MACHINES FOR BAKERIES.

We illustrate herewith some improved apparatus of Mr. Dathis for kneading and baking bread, and which may be seen in operation at a fine establishment on Opera Avenue, Paris.

Kneading by hand, usually employed in all bakeries, is here replaced by machinery. The apparatus consists of a receptacle that revolves around an axis in such a way as to present all parts of the dough that it contains to the action of the kneading instruments. These latter, which are like forks, continuously lift the dough, in order to first stiffen it, and then knead it by drawing it out, aerating it, and inflating it, without ever compressing it. This mode of operating makes the dough very spongy and light.

The kneading tools are fixed to the extremity of levers by means of regulating screws. These levers are actuated by cranks mounted upon a shaft driven by belting or by hand power. The dough pan, with the different pieces that move it, and the flywheels and cranks that actuate the kneaders, rests as a whole upon a cast iron frame.

The maneuver of the machine is very simple: A certain quantity of tepid water is first put into the lower vessel, in order to give a proper temperature to the dough that is to be kneaded in the pan above. The yeast, flour, liquid, and accessories having been put in, the apparatus is revolved, slowly at first in order to give the flour time to absorb the liquid, and then the speed is increased until it is 60 revolutions per minute. After ten minutes have elapsed, the dough is allowed to rest two or three minutes, and then the kneading is continued for another ten minutes. The operation is now finished, and the dough is taken out and put into a basket to rise. The machine is next thoroughly washed with water.

When the dough has risen sufficiently, the fact is announced by an electric bell, which is set ringing through a contact being formed by a movable piston that rests upon the dough.

The yeast is preserved in a wooden vat provided with a cover having a hermetical joint. In the center there is a screw plug, whose aperture is closed with cotton that filters the air coming into contact with the yeast.

In Fig. 2 is shown a Dathis bread oven, which consists of three parts, viz., a lower part forming a base and containing the fireplace and chimney, the oven properly so called, and the cover, with its lifting mechanism.

The lower part is supported by four iron legs in the small size and by four cast iron columns in the large size. It consists of a circular bottom formed of refractory plates arranged upon iron plate. This bottom is provided with a cylindrical double rim composed of refractory plates and tiles held together by an angle iron.

The fireplace is in front of the center of this circular bottom, and beneath it. It consists of a fire-bridge, flues, and an ordinary horizontal grate with ash pan.

The oven properly so called rests upon this lower part, and consists of an iron plate cylinder, having a double base of convex form, made of iron plate. This latter receives the direct heat of the fireplace, whose bridge, being in contact with it, obliges the flames to form a double ring of fire, that embraces the entire surface of the metal. The hot gases escape up the chimney, through the intermedium of a special conduit.

Above the iron plate there is arranged another hollow diaphragm, which is open in the center, and designed to distribute the heat throughout the entire mass of the oven. Water is introduced into the iron plate receptacle through a funnel provided with a cock and pipe. This water at the moment of charging the oven, produces steam, and this latter, condensing upon the cold bread, glazes it and facilitates its development.

Over this diaphragm there is a plano-convex iron plate arrangement, whose contained air equalizes the heat over the entire surface of the sides. Above the plane surface of this piece is placed the wire cloth designed to receive the loaves. As the bread is completely isolated from the dead plate of the oven, it does not become soiled by those impurities that this usually imperfectly cleaned piece usually contains.

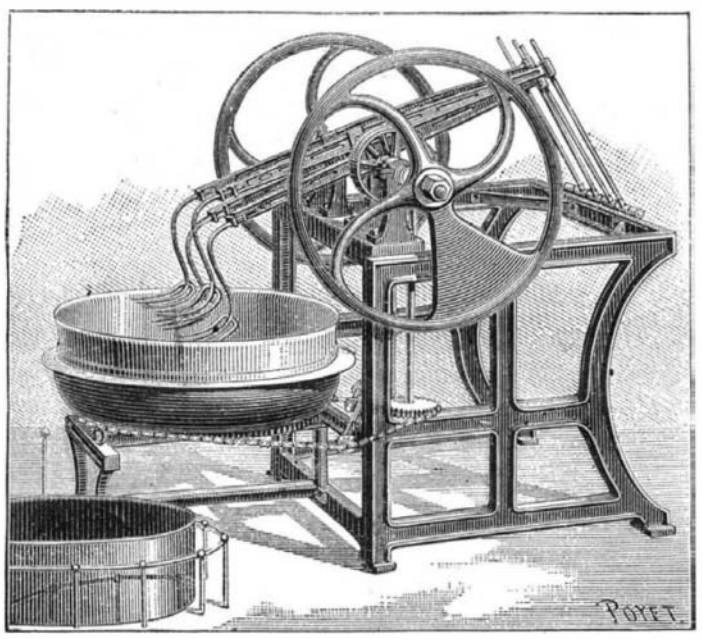

Fig. 1.—KNEADING MACHINE.

The cover, which is of cast iron, and convex in form, is provided externally with an isolating jacket, and serves to reflect the heat to the outer surface of the loaves.

It is lifted and lowered by means of a lever and counterpoise, supported by a column. It is provided with handles, sight holes for watching the interior, and a thermometer. In some cases an electric lamp may be arranged upon the cover, so that the interior of the oven may be lighted up and the baking observed.

In the six foot furnaces the wire-cloth bread support is removed by means of a sort of crane, as shown in the figure.

There are three sizes of these ovens, of the following diameters: 6 feet, 3 feet, and 1½ feet.

The fuel used is either coal, coke, or wood. The baking is not begun until the oven has reached a temperature of between 230° and 260° C. The quantity of coke necessary to obtain such temperature in a six foot oven is not over 18 pounds.—*La Nature.*

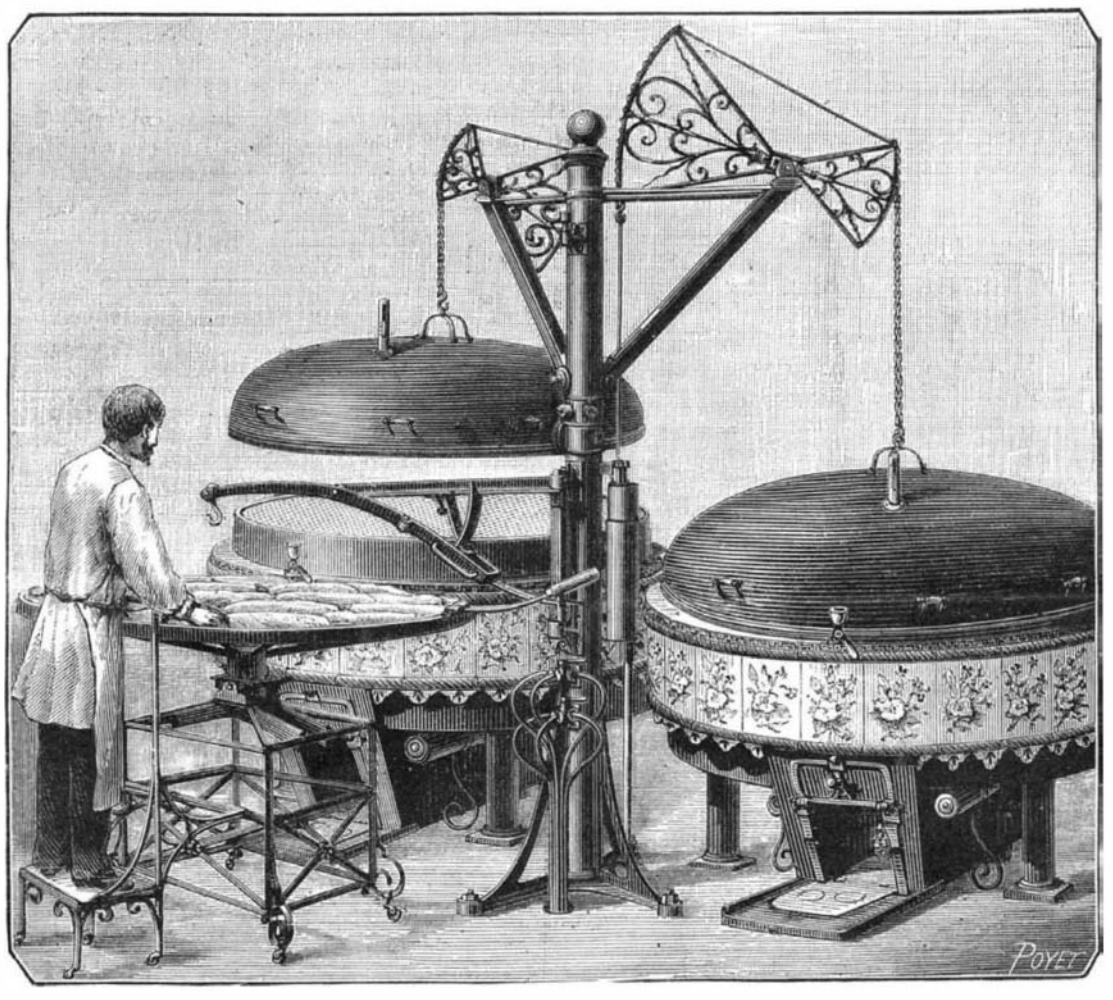

Fig. 2.—DATHIS'S BREAD OVEN.

IN the course of last year 3,284 ships passed through the Suez Canal. Of these vessels, 1,669 passed from the Mediterranean to the Red Sea, and 1,615 from the Red Sea to the Mediterranean.

A Government Signal Lamp.

Major Heap, of the Government Lighthouse Board, has devised a new arrangement of the electric light in its application to lighthouses, which may prove of some value. There are objections to the use of the arc lamp for this purpose, as it can penetrate fogs but little further than ordinary and weaker lamps now in use, and is about three times as expensive to maintain. The experiments made by the Trinity House Board, at South Fouland, England, showed that a 15,000 candle power arc lamp gave but little greater penetration in a fog than an oil or gas light of 2,500 candle power. The explanation offered for this singular deficiency of penetration is that the arc light is composed mainly of rays toward the violet end of the spectrum, while the light given from burning hydrocarbons is composed of rays toward the red end, and these possess the greater fog penetrating qualities.

If one looks at an arc light through a piece of red glass he will no longer see any arc, but only the two carbons heated to the point of incandescence, and the light will consequently be very much diminished. The sun, seen through a fog, appears decidedly red, indicating that only the red rays manage to penetrate. A lighthouse needs, therefore, not only a very powerful light, but also one rich in red and yellow rays. The latter of these conditions are not fulfilled by the arc lamp, but seem capable of realization in the incandescent electric lamp. Up to the present time, however, these have not been made to exceed 300 candle power, and would be too weak for use in lighthouses.

Major Heap's proposition is simply to increase the power of the incandescent lamp by using several carbon filaments in the same bulb. It is not new qualitatively, for there are lamps now in the market in which two filaments are employed in the same vacuum, but the multiple system has never been carried out as far as he suggests.

In a coast light of the third order, the flame at present is a cylinder, 1¾ inches high and 1⅝ inches in diameter, and the lens employed is constructed to give the best results from these dimensions. To necessitate as little change as possible in the present plant, the new lamp is designed to furnish a light of these same dimensions.

Two disks of carbon, 1⅝ inches in diameter, are placed 1¾ inches apart, and are connected at the circumference by twenty-four carbon filaments, one-fifth of an inch from each other. If each of these filaments give a light of 15 candle power, the inventor supposes that the total power will be 360 candles. If it were a simple question of multiplication, this undoubtedly would be the result, but there will probably be other elements entering into such a construction, which will modify the calculation, such as the difficulty of overcoming the resistance of such a length of carbon, and of maintaining the different filaments at the same degree of incandescence. If the system succeeds, it is proposed to include lights of the first order, by increasing the dimensions of the multiple arc.

Good Words from Old Friends.

We have so many of them that we do not often mention the fact in the SCIENTIFIC AMERICAN, although they are none the less pleasant to receive. The following comes from out in Wisconsin, in connection with a question to our "Note and Query" department:

"I have taken the SCIENTIFIC AMERICAN about eight years, and when I do not get it Saturday afternoon it seems as if the wheels of the week had somewhere lost a cog, and I go home from my place of business feeling that the morrow has nothing in store for me. In my estimation there are three good things in this life—the SCIENTIFIC AMERICAN, a happy home, and a clear conscience; the last two every man ought to have, the first every mechanic in the land ought to get."