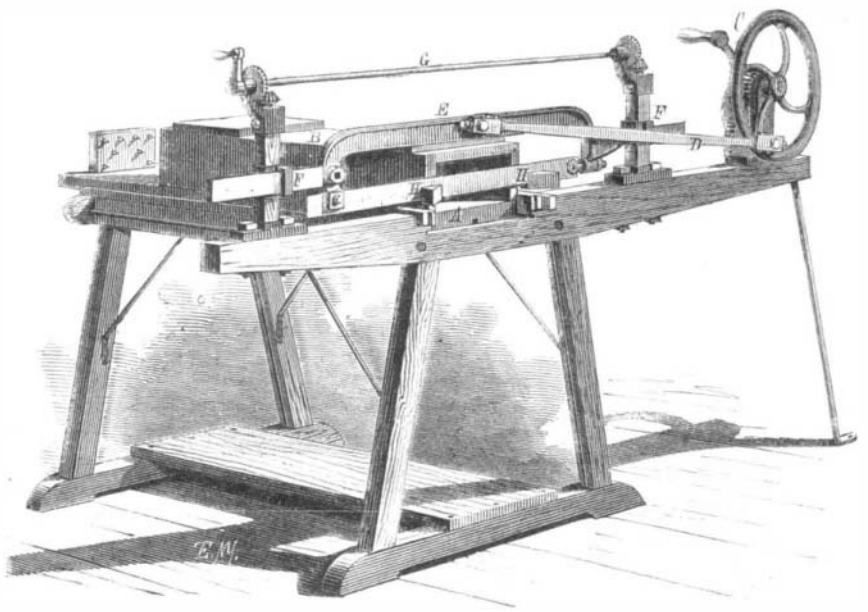
IMPROVED PATENT CANDY CUTTER.

This machine is intended for cutting "beefsteak" and other candies in which nuts, etc., are intermingled, and which are cut from a loaf-like mass into slices while warm. The apparatus consists of a knife reciprocating to cut the candy, and provided with means of constant lubrication to prevent the adhesion of the warm candy, and to cause it to cut more freely.

The frame supports a table and a beam, on which the operating parts are mounted. The candy is made into a long loaf-like mass, with nuts, etc., and placed on a long movable board, A, and against a block on its back end. This board is fed up under the knife as slice after slice is cut off. The box, B, incloses the candy on the sides to hold it in place and in shape, and remains stationary, while the candy and its supporting board is moved up. The wheel, C, is turned by a hand crank, and rotates a smaller wheel having a fly wheel on its shaft. This fly wheel has a connecting part, D, from a bearing on its rim to one on the knife frame, E, to drive the knife back and forth to cut the candy. The knife frame has guide bars at its ends playing back and forth in bearings, F, on posts attached to the beam, as shown. The bearings move up and down on the posts, and the latter are hollow, with one side open. The bearings connect with vertical screws within the posts, so that they may be raised or lowered by turning the screws, to feed the knife as it cuts. These screws have bevel pinions on their top ends, gearing with bevel pinions on the shaft, G, which extends over both posts. The shaft is turned by a hand crank, to raise or feed the knife on the candy, regularly at both ends. The edge of the knife moves through boxes on each side of the candy, which contain sponges saturated with oil, for lubricating as above noted. These boxes are borne by arms from bearings, so that they will move up and down with the knife and keep the lubricator to its edge. The board, A, is moved up by pinion and rack underneath, not shown, with suitable arrangement for gaging its feed, to regulate the thickness of the slices uniformly.

This machine has been in use in the shop of J. Essig, candy manufacturer, Keokuk, Iowa, for the past six months, and, we are informed, has given perfect satisfaction.

For further information and purchase of patents and rights, address the patentee, Francis Quinn, Keokuk, Iowa. Patented October 1, 1872, and October 14, 1873.



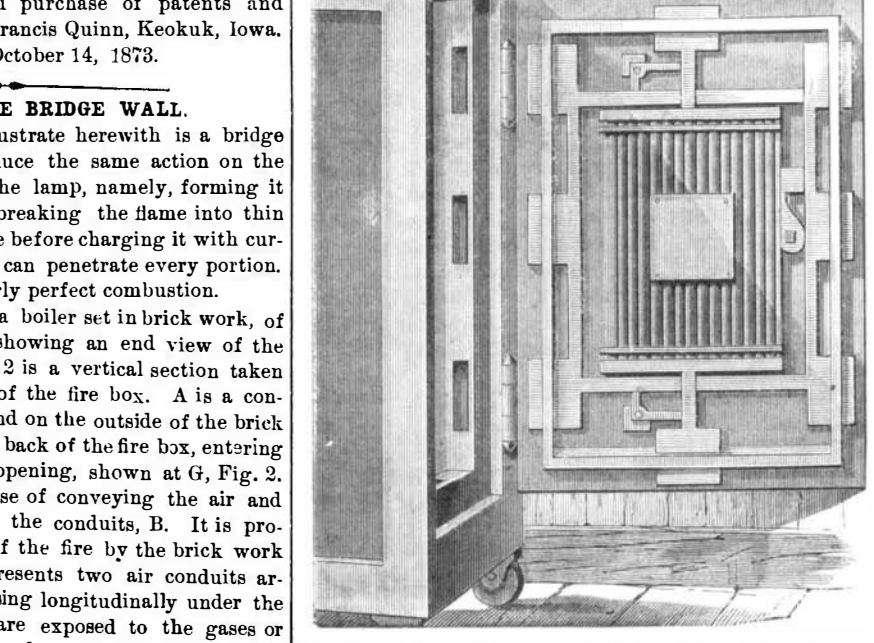
QUINN'S PATENT CANDY CUTTER.

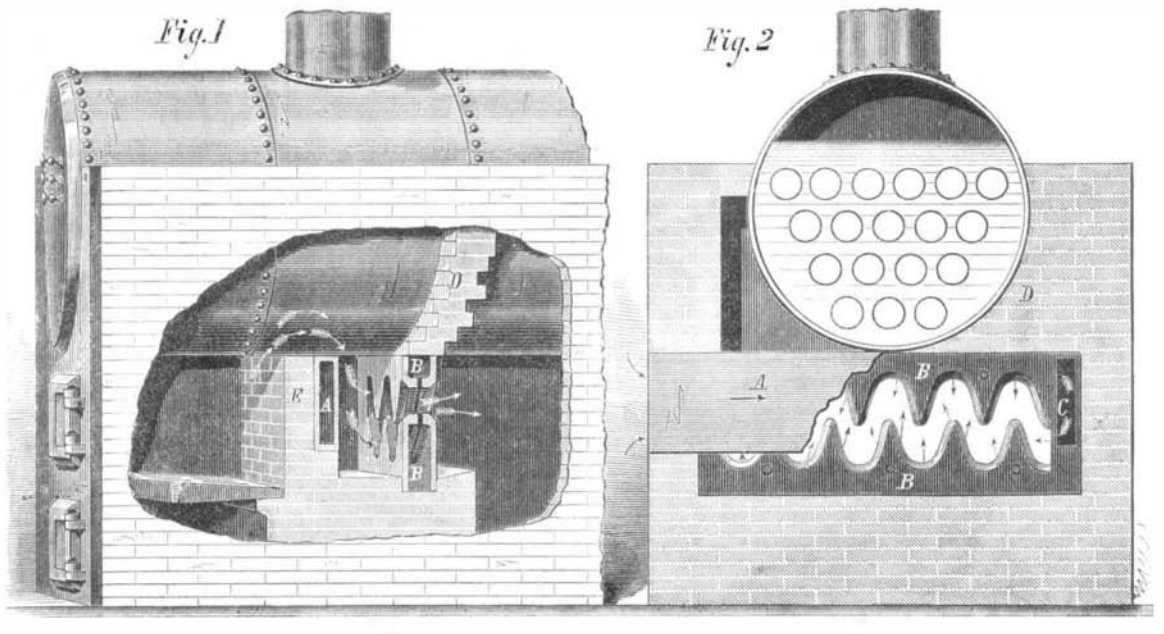
IMPROVED FURNACE BRIDGE WALL.

The invention which we illustrate herewith is a bridge wall, constructed so as to produce the same action on the flame as the flat wick does in the lamp, namely, forming it into a thin sheet or, rather, breaking the flame into thin sheets, thus preparing the flame before charging it with currents of air, so that the latter can penetrate every portion. The result is claimed to be nearly perfect combustion.

Fig. 1 is a side elevation of a boiler set in brick work, of which a portion is removed, showing an end view of the bridge wall in position. Fig. 2 is a vertical section taken through the bridge wall, back of the fire box. A is a conduit or pipe, having its outer end on the outside of the brick work, and extending across the back of the fire box, entering into the conduits, B B, at the opening, shown at G, Fig. 2. This pipe, A, is for the purpose of conveying the air and also heating it before entering the conduits, B. It is protected from the direct action of the fire by the brick work shown at E, Fig. 1. B B represents two air conduits arranged in a vertical plane passing longitudinally under the boiler. The portions which are exposed to the gases or flame present waved surfaces, and are so arranged in relation to each other as to form a ziz zag or serpentine flue, through which the flame or products of combustion are compelled to pass on their way out of the fire box. It will be noticed that the top and bottom of the zig-zag flue terminate nearly in a point. In this portion of the conduits are perforations or a continuous slit for the admission of air, striking the flame crosswise, in fact in every direction (as shown by arrows in Fig. 2), on its way through the zig-zag flue. It will also be noticed in the form of this flue that a direct line is avoided. The object of this is to cause the flame, when it strikes the flue, to be completely broken up into thin sheets, and thus prepared so that the air can penetrate every portion. At the same instant, therefore, that the flame is broken up, it is thoroughly charged with cross currents of heated air in every possible direction, producing combustion of the gases before entering the stack. C is an opening into the side of the gas burner, where the connection is made with the pipe, A. D shows a wall closing the connection between the after part of the boiler and fire box, compelling the products of combustion to pass through the zig-zag flue. The inventor states that this bridge wall has been thoroughly tested, and that the advantages gained by its use are, first, a saving of 25 per cent of fuel; second, the benefit of the coke or solid part of the coal, which, under the present construction of furnaces, it is claimed is wasted; third, all the sooty matter is consumed before reaching the stack, and also all the gases, so that but a very small portion of the heat escapes.

The improvement is further claimed to be efficient and durable, not liable to get out of order, and to require no attention after being set in its place. It can be applied to both locomotive and marine boilers. For further particulars address the inventor, Mr. W. F. Beecher, 93 Seneca street, Cleveland, Ohio.





BEECHER'S FURNACE BRIDGE WALL.

THE BAFFLE DRILL-PROOF SAFE.

An ingenious contrivance has recently been patented by Mr. Henry Geering, of Birmingham, England. Experience has shown that a skilled thief, as a rule, by boring a number of holes through the chilled plate to which the lock of a safe is attached, invariably succeeds in removing the lock bodily, and the safe, with its contents, may then be dealt with at leisure.

The present invention is designed to prevent this, and it consists in the arrangement, at the back of the door and in front of the lock, or at any other required part of the safe, of a series of cylindrical steel rods, free to turn in a frame or bearing pieces. These rods are arranged side by side, and as near together as is compatible with their perfect freedom of motion, excepting immediately in front of the key hole in the door, at which part a space is left for the passage of the key to the lock. One or two series of rods may be used. Where two are employed, the axis of one of the series may cross the axis of the other series, or be placed perfectly parallel with it at pleasure. The patentee provides flat or angular rotating bars, which may be employed instead of cylindrical steel bars. The practical effect of the use of these steel rods is simply this: When the door of a safe or strong room is provided with the invention, the burglar's drill, after it has drilled through the plate of the door, comes against one or more of the rotating steel rods, which, under pressure of the drill, turn on their axes and move from under the drill, which is thus prevented from obtaining a bearing upon them. By this means access to the lock, for the purpose of picking or destroying it, is prevented. Where still greater security is desired, a plate of hardened steel or chilled iron is fixed in front of the steel rods. This plate is pierced with angular perforations, or armed with ribs or projections on the face turned towards the outside of the safe; and in use these perforations or ribs intercept the drill of the burglar, which is either broken or so much injured in contact as to be almost inoperative before it can reach the steel rods. At a public trial, says *Hardware, Metals, and Machinery*, a number of hard steel drills were put through the iron and steel plates with a pressure of from 12 to 15 cwt. behind the drills; but when the latter touched the revolving steel rods, they failed to bite, and were in nearly every case broken. Beyond this, the clicking of the revolving rods, when touched by the drills, was quite loud enough to raise an alarm sufficient, in ordinary cases, to frustrate any burglarious enterprise.

On Some Metallic Spectra.

M. LECOQ DE BOISBAUDRAN.

(1). Lead. When the induction spark from an electric coil passes between two electrodes of lead, the spectrum consists merely of narrow lines; when the electrodes get covered with oxide of lead, there are the numerous characteristic bands, and some of the lines then disappear, while others retain their brightness. The action of the condenser is almost exactly opposite to that of oxidation; it intensifies the lines, and, where they are extinguished through oxidation, the condenser restores them. (2). Chloride of gold. In a gas flame, this gives magnificent bands crossed by slightly nebulous lines, extending from yellow to blue green. With the spark in a solution of $AuCl_3$, the spectrum consists of green bands, and a certain number of narrow lines, distributed between red and violet. The relative brightness of the lines varies according to the mode of operation. The author points out changes undergone by the lines δ 506·3 and δ 523 when one modifies the degree of dilution, the length of the spark, or the direction of induced current. (3). Thallium, The salts of thallium in a gas flame give, besides the bright green line δ 534·9, another, faint and nebulous, having for wave length 568·0. It seems to belong to thallium, for its relative intensity is maintained with various salts of thallium carefully purified. (4). Lithium. From theoretical considerations, the author was led to expect the probable existence of a new line in the spectrum, having 413·0 for wave length. He obtains merely a trace of this line on passing the induction spark in a solution of LiCl, but it can be easily had with the spark in Li_2OCO_2 at red heat. Two series of measurements gave 412·9 and 413 for the wave length.—*Comptes Rendus —Chemical News.*

Practical Science as a Trainer.

Professor Williams, in an interesting article in *Nature*, relasting to remarkable practical achievements of Count Rumford, says: The main interest of the career of this wonderful manappears to me to lie in this, that it affords a magnificent demonstration of the practical value of scientific training, and the methodical application of scientific processes to the business of life. I have long maintained that every father who is able and willing to qualify his son to attain a high degree of success, either as a man of business, a soldier, a sailor, a lawyer, a statesman, or in any responsible department of life, should primarily place him in a laboratory, where he will not merely learn the elements of science, but be well trained in carrying out original physical research, such training being the best of all known means of affording that discipline of the intellectual powers upon which all practical success depends.