IMPROVEMENT IN POCKET KNIVES.

The greatest defect of the ordinary pocket knife lies in the means provided for opening the blades. This is particularly noticeable in knives with strong back springs. Broken finger nails and sore fingers, with an occasional cut, bear witness to the desirability of an easier way of opening the blades. Our engraving shows an improvement designed to obviate this difficulty, and to facilitate opening the blade by substituting the pressure of the ball of the thumb for that

DU BOIS'S IMPROVED POCKET KNIFE.

of the thumb nail, while permitting of the same natural and intuitive motion to which knife users are accustomed.

The invention consists of a pivoted blade lifter arranged to shut within the handle, and provided on the inner side with a stud or spur capable of engaging the notch in the blade, and on the outer side with a knob or thumb piece to receive the pressure of the thumb. These lifters may be applied in two ways, as shown in the engraving, one being short, and having its pivot at one side of the blade pivot; the other being longer and placed on the same pivot with the blade and swinging on the same center. Either of these lifters may be made to serve the purpose of a button hook for glove or shoe, or as a nail cleaner, or they may be fitted for any other useful purpose in addition to that of opening the blade.

This blade lifter or opener applied to a knife, as described, will be found exceedingly useful where the blade is a stiff one, especially by ladies, many of whom are unable to lift the blades of a good knife with their thumb or finger nails. The motion of operating this lifter is such a natural and easy one that the lifter may be used in the dark as well as in the light.

The lifter may be provided with a back spring or not, as may be deemed advisable. It may be applied to knives at a trifling expense, and will prove a great convenience to knife users.

This useful invention has been patented by Mr. George W. Du Bois, of Wilmington, Del.

A Superior Whitewash.

For a useful lime wash for wood and stone *The Journal of the Society of Chemical Industry* gives the following method of preparation: Twenty liters quicklime are slaked in a suitable vessel with as much hot water as will stand at a level of 15 cms. above the lime. The milk of lime is diluted, and first 1 gramme of sulphate of zinc and then 0·5 gramme of common salt are added. The latter causes the lime wash to harden without cracking. A beautiful cream color can be imparted to the mass by putting into it 0·5 gramme of yellow ocher, or a pearly tint by the addition of some lamp black. A fawn color is produced by two grammes of umber and 0·5 gramme of lamp black A stone color can be obtained, from 2 grammes of umber and 1 gramme of lamp black. The color is applied, as usual, with a brush.

Hourly Tides in a River.

According to the *Lockport (N. Y.) Journal*, the water in the Niagara River at that place presented the phenomenon, on the afternoon of July 2, of hourly tides, the water rising and falling several feet once an hour. The cause does not appear to have been discovered.

Profit of Mushroom Culture.

The *Dublin Gardener* quotes a letter from a Mr. Barter, giving his results of mushroom culture, which shows that less than an acre of ground planted to mushrooms in the vicinity of London, supported four families—that of the lessee of the ground and those of three workmen receiving £4 each per week. Mr. Barter says that he is a carpenter by trade, and hired little more than an acre of land for £12 per year, and is gradually putting the entire area to mushrooms, expecting at least five tons weight of the esculent, at a wholesale price of one shilling a pound. He plants the spawn in beds two and a half feet wide, one of which, twenty yards long, yielded 160 lb. at one gathering, and another, 25 yards long, gave at the first gathering 76 lb., the second 200 lb., and the third 84 lb., or 360 lb. in three weeks.

AN AERIAL TURBINE WHEEL.

The form of the wings of this mill, says the *Revue Industrielle*, from which we translate, has been studied with a view of satisfying all the required conditions, which are comprised in the following rules: Conforming to the Smeaton rule of exposing seven-eighths of the geometrical surface of the sail; presenting as large a surface as possible at the extremity of the arms; curving the wings or sails so as to present the minimum of resistance to movement in light winds; and presenting at the rear a large surface as resistance to the air accumulated and compressed by rapid movement in high winds.

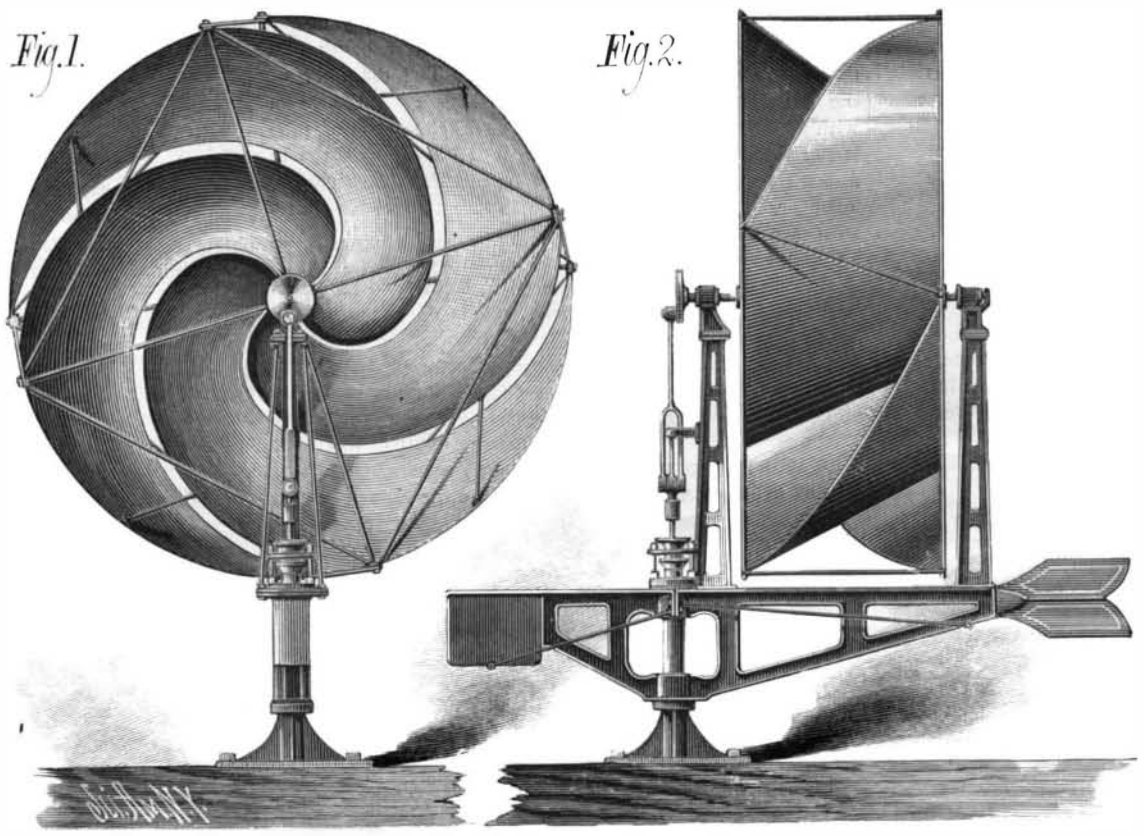
The results obtained by these rules are forms of wings which preserve an equilibrium between the force of the wind tending to overturn the structure and the cumulative resistance of the air tending to sustain it in the opposite direction. Mr. A. Dumont, the inventor of the turbine herewith illustrated, constructed a wheel having a diameter of 2 meters, and presenting a surface to the wind of 3·14 meters, and he made his observations with a wind of 8, 9, and 10 meters a second.

Under these conditions it raised a weight of 8 to 12 kilogrammes for every meter of surface, and when in full motion the wheel could easily be made to turn in a direction contrary to that of the wind. If a gust of wind struck the wheel the pressure was at once felt, and the rate of speed immediately increased and the equilibrium was re-established.

In order to observe the action of the wind as it passed through the chutes of the wheel of his aerial motor, Mr. Dumont tried the following experiment: One of his machines being actuated by a very violent wind, he placed at different heights in front of the wheel pieces of black and white paper finely torn, and he observed that the wind as it passed through the wings of the wheel did not undergo any deflection, and that the layers of different colors were found at the same height and in the same relation at a distance of 1·50 meters behind the wind wheel. The inventor has formulated this result as follows:

Two molecules of air meeting the wing, each at a different point, cross it and lose thereby a certain amount of their velocity, which nevertheless is always the same for the two molecules. After having given up in part their impulsive force, they leave the wheel at the rear without being sensibly changed in their direction.

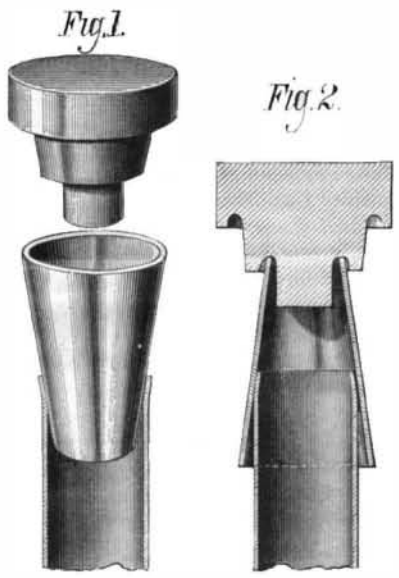
Further experiment proved, says our contemporary, that the apparatus with 2 meters of diameter, operating in a wind of 7 meters, and actuating a lift pump, develops a power of 10 kilogrammes. The results of other experiments have been tabulated and appear in the *Revue Industrielle*, but lack of space does not admit of our producing them.



AN AERIAL TURBINE WHEEL.

DEVICE FOR FITTING STOVE PIPES.

The annexed engraving shows a simple and effective device for contracting or expanding the ends of stove pipe to make the ends of the adjoining lengths fit into each other. The tool consists of a hollow cone of cast iron, which is inserted into or placed upon the end of the stove pipe length, and crowded downward to expand or contract the end of the pipe, as the case may require.



DEVICE FOR FITTING STOVE PIPES.

This tool is made large enough at one end and small enough at the other end to adapt it to the usual range of sizes. A wooden plug is provided which may be inserted in either end of the cone whenever it is necessary to drive the cone into or upon the end of the pipe. This will be necessary only in case of very heavy pipe, as the mere crowding down of the cone by the hands alone serves to expand or contract the ends of pipe of ordinary thickness.

The inner and outer surfaces of the cone being parallel, the edges will be flared and contracted at a corresponding angle, so that the end of the one pipe may be inserted into the other without the trouble usually attending the fitting of stove pipes. Fig. 1 shows the hollow cone employed in expanding the end of the pipe; Fig. 2 shows the manner in which the pipe is contracted. The wooden plug which is inserted whenever it is necessary to drive the cone is shown in both figures.

Further information in regard to this invention may be obtained by addressing N. C. Pettit, Waldo, Fla.

Cooking by Gas.

Let me put on record the result of some experiments made with gas ovens, which will be of interest to all. It is generally acknowledged, without question, that an oven lined with slag-wool is the best, because it is supposed "to save 40 per cent of gas," and do other wonders. Now, the average cost of gas for oven work in a private house will not exceed, at the most, about 15 or 20 cubic feet per day. A saving of 40 per cent on this, even if it existed in practice, would not be particularly important to any one except the very poorest. I took a common cast-iron oven, 16 inches square and 20 inches deep, weighing 1 cwt. 2 qrs. 15 lb., and inserted an ordinary Bunsen ring of good construction in the bottom. With free ventilation and a gas consumption at the rate of 14 cubic feet per hour, I obtained the following temperatures in the center of the oven:

In 3 minutes.....	250°	Fahr.
" 5 "	300°	"
" 8 "	360°	"
" 12 "	400°	"

With a consumption of less than 2 cubic feet of gas, I got up a common heavy cast-iron oven—freely open to the air, and not jacketed in any way—to a first rate heat for pastry, and in perfect working condition. It is evident that such an oven, of good capacity, can be heated to a good temperature for roasting meat, every day for a week, for a cost of one halfpenny or less per week. These experiments were made with an oven in practical working condition, with three strong shelves, one being between the burner and the thermometer. The result can, I think, easily be accounted for by the fact that iron does not take up heat at all readily or quickly, and makes a good retainer of heat. The outside of the oven is a long time before it becomes even warm to the hand.