

# SCIENTIFIC AMERICAN

A WEEKLY JOURNAL OF PRACTICAL INFORMATION, ART, SCIENCE, MECHANICS, CHEMISTRY, AND MANUFACTURES.

Vol. XL.—No. 9.  
[NEW SERIES.]

NEW YORK, MARCH 1, 1879.

[\$3.20 per Annum.  
[POSTAGE PREPAID.]

**AMERICAN INDUSTRIES.—No. 7.**

**THE MANUFACTURE OF HORSESHOE NAILS.**

The manufacture of horseshoe nails by machinery is not new, but during the past few years so many improvements have been made, and so much ingenuity shown in perfecting the machinery used, that the illustration of the largest nail manufacturing establishment in this country must prove of interest to our readers. Every one is familiar with the musical ringing of the anvil of the village smith as he rounds up his time to the full by skillfully drawing horseshoe nails from rods of tough iron; and many of us have seen the nail maker, who tramped from shop to shop, making at each stop a quantity of nails; but now "his occupation is gone." Machinery, more nimble and accurate than he, turns out by the million nails that are better finished, more uniform, and of better quality than the article made by hand.

The first nail machine we can find record of was one patented in 1606, by Sir Davis Blumer, in England, and twelve years later an improvement was patented by one Clement Danbury, but neither of these machines ever seems to have been put to a practical test.

Cut nails were first made in this country by Jeremiah Wilkinson, of Cumberland, R. I., in 1775, who built a rough machine with which he cut tacks from sheet metal, and later he so improved his machine as to enable him to make nails and spikes in a similar manner, finishing the heads in a vise.

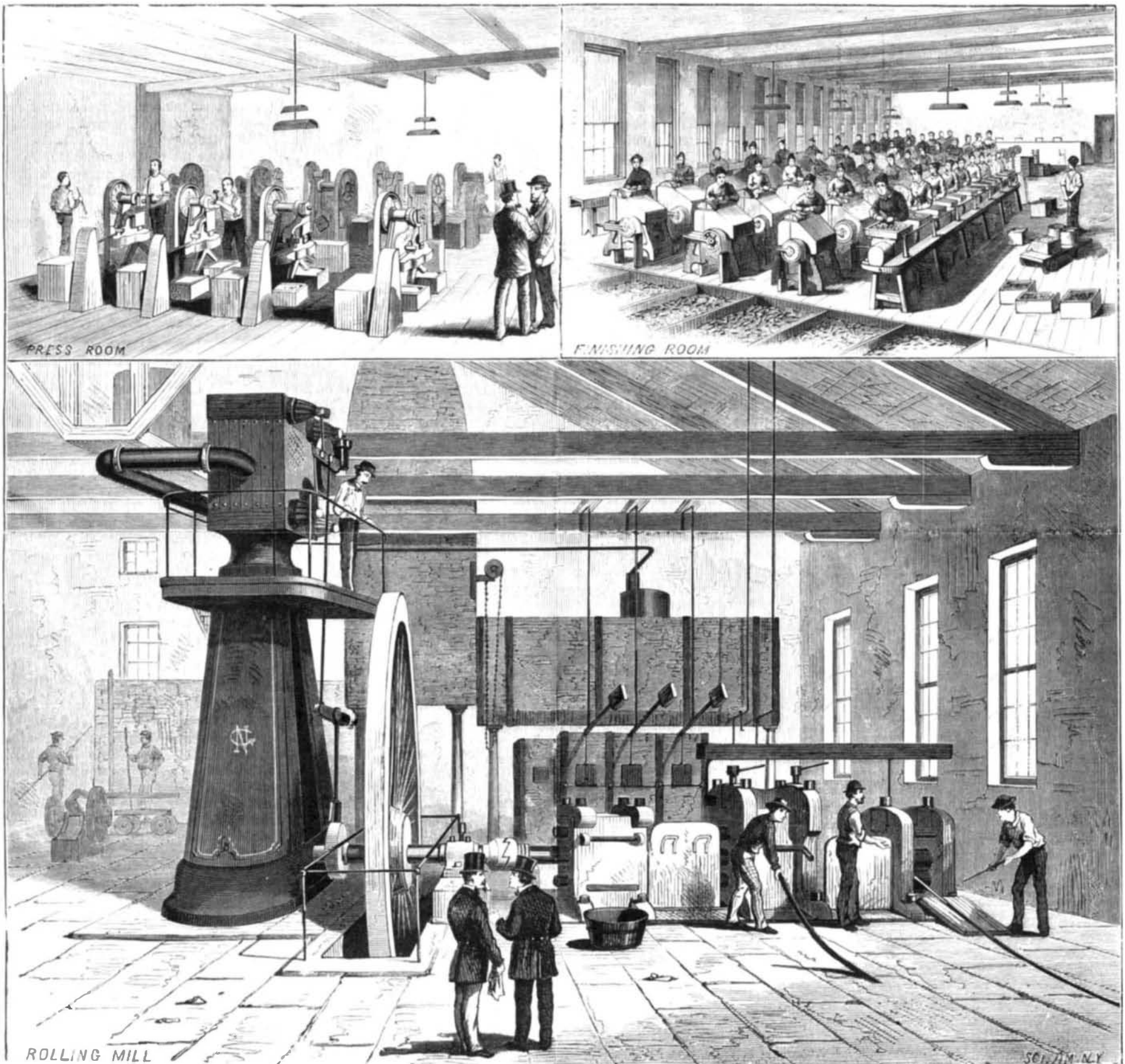
A Mr. Perkins took out letters patent in this country in 1795, for a machine which it was said had a capacity of turning out 200,000 nails a day. This machine eventually found its way to England, where it created great excitement, especially among the manufacturers of hand-made nails.

The Perkins machine was the first one put in practical use, and did its work well in a small way; but what would

Mr. Perkins say if he could enter a large manufactory like the Globe Nail Company's works, and witness the turning out of ten tons of finished nails a day, as this concern does?

We have chosen as the subject of our industrial illustration this week the manufactory of the Globe Nail Works, of Boston, Mass., whose extensive establishments are devoted entirely to the manufacture of horseshoe nails.

The works, which are situated at Boston Highlands, Mass., include a large main building, an extensive ell in which the several steps of nail making are carried on, a rolling mill—a model of its kind—in which the iron is prepared for the punching presses, and a machine shop, where all the rolls are made and where the repairs are carried on. The buildings are divided by brick partitions and passage ways, which almost completely isolate one department from  
*(Continued on page 130.)*



**THE MANUFACTURE OF HORSESHOE NAILS.**

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[Continued from first page.]

another. The beams, girders, and stairways are entirely of iron. It is, as a whole, an example of the most approved fireproof construction.

The machinery is driven by two Corliss engines of 150 horse power each, one of which appears in the rolling mill in the lower portion of the front page view, the other is employed in driving the nail machinery shown in the other views. Only the best Swedish iron is used in the manufacture of these nails. It is reduced to the required form in the rolling mill, being first heated in the furnaces shown in the background, and afterward passed between a succession of rolls, which reduce it in thickness, elongate, and shape it for the operation of punching. On finally leaving the rolls the iron is conveyed to the press room, shown in the upper left hand view on the title page, and is automatically fed to power presses, which cut the nails from the strip with uniformity and accuracy. Being worked in oil through the several processes of manufacture and finishing, the iron is not liable to rust while in store or in transit.

From the presses the nails go to the tumbling cylinders where they are smoothed by attrition, after which they are pointed, and stamped with the Globe Nail Company's trade mark in the finishing room shown in the upper right hand view in the title page engraving. The machines here employed are attended by girls. After this operation the nails are again tumbled, and are finally conveyed to the assorting room, where each nail receives individual attention. Those having

wearing out and destroying what this establishment is trying to supply. In all times and seasons horseshoe nails, like staple articles of food, are in constant demand.

The nails made by the Globe Nail Company have been steadily growing in favor since their introduction ten years ago so that it has been necessary to enlarge their works and increase their facilities from time to time, having now attained such proportions as to entitle it to the highest place in the front rank among the similar industries of the world.



**Fig. 2.—ASSORTING ROOM.**

As an evidence of the public appreciation of their goods the company point with commendable pride to the fact that at every World's, National, State, County, and Industrial Fair, where their horseshoe nails have been exhibited, they have received the highest awards. At the recent Exhibition at Paris, this company received two gold medals, being the only gold medals ever awarded for horseshoe nails.

The marked success of this concern is due to a careful selection of material, scrupulous care in manufacturing and assorting, and the adoption of improved labor-saving machinery, by which the product is not only cheapened, but made better.

**PNEUMATIC REGULATOR FOR CLOCKS.**

The pneumatic clock regulator represented by the accompanying engravings is the invention of Mr. E. J. Muybridge, of San Francisco. It is intended to regulate with accuracy a certain number of clocks located in different parts of large cities.

The pneumatic regulator may be applied to any ordinary clock operated by weights, springs, or other motive power. It consists of a series of hollow bells, plunging into and emerging alternately from vessels filled with a liquid; by this means the air within the bells is compressed and forced through tubes into a second vessel filled with the same liquid, where the tubes end just below a second series of bells corresponding in number to the clocks to be regulated. From here the air acts directly on the gearing

of the second and minute hands of the clocks. The further details are easily understood from the engravings. Fig. 1 represents the clock combined with the regulator, which acts on the clock, represented by Fig. 2, which may be situated at any distant point.—*La Natura*

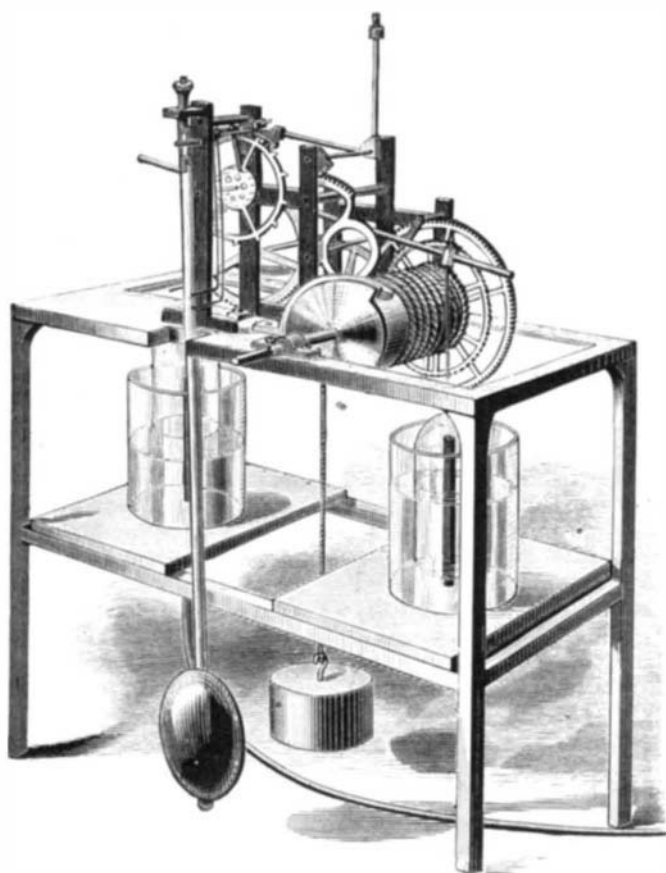
**A FAST FIRE ENGINE.**—Switzerland exhibited at Paris a self-propelling fire engine, which traveled to the Exhibition, a distance of 250 miles, in eighteen hours. This was a very good performance, being over 14 miles an hour.

**Dangers of Arsenic.**

In a series of samples of glazed and plated papers examined for the Massachusetts State Board of Health, and intended to be used largely by children, Professor E. S. Wood has found arsenic present in dangerous amount in all but one of the greens, one scarlet, and one red, and a small quantity in one blue and one chocolate brown.

The *Denver (Col.) News* publishes the following: "For some weeks past a local physician has been attending a young lady who has exhibited every possible indication of arsenic poison. Her appetite failed her, and her face became of a ghastly pallor, while the features were bloated and her eyes watery, with swelling of the lower limbs. Day by day her body was racked with intense pain, and finally her condition became so unendurable that she almost longed for death to put an end to her sufferings. The physician was satisfied from the beginning that she was afflicted with some disease produced by arsenic poison. But the most rigid investigation failed to reveal in what possible way it could have been administered to her. Her food was inspected, the water she drank was most carefully selected from the wells, where no impurity by any means could find its way

into it. By the merest accident in the world the cause of this remarkable condition was discovered. The doctor happened to be present when the young lady's clothes were brought home from the wash. The singular luster of the linen struck him as remarkable. He inquired who did that washing, and was told that an old negro woman whose great skill in polishing linen made her very popular with the girls. The doctor thought he was now on the road to the discovery, and concluded for the nonce to play an amateur detective. He visited the old woman, and soon learned that her "polish" was produced by the use of arsenic in the starch. Then the whole case was plain. The girl was

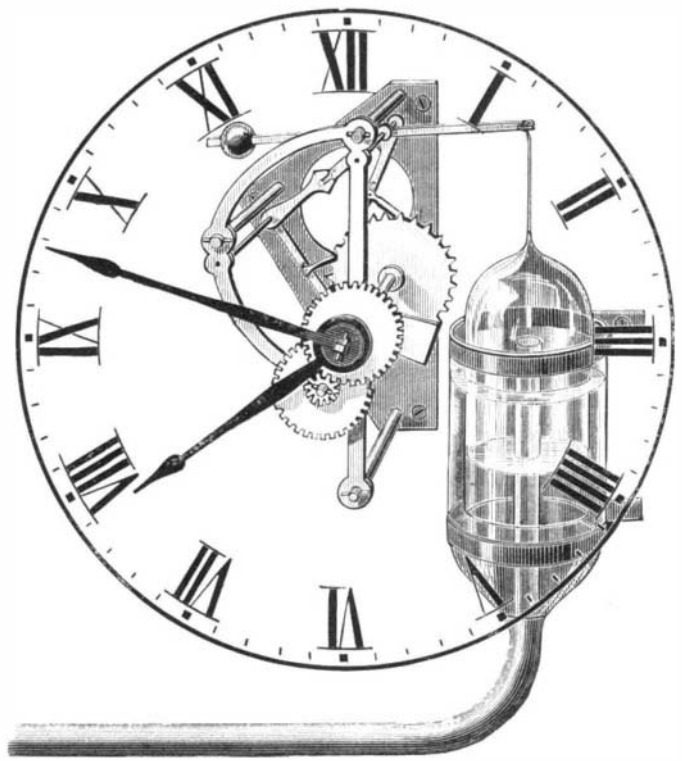


**Fig. 1.—PNEUMATIC REGULATOR FOR CLOCKS.**

the least imperfection are rejected, and only the absolutely perfect ones are packed for shipment.

These nails are far more perfect than hand-made nails, and as they cost but very little more than the iron from which they are made, it is obvious economy for every horseshoer to use them.

The nails made by this company not only find their way into all parts of this country, but are sent to Europe in large quantities, where they successfully compete with those of English manufacture. Millions of horses are constantly



**Fig. 2.—PNEUMATIC CLOCK.**

afflicted by arsenic poison produced by absorption. Being of a peculiar temperament and organization, she incurred a danger which others might have escaped. Respiration aided it, and her bodily susceptibility to the fatal drug conspired to produce the dangerous condition which has just been detailed.

**A RICH** growth of sponge has been found in the harbor of Key West, Fla. One man with a few small boats lately secured \$10,000 worth in two days.