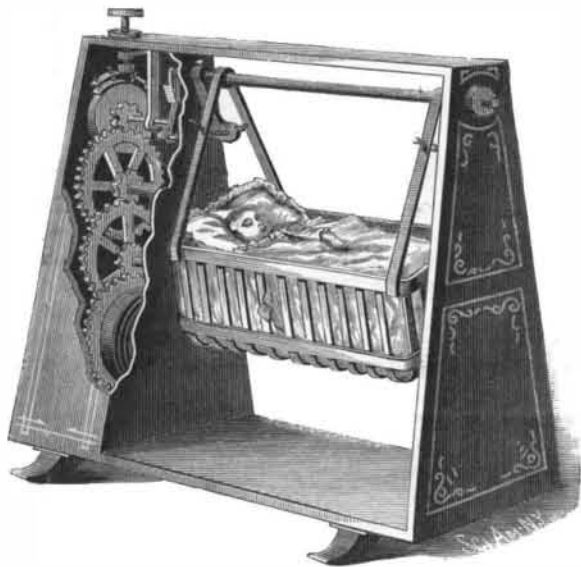


**AUTOMATIC ROCKING CRADLE.**

The supporting frame for the rock shaft, from which the cradle is suspended and rocked, consists of a broad base plate with uprights a suitable distance apart, for hanging the cradle between them, and an upper cross plate for staying the uprights at the top. At one end of the frame is a case inclosing a coiled driving spring and a suitable multiplying and transmitting train of gear wheels, and pinions connecting the spring with a crank shaft located in the upper part of the case. This crank carries a rod working in a sleeve on the crank of the rock shaft, so arranged that the rotation of the crank shaft will cause a rocking motion of the main

**ANDERSON'S AUTOMATIC ROCKING CRADLE.**

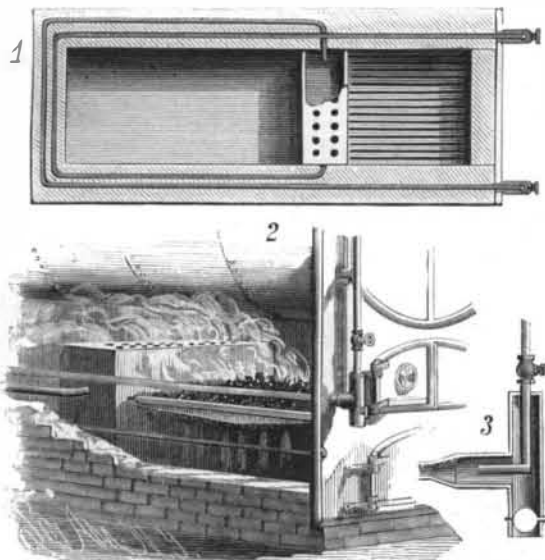
shaft. The speed can be regulated by a friction brake in connection with a disk fitted on the crank shaft; the brake is operated by an adjusting screw extending down through the top of the case. Between the brake shoe and an upper bar are placed coiled springs, the elasticity of which prevents the brake from stopping the cradle too abruptly. To prevent a jerky motion of the cradle when the crank passes the center, the cradle arms are hung loosely on the rock shaft, while the driving arms are rigidly secured to the shaft by set screws, and act against springs fitted on a rod extending from one to the other of the arms of each end of the cradle; the springs form buffers which relieve the cradle of any shocks that might otherwise be imparted to it by the quick action of the crank. Access to the driving mechanism is afforded by a door in the top of the case.

This invention has been patented by Mr. Edward Anderson, of 567 South Morgan St., Chicago, Ill.

**DEVICE FOR FEEDING AIR TO FURNACES.**

The object of the invention herewith illustrated is to provide attachments for furnaces, by the use of which the draught can be regulated and the gases formed from the coal can be wholly consumed. Fig. 1 is a sectional plan view, Fig. 2 is a perspective view of part of the furnace and boiler, and Fig. 3 is a section of a T-head, showing the pipes connected with it.

With any part of the steam space of the boiler are connected the ends of two pipes, which extend forward to the front of the furnace and then down to the level of the upper part of the fire chamber, at which points they

**WRIGHT'S DEVICE FOR FEEDING AIR TO FURNACES.**

enter the upper arms of the T-heads, and are bent at right angles to discharge steam into the horizontal arms of the heads.

The connection between the upper arms of the heads and the steam pipes is made steam tight, and the lower arms of the heads are provided with valves, so that the entrance of air can be readily regulated. The steam pipes are furnished with valves a little above the heads,

by which the admission of steam can be regulated. The horizontal pipes of the heads are embedded in the walls of the furnace and extend to the rear end of the furnace, pass through the end wall and through the side walls, and terminate in a chamber formed in the rear side of the bridge wall. The air chamber is covered with slabs of fire brick, finely perforated, so that the contents of the chamber will be discharged in fine streams into the products of combustion as they pass over the bridge wall.

By this plan steam or air, or steam and air, in any desired proportions can be introduced into the furnace in any quantity to regulate the draught and consume the gaseous products of combustion, so that the fuel will be entirely consumed and the greatest possible amount of heat created. The air and steam entering the furnace, being superheated, will have no tendency to lower the temperature, and all the heat produced will be utilized.

This invention has been patented by Mr. William Wright, of 262 W. 22d St., New York city.

**A New Stain from the Huckleberry.**

BY ALBERT E. JENKINS, ANN ARBOR, MICH.

In volume xxiii. of the *Archiv fur Mikroskopische Anatomie*, Dr. Lardowsky describes a new stain, which he highly recommends for the karyokinetic figures and the cellulose walls of plants.

The fresh ripe fruit of the huckleberry, *Vaccinium myrtillus*, is washed in water, and the juice expressed and mixed with twice its volume of distilled water, to which a trace of alcohol has been added. It is then boiled and filtered while hot, the resulting fluid being of a clear deep red color and faintly acid reaction. This, if kept in a cool place, will remain unchanged for a considerable time. Probably a crystal of thymol or of chloral hydrate would prolong the period. At the time of using, it is diluted with two or three volumes of distilled water, as it is quite thick when cold.

This solution stains red all objects hardened in chromic acid or chromium solutions. A beautiful violet stain, which is also more permanent than the red, may be produced as follows: The section is stained for one or two minutes as usual in the red fluid, then washed in distilled water, and transferred to a one per cent aqueous solution of lead acetate. Here it is washed until the red has turned to a lilac, when the specimen may be at once mounted in glycerine, or transferred through alcohol or clove oil to balsam.

**Moving a Ninety Foot Chimney.**

One of the most difficult transfers of heavy structures yet attempted was successfully completed in Salem, Mass., a few weeks ago, where a brick factory chimney, 90 feet high and only 6½ feet in diameter at the base, was taken up and moved, with the aid of six men and two horses, 100 feet, and safely deposited upon a new foundation. The chimney was nearly cylindrical, the upper diameter being 5 feet; and it was estimated that a sway of 3 inches from the vertical would bring it to the ground, so that great precautions were taken to prevent lateral movement in transferring it to the platform on which it was to be transported. A cage was first built around the chimney, consisting of horizontal timbers supporting shores, which extended 23 feet up the sides of the shaft, and were re-enforced by a second set of shorter ones beneath. After these were in place, and well secured, holes were cut through the brickwork and needles inserted, under which thirty-four jackscrews were placed, and the shoring and shaft raised together high enough to allow a rough platform to be constructed under them, and rollers to be set in place. The platform, which was of strong plank, extended to the new position of the chimney, and by leveling it carefully, and employing a large number of rollers, the load, weighing 130 tons, was easily moved into place.

**IMPROVED FUNNEL.**

The funnel herewith shown is provided with a float for automatically closing a valve as the liquid rises, so that there is no danger of overflowing the vessel. A valve, A, arranged to close the funnel, is pivoted in small uprights of an annular flange secured in the funnel. The valve is formed with a tail piece, and the funnel is provided with a bent rod which may be pressed upon the tail piece to open the valve; the rod is raised by a coiled spring. For holding the valve open a setting and tripping device is employed, consisting of a pivoted ring, B, on one side of which is a notched tongue, and a metal tongue secured to the under surface of the valve. The ring is so pivoted that the side opposite the tongue overbalances the side to which the tongue is secured, and causes it normally to be elevated when the funnel is right side up. The side of the ring opposite the tongue is provided with a plate against which the float rod, C, strikes to trip the valve. The float is inclosed in a tube attached to the funnel. Around the tube of the funnel is a short but large tube having a series of holes formed in it; within this is placed an adjustable tube having a flange at its lower end to support the funnel upon the vessel to be filled. The tube of the funnel can thus be raised more or less out of the vessel, according to the height at which it

is desired to have the liquid rise in the vessel before the float will trip the valve.

By pressing downward upon the rod the valve will be raised until its tongue enters the notch of the tongue of the ring, which will hold the valve open so that it will not interfere with the flow of liquid. As the liquid rises it will lift the float, causing the ring to turn on its pivots and lower the notched tongue, to release the metal tongue and permit the valve to drop and close the funnel. By this means there is no danger of over-

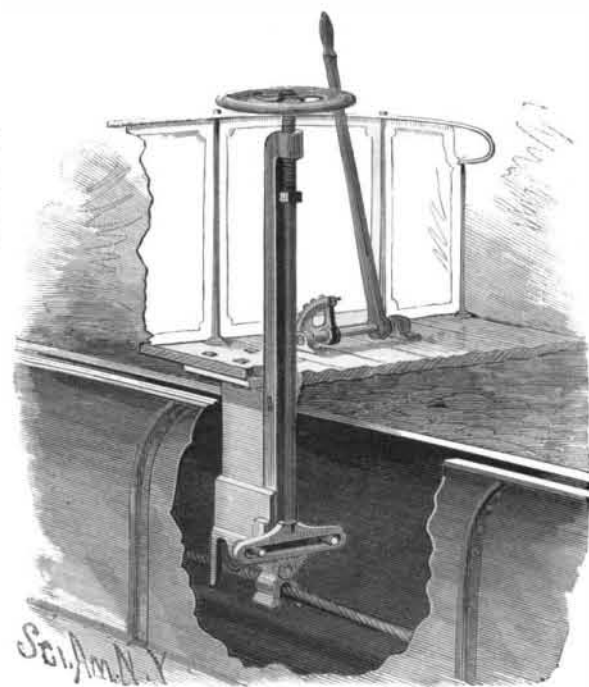
**STADLER'S IMPROVED FUNNEL.**

flowing the vessel, which may be filled to any desired height. This invention has been patented by Mr. Peter C. Stadler, of 439 W. 46th St., New York city.

**IMPROVED CABLE GRIP.**

The engraving shows a device for gripping the cable of cable roads, patented by Mr. David B. Anders, of 2116 Master Street, Philadelphia, Pa. A flat bar, projecting downward from the car floor through the slot in the tunnel in which the cable runs, is connected by a chain with a groove-edged quadrant on a shaft journaled on the car floor and having an upwardly projecting lever. The upper end of an arm extending upward from the flat bar is provided with a nut through which passes a screw having a hand wheel on its upper end, and having its lower end swiveled on the upper end of a rod passing downward in front of the bar. On the lower end of the bar is a cross piece having a slot, into which pass two pins projecting from the upper end parts of two gripping levers pivoted on the bottom edge of the flat bar. Below the pivot these levers have gripping jaws from which lugs extend downward and away from each other. Guide lugs also extend downward and outward from the lower end of the bar, in which a roller is journaled to prevent the lower edge of the bar from sliding off the cable, thus greatly reducing the friction.

To grip the cable the screw is turned to raise the rod,

**ANDERS' IMPROVED CABLE GRIP.**

whereby the jaws are pressed firmly against the cable; to release the cable the rod is moved downward. The lugs on the levers guide the cable in between the jaws. When the car arrives at a cable crossing, the cable is released and the lever swung down, thereby raising the flat bar by means of the chain; the lugs on the bar guide the cable to place. This grip operates quickly, and holds the cable firmly.