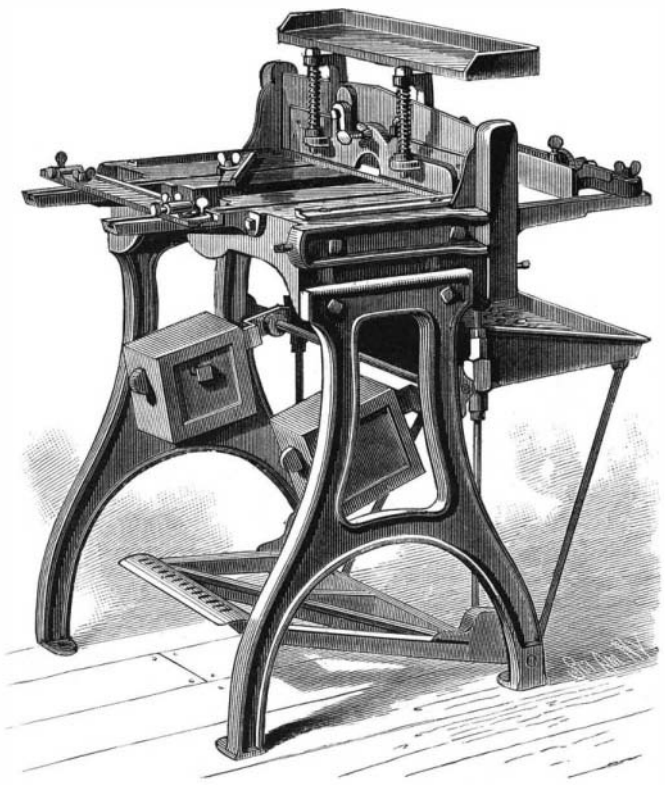
IMPROVED SQUARING SHEAR.

We give an engraving of a new squaring shear recently introduced to the trade by the Niagara Stamping and Tool Company, of Buffalo, N. Y., for the use of tinners, can-makers, and others.

This shear has several new and desirable features. Instead of the usual springs for lifting the treadle, this shear has a very strong and durable weight device, not liable to derangement. On the cross-head carrying the upper knife there is a hold-down or clamp, similar to that of paper cutters, which comes down upon the tin and holds it rigidly to the table before the knife begins to cut, thus preventing the "drawing" of the tin. On the back of the shear is a metallic pan into which the tin cuttings are discharged, and on the top of the cross-head is a shelf to receive patterns, tools, etc., while adjustment is being made. The new gauges attached to these shears allow of adjustment to the smallest fraction of an inch by means of micrometer screws. When once set these gauges are not liable to move accidentally, and are, therefore, much more reliable than ordinary gauges. They fit squaring shears of any make, so that any one having a squaring shear without the patented improved gauges can avail himself of their advantages by ordering them from the manufacturers.

Three sizes of this machine are made: a 22 inch for tinners' use, a 32 inch for stovepipe work, etc., and a 42 inch shears for large work, cornice-makers, etc. The shears can be furnished either plain—that is, with springs and the usual gauges—or with any one or more of the new attachments, and these attachments (except the clamp or hold-down) can at any time be added to the shear.

The Niagara Stamping and Tool Company is largely engaged in the manufacture of presses, dies, and tools for making tinware, fruit cans, etc., and our readers who may be in want of further information in regard to them can obtain it by writing to the company.



IMPROVED SQUARING SHEAR.

Utah Coal.

A block of coal, 4 feet wide, 4 feet high, and 10 feet long, weighing 12,900 pounds, was taken on a flat car to the Denver Exposition to be exhibited. It was taken from a coal mine in Utah owned by the Denver and Rio Grande Railroad Company, who are now building a road from Salt Lake City east, to intersect their line to the Rio Grande. This company is at war with the Union Pacific, and rather than patronize or accept a favor from that road they send the coal, which was mined a few hundred miles of Denver, north on the Utah Central to Ogden; thence west, on the Central Pacific, to Lathrop, Cal.; thence south to Yuma, and east to New Mexico, on the Southern Pacific; and thence north, on their own road, to Denver.

CLAMOND'S INCANDESCENT GAS LAMP.

Every one is acquainted with the Drummond light, which is obtained through the combustion of a mixture of hydrogen and oxygen that raises a lime or magnesia crayon to a white heat.

Now, Mr. Clamond's new lamp is nothing else than the Drummond light rendered practical. The invention involves two characteristic improvements: (1) a substitution of atmospheric air, which is within reach of every one, for oxygen, which has to be manufactured; and (2) substitution of a wick of woven magnesia for the magnesia or zircon crayon.

For obtaining high temperatures, air may be substituted for oxygen on condition that it be itself raised to a high temperature; and it is by doing this that Mr. Clamond has been enabled to obtain an effect similar to that produced by oxygen in the Drummond light. But it is not so easy as might be supposed to raise to a high temperature, and within a very short circuit, a quantity of air six times greater than that of the illuminating gas The velocity of such air, which is not much of a conductor of heat, must, in fact, be very great. Mr. Clamond has solved the problem by means of a very simple apparatus, which will be described further along, and which has the effect of putting all portions of the current of air in contact with the sides of a small tube of refractory earth heated externally.

The new burner has a double system of tubing, one for ordinary gas, and the other for air under a pressure of 35 to 40 millimeters of water. We learn that thus far only two types have been constructed—one burning 180 liters of gas, and giving 4·15 Carcels (equal to 43·3 liters per Carcel), and the other consuming 500 liters of gas, and giving 18 Carcels (equal to 27·7 liters per Carcel).

Leaving aside for the present the production of air under pressure, let us study the operation of the burner, of which, in the accompanying figures, there is given a general view, a view of a burner divested of its jacket, a longitudinal section, and horizontal sections at different heights. A (Fig. 3) is a disk carrying two coupling tubes designed to receive the ends of the pipes that introduce the air and gas. B is a disk perforated with small holes, and forming a distributer, which serves for distributing the air and gas in suitable proportions through the burner properly so-called. For this reason it carries no less than five series of holes of variable number.

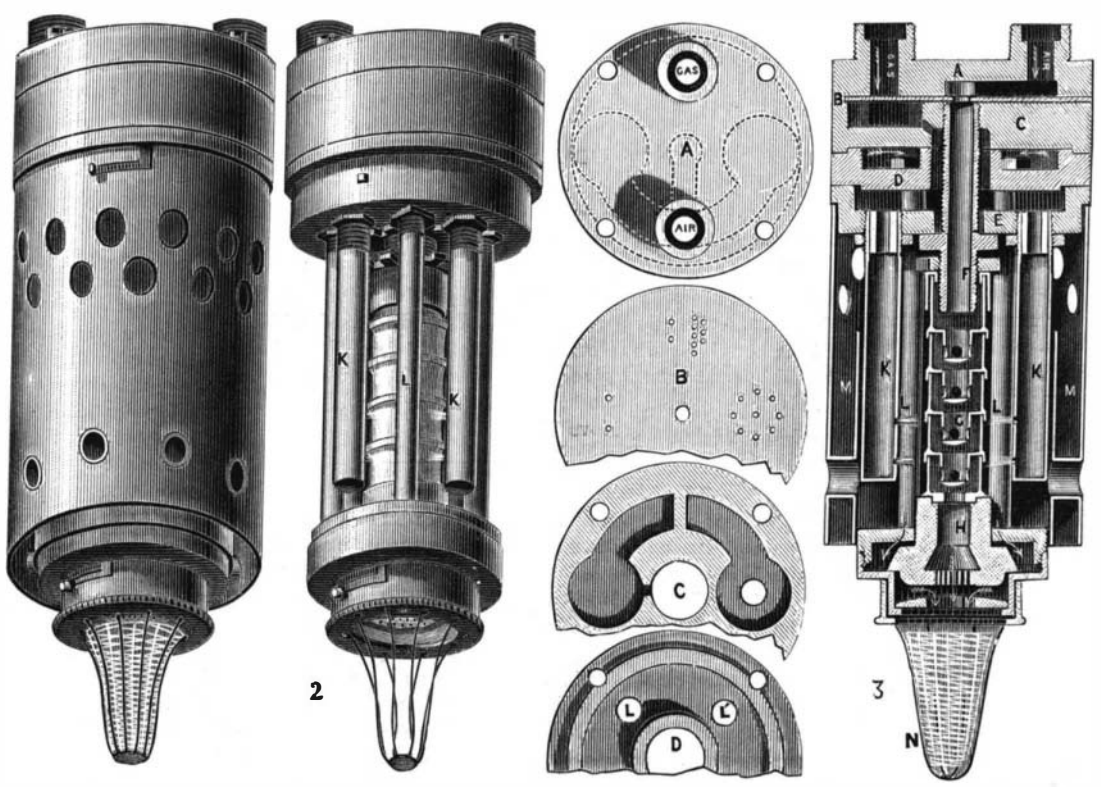
A certain quantity of gas mixes with a suitable proportion of air, and enters four pendent tubes, K, which are perforated with holes. The mixture burns, and the flame licks the superheater, G, which is thus raised to a very high temperature. Another portion of the gas mixes with a second quantity of air, and enters, through the tube, L, the lower part of the burner, where it inflames. Finally, a third quantity of air enters through the center of the burner at F, traverses the superheater, G, and, by impinging against the sides, rises to a temperature of about 1,000°, and makes its exit through a series of apertures in the refractory piece, H. The combustion of the gas under the action of air at so high a temperature produces a jet of exceedingly hot gas, which, coming in contact with a basket of magnesian thread, N, at the bottom of the lamp, raises it to incandescence. This basket was a happy idea of Mr. Clamond's. It is conical in shape and made of a sort of lacework of drawn magnesia. This latter, in powder, is made into a plastic paste with a solution of acetate of magnesia, and drawn out something like vermicelli. The thread, while still soft, is wound upon a conical mould that has a double backward and forward rotary motion. The cone, once formed, is taken from the mould and baked so as to give it the requisite solidity. In the lamp it is held by a small platinum wire basket that may be seen in Fig. 2. The magnesian basket thus prepared is capable of furnishing light for about forty hours, after which it must be replaced by another, inasmuch as the diameter of the threads of which it is composed diminishes through the escape of the material in the form of an impalpable powder. The platinum wire support in which this magnesian wick is placed is mounted with a bayonet catch, so that the wick may be removed and replaced with the greatest facility. The present price of these wicks does not exceed twelve centimes, but it will be much lower in the future.

The light produced possesses all the equalities of incandescence, that is to say, perfect steadiness, and a very warm yellowish color, between the whiteness of daylight and the yellow light burning in ordinary gas burners. As the wick burns at the base of the lamp no shadows of the latter are cast. It will be observed that the quality of the gas plays no part in the light produced, since the latter results from the incandescence of the magnesia, and depends only upon the temperature.

We have reserved until now the weak point in Mr. Clamond's system—we refer to the production of air under pressure.

In a factory, shop, or anywhere that a motive power is at one's disposal, the production of such air presents no difficulty; and the economy effected in the gas burned and in the quality of light produced would offset the extra expense attending the purchase of the burners, the double piping, and the putting in of the small blower necessary for the production of air at the low pressure of 40 millimeters of water. The work required for such compression is, in fact, insignificant, for it does not represent 100 kilogrammeters per hour and per focus of 4 Carcel burners. A one horse steam power would serve for more than 2,000 foci. For installations of small extent, then, a small gas motor would be sufficient. In Mr. Clamond's shop, the numerous burners that light it are very readily run by a small Bisschop motor. For installations of less importance, and in which there is no motive power at disposal, Mr. Clamond has under study a system of blowers and weights which shall operate several hours without any attention having to be paid to them. It will be only necessary to wind up the weight every evening before lighting, by means of a winch. Seeing the small force necessary, such a project is very feasible; for several carbureted gas apparatus employed in country mansions or in places distant from any gas works are already operating by such a process. The use of a small motive power is a drawback that it is not necessary to attach too great importance to; it cannot be compared with that that the manufacture of oxygen would involve.

Finally, we may add that, if some day the distribution of electricity to houses become *un fait accompli*, it will be easy to obtain from the electric current the slight power necessary to actuate the blowing apparatus; and, in such a case, we shall see electricity come to the aid of gas and favor its economic use. Electricity and gas will then once again lend each other mutual support; and this is the best termination that could be desired to the contest now going on between them.



CLAMOND'S INCANDESCENT GAS LAMP.

DESCRIPTION OF FIGURES.

1. General view of the burner. 2. View of burner divested of its jacket. 3. Longitudinal section of burner. A, B, C, D, horizontal sections of the burner at the points marked by corresponding letters in No. 3. 3. A, disk with air and gas inlets. B, distributer. C, D, E, distributing flues. F, entrance for air to the superheater. G, superheater. H, blow-pipe of refractory clay. K, tubes serving as auxiliary burners for heating the air. L, pipe for leading the gas to the blow-pipe. I, refractory piece for giving a horizontal direction to the gas entering the blow-pipe. M, external jacket perforated with holes. N, platinum basket containing the magnesian wick.—*La Nature.*

DISTINGUISHING SPURIOUS HONEY.—A solution of 20 parts of honey in 60 parts of water mixed with alcohol gives a heavy white precipitate of dextrine if glucose has been added, while genuine honey, if treated in the same manner, merely becomes milky.