THE CINCINNATI INDUSTRIAL EXPOSITION.

The machinery department of the Cincinnati Industrial Exposition contains enough to occupy a whole page of your paper. So I will give only a birdseye view of what is there to be seen.

A machine for making wire nails complete requires but little attention. Near it stands a nail-driving machine used for joining boxes. A large machine for making barbed wire fences is in operation.

A shoe manufacturer has a dozen or more employés at work making shoes. Most of the branches of labor are carried on in full view of the visitors, and usually attract a crowd.

A firm with emery wheels comes from Boston, another is from Detroit.

A thread spooler winds the cotton of John Clark, Jr., and a spool of cotton is presented to each passer by.

The Corticello Twist and Silk Company have a machine in operation for winding silk, and the exhibitors are almost lavish in their advertisement, which is not needed to those who have ever used their goods.

A sewing machine brought from Chicago stands in the vicinity. It is propelled by electricity. The attachment can be made to any machine, and costs $25. The owner has one order for twenty-five machines to be used in a shoe factory in Massachusetts.

Weaving by the Jacquard loom draws crowds of people. Two of the looms are from Paterson, N. J. One is making handkerchiefs of various colors and patterns, the other bookmarks. The one making bookmarks is certainly a wonderful and complicated affair. Near the loom stands a machine for weaving gros grain dress silk. It is operated by the hands and feet, and made like those used in France.

A something novel to me was a machine from Boston for shearing sheep. It is to be moved by steam or water power. The machine is to be leased—not sold. It is suitable for the ranches of California, Kansas, and Colorado. It never cuts the sheep in shearing, which is one humane result that it effects.

A small but very useful contrivance is a clothes sprinkler. Laundry women should tender a vote of thanks to the inventor. A key hole guard, originated by a German of this city, is simple but ingenious. A new method of connecting the joints of stove pipes is likely to prove available. I observed from Boston a cordage that I think is unsurpassed for strength and durability. The manner in which it is woven is peculiar.

The Slater Woolen Company, of Webster, Mass., makes a large and handsome display of 52 pieces of broadcloths, doeskins, etc.

A fire escape is well worth the attention of hotel keepers and manufacturers.

An ice machine, said to be invented in Prussia, is much smaller than the American one exhibited last year.

A simple yet useful invention is a show case from New York containing the Waltham watches. The doors, by which salespeople take articles from the show case for examination by purchasers, slide down vertically, and so are not in the way of the clerks passing through the narrow space at the back of the counters. The Esterbrook pens have a large and varied display.

Van Duzen & Tifts' bells range in size from a cow bell to a church bell. Evans' artificial legs seem to be preferable in some respects to natural ones. The motion of the ankle adjusts itself to whatever position the limb takes. The flesh tints are perfect. A patented flour chest is a treasure to housekeepers. Dentiphones modestly lie in a small case, unused and unexplained. Three telephone displays are in the main hall. A sponge in a glass, that serves as a reservoir for feeding it with water, is a good contrivance for book-keepers and bankers to moisten their fingers. The granite iron ware of St. Louis, now so much in vogue, is well represented. A water cut-off is to turn the water from a cistern, until the first water, which is not clear, has run off, and then convey the clean water to a cistern. It is also useful in cutting off the water supply when the cistern is full.

A wooden woman, dressed in fantastic style, is the operator at the Exposition, and occasions many a merry laugh.

Hamilton, Ohio, has much machinery on exhibition; also some mantels and marble statues. A lithographic press is exhibited by MacBriar. It is of English make, and cost $950.

The usual large number of washboards, wringers, clothes driers, and knitting and sewing machines, are collected together. A wagon cover that can be folded or taken off entirely, and that can be moved so that a portion will project either forward or backward, seems to me a paragon of convenience for country people and expressmen. Folding and extension iron and steel gates are well worth the attention of storekeepers, livery stable men, and brewers. One is used in the rear of the Exposition building. Cincinnati is so noted for its musical talent and culture that many pianoforte manufacturers and dealers make an exhibit of their instruments and employ skillful musicians to play on them in the afternoon and evening, so that by auricular demonstration visitors may learn their comparative merits. A bookbinder's wire stitching machine comes from Boston, and may work a revolution in the old method of uniting the leaves of books. Caldwell's grain conveyor, of St. Louis, takes with the millers. Timmerman's furnaces for evaporating fruit can be used indoors or outdoors, and utilizes all the heat generated. The fruit is bleached by the fumes of burning sulphur, but it is harmless.

Mrs. Short, of this city, exhibits five inventions of her own, namely, a cleansing powder for paint, a machine for washing blankets, a mangler and ironer, and a lace curtain stretcher.

The electric lights used in front of the Exposition building, in the vestibule, and the main hall, have the name as inventor of Maxim, New York. The *modus operandi* has been lately described in the SCIENTIFIC AMERICAN.

One of the most useful inventions is that of an arrangement placed under the boilers of the Exposition building. The inventor is Mr. Murphy, who hails from Detroit. He ought to take up his residence in Cincinnati, and get the city officials to pass an ordinance against manufacturers and others letting volumes of black, dirty smoke belch forth from their chimneys. In that way he could promote the comfort and health of the people and earn a fortune for himself. But a friend sagely remarks there is one great objection to its adoption by the city authorities for the water works, and that is that the steam stoker does not vote, while the twenty men that could be dispensed with do. Murphy's smokeless furnace is creating unusual interest in consequence of its remarkably successful operation. All coal fed to the furnace is passed through the hoppers, and dealt to the grate in a partially coked state and in small charges. The operation of the furnace may be stated as follows: The coal is pushed on the grate and remains there long enough to be coked. The gases then being released, the next charge forces the coke forward down the grates. This furnace is not, therefore, a "smoke consumer," for the smoke is never generated. It is, properly speaking, a smokeless furnace, or a smoke preventer.

The Union Electric Signal Company, of Boston, exhibit a practically successful system of operating railroad signals automatically. Each section of a mile of track is insulated from that preceding and following it. If a rail is anywhere displaced or broken, or a switch or drawbridge turned, there is no circuit, consequently no current, hence a "danger" signal must be displayed until the rail is relaid, the switch replaced, the bridge closed, or the destruction of the washout repaired. If the battery were neglected there would be no current, and a danger signal would be shown until it was attended to.

So it is with each section. The engineer sees by the signal just the state of the track for a mile ahead of him all the time, and the track and train themselves are made to announce their state automatically and positively. Thus it is impossible for the signal to give the train a signal of "safety" when there is danger ahead. If a track is single, and trains run both ways on the same track, it is required that signals be displayed not only at the end at which the train is entering, but also at the other end. That is to prevent a train entering a section, and so avoid meeting a train already started from the other end.

Secondary or cautionary signals are also used, which announce at a considerable distance before the section signal is reached, the state of affairs, and thus prevent danger from insufficient warning. VIRGINIA PENNY.

Cincinnati, Oct. 8.

THE AMERICAN INSTITUTE FAIR.

The fair of the American Institute is now at its best, all of the exhibits are in place, the patronage is large and well merited, and while we do not find anything as remarkable as the telephone, phonograph, and electric light were, on their first appearance in past years, the exhibition is very satisfactory.

The electric light, which was absent at the date of our last visit, is now supplied by two firms, the United States Electric Lighting Company, of this city, who light a portion of Machinery Hall, and the Fuller Electrical Company, also of this city, who light the main hall and also furnish lights at the front and rear of the exhibition buildings.

Among interesting objects in Machinery Hall we find Volkmar's apparatus for drying fruits, vegetables, fish, and meats by cold air, avoiding decomposition which accompanies high temperatures.

Mr. C. C. Clawson, of Raleigh, N. C., exhibits an automatic machine for packing tobacco and other articles. It weighs out the article, packs it in bags, and delivers the packages at the rate of thirty per minute.

Mr. William F. Gregg, of this city, exhibits some fine astronomical and engineering instruments, among which may be mentioned a thirty-inch time transit, a four-inch telescope, and a fine equatorial stand for a six-inch telescope. He also exhibits a new form of stereograph.

Several Holtz electrical machines are exhibited by Mr. Curt W. Meyer, of New York, who also shows some interesting apparatus for schools and amateurs.

EXPORTATION OF VULCANITE EMERY WHEELS.

The New York Belting and Packing Company have been receiving for some years large orders for their vulcanite emery wheels from England, where they are used in the government arms manufacturing works an Enfield, near London. They have also, for a considerable time back, been supplying these wheels for the use of both English and Continental manufacturers of fine cutlery, machine tools, and implements of precision, their superiority over English emery wheels for nearly every kind of grinding, cutting, and finishing being thus practically recognized. The success of the company in this field, almost within the bailiwick, as it were, of a business in which England claims especial preeminence, is particularly creditable to its managers and to their goods, and cannot fail to be gratifying to American mechanics generally.

The solid emery vulcanite wheel is an American invention, to attain complete success in the manufacture of which the company devoted years of laborious application, making thousands of costly experiments, and constructing therefor elaborate and expensive machinery. It was a branch of the business which, starting with the most ample facilities, and using only the best rubber, presented peculiar difficulties, for the problem was far more complicated than any which came up in other departments of the vulcanizing process. Aside from the nice distinctions always necessary in the mixing and vulcanizing processes of the rubber manufacture, they had still more difficult points to overcome in making wheels which would be sufficiently strong to run at a circumferential velocity of from 5,000 to 7,000 feet per minute, and which would have only just enough rubber in them to bind the emery closely, so that the wheels would wear perfectly even without glazing, would not soften by heat nor become brittle from cold, and would be throughout of such uniform texture and density that their work could always be depended upon. How well they have succeeded in overcoming these difficulties, and also in perfecting the mechanical details for mounting, truing, and turning off wheels, the greatly increased demand affords the best proof.

There have been but few improvements which have within the past twenty years worked such important changes in the way of economizing work in the machine shop and finishing room as has been effected by the emery wheel. The many different grades in which it is made, each different from the preceding by the slightest variations, fit it alike for almost every kind of grinding and polishing. Its handiness and general adaptability have enabled it to drive out the use of the grindstone, to a great extent, in the saving files to the value of millions of dollars, and greatly reducing the amount of work for which lathe tools were formerly used, so that it is now generally employed by workers in wrought, cast, and chilled iron, hardened steel, slate, marble, glass, etc. In the marking of hardware, cutlery, and edge tools, it has become indispensable, while it has also effected a great saving of labor in the manufacture of plows, safes, stoves, agricultural implements, and small machinery of almost every description. It is, therefore, a matter of considerable credit to American inventive genius and mechanical skill that the rest of the world should be indebted to us for the introduction and continued manufacture of the best articles in so important a specialty.

DECISIONS RELATING TO PATENTS.

By the Commissioner of Patents.

(*Appeal from the Board of Examiners-in-Chief.*)

HOCKHAUSEN *vs.* WESTON.—DYNAMO-ELECTRIC MACHINE.—INTERFERENCE.

Application of William Hockhausen filed January 28, 1878. Application of Edward Weston filed December 13, 1877.

Marble, Commissioner:

1. A machine which embraces all the features called for by the issue in an interference in such a manner as to be capable of successful operation will serve to give date to an invention, although such machine fail to show additional features which give increased efficiency to the perfected machines.

2. Objections to the patentability of a claim constituting the issue in an interference should be urged by a motion for dissolution of the interference, and not by an attempt to restrict the scope given by the Examiner to such claim.

3. In both the courts and the Office abandonment is an ill-favored finding, and cannot be presumed, but must be conclusively proven.

4. The charge that an applicant is not an original inventor must be sustained by proof of a most conclusive character.

HOPKINS *vs.* LE ROY.—JOURNAL BEARING.

Application of D. A. Hopkins filed November 20, 1879. Application of T. V. Le Roy for reissue of patent No. 221,737, granted November 13, 1879, filed June 5, 1880.

Marble, Commissioner:

1. When a party files a preliminary statement it is to be presumed that he has fully canvassed all the facts in the case and has correctly stated the same, and unless a request to amend the statement is made before any testimony has been taken all parties have a right to proceed on the issue as made in the respective statements.

2. A party has no right to wait until his opponent has fully developed all the facts in his case, and then for the first time ask leave to correct errors in his statement; but if through carelessness or negligence he has failed to have such correction made he must suffer therefor.

WICKS *vs.* MCAVOY.—SHEET METAL CAN.—MOTION FOR REHEARING.

Marble, Commissioner:

1. The rules relative to the granting of rehearings in interference cases before this Office are those which govern the granting of new trials in the courts, and to motions for the same diligence is a prerequisite.

2. Misstatements in arguments of counsel will not warrant the granting of a new trial.