

A CHEAP TELEPHONE SYSTEM FOR FARMERS.

We have been favored by Mr. Robert E. Maranville, of The Pendleton Republican, Pendleton, Indiana, with particulars of the unique telephone line shown in our illustration, which is now in use between the cities of Anderson, Pendleton, and Ingalls, Indiana. The line, it seems, is not an experiment, but is in active daily operation with four regular subscribers, and it gives a service which our correspondent assures us



HOME-MADE FENCE TELEPHONE SYSTEM.

compares well with the lines of the regular companies. The line is unique in that it employs as a conductor such a common, everyday commodity as the top wire of a barb-wire fence, the continuity of the line being assured by special devices at highway and railroad crossings. It is claimed by its originator and owner, Mr. C. Alley, to be the only one of its kind in existence. The line is 14 miles in length with five stations, two at Anderson, two in Pendleton and one at Ingalls. We are informed that additional subscribers could be served to advantage, but that the terms of the contract with the present parties prohibit it. The unquestioned success of this novel telephone line is stated to be due largely to the perfect insulation. The builder invariably uses the top strand of the fence wire which is treated to a generous coating of rubber paint. At the fence sections common galvanized wire is used to continue the circuit to a connection with the next fence, the same arrangement being carried out at the railroad crossings. In order to carry the line across the road or highway, the circuit is either placed beneath an inverted trough, covered by the material of the road, or as shown in our accompanying illustration it is carried overhead by means of two poles, one on each side of the crossing. In this illustration, Mr. Alley himself is seen in the act of "telephoning to town," a feat which can be performed at any desired point along the line by simply attaching, as shown, a portable transmitter and receiver.

The inventor is very much pleased with the results of his simple and economical system, which, undoubtedly, has many features to recommend itself to rural communities. The cost is extremely low, as there is no expense for copper wires, and poles are only needed at the crossings. Where the number of patrons is not too large, the service is said to be all that could be desired. Our correspondent states that he has used the fence line to converse with a friend some eight miles distant, and this at a time when the fence-posts were still saturated with the morning dew, a condition under which the line is supposed to work to the least satisfaction.

The line has been such a practical success that the farmers of the neighborhood are organizing companies for the purpose of placing themselves in telephonic communication throughout the whole district. As evidence of the practicability of the barb-wire telephone our correspondent quotes the case of the Wagner Glass Company, who, with offices at Anderson, are able to communicate daily with

their plant at Ingalls, thirteen miles distant. The cost in this case is only \$100 per year, and there is the added advantage that having only two other subscribers on that wire, the line is almost always available.

A NEW METHOD OF CUTTING THREADS.

All machinists know the difficulty of cutting threads on the lathe. The tool must be carefully set by the use of the small thread gage; the point must be frequently sharpened, and the utmost patience, care and skill must be exercised to secure exact duplication. With the invention of a new device by Mr. Herman Dock, of the Rivett-Dock Company, of Brighton, Mass., the difficulties of thread cutting have largely disappeared. The work of the skilled operator is more accurately and more quickly performed by mechanical means.

Mr. Dock's device, as our illustration shows, consists of a steel disk mounted on a slidable holder and provided with teeth on its periphery ground to the exact angle of the thread for which the tool is designed. These teeth are, in truth, cutting tools, each of which has a greater radial length than its predecessor. The disk and its slide can be reciprocated on the vertical supporting frame by means of a hand lever. The heel of the cutting tooth rests on a stop or support on the base block, and thus holds the tooth constantly against the work, preventing all chattering and taking up the strain.

In operation the face of the cutter is squared to the work or axis of the lathe, and the cutting faces are leveled as nearly as possible to the center line of the lathe. The cross slide is run in until the first cutter or tooth engages the work. The first tooth will cut the rough beginning of a V-thread. At the end of a cut the hand lever is swung back, carrying with it the disk and automatically rotating the disk through one tooth by means of a pawl. The lathe is then reversed; the lever is thrown forward to present the second tooth of the disk to the work, and a second, somewhat deeper cut, is made. After each cut the lathe is reversed and a new and finer cutter presented to the work. The last cut cleans up the thread exactly as in the final cut of a single-point tool. There are, hence, nine heavy measured cuts and one final cleaning and finishing cut.

The frame of the tool rests and rocks on a rib directly under the center of the cutting disk. By means of an elevating screw (not shown in the illustration) the tool can be given any rake necessary for a right or left thread.

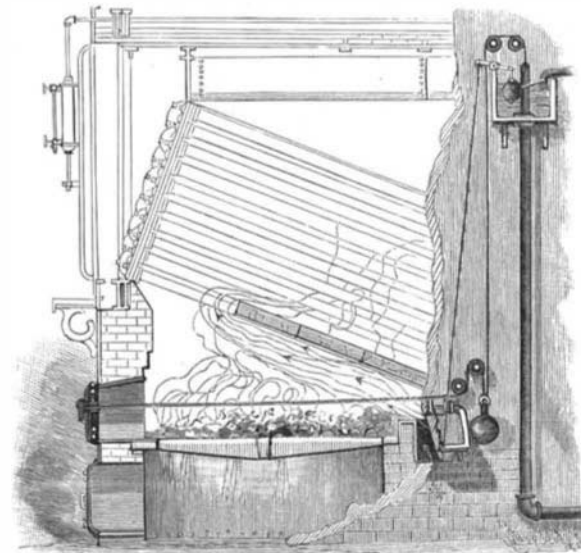
This new tool enables the lathe to run at double the usual speed to cut threads from three to ten times more quickly than in the old way. A standard 8-pitch thread can be cut in ten cuts on 1-inch machine steel with the lathe running at 135 turns per minute.

AN IMPROVEMENT IN SMOKE CONSUMING FURNACES.

In most smoke-consuming furnaces atmospheric oxygen is admitted in a continuous current to the fire to aid the combustion of the smoke. The smoke and gases may be burnt; but the temperature at times is so considerably reduced that the system is not economical. An invention, operating on a principle radically different from that of such furnaces, has been recently patented by Mr. William C. Johnson, of Memphis, Tenn. The invention in question consists in supplying atmospheric oxygen to the fire not continuously, as heretofore, but only at the time when smoke is produced,—in other words immediately after fresh stoking. The furnace is, therefore, not unnecessarily chilled; the oxygen is fed only when it is required and is then

automatically cut off. As even a heavily fired boiler furnace throws off smoke of incomplete combustion about one-half the time the great saving effected here is easily seen.

As our illustration shows, the bridge-wall is formed with a passage designed to conduct atmospheric air to the furnace and closed at its outer end by a door. A cable extends upwardly from this door to a lever carrying a float rising and falling in an ordinary flushing-tank and controlling the water-supply valve. The outlet valve of the tank is connected with the firebox door by a second cable running over idler-pulleys and carrying a weight. When the fire door is closed, the bridge-wall passage door is also closed. But, when in order to stoke the furnace, the fire door is opened, the weight on the second cable drops and the outlet valve in the tank opens. The falling of the water causes the float to descend and the bridge-wall passage door to open, thereby admitting air to the furnace. The closing of the fire door restores the parts to their normal positions, not simultaneously, however, but gradually. For the rising of the water in the tank will require a certain time, during which, the bridge-wall passage door remains open; when the water has reached the normal height, the float will close the bridge-wall passage door. The rising of the water can be regulated so as to cut off the atmospheric oxygen only when the smoke has been entirely consumed, after which the ordinary draft will answer for the needs of the furnace. It is very important for purposes of economy that just the right quantity and no more of atmospheric oxygen should be introduced and



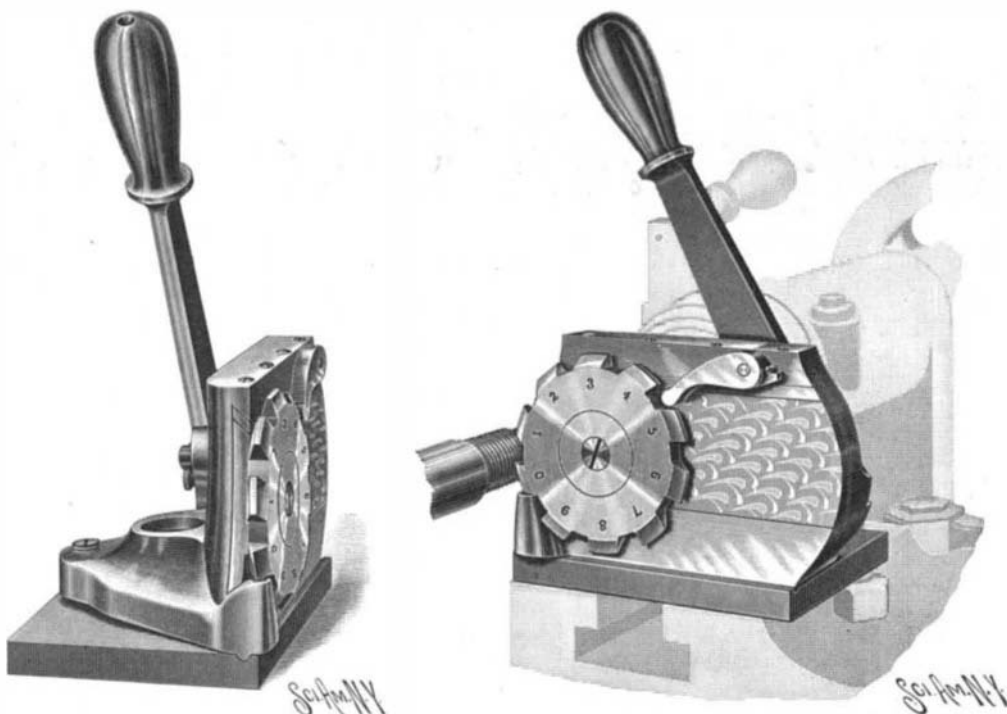
AN IMPROVEMENT IN SMOKE-CONSUMING FURNACES.

this is regulated by the size of opening through door to bridge-wall.

In order to force the atmospheric oxygen into the furnace and distribute it over the fuel, the lower row of pipes are partially covered with fire-brick, forming a deflector. When horizontal tubular boilers are used a number of bends of pipe are arranged at an incline over the grate, which pipes project outside of the furnace. The pipes are fed with water by a feed-water pump and discharged into the boiler. The ends of the pipes are closed by plugs which can be removed to clean the pipes. The upper side of the pipes supports a continuous wall of light fire-brick which serves to deflect the draft through the bridge-wall passage. The fire-brick, as it becomes incandescent, effectually assists the fuel in heating the feed-water and thus serves the double function of heating and deflecting.

The furnace is not untried. The inventor has subjected his device to severe tests and has proven its economy and efficiency. The cost of the water used in the tank will vary with the locality, but has not as yet exceeded 8 cents per day. The saving of fuel, we have been told, is very appreciable. This furnace is inexpensive in construction and is equally applicable, as we have seen, to the horizontal tubular and any of the water tank boilers. With the latter special feed water pipes in the furnace are not necessary.

THE electric launches on the Grand Canal, Venice, are getting very popular and it looks as though the steamboats were seeing their last days, the great objection to them being their dense smoke, and the large waves produced by them, which are damaging the palaces along the canal. Of course the electric launches are not open to these objections.



TWO VIEWS OF AN INGENIOUS MECHANICAL THREAD CUTTER.