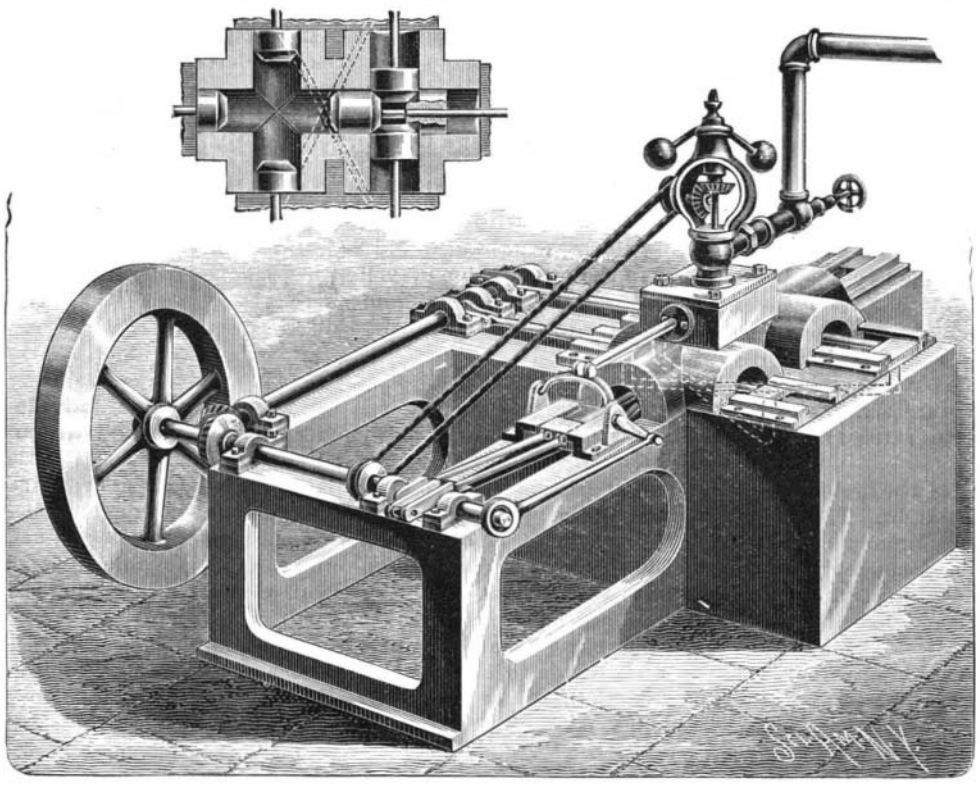
In the engine shown in the annexed engraving, the inventor has provided a mechanism for utilizing the steam to the fullest extent. This engine is practically furnished with four pairs of reciprocating pistons, although in reality one of the pistons answers a double purpose. The power cylinder consists of a longitudinal cylinder intersected by two transverse cylinders. In the longitudinal cylinder are arranged three pistons, two pistons being placed in opposite ends of the cylinder and connected by a rigid bar outside of the cylinder, the third one being placed in the center division of the cylinder. The central piston and the end pistons are connected with oppositely arranged cranks on the main shaft, so that the end and central pistons move simultaneously in opposite directions.

Transverse cylinders are located at points corresponding to the ends of the strokes of these pistons, and in each transverse cylinder are arranged pistons which move simultaneously in opposite directions, and their movements are so timed relative to the pistons in the main cylinder that when the pistons in the main cylinder approach the point of intersection, the pistons in the transverse cylinders approach in like manner, and the movement of the pistons in the opposite direction are also in unison.

An auxiliary shaft is arranged at right angles with the main shaft, and connected therewith by a miter gearing. The auxiliary shaft is provided with two oppositely arranged cranks, which are connected with the crossheads of the piston rods of the adjacent pistons of the transverse cylinder, and these crossheads are connected by rods running underneath the cylinder with the diagonally opposite pistons in the transverse cylinders. By means of this construction these two sets of pistons are made to alternate with each other in their movements.

Upon the top of the cylinder is placed a steam chest containing a valve adapted to admit steam to and exhaust it from the space at the intersection of the cylinders, and the speed is regulated by a governor of ordinary construction.

It will thus be seen that when steam is admitted at one end of the cylinder, it presses upon four pistons, which move outward simultaneously, thus utilizing the steam pressure upon all sides of the point of admission. The detail view clearly shows this construction. In this view the pistons of one set have reached the end of their outward stroke, while the other set are at the inner limit of their stroke and are about to take steam.



ROBEY'S STEAM ENGINE.

This improved engine has been patented by Mr. James G. Robey, of Greenville, Texas.

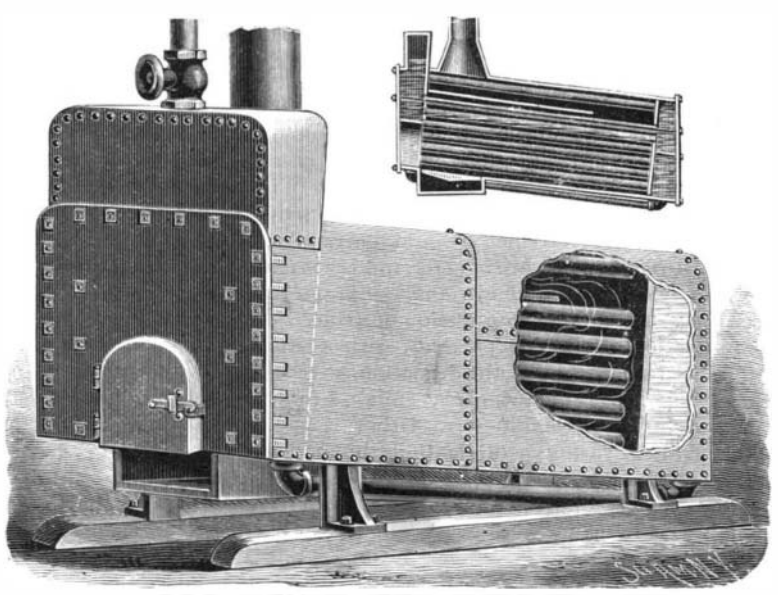
KNIGHT'S IMPROVED HALTER.

AN IMPROVEMENT IN HALTERS.

A simple and effective device for controlling and leading unruly horses without danger of doing them any injury is illustrated by the annexed engraving. It is a halter formed of adjustable head straps, a nose strap containing a flat spring for holding it normally in loose contact with the animal's nose, and a device for contracting the nose strap with more or less force when the halter is unduly pulled upon.

The nose strap is made of two thicknesses of leather, between which is placed a flat spring, bent into such form as will permit of its being worn by the horse without discomfort when he pulls lightly on the leading strap. The ends of the nose strap are provided with yokes, in which are journaled friction rollers. A strap passes through these yokes and partly around the rollers. To the center of the strap is fastened a guide yoke, furnished at its rear end with two friction rollers, between which project the ends of the strap referred to. These ends receive between them a ring, and are fastened together by stitching or otherwise. The snap hook of the usual leading strap is received in the ring. Whenever the horse pulls unduly on the leading strap, the ends of the strap which pass outwardly between the rollers are drawn outward, thus causing the contraction of the nose strap with a force proportioned to the pull of the animal. The pressure of the strap upon the nose is sufficient to secure the desired result. As soon as the horse stops pulling, the elasticity of the spring returns the parts to their normal position.

The halter is made so that it may be adapted to the



TOOLE'S IMPROVED STEAM BOILER.—[See page 68.]

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