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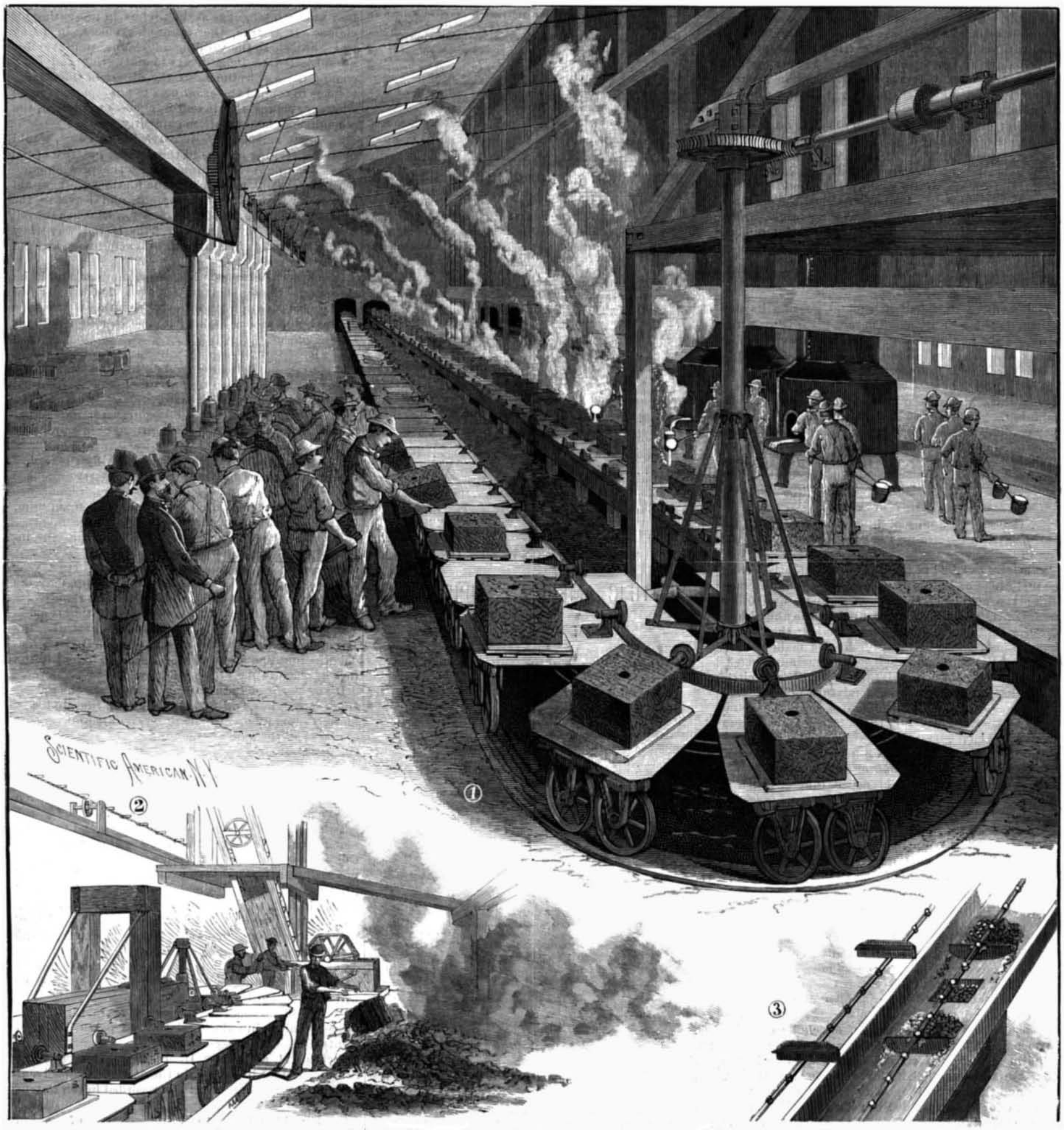
THE WESTINGHOUSE FOUNDRY, NEAR PITTSBURG, PA.

The illustrations show a recently erected plant for carrying out foundry work. It has been installed for the making of small castings for the Westinghouse companies. The air brakes for trains and the complicated interlocking switch and signal mechanisms that these companies are concerned with require a multiplicity of small parts. The foundry plant to which we refer is peculiarly adapted for the production of such pieces.

Its distinctive feature is a series of tables carried on wheels and linked together so as to constitute an endless chain. These move upon an endless track up and down the main foundry and through a smaller room adjoining the casting and moulding room, and carry the flasks or moulds from moulder to founder, and to the room where the moulds are broken up. In this compartment the castings are removed from the moulds. The arrangement of wheels and tracks is peculiar. The front ends of the tables are supported on two wheels, each wheel being journaled in a pedestal, the whole being underneath the table, so as to sustain it at a convenient height from the floor. A single wheel supports the inner end of the table. This wheel is also journaled in a pedestal, but is placed on the top surface of the table, so as to rise well above it. An elevated rail is provided for these wheels, which rail, on both the straight sides of the run, rests on short columns. On these rails the inner wheels run, so that the tables are kept horizontal. The elevated rail bends in the arc of a semicircle at both extremities of the straight portion, and thus completes the circuit. At the end nearest the observer, as shown in our cut of the foundry, a shaft extends from the floor up toward the ceiling, connected above with countershaft and friction clutch. Below the level of the tables the shaft is provided with



1. The moulding room and foundry. 2. Removing castings from mould, and sifting and elevating sand. 3 The conveyer trough and scrapers.

RAPID METHOD OF MOULDING NOW IN USE AT THE WESTINGHOUSE FOUNDRY, PITTSBURG, PA.

a sprocket wheel. This shaft occupies the center of the circle described by the bent rail. The sprocket wheel gears into the endless chain of tables beneath their working surfaces. If rotated, it causes them to travel around the circuit.

It is clear that, if columns were used to carry the semicircular elevated rail, the sprocket wheel would be interfered with. Accordingly this portion of the elevated track, as well as sections of straight track adjoining it, are suspended very ingeniously in the manner shown. A collar is fixed to the vertical shaft. A loose collar sets upon it, and to the loose collar a number of suspension rods are attached which extend diagonally downward and sustain the portions of the railway unsupported by columns. This leaves a free space for the sprocket wheel, and the suspension of the rail from the central shaft avoids the necessity of a more cumbrous system of suspension from the roof trusses or other upper works of the building. The suspension rods are re-enforced by radial pieces extending from a second loose collar at the level of the rail and by a species of U-shaped table that comes inside the rail. As the suspension and radial pieces could not be carried out to the line of the rail, the table is directly carried by them, and in its turn carries the rail.

On one side of the foundry is the moulding table, to be provided with mechanical moulding machinery. A conveyer trough runs from the room in the rear toward this table. A chain propelling scrapers through the trough is kept in motion. As fast as the trough is supplied with moulding sand it is carried to the vicinity of the moulding bench and discharged ready for use. A chain and bucket elevator is arranged in the rear room, which supplies the conveyer with the sand in question.

Adjoining the revolving chain of tables on the side opposite the moulding bench are the cupolas, where the metal is melted.

The operation of the apparatus is as follows: The moulders turn out quite rapidly the moulds by the aid of the machinery. As soon as finished the operator places the mould on one of the traveling tables, which are constantly moving behind him toward the cupolas. The mould is carried around the curve until it reaches the founders. They pour the metal into the mould as it passes. If necessary, the whole series of tables can be stopped for this process.

The mould, now filled with metal, goes on its way and enters the rear room. There it is thrown off the table and the casting is extricated from the sand. The sand is sifted in a revolving sifter, and is elevated to the conveyer, which returns it to the moulders.

It is obvious that snap flasks may be used to advantage on this apparatus, or that regular flasks may be employed. The machine lends itself to any of the ordinary modifications of foundry practice.

The chain includes 158 tables, and there is a single hold on each table for the tooth of the sprocket wheel.

The Acids of Fruits.

Mr. George W. Johnson, in his *Chemistry of the World*, says, in describing the "vegetable food of the world:"

"The grateful acid of the rhubarb leaf arises from the malic acid and bin-oxalate of potash which it contains; the acidity of the lemon, orange, and other species of the genus *Citrus* is caused by the abundance of citric acid which their juice contains; that of the cherry, plum, apple, and pear from the malic acid in their pulp; that of gooseberries and currants, black, red, and white, from a mixture of malic and citric acids; that of the grape from a mixture of malic and tartaric acids; that of the mango from citric acid and a very fugitive essential oil; that of the tamarind from a mixture of citric, malic, and tartaric acids; the flavor of asparagus from aspartic acid, found also in the root of the marshmallow; and that of the cucumber from a peculiar poisonous ingredient called fungin, which is found in all fungi, and is the cause of the cucumber being offensive to some stomachs. It will be observed that rhubarb is the only fruit which contains bin-oxalate of potash in conjunction with an acid. It is this ingredient which renders this fruit so wholesome at the early commencement of the summer, and this is one of the wise provisions of Nature for supplying a blood-purifier at a time when it is likely to be most needed.

"Beet root owes its nutritious quality to about 9 per cent of sugar which it contains, and its flavor to a peculiar substance containing nitrogen mixed with pectic acid. The carrot owes its fattening powers also to the sugar, and its flavor to a peculiar fatty oil; the horseradish derives its flavor and blistering power from a volatile acrid oil. The Jerusalem artichoke contains fourteen and a half per cent of sugar and three per cent of inulin (a variety of starch), besides gum and a peculiar substance to which its flavor is owing; and lastly, garlic, and the rest of the onion family, derive their peculiar odor from a yellowish, volatile, acrid oil; but they are nutritious from containing nearly half their weight of gummy and glutinous substances not yet clearly defined."

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SCIENTIFIC AMERICAN SUPPLEMENT

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PROPOSED AMENDMENTS TO THE PATENT LAWS.

Quite a number of bills have been introduced in Congress for the amendment of the patent laws, one of which (H. R. 9953) we will now briefly review.

The first section is to the effect that patents may be issued and will be valid, provided the invention is new and has not been patented or described in any printed publication before the invention or discovery thereof by the applicant.

The second section provides that no patent shall be issued for an invention already patented in a foreign country, unless the patent shall be applied for within two years from the date of the earliest foreign patent.

As the law now stands, an American patent may be granted at any time during the term of the foreign patent, provided the invention has not been in use for more than two years.

The second section also provides that the American patent issued as above shall run for 17 years from the date of the earliest foreign patent.

Under the present law the American patent expires when the earliest foreign patent expires. This is a good amendment and should be adopted. The third section provides that an inventor, after describing his invention in the specification, may use such language in stating his claims as he prefers.

We do not exactly perceive the object or value of this amendment. As the law now stands, the inventor may use such language as he prefers in presenting his claims. It is true, the examining officer, in many cases, objects to the wording of claims, and inventors are subjected to long delays in answering and overcoming these objections. If the object of the amendment is to compel the examiners to allow patents upon whatever claims the inventor chooses to present, the amendment should state so explicitly.

Such an amendment, if carried into effect, would make a sweeping change in the present practice of the office. It would render unnecessary the present cumbersome system of official examinations. It would give to every applicant a patent, and leave to the courts the settlement of the question whether the patent was valid or worthless. This is the way they deal with patents in nearly all other countries, and the plan works well.

It makes the inventor his own examiner, and if he chooses to take a patent for an old device, it is his own affair. It is the opinion of many that this is the best method, and sooner or later it must be adopted in our Patent Office.

Section 5 provides that all assignments, licenses, and conveyances of patents shall be void against any subsequent mortgagee or purchaser, unless recorded within three months from date.

By this provision a *bona fide* purchaser and actual possessor of a patent may be deprived of his property without compensation.

To accomplish this it is only necessary for the former owner to give a second deed to another party and place it on record, the first deed, perhaps through ignorance of the holder, oversight, or trick played upon him, having been kept away from record for three months.

This section needs amendment so as to prevent injustice to the first *bona fide* purchaser.

Section 6 provides that aliens, resident here a year and having declared intentions of citizenship, may file caveats. At present two years' residence is required.

Section 7 provides that when an application is made for a patent for an invention already patented, the Patent Office may, by the assent of both parties, decide the question of priority and grant a patent to the new applicant if he proves priority.

If the assent of both parties is not given, the Patent Office may take *ex parte* testimony from the applicant and give him a patent if he proves a date of invention earlier than the date of the filing of the application of the first patentee. A similar provision applies to rejected cases and competing applications. Whoever proves by *ex parte* testimony that his invention was made before the date of the filing of the application cited against him, is to receive a patent.

This section if adopted would put an end to a vast amount of litigation now carried on before the Patent Office, under the general designation of interference proceedings; it would turn over nearly all questions of priority to the courts, where they properly belong, and where, in fact, they now go for final settlement.

Section 8 provides for issuing certified copies of patents at a charge of twenty-five cents extra for the certification. Section 9 provides that in suits no damages or profits shall be recovered except for six years last preceding the bringing of such suit. This will be a help to infringers.

Section 10 provides for the recording in the Patent Office of all injunctions relating to patent infringements.

Section 11 authorizes U. S. courts to pass the title to a patent by decree, in the case of an insolvent or bankrupt; such decree to be recorded in the Patent Office.

Section 12 relates to infringements of design patents, and makes a verdict of infringement to be conclusive evidence that the profits made by the de-