

**New Inventions.**

**Machine for Cutting Leather.**

Jesse W. Hatch and Henry Churchill, of Rochester, N. Y., have taken measures to secure a patent for an improved machine for cutting leather, &c. The pieces of material, in this machine, are cut by means of an endless-edged knife, or punch, of the desired form, attached to a shaft, which receives a reciprocating rectilinear motion. The knife, or punch shaft, is made to receive a half revolution on its axis, so as to change the position of the punch for cutting out articles of different widths at opposite ends, thus to avoid waste of material. The interior of the punch is fitted with a plate, which is connected with the shaft by springs, so that during the cutting operation it will rest upon the material that is being cut, and its springs will yield to the pressure applied to the punch, to allow the latter to continue its motion. When the punch is raised the plate is forced outwards by the springs and made to expel from the punch the piece or pieces which have been cut out.

**Sectional Floating Dock.**

Morgan Everson and Daniel M. Rickard, of Rondout, N. Y., have taken measures to obtain a patent for an improved sectional dock. Sectional floating docks are made with tight trunks which are partly filled with water to sink the dock to receive a vessel into it, and then these trunks are emptied by pumps, so as to float the dock and raise the vessel above the water. It is very desirable to have the pumps of floating docks so arranged that they will operate rapidly and correctly. We have heard complaints respecting the great length of time required to empty the trunks of such docks, owing to the imperfect working and arrangement of the pumps in the trunks. The above named inventors claim an improved arrangement in connecting the machinery for working the series of pumps in the trunks, and also a peculiar arrangement of the pumps within the water trunks, whereby they (the trunks) are perfectly balanced, and kept in a proper position in the water, however unevenly they may be loaded.

**Improved Slate Frame.**

Edwin Young, of Philadelphia, has taken measures to secure an improved method of making frames for account slates, whereby, when the slate may be broken a new slate can be easily put into the same frame, thus making one frame serve for a great number of slates, whereas the common frames are so made as to be comparatively useless when the slate is broken.

**Warming Buildings.**

John Sawyer, of Fitchburg, Mass., has taken measures to secure a patent for heating apartments more effectually by hot air, from the use of a range or stove in the basement of a dwelling. An interior pipe attached to the range or stove, and forming the smoke flue, passes through the center of the chimney, and heats the air between the two; valves are arranged to admit the hot air into the various rooms, or to shut it off at pleasure.

**Corrugated Locomotive Tank.**

J. G. Collins, of Lawrence, Mass., has taken measures to secure a patent for making the water tanks of locomotives of corrugated iron plates. He employs a peculiar method of bending or curving the edges of the plates, forming the top and bottom of the tank and uniting them to the body in such a manner as to dispense with the angle irons at the joints.

**Slide Valves of Steam Engines.**

Henry Bates, of New London, Conn., has made an improvement in the combination of slide valves intended to overcome the great difficulty which is encountered in giving the shortslide valve any very considerable amount of lap for cutting off the steam early in the stroke, viz.: choking or closing the exhaust port some time before the stroke of the piston terminates. The inventor has taken measures to secure a patent.

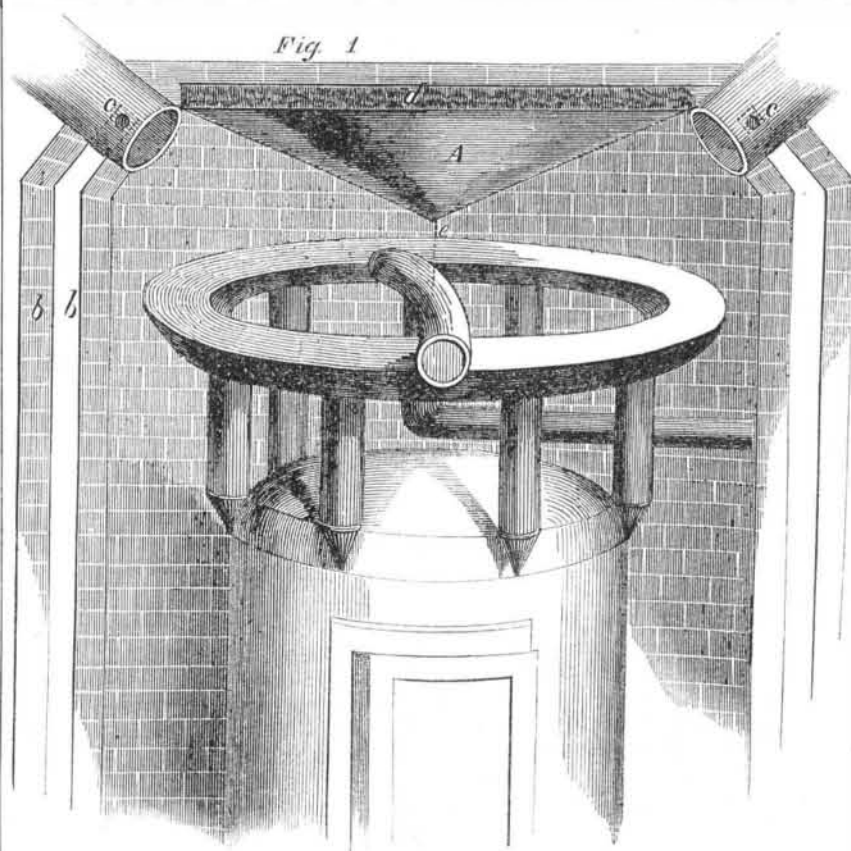
**HOT AIR FURNACE.**

This figure is a perspective view of an improvement in hot air furnaces, for which a patent was granted on the 1st of last month, (August) to John Carton, and Joseph Briggs, of the city of Utica, N. Y.

The nature of the invention consists in providing the upper part of the chamber or enclosure of the furnace with a cover made in the form of an inverted cone, placed directly over the furnace and having its center brought downwards towards the top of the furnace.

The cover thus placed prevents any of the heat from rising above the top of the chamber, and causes it to be equally distributed through the distributing pipes. This invention may be applied to any of the hot air furnaces in general use—portable or permanent furnaces.

A is the cover; *b b* are the outer and inner walls of the brick chamber. The edge of the cover is fixed in the brick work just above the mouth of the distributing pipes (upon which it also rests) and extends into the

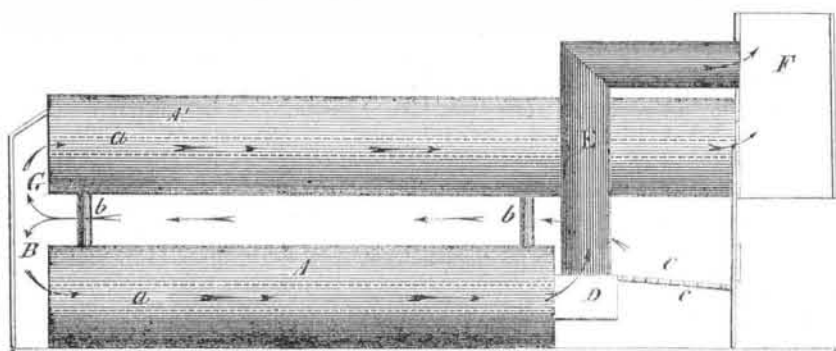


brick work about two inches. The cover is made to project downwards and comes to a point at *e*, directly over the center of the furnace. The cover thus placed prevents the heat from rising into the top of the chamber and causes it to spread equally from the hottest point towards the several distributing pipes, *c c*, through which it passes, so that no heat is lost or retained, but is more rapidly and equally distributed through the building. The cover may be made of sheet-iron or other metal, or it may be made of some non-

conducting durable substance. If the cover be made of metal the space above it under the covering of brick at the top at *d*, should be filled with ashes, plaster, or some non-conducting substance. The claim is for the deflector, *A*, placed at the top of the chamber of hot air furnaces constructed as described.

More information may be obtained by letter addressed to the patentees at Carton's stove and furnace store, No. 133 Genesee st., Utica, N. Y.

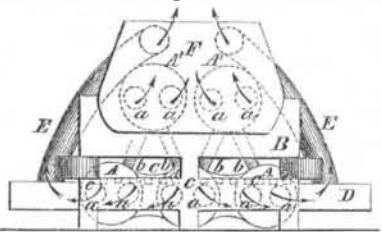
**BIRD'S PATENT STEAM BOILER.—Fig. 1.**



The annexed engravings represent an improvement in Steam Boilers, for which a patent was granted to Will E. Bird, of Cahawba, Ala., on the 18th of July last.

Figure 1 is a side elevation of the furnace and boilers as arranged and combined, with a portion of the jacket in which the boilers are set, removed, to show the arrangement, and figure 2 is a front elevation thereof.

Fig. 2.



Similar letters indicate corresponding parts. The nature of the invention consists in arranging a furnace with upper and lower boilers, or series of boilers of different lengths as

represented, namely, the lower series of boilers, *A*, may be placed directly upon the ground or upon the deck of a vessel, and should have one, two, or more flues, *a*, passing through them; the upper series of boilers, *A'*, should be placed a suitable distance above the aforesaid lower boilers, to give between them the requisite amount of flue space for the gaseous products of combustion to pass from the fire chamber, *C*, located in front of the lower boilers, to the space, *G*, at the rear ends of both sets of boilers; the front ends of the upper boilers project in front of the lower boilers a little more than the required length of the grate bars, *c*, and form the top of the fire chamber; the rear ends of both sets of boilers should be in line with each other, or nearly so. The upper boilers, *A'*, may be made with or without flues. If they have flues, the flues will discharge themselves directly into the chimney, *F*, as shown in figure 2. The front ends of the flues in the lower boilers all discharge into a flue box, *D*, the

ends of which extend beyond the sides of the furnace, and are connected by the flue arms, *E E*, with the chimney, *F*. Where two or more boilers are used in each set, the spaces between them should be closed in with cement or other suitable substance, in any well known or usual manner. The front of the furnace is formed in any suitable manner. The sides of the furnace, and of the flue space between the two sets of boilers, are closed up by suitable walls. At the rear ends of the boilers a breeching is placed, which incloses the space, *G*, figure 2, that communicates with the flue space between the two sets of boilers, and with the flue in said boilers. The upper and lower sets of boilers are connected to each other by a series of short tubes, *b b*, which should be of sufficient size and number to conduct the steam formed in the lower boilers, to the upper boilers. The gaseous products of combustion pass in the direction of the arrows. It will be perceived that the intense heat in the furnace will act directly upon the under sides of the front portions of the boilers composing the upper set, and upon a portion of the front ends of each boiler in the lower set, and that the flame and hot gaseous products of combustion will act upon the under portion of each boiler of the upper set, and upon the upper portion of each boiler of the lower set, in passing from the furnace to the space, *G*, and in passing thence to the chimney, they will act upon the surfaces of the flues in the lower set of boilers, and also upon the surfaces of the flues in the upper set of boilers, in case flues should be placed in them. The advantages of this combination of a furnace with an upper and lower set of boilers are the following, viz.:—First, the center of gravity is considerably nearer the deck, when used in steamboats, than it can be placed in the ordinary arrangement of furnaces and boilers upon the boats navigating the western and southern rivers. Second, the heat generated in said furnace, when combined with the said upper and lower set of boilers, will also act efficiently upon a much larger surface than it can in the present arrangement of furnaces and boilers on the above-mentioned steamboats, and consequently the consumption of a like quantity of fuel will generate a much larger quantity of steam. Third, the bottom of the lower portion of each boiler in the lower set, not being acted upon by heat, the water therein will remain tranquil, which will cause nearly all the mud in both sets of boilers to accumulate there, and thereby prevent the bottoms of the boilers in the upper set from being burned and injured in consequence of an accumulation of mud upon them. Fourth, there is much less danger of collapsing the flues, or explosions, when the boilers are arranged and combined with the furnace in the within-described manner, for the reason that the lower set of boilers must always be full of water, and as it is not an indispensable feature in the said arrangement, that flues should be placed in the upper set of boilers, there need not be any collapsing of flues in said boilers. When flues are placed in the upper set of boilers, they being so few in number—rarely more than two—will be so near the center of the boat's motion that there will be much less danger of their becoming uncovered by the careening of the boat. The patentee intends to combine, sometimes, one boiler, *A*, below, and two above, or vice versa, combining them by the tubes, *b b*, and furnace and chimney, as set forth. The claim is for the combination of the lower boiler or boilers, and the upper ones, with each other and the furnace, in such a manner that the top of the furnace will be formed by the upper boilers or boiler, and the rear of the furnace principally formed of the lower boiler or boilers, while the flue space from the furnace passes between the upper and lower boilers, and communicates with the flues, returning through the lower boilers or boiler. Mr. B. has had one of these boilers in operation for seven months, and it has performed according to his expectations, both as it respects safety and economy. More information may be obtained by letters addressed to the patentee, at his residence named above.