Comparative Cost of Steel and Wood.

Entire cost of steel post, 24.33 cts., estimated life	30 years
Money worth 6 per cent.	
Entire cost of wood post, 17.80 cts.; estimated life	12 years
Expenditure for steel posts	24.33 cents
Expenditure for wood posts	17.80 cents
Difference	6.26 cents

Compound interest on 6.26 cents for 12 years amounts to 13.06 cents. At the expiration of 12 years wood posts have failed and need renewal. 13.06 cents has been saved over cost of steel posts. This is equivalent to purchasing 8.8 years more protection with wood. In other words, 24.33 cents expended for steel gives 30 years of protection, while same amount expended for wood gives 12 years original life, plus 8.8 years' interest on investment, or 20.8 years, a balance in favor of steel of 9.2 years. Viewing the matter from another angle, assuming that posts are set one rod apart, track protection costs per year as follows:—

Steel Posts—

Per rod	$ .0081
Per mile	2.59
Per 100 miles	259.00

Wood Posts—

Per rod	$ .0117
Per mile	3.74
Per 100 miles	374.00

Balance in favor of steel posts of—

$ .0036	per rod per year.
1.15	per mile per year.
115.00	per 100 miles per year.

Other advantages claimed are no staples used; right-of-way may be burned over from time to time without injury to posts. No loss from accidental fires and no renewal on that account. Special end, corner and gate posts must be used in connection with the steel line posts. No means are provided for bracing them so as to use them as end or corner posts. There is not enough steel in them to stand the strain of stretching a heavy wire fence. The minimum amount of steel is used necessary to meet requirements of a right-of-way fence. The line and end posts are treated as distinct problems. In this they are not unlike posts made of other materials. The demands on the end and corner posts are entirely different from those on the line posts. The line post should possess a certain degree of flexibility, while end and corner posts must be absolutely rigid. The following is the comparative cost of steel and wood end and corner posts:—

Cost of end post	$1.62
Cost of corner post	2.30

Assuming it fair to say that twice as many end posts will be needed as corner posts, it places the average of the stretching post at $1.84 each. If $1.84, the cost of the steel corner post, bears the same relation to the cost of a good wooden corner post that the price of the steel line post bears to the price of the wooden post, then the economy is demonstrated. In order to determine whether or not this relation maintains, we resort to the following equation:—

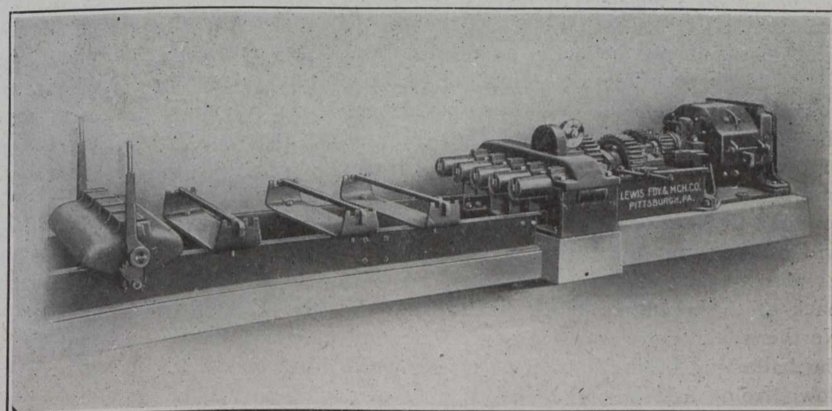
$$\frac{12c.\ \text{(cost of wood line post)}}{23.03c.\ \text{(cost of steel line post)}} = \frac{x\ \text{(cost of wood corner post)}}{\$1.84\ \text{(cost of steel corner post)}}$$

We find $x = 96$ cents, cost of wooden corner post, which appears to be a conservative estimate of the cost of a good wooden corner post. From a mathematical and perspective point of view, the manufacturer of the steel fence post appears to have made out a case that is worthy of continued and further close investigation. Time alone, under practical service conditions, can demonstrate if the figures are based upon substantial premises.

The steel fence post has not yet proved its merit in practice and at this time concrete with suitable reinforcement seems to offer the only solution to the problem.

MOTOR-OPERATED BAR-TWISTER.

In concrete work the steel bar gives the tensile and the concrete the compression strength. In order to produce a bar having a high elastic limit and homogeneous texture, it is essential that continuous and uniform running be attained on the machine used in twisting these steel sections. A great deal of trouble is experienced with belt-driven machines on account of belt slippage causing unnecessary strain during the twisting process, which usually results in an inferior product due to the elastic limit of the bar being exceeded. With a motor gear-connected to the machine, as shown in the accompanying illustration, an occurrence of this kind is practically impossible, since this method of motor connection insures constant torque being applied during the time the bars are being twisted.



The type of machine here shown, manufactured by Lewis Foundry and Machine Company, which is used for twisting Ransom bars, is arranged for two speeds. A 75-h.p. Westinghouse mill motor is used on five 1¼-inch bars, and a 60-h.p. motor on five 1⅛-inch bars. The twisting heads are steel castings arranged to receive tool steel dies for bars ⅜-inch to 1¼-inch, advancing by eighths of an inch. Bearings are brass bushed, and the shafts turned and hammered open-hearth steel. The bed is made of 10-inch channels of sufficient length to accommodate 60-foot bars. The tail stock is so arranged that is may be locked on bed at any distance from head stock. An index is provided to register the number of turns made by the bar-twisting head. The dial is re-set by hand, and can be moved back to zero when the load is released. The twisting speed of the head is about 60 r.p.m. for 1¼-inch bars, taking about one minute. The time consumed in loading and unloading is about two minutes; consequently, a complete cycle occurs every three minutes. One complete standard twist will occur on 1¼-inch bars in 12½ inches, and on 1-inch bars in 10 inches.