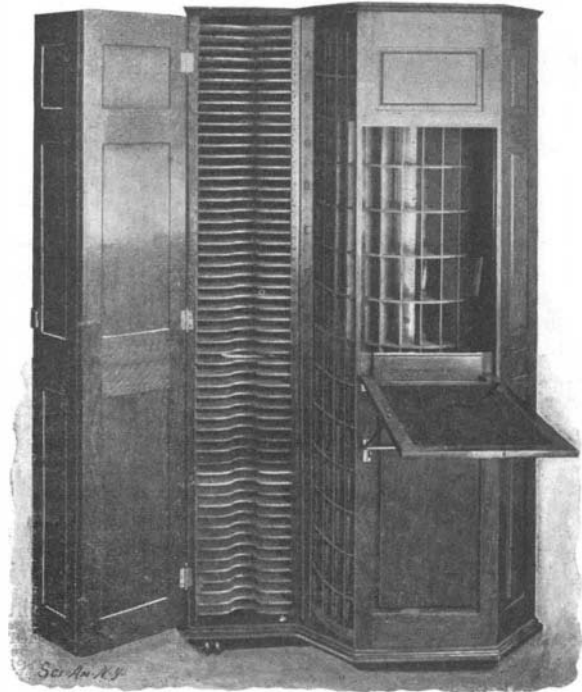


A SIMPLE CABINET FOR FILING PAPERS.

In the accompanying illustration we present a novel cabinet by means of which correspondence, blanks, documents, clippings, and the like, may be readily filed away and alphabetically indexed. The cabinet comprises essentially two parts, a rectangular portion and an octagonal portion. Within the rectangular portion, a box-section rotating on trunnions is mounted, which box-section has an open front and is adapted to receive a number of removable shelves, numbered from top to bottom. A folding-door is provided, which, when the box-casing faces the octagonal portion with its open



A CABINET FOR FILING DOCUMENTS.

front, closes both the rectangular portion and an opening in the octagonal portion.

Within the octagonal portion and adjacent to the rectangular portion, an upright is mounted upon which is inscribed one-half of the letters of the alphabet, the other half being inscribed upon a second upright also secured to the octagonal portion, but at the right hand side of the opening closed by the door.

In the octagonal portion a revolving cabinet is mounted, divided into pigeon-holes in horizontal alinement with the letters on the uprights. The letter "A" for example is adjacent to the upper row of pigeon-holes, and the letter "N" likewise, the two letters serving to index all the pigeon-holes in the upper row. The documents indexed by the letter on the left hand upright will be at the left hand side of the revolving cabinet; while the documents indexed by the letter on the right hand upright will be at the right hand side of the cabinet. At the top and bottom of the revolving cabinet, at the end of each vertical row of pigeon-holes, the twenty-six letters of the alphabet are inscribed.

In filing away papers belonging to "Walter Brown," for example, the cabinet is turned until the letter "W" at top and bottom is brought into view, and in the pigeon-hole at the junction of the vertical column "W" and the horizontal line "B" "O," the documents are filed and placed nearest the letter "B." Under such an arrangement, it is evident that the filing of documents may be accomplished so that no difficulty is experienced in searching for any particular paper.

In front of the octagonal portion a drop-section is hinged, which can be lowered to form a desk.

The patents on this cabinet are controlled by Mr. Cyrenius A. Layton, of Wapakoneta, Ohio.

Electrolytic Cleaning of Metal.

Mr. C. B. Burgess contributes to The Electrical World some excellent notes on the use of electrolysis in cleansing metallic surfaces. The notes have special reference to the preparation of the surfaces for electroplating. The author points out that if the article to be cleaned is suspended in a sodium chloride solution and used as an anode, the metal will be attached and hence cleaned to a certain degree. The anode reaction will, however, have little or no effect on substances of an oily or greasy nature, but the chemical reactions at the cathode afford all that may be desired in this direction. With the above named electrolyte, sodium is liberated at the cathode, immediately uniting with the water, forming sodium hydroxide and hydrogen, which rises to the surface. The reducing properties of the so-called nascent hydrogen thus formed are well known, and whether by the hydrogen alone, or by aid of the sodium, any oxide, sulphide, chloride, or similar compound on the metallic surface serving as the cathode will be quickly reduced to the metallic state. The sodium hydroxide formed will attack the grease or oil, producing saponification exactly as is done in the electroplater's lye vat. In most cases, the chemical action

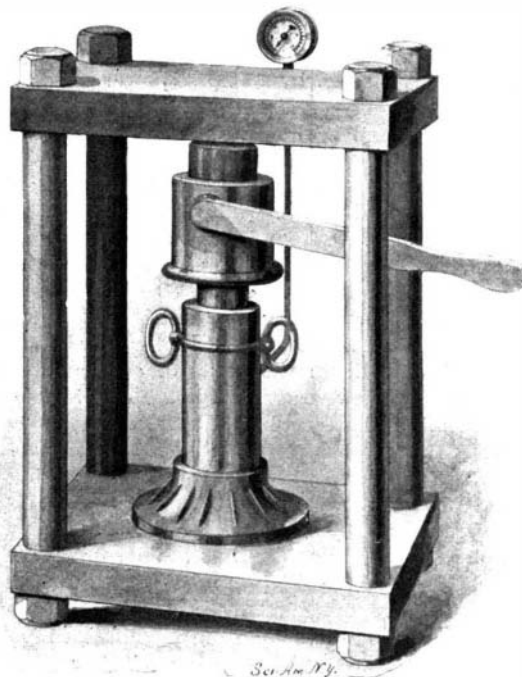
at the cathode will in no way affect the metal itself, but will act only on the foreign substances present, thus allowing polished surfaces to be cleaned without destroying the finish. The electrical energy necessary to effect the cleaning of articles of iron or copper as they come from the polishing room may be taken as approximately equal to that used for the electro-deposition. Although the current density must be considerably greater for cleaning than for plating, the time is much shorter. Current density has a marked effect upon the rapidity of cleaning, and the disappearance of foreign substances in no wise follows Faraday's laws. The following figures, taken from some observations made by Mr. H. A. Smith, illustrate this very clearly. The measurements were made to determine the effect of current density upon the rapidity of removal of a film of grease from an iron surface, such as it acquires from a greasy polishing wheel. The electrolyte was a nearly saturated solution of sodium chloride:

Current per square foot.	Time necessary for cleaning.
20 amperes.....	15:00 minutes.
40 ".....	3:50 "
140 ".....	0:75 " about.

With a solution of potassium hydroxide a current density of 80 amperes per square foot cleaned the iron almost instantly. Some of the advantages of the electrolytic method of cleaning over that commonly used in an electroplating plant are the following: There is less complication from the fact that the cleaning vat may be of similar construction to the plating vats, and connected to the bus bars in the same way. There is a considerable saving in labor and material in dispensing with the hand brushing. After once wiring an article there is no need of touching it with the hands, for it may be transferred directly from one tank to another. The oxides and other metallic compounds may be removed simultaneously with removal of grease and dirt, thus avoiding the use of a cyanide or an acid dip. A metal which has a brightly polished surface may be cleaned without destroying the polish.

AN IMPROVED HYDRAULIC PRESS.

The mechanical engineer, and specially the mining engineer, is often in need of a hydraulic press for the purpose of testing materials, for making briquettes, or for similar purposes. Our engraving shows a very simple hydraulic press which can be made by any one who has a hydraulic jack. Two wrought iron plates 12 inches square and 2 inches thick are bored to receive upright rods, one at each corner. These rods may be of any desired length up to 5 feet, and should be about 2 inches in diameter. The height should be regulated by the size of the jack and the class of work which is to be accomplished with the aid of the press. By the use of blocks of wrought iron or steel, it is possible to regulate with great ease the distance through which the pressure is exerted. The hydraulic jack may be provided with a gage which indicates pressures varying from 2,000 to 4,000 pounds to the square inch. It would be possible to make the top and bottom plates of cast iron, provided they were reinforced by diagonal ribs. We are indebted to Alexander Roy



A SIMPLE HYDRAULIC PRESS.

a mining engineer, for this suggestion. Mr. Roy has used a press of this kind in making briquettes for testing purposes.

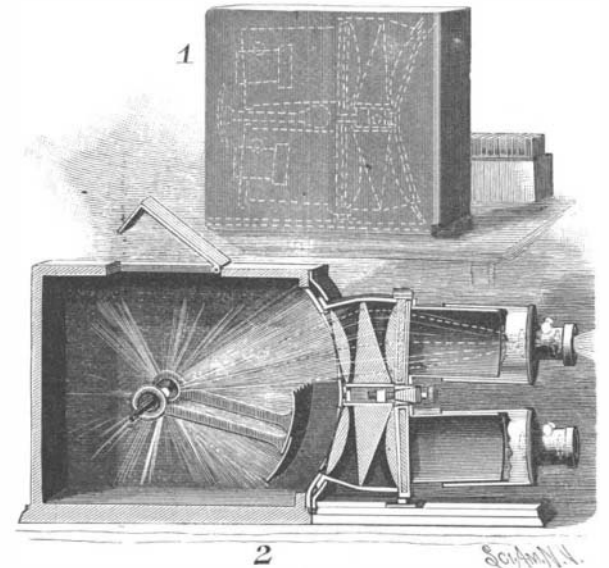
In Tasmania the trade in axes and saws has been almost entirely monopolized by Americans. It is now the intention to carry on international competitions between teams of axmen and sawyers, using British and American tools, with the object of proving which country manufactures the best implements.

A NEW FORM OF STEREOPTICON.

A multiple dissolving-view lantern has been invented by Dr. Samuel E. Woody, 600 West Broadway, Louisville, Ky., which includes various improvements in construction, by which the light is so refracted that the picture from each of the two optical systems appears on the same spot of the screen.

Referring to Fig. 2 of our engraving, it will be observed that two condensers are mounted at the end of the light-casing, the upper being fitted to slide in a segmental guideway on the light-casing so that it can be adjusted relatively to the lower, by means of a wedge interposed between the frames of the condensers. By reason of this adjustment a proper registration of the two pictures projected by the two optical systems is obtained.

Each condenser is provided with two plano-convex



A NEW FORM OF STEREOPTICON.

lenses, having a prism interposed between them, so that the rays of light passing to the first lens are refracted by the prism to the other lens adjacent to the slide-holder. The two lenses of each condenser are inclined to each other, and the interposed prism refracts the rays of light at a proper angle.

The apparatus is provided with a shutter held movably in the light-casing between the light and the condensers. By operating the shutter the rays can be made to pass through one or the other of the condensers.

In the modified form shown in Fig. 1, the light-casing, in addition to the ordinary function, serves as a receptacle for the condensers, the slide-holders, and the adjustable tubes carrying the objectives, thus facilitating the transportation of the apparatus. In order to obtain this compact arrangement, the bottom of the light-casing is formed with a dovetail groove adapted to register with a similar groove in an extension hinged to the outer end of the bottom, and forming a cover for the open end of the casing when the several parts are stored. In the registering dovetail grooves a support slides which carries the stereopticon parts. In using the device the extension is swung down and the support carrying the stereopticon is slid out, reversed, and reinserted in its proper operative position.

Interesting Discovery in the Tower of London.

It would really seem impossible to make any new discovery in the Tower of London, which has been examined so many times by architects and antiquaries. Some unusually interesting discoveries have just been made in the process of laying the foundation for the erection of a new guard-room near the White Tower. The workmen cut the Roman wall of the second century and found a number of perfectly preserved flue tiles for the diffusion of hot air from the hypocaust.

These tiles are excellent specimens, measuring 15 inches in length, 6½ inches in width, and 4½ inches in depth. According to a cable dispatch to The New York Sun, while removing the mud from the subway leading from the river and the moat, the workmen discovered a number of iron and stone shot, left, it is believed, at the time of the conflicts between the royal troops and the rebels under Wyatt, in 1554. The shot are thickly set in a conglomerate of mud and gravel, mixed with human bones and bits of armor, showing firing with deadly effect at close quarters.

The Fish Commission Expedition.

The United States Fish Commission is about to send out one of the most extensive scientific expeditions ever arranged by the Commission. The expedition will sail on the "Albatross" in charge of Prof. Agassiz to explore portions of the Pacific Ocean. Some of the islands to be visited are the Marshall, Society, Friendly, Fiji, and Gilbert groups. It is expected that the trip will require eight months, and will leave San Francisco in August.