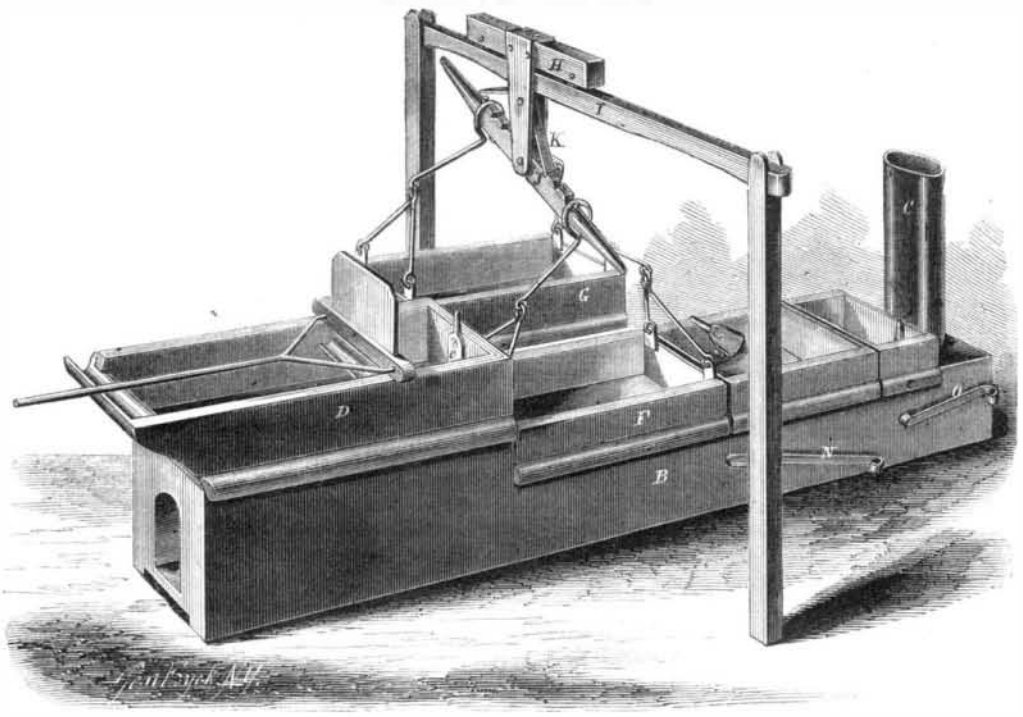
Improved Evaporator.

The extensive introduction of the culture of Chinese sugar cane, has created a large demand for apparatus for making sugar and molasses from the juice, and has stimulated inventors to make improvements in this apparatus. The accompanying engraving illustrates an arrangement of furnace and pans devised for the purpose of conductiong the evaporating process, by which the watery portion of the juice is expelled from the saccharine portion, with great economy of labor and in a manner to produce a superior article of molasses.

TUFTS'S EVAPORATOR.



The inventors state that experience has shown that when the sirup has been boiled down to a specific gravity corresponding with about 20° or 30° of Baume's scale, if it is then allowed to cool at rest, the gummy portion of the juice will be precipitated, and will fall to the bottom; but if the boiling is continued, the gum will become so mingled with the molasses that it cannot be separated, imparting to the molasses a disagreeable acid flavor. This apparatus is accordingly designed to enable a pan of juice to be easily taken from the fire when the proper degree of evaporation is reached, and to allow it to rest till the gum is deposited, when the sirup is drawn off into another pan where the evaporation is completed.

The fire is made in the furnace, A, and the smoke passes through the horizontal flue, B, and out of the chimney, C. The juice is first poured into the pan, D, where it is heated to the boiling point. The gate, *e*, is then opened and the juice is drawn into the pan, F, through a suitable spout. This pan rests over the flue where the heat is less intense than it is directly over the furnace, and where, consequently, the sirup is in less danger of being burned. Here the boiling is continued until the juice is about half evaporated, when the pan is raised from its seat and carried to one side of the flue, while another precisely similar pan, G, is brought into its place and filled with a fresh supply of juice from the pan, D, in order that the work may go on without interruption.

To facilitate this changing of the position of the two pans, F and G, they are suspended from a carriage, H, which runs on rollers upon a cross beam supported over the flue by upright posts at its ends. As the pan must be raised from its seat before it is carried to one side, the pans are hung upon a vibrating lever, J. A brace, K, holds the lever, J, either in a horizontal or in an inclined position, as may be desired.

After either of the pans, F or G, is emptied, it must be very carefully cleaned before receiving a fresh supply of juice, and the pan, M, is provided for heating water for this purpose.

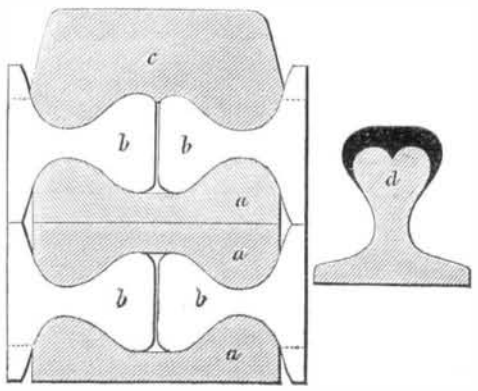
The upper part of the flue is left open to be closed by the pans, F and G, so that the smoke may come directly in contact with the bottoms of these pans; but provision is made for turning the smoke down away from immediate contact with the pans in case the heat should be too great. This is effected by introducing two sheets of metal of the same width as the interior of the flue and of the same length respectively as the pans, F and G. The sheet under the pan, F, is fastened at one end to a rock shaft, the end of which is brought through the side of the flue and has the lever, N, secured rigidly to its extremity. By carrying the loose end of this lever up or down, the metal plate is tipped so as to conduct the smoke either upon its upper or under side, thus directing the heat against the bottom of the pan or shielding the pan from its action as may be desired. The metal sheet under the pan, G, is connected in like manner with the lever, O.

The scraper in the pan, D, is provided from drawing out the scum which rises in this pan, the trough at the end of the pan greatly facilitating the operation.

The patent for this invention was granted, through the Scientific American Patent Agency, March 11, 1862, and further information in relation to it may be obtained by addressing the inventors, M. and S. G. Tufts, at Maineville, Ohio.

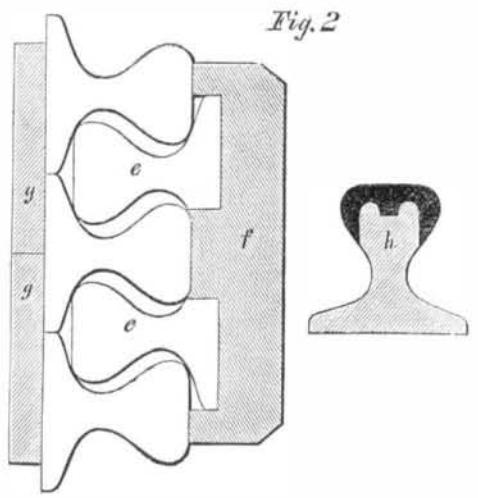
PERRY AND ONIONS'S MODE OF FAGOTING RAILS.

Fig. 1



One large item of expense in operating our railroads is the renewal of the rails, the ends of which are battered by the concussion of the wheels. The usual mode of renewing rails is by sawing them into short pieces, which are piled up in bundles or fagots,

Fig. 2



heated to a welding temperature, and re-rolled. The accompanying engravings represent an improved method of piling the old rails to produce in the new rail a more solid face than has been obtained heretofore.

Fig. 1, illustrates the plan for forming a pile of 4 rails. Three bars of iron are rolled in the form shown at *a a a*, and are piled with the rails, *b b b b*, in the manner represented. Then a bar of iron or steel of the form indicated by the shaded section, *c*, is placed upon the top of the pile, when the fagot is ready for the furnace and rollers. The first passage through the rollers crushes the flanges into one another to the dotted lines. Then the old rails are all worked into the interior of the mass to make the stalk of the new rail, while the top and bottom bars come into positin to form the head and flange—the parts which it is most important to have sound and free from fibrous structure.—The cross section or end of the new railis represented at *d;* the darkly-shaded head showing the part formed by the bar, *c*.

Fig. 2 illustrates the mode of forming a pile of 5 rails; two of which, *e e*, are made up of the short pieces left from the saws and shears, with about an inch sheared from one of the flanges to make the pieces fit into the pile. This pile is passed 9 times through the rollers, the first 4 times on edge in the position represented. The head is formed by the piece, *f*, and the flanges by the pieces, *g g*. The pieces, *g g*, may be of equal or unequal widths, or they may be combined in one piece 10 inches wide. The end of the rail formed by this pile is represented at *h;* the darkly-shaded part showing the portion formed by the bar, *f*.

This mode of piling rails was designed by William Perry and William Onions, both of St. Louis, Mo. Steps have been taken to secure the invention through the Scientific American Patent Agency, and further information in relation to the invention may be obtained by addressing William Perry, at St. Louis.

CLOTHES WRINGERS—SQUEEZERS.

The little machines which are now so extensively employed for pressing the water from washed clothes are composed of two small rollers, covered with vulcanized india rubber, and set one above the other in adjustable spring bearings. Being geared together by pinions, they carry the clothes through and between them, when they are revolved, and thus press out the water. This class of machines have been used in calico-print works and bleaching establishments for a century, at least, and are called "squeezer rollers." Being employed to press the water from long pieces of cotton the rollers are made of wood, covered, in some cases, with several thicknesses of cotton cloth. Of course, such rollers are not suitable for pressing body clothing, because they would crush the buttons and the hooks and eyes of shirts and frocks; hence the use of vulcanized rubber, which, being elastic and moderately soft, is a great improvement for the covering of such rollers.

Wringing machines are different in their construction from squeezers. They are made so as to embrace a wringing or twisting motion. They generally consist of a revolving hook attached to a crank handle at one end of a frame, and this hook is connected, by an open bag of coarse linen, to a stationary ring situated on a post. The washed clothes are placed in this bag, and the hook is revolved. This action twists the bag and wrings the clothes. For wringing cotton yarn no bag is necessary. The hanks of yarn are placed over a stationary hook at one end, and a revolving hook at the other end of the frame. Such machines are also employed in some bleach works, and have also been attached to some of our washing machines. They are not so convenient for domestic purposes as the squeezers with vulcanized-rubber rollers for small articles, but are perhaps better suited for blankets and such like large articles.