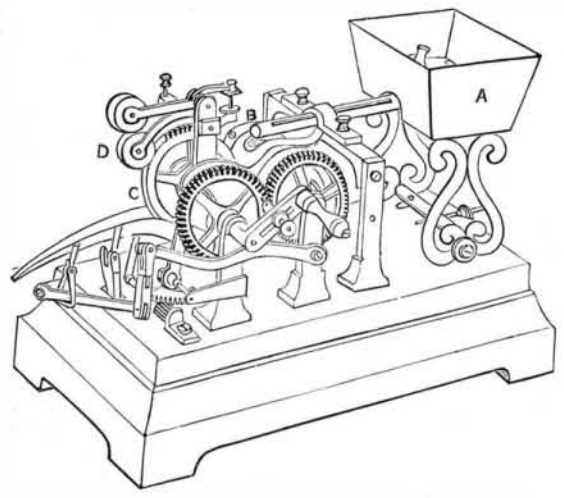
FRENCH PILL PRINTING MACHINE.

The engraving shows a pill printing machine invented by M. Vial, of Paris. The pills, first coated, are placed in the hopper, A, and are conducted thence, one by one, along a small groove to B, where they drop through a cylinder to another groove. At a certain point in their passage they are brought in contact with a wheel, C, which is being turned by the operator. On the outer rim of the wheel the type is fixed, it is inked from little rubber cylinders, D, as it revolves, and the pill meets the wheel just as the type approaches. It receives the impression in beautifully clear characters, and is henceforth unmistakable as to its properties, no matter in what company it may ultimately find itself.



PILL PRINTING MACHINE.

A Model Foreman.

The following, from the *Manufacturer and Builder*, contains not only good advice to the class of persons to whom it is addressed, and to which they will do well to heed, but to the manufacturer it suggests some of the qualifications a foreman should possess to insure harmony and good feeling among the workmen:

He will not discharge a good workman for a slight offense, and retain the poorest men. A good foreman (instead of giving his order to a man verbally and imperfectly) will always carry a sketch block or pad in his pocket, and where drawings are not used, will give his orders on paper, together with a rough pencil sketch if required. He should then require the workmen to file away those orders, thus putting him in the possession of the necessary evidence to defend himself in case there should be any fault with the work when completed.

A foreman should realize that his workmen are entitled to his respect, and he should conduct himself in such a manner that when he moves about among his men they will feel in duty bound to show him all the courtesy which pertains to his position. His personal habits should be such as may with profit be imitated by every man in the shop. If a workman gets into trouble over a piece of work, a kind and sympathetic foreman will always help such a person out of his difficulty.

It is wise for a foreman to employ only the best language toward his men, for the use of profanity not only creates an enmity between the foreman and the workman, but also destroys the ambition and interest which the latter should always manifest in his work.

A foreman should be systematic, and wherever a standard or a certain routine can be applied to any branch of the work it should be done. Tools, instead of being left scattered over the floor, should each have a particular place. Thus, both the foreman and workman are saved the aggravating annoyance of searching for these tools.

When a piece of work is given to a mechanic he should always be allowed to finish it, for one of the most disagreeable things, and also one of the most humiliating to the workman, is to commence a piece of work and then have the foreman to take it to some one else to finish.

Finally, a model foreman should endeavor to make himself so useful to his employers that they cannot well do without him, taking the same interest in managing the shop and studying economy with as much care as if his own capital were invested in the business. The manufacturing world are looking for artisans of this kind, and any person who has followed the opposite plan will, by adopting the principles herewith outlined, be agreeably surprised in a short time that he can make progress with so much greater satisfaction to himself than ever before.

A Novel Horseshoe.

A Berlin manufacturer is making a horseshoe of iron and hemp that is receiving considerable favor among the Germans. The shoe is of malleable iron carrying a deep wide groove, into which tarred hemp rope is firmly wedged. The rope is so thick that it protrudes beyond the rim of iron. The shoe is very light, and is said to be serviceable.

A Large Ingot of Steel.

There was cast recently at the Norway Iron Works, South Boston, an ingot of steel 10 feet 4 inches long, 24 inches square at one end, and 26 inches square at the other. It weighed 19,000 pounds, exceeding by some 9,000 pounds the largest casting of the sort previously made. The mould, which was of cast iron and weighed 13,700 pounds, was constructed by the Bridgewater Iron Company. The ingot is to form a part of a pumping engine now being made by the Bridgewater Company for the Calumet and Hecla Mining Company.

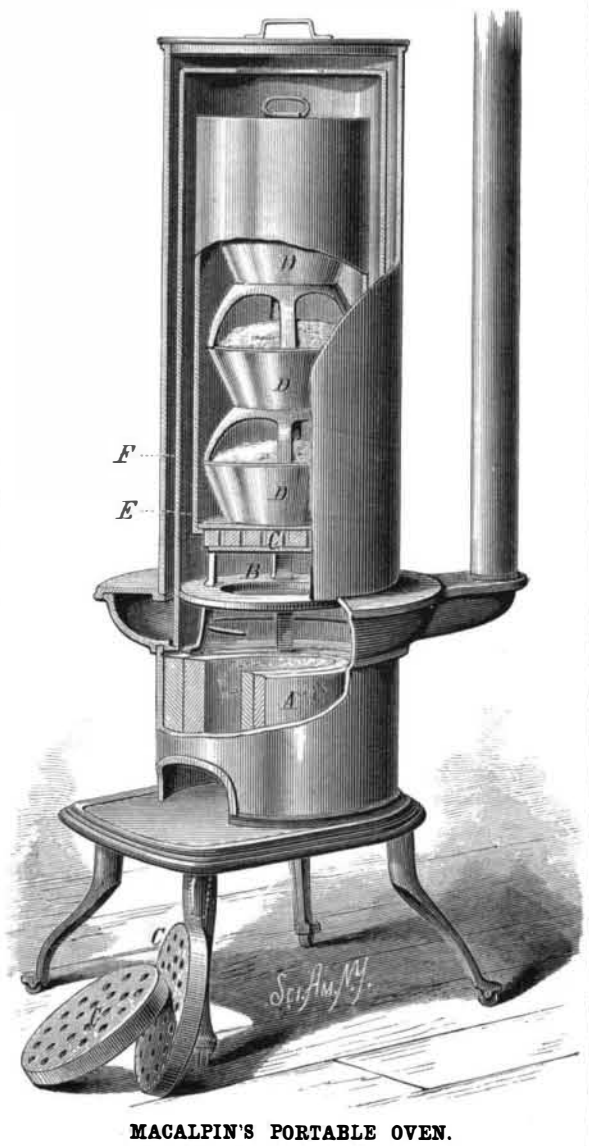
NEW PORTABLE OVEN.

It is generally admitted that for some culinary operations the ordinary cook-stove and range are neither effective nor economical, and it has been determined by actual experiment that in the matter of baking, ordinary stoves are wasteful of both fuel and time.

The new portable oven shown in the engraving is designed to be used in connection with an ordinary portable furnace, and is not only capable of baking with a small amount of fuel, but it also prevents the dissemination of odors from the articles being cooked. The inventor contracts the fire pot of an ordinary portable furnace by inserting an extra lining, A, of fire brick; this serves the double purpose of materially reducing the fire space and of preventing the radiation of heat into the room—a very desirable feature in warm weather.

The top plate of the furnace has the usual opening for the reception of cooking vessels. To this opening is fitted a cylindrical casing, closed at the top by a removable cap, and to a flange surrounding the upper edge of the fire pot is fitted a cylinder concentric with the outer cylinder, forming between the two a flue, F. The inner cylinder has a central opening at the top, so that the products of combustion may pass upward in the inner cylinder, and downward in the flue, F, to the chimney flue.

An annular plate, B, and a plate, C, of refractory material are supported by legs which rest on the fire brick, A. The pans, D, which contain the dough, are supported one above another on the plate, C, the several pans are separated by light frames, and they are all inclosed by a cylindrical casing which rests upon the plate. C. By this arrangement the full effects of the fresh products of combustion is utilized in heating the inner casing and its contents, there being very little loss of heat by radiation, owing to the fact that the products of combustion, which pass upward around the inner casing, descending the flue, F, form an effectual air-jacket which prevents the chilling of the oven.



MACALPIN'S PORTABLE OVEN.

The design of the inventor is to concentrate and make use of all of the heat from the fire, so that none of it shall pass up the chimney and be wasted, and at the same time to have such control of it as to permit more or less of it to escape into the room as may be desired, and to carry off all offensive odors and smoke which commonly escape into the room when cooking is done in the usual way. Either coal or gas may be used as fuel. The oven is made in different sizes, large ones being made for hotels and bakeries.

The oven is raised from the furnace by cords or chains passing over pulleys in the ceiling, with counterbalance weights at the end.

These ovens may be adapted to broiling, frying, or cake making. We are informed by the inventor that a loaf of bread weighing two pounds two ounces has been baked in one of these ovens in thirty-two minutes, and that eight and a half pounds of bread can be baked in the same length of time.

This invention was recently patented by Mr. Daniel MacAlpin, 2041 Ridge avenue, Philadelphia, Pa., who should be addressed for further information.

HENS' WIRE NESTS.

It is a well known fact that straw or hay nests or basket nets for setting hens cannot be kept free of vermin. The annexed, illustration, which we take from the *Leipziger Illustrirte Zeitung*, shows a very practical and simple nest. It is made of wire netting, and is filled with hay or straw, which can be removed and replaced with fresh material very conveniently. As the air can circulate through the nest quite freely vermin are not apt to infest the nest. It is also stated that it is well to pour petroluum on the bars or rods of a chicken coop so that the petroleum will spread on the feet of the fowls, so that when they scratch themselves they will bring the petroleum in contact with the body, dispersing the vermin.

IMPROVED HEN'S NEST.

Railway Ties and Telegraph Poles.

But few people comparatively have any idea of the amount of timber used in the construction of a single railroad. We hear that our forests are rapidly disappearing, and we know that material for building and fuel causes the sacrifice of many leafy monarchs of the forest; yet only the initiated knows that it yearly takes 200,000 acres of forests to supply cross-ties for the railroads of the United States. We interviewed a gentleman who has been in the business for thirteen years, and concluding that his observations and experience would be of interest, we give the substance of his talk: It takes 15,000,000 ties to supply the demand on our railroads, for which, on an average, the contractors get 35 cents apiece, making in the aggregate $5,250,000. In building a new road the contractors figure on 2,700 ties to the mile, while it takes 300 ties to the mile to keep a constructed road in repair. Contractors, of course, buy pieces of timber land as near to the proposed line of road as possible, paying for the timber an average of $20 per acre, or giving the proprietor of the land 10 cents for every tie got out. The average of a good piece of timber land is 200 trees to the acre and 12 ties to the tree.

The size of a cross-tie differs on different roads, but the usual size demanded is 8 feet 6 inches long and 8 inches face. White or burr oak is considered the best timber for the purpose, although cherry, maple, ash, and even locust have been used. The last named were first used on the Little Miami Railroad, and after a time thrown aside as unfit for the purpose. Railroad men much prefer ties hewn out with an ax to those sawed in a mill, and many contend that the first named will considerably outlast the sawed ties. This theory is probably a fallacy, as sawed ties have been placed alongside of hewn ties, and remained sound twice as long. This business gives employment to an army of choppers, who are paid 10 cents apiece for each tie. A continued practice makes the choppers expert in the use of the ax, and a single man has been known to get out 35 ties in a day; yet the average is only 10, while an expert will probably get out 20. During the war, when ties sold at from 50 to 65 cents, choppers were paid 12½ cents apiece. Although the contractor gets 35 cents apiece from the railroads for each tie, still there is a loss of from 5 to 7 per cent on dockage and stealage. An inspector is sent by the company to inspect the ties. This is generally a clerk from some of the offices, who frequently knows but little as regards the strength or durability of timber, and, as a consequence, some of the best ties are docked and only bring 20 cents apiece. The stealage is where the section men put in new ties which have not been inspected and received, and fail to report the use of the same to the roadmaster.

Most all cross-tie men also contract for bridge timbers and trestling, as well as telegraph poles. For the latter chestnut and cedar are mostly used. They bring about $1.75 apiece, and are cut mostly in the tamarac swamps of Michigan and the forests of Southern Kentucky and Tennessee. Large sums of money have been made by lucky contractors above