New Inventions.

Alloy for Journal Boxes.

The following is a recipe for composition metal used by A. H. Landphere, of Union, Wis., who assures us it is superior to what is known by the name of "Babbitt metal":—One pound of antimony and ten pounds of lead melted together, and run into journal boxes.

Dyes from Coal Tar Products.

Four years ago, F. Grace Calvert, an eminent English chemist, made the extraordinary statement before the Society of Arts that "ere long, some valuable dyeing substances would be prepared from coal." A few weeks ago he stood up before the same society in London, to demonstrate the truth of the above expression, by showing them a beautiful purpleish blue color, rivaling that of orchil, and having the great advantage over it of not being destroyed by light. These colors, for there are many of them, have been prepared from the alkalies of coal tar by Messrs. W. Perkins and A. H. Church, two rising discoverers, and have been called by them nitroso-phenyline and nitroso-naphthyline, &c. The colors have been tried on silk, and found perfectly fast. Mr. Perkins' process is as follows:—He dissolves in water the sulphates of aniline, of cuminine, and of toluidine, and adds sufficient bichromate of potash to neutralize the sulphuric acid in these sulphates. The whole is left to stand for twelve hours, when a brown substance is precipitated, which is washed with coal tar naphtha, and then dissolved in methylated spirits. This solution, with the addition of a little tartaric oxalic acid, forms the dyeing liquor of Mr. Perkins.

Messrs. Grace Calvert and Charles Lowe have prepared from coal tar products of a most extraordinary dyeing power, and yielding colors nearly as beautiful as safflower pinks and cochineal crimsons; and what enhances the value of the discovery is, that upon cloth colored with them, all the varieties of shades and colors given by madder are obtained—violet, purple, chocolate, pink, and red. These colors stand light and soap, which the originals, safflower colors, do not. The processes by which these wonders of chemical art are manufactured are not yet known; but we shall look carefully for them, and give them to our readers. Just imagine a crimson silk handkerchief dyed with a piece of coal!

Improved Furnace.

The great difficulty attending the successful burning of such refuse fuel as cannot be burned on a grate but has to be consumed on a hearth, is to introduce sufficient air into the material as will supply oxygen enough to consume all the carbon of the substance.

The furnace represented in our illustrations is intended to overcome this difficulty; and the peculiar construction of it for this purpose will be understood from the following description.

Fig. 1 is a sectional elevation of the furnace, and Fig. 2 is a horizontal section.

H is a cylindrical fire-place or furnace, having vertical sides up to a certain point, from which rises a dome-shaped top. From the cylindrical furnace a number of angular projections, B′, are built inside, and through these passes the air conduit or space, G, communicating with the external air, as seen in Fig. 1. This is divided into three draft passages, C C B, as seen in Fig. 2, and thus supplies air at three different portions of each angular projection. To each of the passages, G, there is a damper, *g*, which enables the air to be supplied into the center of a cone, E, and from that to be distributed by four draft or supply passages, E′, right into the center of the burning mass. There are a series of openings in the furnace wall, A, which can be closed with doors, and are used for looking into the furnace to see how the operation is going on. There are also openings for cleaning the hearth of the furnace and exhausting the ashes.

On a support, *a*, rests the boiler, and under it the heated products of combustion pass, giving up their heat to it on their way to the chimney, F. There is a transverse bridge, *b*, in the flue, and some side bridges *e′*, are erected on an arch that crosses the flue, so dividing the flue into two parts horizontally, *d* being the lower passage.

The operation is as follows:—The fuel being fed through the hopper, I, by means of a feeder, J, and the fire lighted, the external air coming through the passages, G, becomes heated, and so is admitted to the fuel at a temperature conducive to promoting combustion, and besides it being admitted in so many places, every portion of the fuel has a chance of being burned. The heated products of combustion pass through the flue, D, and over the bridge, *b*, giving up their heat to the boiler, and also in the direction of the arrows in Fig. 2, around the side bridges, *e′*, so that no heat may be lost. There is a damper, *f*, at the side of the chimney, which directs the gases through the side bridges, *e′*, or under them, through the passage, *d*, into the chimney, F.

This is an excellently contrived furnace, and is the invention of Evan Skelly, of Plaquemine, Iberville Parish, La. He has applied for a patent, and will be happy to give any further information upon being addressed as above.

SKELLY'S BAGASSE FURNACE.

Fig. 1

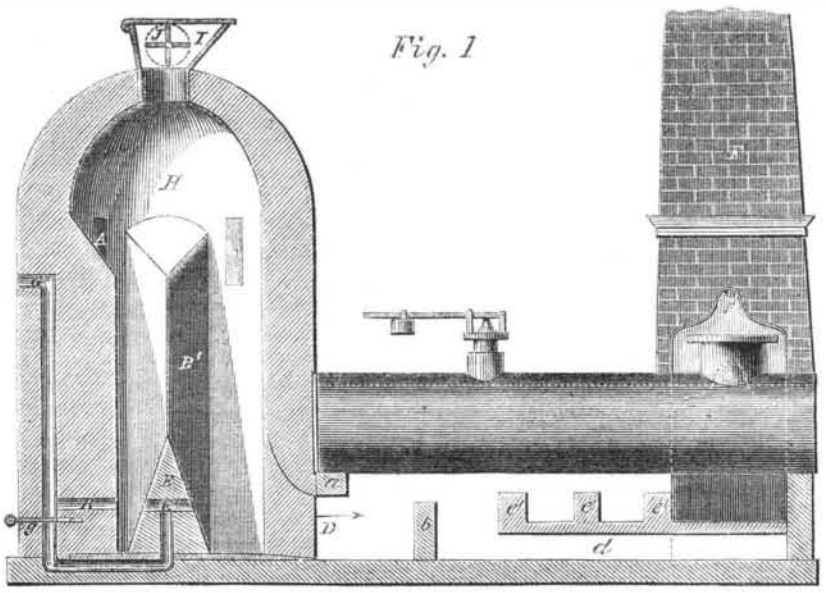
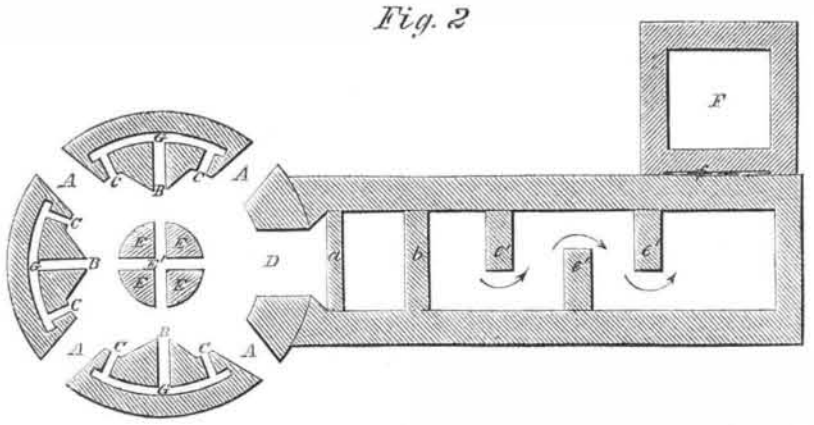


Fig. 2



BARROWS' SELF-REGULATING DAMPER FOR HOT AIR FURNACE FLUES.

Fig. 1

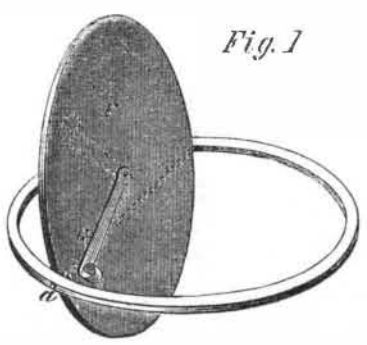
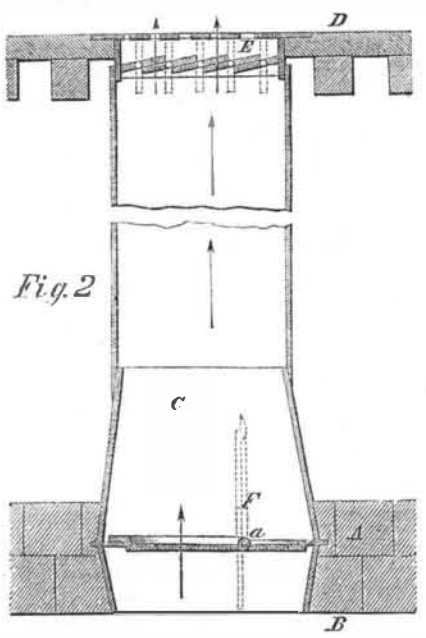


Fig. 2



A great objection to the use and adoption of air-heating furnaces is that the hot air conducting pipes are very liable to become overheated when the registers are closed; and from this cause many serious accidents have occurred, the adjacent wood-work taking fire, and thus inflaming, and perhaps destroying much valuable property. The object of this invention is to prevent the pipes becoming heated, by providing them with a self-regulating damper, so that when the register of the pipes is closed, and the draught through them consequently stopped, the dampers will close by their own gravity, and shut off the pipes from the air-heating chamber; and when the registers are fully, or more or less open, the dampers will be opened to a corresponding degree by the action of the draught.

Fig. 1 is a perspective view of one of these dampers, separated from the pipe. A circular plate, F, forms the damper; and it is suspended by an axis, *a*, which is a little to one side of the center, in a ring; an adjustable balance, G, is added, so that nearly an equipoise may always be maintained. Fig. 2 illustrates the application of this damper to the air-conducting pipe. A, represents a portion of the upper part of the masonry which encloses a hot air furnace to form the air-heating chamber, B, and C is a hot air conducting pipe, the lower end of which communicates with the air-heating chamber, B, and the upper end is connected to the register, E, in the floor of an apartment, D. F is the valve or damper before described, so weighted that it is nearly balanced; but it is still sufficiently preponderant on the larger side as to allow it always to close by gravity, and at the same time to open with a slight draft.

From this description it will be seen that when the registers, E, are closed, the damper closes itself, and all communication between the chamber and the pipe is stopped; but when the register is opened to the position indicated by the dotted lines, the current of hot air (shown by the arrows) also opens the damper, F, to the position indicated by dotted lines also, and the room is filled with warm air.

This simple and ingenious contrivance is the invention of Mr. Ebenezer Barrows, No. 228 Water street, New York, and a patent was granted for it March 23, 1858. It can be attached to any furnace with little trouble, and will form a safe and valuable addition.

The inventor will give any further information upon being addressed at the furnace and range depot, E. Barrows, Sons, 228 Water st., New York.

Patent Case Decided.

The sewing machine interference case, upon which the parties have been taking testimony for six months or more, between the application of Wm. C. Watson, manufacturer of the "Ten Dollar Sewing Machine," and the patents of A. B. Wilson, held by the Wheeler & Wilson Manufacturing Company, the Grover & Baker Sewing Machine Company, and I. M. Singer & Co., was decided last week by the Commissioner of Patents in favor of the latter, thereby establishing their exclusive right to the "rough surface and spring pressure feed" in combination.—*New York Tribune.*

[To prevent misapprehension we would state that the facts in the above case, as we understand them, are simply these:—W. C. Watson, believing that he could prove a prior date of invention over A. B. Wilson, applied for a patent on the spring pressure feed, and obtained a declaration of interference. Testimony as to date of invention was then taken upon both sides. The Commissioner of Patents, upon an examination of the testimony, decides that Watson has failed to establish his priority of invention and his application for a patent is accordingly rejected. But there is nothing in this decision which establishes the "exclusive right" of the above-named wealthy firms. Questions of this latter character are beyond the province of the Commissioner, being left to the courts for adjudication.

Iron Bridge over the Nile.

A great tubular iron bridge is now being constructed at Newcastle, England, and will be completed in about two years, for the Egyptian Railroad, which crosses the Nile about midway between Cairo and Alexandria. The river there is 1,100 feet wide, and a steam ferry boat is now employed to do the business. It does not suit the go-ahead spirit of the Pasha. He was once detained for four hours in crossing by an accident to the boat, and he then gave Robert Stephenson orders to build this bridge.