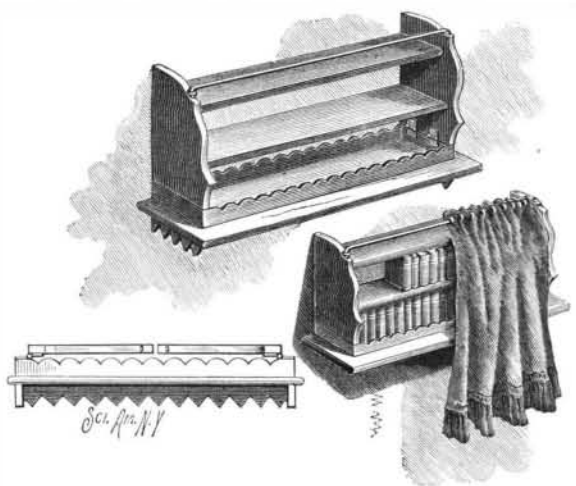
AN IMPROVED FOLDING BOOK CASE.

A folding book case designed to have a certain amount of rigidity is illustrated herewith, and has been patented by Mr. Phillip Kaffenberger, of Springfield, Mo., the small figure being a front view showing the hinged parts in their folded position, without the removable shelves. The case is made with a permanent



KAFFENBERGER'S FOLDING BOOK CASE.

board or bottom shelf, to which short side pieces are permanently attached, and folding side parts hinged thereto, grooved to receive the shelves. The bottom board has strips supported thereon or pendent therefrom, which may serve as ornaments or as receptacles for the removable parts during transportation or storage. A tie rod is used to connect the ends of the side parts at the top, this rod also serving as a curtain rod.

MAKING CARBON RODS AND PLATES.

BY GEO. M. HOPKINS.

Carbon rods and plates of the finest quality can be made economically only by the use of expensive machinery and apparatus, such as pulverizing mills, hydraulic presses, and retorts or ovens; but the amateur, without a great deal of trouble, and with very little expense, can make carbon plates and rods which will answer a good purpose. The materials required are coke, wheat flour, molasses or sirup, and water. The tools consist of a few moulds, a trowel or its equivalent for forcing the carbon mixture into flat moulds, tubes to be used as moulds for carbon rods, and ramrods for condensing the material in the tubes and forcing it out, and an iron mortar or some other device for reducing the coke to powder.

Clean pieces of coke should be selected for this purpose, and such as contain no volatile matters are preferred. The coke is pulverized and passed through a fine sieve. It is then thoroughly mixed with from one-sixth to one-eighth its bulk of wheat flour, both being in a dry state. The mixture is moistened with water (or water with a small percentage of molasses added) sufficiently to render it thoroughly damp throughout, but not wet. It should now be allowed to stand for two or three hours in a closed vessel to prevent the evaporation of the water. At the end of this time the mixture may be pressed into moulds of any desired form, then removed from the moulds and dried, slowly at first, afterward rapidly, in an ordinary oven at a high temperature. When the plates or rods thus formed are thoroughly dried, they are packed in an iron box, or, if they are small, in a crucible, and completely surrounded by coke dust to exclude air and to prevent the combustion of the plates or rods during the carbonizing process. The box or crucible must be closed by a non-combustible cover and placed in a furnace or range fire in such a way as to cause it to be heated gradually to a red heat. After the box becomes heated to the required degree, it is maintained at that temperature for an hour or so, after which it is removed from the fire and allowed to cool before being opened. The rods or plates are then boiled for a half-hour in thin sirup or in molosses diluted with a little water. They are again baked in an ordinary oven and afterward carbonized in the manner already described. This latter process of boiling in sirup and recarbonizing is repeated until the required density is secured.

As some gases are given off during carbonization, it is necessary to leave the box or crucible unsealed to allow these gases to escape.

Fig. 1 shows an inexpensive form of mould for flat carbon plates. It consists of two right-angled pieces of wood of the thickness of the carbon plate to be made, and a thick plate of sheet iron. The iron should be oiled or smeared with grease before the mould is filled. The carbon and flour mixture is pressed into the mould smoothly, the wooden pieces are removed, and the carbon is left on the iron plate to dry. When dry, it is easily separated from the plate and may be handled without danger of breaking.

Cylindrical carbon rods may be formed in a wooden mould, as shown in the background of Fig. 1, and dried in a grooved iron plate adapted to receive them, or a brass tube may be used as a mould, as shown in Figs. 2 and 3. To facilitate the filling of the tube, a funnel may be formed on or attached to one end. The tube may be filled with carbon entirely from the top, or it may be partly filled by forcing its lower end several times down into the carbon mixture, finishing the filling at the top. The lower end of the tube is placed on an iron plate and the contents are rammed from time to time during the filling operation. When the tube is filled, it is discharged in the manner illustrated by Fig. 3, *i. e.*, by pulling it over a fixed rod while its discharge end delivers the carbon cylinders to the iron plate on which they are to be dried and baked preparatory to carbonization. The plate in this case should be oiled to prevent the adhesion of the rods. The rod by which the contents of the tube are ejected should be on a level with the top of the iron plate. Fig. 4 shows in section an iron box containing plates and rods packed ready for carbonization.

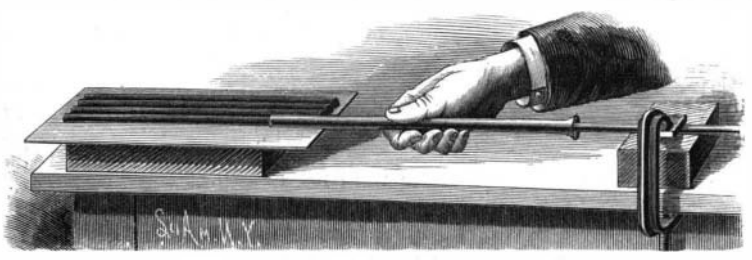


Fig. 3.—DISCHARGING THE MOULD.

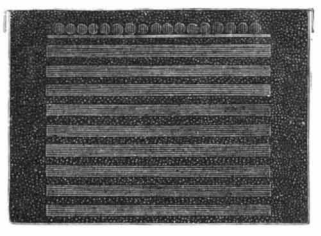


Fig. 4.—CARBONIZING BOX.

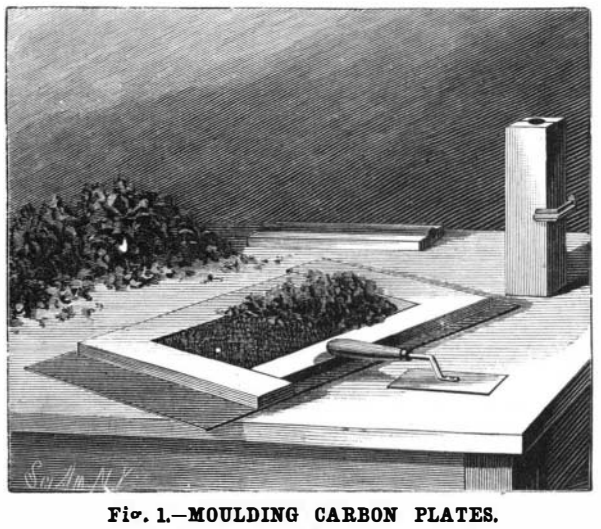


Fig. 1.—MOULDING CARBON PLATES.

Fig. 2.—MOULDING CARBON RODS.

Substances Liable to Spontaneous Combustion.

Cotton-seed oil will take fire even when mixed with 25 per cent of petroleum oil, but 10 per cent of mineral oil mixed with 10 per cent of animal or vegetable oil will go far to prevent combustion.

Olive oil is combustible, and, mixed with rags, hay, or sawdust, will produce spontaneous combustion.

Coal dust, flour dust, starch, flour (especially rye flour) are all explosive when mixed with certain proportions of air.

New starch is highly explosive in its comminuted state, also sawdust in a very fine state, when confined in a close chute and water directed on it. Sawdust should never be used in oil shops or warehouses to collect drippings or leakages from casks.

Dry vegetable or animal oil inevitably takes fire when saturating cotton waste to 180° F. Spontaneous combustion occurs most quickly when the cotton is soaked with its own weight of oil. The addition of 40 per cent of mineral oil (density 0·890) of great viscosity, and emitting no inflammable vapors, even in contact with an ignited body, at any point below 338° F., is sufficient to prevent spontaneous combustion, and the addition of 20 per cent of the same mineral oil doubles time necessary to produce spontaneous combustion.

Patent driers from leakage into sawdust, etc., oily waste of any kind, or waste cloths of silk or cotton, saturated with oil, varnish, turpentine. Greasy rags from butter, and greasy ham bags. Bituminous coal in large heaps, refuse heaps of pit coal, hastened by wet, and especially when pyrites are present in the coal; the larger the heaps, the more liable.

Lampblack, when slightly oily and damp, with linseed oil especially. Timber dried by steam pipes, or hot water or hot air heating apparatus, owing to fine iron dust being thrown off; in close wood casings or boxings round the pipes, from the mere expansion and contraction of the pipes. —*American Miller.*

BAND CUTTER PLATFORM FOR THRASHING MACHINES.

The illustration herewith represents a simple construction of platform which may be conveniently and

LEEPER'S BAND CUTTER PLATFORM FOR THRASKING MACHINES.

expeditiously attached to the wheel of a thrashing machine, or the wagon carrying it, whereby the person cutting the bands of the grain may be provided with a firm and comfortable support. It is a patented invention of Mr. Alfred B. Leeper, of Owaneco, Ill. Upon the under side of the platform are two transverse brace bars, one of which has on its under face a semicircular recess adapted to conform to the contour of the wheel tire, and a clamp adapted to engage the wheel felly. To the other beam is hinged a brace bar, as shown in the sectional view, adapted to support the platform, its free end resting upon the hub of the wheel and bearing against one of the spokes, the bar having a recess to receive the spoke. This bar, when the platform is not in use, is folded up against its under side.

Beginning of Electrical Practice.

Mr. Deland has an article in the *Electric World* instructive to a large class of young persons who are seeking information as to the best means of learning the electrical trade.

He thinks that a young man who has evinced a taste for electricity can find no better opportunity of learning its practical applications than in the employ of a good electrical supply house, which carries in stock a large number of testing instruments and all the various apparatus which are in daily use in the different branches of electrical application. A training founded on a few years' experience in such a place must indeed be of considerable value to any one, no matter in what direction his later and cultivated energies may direct him, and we believe that not a few of our prominent electricians have at one time or another served an apprenticeship of this sort, which has been turned to good advantage later on.

A Cheap Telephone.

A correspondent in the *American Artisan*, who claims to have had considerable experience in that line, says a good working telephone may be made as follows: Make two tin drums six inches in diameter and four inches deep. They should have a heavy wire formed in same as half gal. cup. The wire should not be less that No. 9. Take rawhide that has been divested of hair and stretch it over the drum while wet, and bind it on with a small wire; let it remain till perfectly dry. A very thin hide, such as squirrel, cat, coon, is the best. Thick hide will not work well. Now, to erect your drum, wire, etc., having set your posts and put up your insulators, which may be made of wire and suspended from arms which have been nailed to the posts, bore a hole in the wall where the drum is to be placed, run the wire through your drum and through the rawhide in the center, having a button ready. Pass the wire through the eye of the button and back through the drum and twist tightly, letting the button go, resting it on the hide. Put up the wire at the different insulators (string loop suspenders) till it reaches the other end of the line; then proceed to do as at first. If the wire has been properly stretched and all the work has been done as it should have been done, you will have a good and cheap telephone. No. 18 copper wire for main line should be used.