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The reputation of these governors is well established. Parties troubled with unsteady power may send for them in entire confidence. They never fail.

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1 13

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SEMI-STEEL LOCOMOTIVE TIRES, FIRE-BOX AND Tube Sheets, and Boiler Plates. Warranted fifty per cent stronger and more durable than the best Low Moor qualities of iron.

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1 13

WARREN'S TURBINE WATERWHEEL (WARREN & Damon's patent)—Cotton and woolen manufacturers, millwrights and millowners, and every mechanic who would economize in water power, should investigate this wheel. Recent improvements are included and clearly illustrated in a late pamphlet of 51 pages. Applicants send two stamps. Special attention paid to Southern trade. They are arranged compact and portable, requiring no mechanical skill to set and operate them. Every wheel warranted. Address ALONZO WARREN, Agent, American Waterwheel Company, No. 31 Exchange-street, Boston, Mass. 12 6

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ENGINE FOR SALE.—A 6-HORSE ENGINE, WITH Boiler and Pump complete; now in use at No. 306 Pearl-street; must be removed before the first of May.

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The above establishment manufactures Portable Engines of all sizes, having the latest and most valuable patented improvements, and being an excellent combination of known devices for the production of a compact, efficient and cheap Portable Engine.—SCIENTIFIC AMERICAN. 13 8

A YOUNG MAN, A COLLEGE GRADUATE, DESIRES employment with a Surveyor in his out-door duties; testimonials as to character, &c., can be given. Address SURVEY, Post Office Box No. 1740, Philadelphia, Pa. 1*

STEAM ENGINES FOR SALE.—NEW AND SECOND-HAND, from 2 to 15-horse power, consisting of Horizontal, Uprights and Portables; also, a Machine Shop, now in successful operation, well stocked with tools and all that is required to conduct the business. Inquire at the MACHINE SHOP, No. 643 Water-street, New York. 1*

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THE HERALD OF PROGRESS.—A JOURNAL OF Health, Progress and Reform; Andrew Jackson Davis, Editor. This well-established Family Newspaper has entered upon its second volume, with an able array of contributors. The editor furnishes weekly contributions to the Medical Department; also, "Medical Whispers" and "Answers to Correspondents," with articles under the following and other distinct heads: "Teachings of Nature," "Voices from the People," "Doings of the Moral Police," "Tidings from the Inner Life," &c., &c. Terms—\$2 a year, or \$1 for 6 months. Sample copies sent free. Address A. J. DAVIS & CO., No. 274 Canal-street, New York. 13 2*

WANTED.—A SITUATION IN A MACHINE SHOP, by a young man of steady habits. Address, with card, E. THRANGER, Pavilion, Genesee county, N. Y. 1*

MACHINERY.—S. C. HILLS, No. 12 PLATT-STREET, New York, dealer in Steam Engines, Boilers, Planers, Lathes, Chucks, Drills, Pumps; Mortising, Tenoning and Sash Machines; Woodworth's and Daniels' Planers; Dick's Punches, Presses and Shears; Cob and Corn Mills; Harrison's Grist Mills; Johnson's Shingle Mills; Belting, Oil, &c. 2*etw

LANTERNS ARRANGED FOR THE NEW OXYGEN lime light and pictures for the stereopticon, also photographs; the finest magic lantern pictures ever produced. Catalogues sent by mail free. C. T. AMSLER, Optician, No. 635 Chestnut-street, Philadelphia, Pa. 10 6*evy

SULPHATE OF AMMONIA, SUITABLE FOR AGRICULTURAL and chemical purposes, for sale by DODGE, COLVILLE & OLCOTT, No. 188 Pearl-street, New York. 12 5*

A MESSIEURS LES INVENTEURS.—AVIS IMPORTANT. Les Inventeurs non familiers avec la langue Anglaise et qui préfèrent nous communiquer leurs inventions en Français, peuvent nous adresser dans leur langue natale. Envoyez nous un dessin et une description concise pour notre examen. Toutes communications seront reçues en confiance.

MUNN & CO., SCIENTIFIC AMERICAN Office, No. 37 Park-row, New York.

HOMES FOR THE INDUSTRIOUS,

IN THE GARDEN STATE OF THE WEST.

THE ILLINOIS CENTRAL RAILROAD COMPANY HAVE FOR SALE

1,200,000 ACRES OF RICH FARMING LANDS, IN TRACTS OF FORTY ACRES AND UPWARD,

ON LONG CREDIT AND AT LOW PRICES. MECHANICS, FARMERS AND WORKING MEN.

The attention of the enterprising and industrious portion of the community is directed to the following statements and liberal inducements offered them by the

ILLINOIS CENTRAL RAILROAD COMPANY, which, as they will perceive, will enable them, by proper energy, perseverance and industry, to provide comfortable homes for themselves and families, with, comparatively speaking, very little capital.

LANDS OF ILLINOIS. No state in the Valley of the Mississippi offers so great an inducement to the settler as the State of Illinois. There is no portion of the world where all of the conditions of climate and soil so admirably combine to produce those two great staples—corn and wheat—as the prairies of Illinois.

THE SOUTHERN PART of the State lies within the zone of the cotton regions, while the soil is admirably adapted to the growth of tobacco and hemp; and the wheat is worth from fifteen to twenty cents more per bushel than that raised further North.

RICH ROLLING PRAIRIE LANDS. The deep rich loam of the prairies is cultivated with such wonderful facility that the farmers of the Eastern and Middle States are moving to Illinois in great numbers. The area of Illinois is about equal to that of England and the soil is so rich that it will support twenty millions of people.

EASTERN AND SOUTHERN MARKETS. These lands are contiguous to a railroad 700 miles in length, which connects with other roads, and navigable lakes and rivers, thus affording an unbroken communication with the Eastern and Southern markets.

APPLICATION OF CAPITAL. Thus far, capital and labor have been applied to developing the soil; the great resources of the State in coal and iron are almost untouched. The inviolable rule that the mechanical arts flourish best where food and fuel are cheapest, will follow at an early day in Illinois, and in the course of the next ten years the natural laws and necessities of the case warrant the belief that at least five hundred thousand people will be engaged in the State of Illinois in various manufacturing pursuits.

RAILROAD SYSTEM OF ILLINOIS. Over \$100,000,000 of private capital have been expended on the rail roads of Illinois. Inasmuch as part of the income from several of these works, with a valuable public fund in lands, go to diminish the State expenses, the taxes are light, and must, consequently, every day decrease.

THE STATE DEBT. The State debt is only \$10,105,398.14, and, within the last three years, has been reduced \$2,959,746.80; and we may reasonably expect that in ten years it will become extinct.

PRESENT POPULATION. The State is rapidly filling up with population; 868,026 persons having been added since 1850, making the present population 1,722,663—an ratio of 102 per cent in ten years.

AGRICULTURAL PRODUCTS. The agricultural products of Illinois are greater than those of any other State. The products sent out during the past year exceeded 1,500,000 tons. The wheat crop of 1860 approaches 35,000,000 of bushels, while the corn crop yields not less than 140,000,000 bushels.

FERTILITY OF THE SOIL. Nowhere can the industrious farmer secure such immediate results for his labor as upon these prairie soils, they being composed of a deep, rich loam, the fertility of which is unsurpassed by any on the globe.

TO ACTUAL CULTIVATORS. Since 1854, the company have sold 1,300,000 acres. They sell only to actual cultivators, and every contract contains an agreement to cultivate. The road has been constructed through these lands at an expense of \$30,000,000. In 1850, the population of the forty-nine counties through which it passes was only 335,593, since which 479,923 have been added, making the whole population 814,891—a gain of 143 per cent.

EVIDENCES OF PROSPERITY. As an evidence of the thrift of the people, it may be stated that 600,000 tons of freight, including 8,600,000 bushels of grain and 250,000 barrels of flour, were forwarded over the line last year.

EDUCATION. Mechanics and working men will find the free school system encouraged by the State, and endowed with a large revenue for the support of schools. Their children can live in sight of the church and schoolhouse and grow with the prosperity of the leading State in the Great Western Empire.

PRICES AND TERMS OF PAYMENT. The prices of these lands vary from \$6 to \$25 per acre, according to location, quality, &c. First-class farming lands sell for about \$10 or \$12 per acre; and the relative expense of subdividing prairie land as compared with wood land is in the ratio of 1 to 10 in favor of the former. The terms of sale for the bulk of these lands will be

ONE YEAR'S INTEREST IN ADVANCE, at six per cent per annum, and six interest notes at six percent, payable respectively in one, two, three, four, five and six years from date of sale; and four notes for principal, payable in four, five, six and seven years from date of sale; the contract stipulating that one-tenth of the tract purchased shall be fenced and cultivated, each and every year, for five years from the date of sale, so that, at the end of five years, one-half shall be fenced and under cultivation.

TWENTY PER CENT WILL BE DEDUCTED from the valuation for cash, except the same should be at six dollars per acre, when the cash price will be five dollars.

Pamphlets descriptive of the lands, soil, climate, productions, prices, and terms of payment, can be had on application to

J. W. FOSTER, Land Commissioner, Illinois Central Railroad, Chicago, Ill.

For the names of the towns, villages and cities situated upon the Illinois Central Railroad, see pages 188, 189, 190, Appleton's Railway Guide.

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HOSE.—The superiority of these articles, manufactured of vulcanized rubber, is established. Every belt will be warranted superior to leather, at one-third less price. The Steam Packing is made in every variety, and warranted to stand 300 degs. of heat. The Hose never needs a variety of rubber adapted to mechanical purposes. Directions, prices, &c., can be obtained by mail or otherwise at our warehouse. NEW YORK BELTING AND PACKING COMPANY.

JOHN H. CHEEVER, Treasurer, Nos. 37 and 38 Park-row, New York. 1 13

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SCIENTIFIC REPORTING.—PATENT SUITS, INVOLVING questions of science or mechanics, reported verbatim: scientific lectures, or the proceedings of scientific societies, either reported in full or condensed, by HENRY M. PARKFURST, of the firm of Burr & Lord, Short-hand Writers and Law Reporters, No. 121 Nassau-street, New York. 11*

GUILD & GARRISON'S STEAM PUMPS FOR ALL kinds of independent Steam Pumping, for sale at Nos. 55 and 57 First-street, Williamsburgh, L. I., and No. 74 Beekman-street, New York. 1 26J GUILD, GARRISON & CO.

CLINTON WIRE CLOTH COMPANY.—MANUFACTURERS of Power Loom Wire Cloth, for threshing machines, fan mills, grain sorters, rice mills, locomotive spark-arresters, and all other uses, of a superior quality. Contracts made with the trade and large consumers, on such terms that they will find it to their interest to take their supply from us. Our trademark—"Power Loom Wire Cloth." C. H. WATERS, Agent and Treasurer, Clinton, Mass. 2 14*

SOLID EMERY VULCANITE.—WE ARE NOW MANUFACTURING wheels of this remarkable substance for cutting, grinding and polishing metals, that will outwear hundreds of the kind commonly used, and will do a much greater amount of work in the same time, and more efficiently. All interested can see them in operation at our warehouse, or circulars describing them will be furnished by mail. NEW YORK BELTING AND PACKING CO., Nos. 37 and 38 Park-row, New York. 1 13

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N. B.—Reliable orders filled for any part of the United States and Europe. 18 13

PUMPS! PUMPS!!! PUMPS!!!—CARY'S IMPROVED Rotary Force Pump, unrivaled for pumping hot or cold liquids. Manufactured and sold by CARY & BRAINERD, Brockport, N. Y. Also, sold by J. C. CARY, No. 2 Astor House, New York City. 11 13

HAYDEN SANDERS & CO., NO. 306 PEARL-STREET, New York, Manufacturers of Brass Work for Steam, Gas and Water. 9 13*

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PORTABLE STEAM ENGINES.—COMBINING THE maximum of efficiency, durability and economy with the minimum of weight and price. They received the large GOLD MEDAL of the American Institute at their late Fair, as the "Best Portable Steam Engine." Particularly adapted to railway purposes, as repair shop and station engines. Every engine warranted satisfactory, or no sale. Descriptive circulars sent on application. Address J. C. HOADLEY, Lawrence, Mass. 8 26*

Zur Beachtung für deutsche Erfinder. Die Unterzeichneten haben eine Anleihtung, die Erfindern das Behalten angibt, um sich ihre Patente zu sichern, v. auszugeben, und verabsolgen solche gratis an dieselben. Erfinder, welche nicht mit der englischen Sprache befaht sind, können ihre Mittheilungen in der deutschen Sprache machen. Skizzen von Erfindungen mit kurzen, deutlich geschriebenen Beschreibungen beliebe man zu adressiren an Munn & Co., 37 Park Row, New-York. Auf der Office wird deutsch gesprochen. Dasselbst ist zu haben:

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Plan for Dispensing with Railroad Switches.

The improvement which we here illustrate dispenses with railroad switches and the trouble and expense of switch tenders. It has for months past been in successful operation upon many city passenger railways in Philadelphia, Baltimore and Boston.

The result is obtained by having one line of cars use wheels, A A, with an extra tread, *c c*, in addition to the common tread, and a short inclined supplementary rail, D D, so placed at the turn-off that the extra tread shall run gently upon it, the wheels being gradually raised off their usual bearing, running on the extra tread alone, and passing over and above the usual grooved rail, E E, without touching it. Directly after the point of divergence is passed, the wheels, in the same gradual manner, come down again to their usual bearing on the common tread, and the cars proceed on the straight track, as before; the change of bearing from the common tread to the extra tread, and *vice versa*, being so smoothly accomplished as to be scarcely perceptible.

The other line of cars, provided with wheels, B B, of the ordinary form, will, of course, follow the ordinary grooved rails, E E, as usual, and be gradually deflected from the straight line, just as if the straight track did not exist beyond that point.

By varying the position and diameter of the extra tread, many combinations may be obtained, and thus a number of different lines of cars may use the same track in common; each line as it arrives at the point of diversion from the other lines, will follow its own course.

The whole arrangement is entirely solid; the frog is cast in one piece, and there is nothing to get out of repair or to be affected by ice. The pavement is laid flush with the inclined rail, as seen at F, and the greatest elevation is merely enough to raise the flange of the double tread wheel over the grooved rail, and permit it to go straight on. Of course, the extra tread is only brought into use at turn-outs.

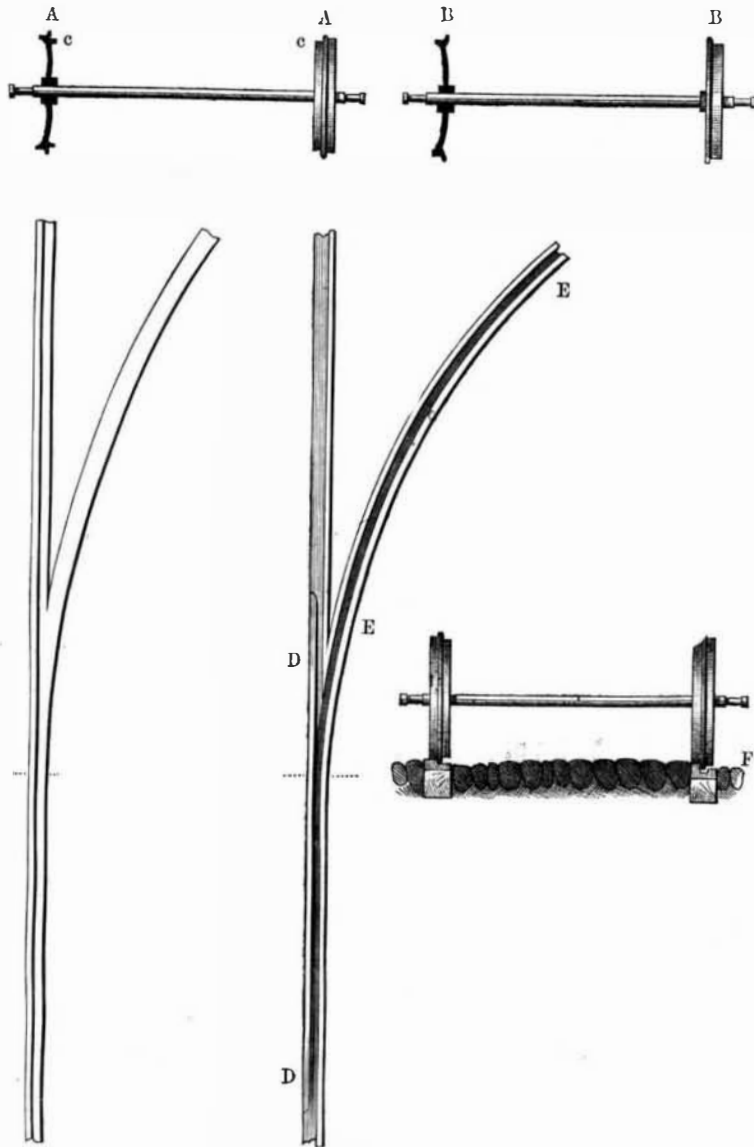
The cost of the frog casting is no more than that of the tongue switch heretofore in use, and it will last much longer. The cost of the double tread wheel is only one dollar more than the ordinary wheel; it is but little heavier and considerably stronger, the only difference being the extra tread, *c c*, one and a half inches wide, of unchilled iron, giving a lateral strength and stiffness.

When two lines of railroad intersect each other, it is only necessary to furnish the cars of one line with double tread wheels, the other line requiring no change whatever, and it is only necessary to have the patent wheels upon one side of the cars. The extra expense would therefore, in such cases, be only two dollars per car of the one line, and nothing for those of the other line. It seems to us that there could be no mechanical device to effect the purpose more compact, light and strong than this.

Of the numerous railway companies using this arrangement, it will be understood that a *portion only* have changed their wheels, or been put to any other expense; among them, some very complicated inter-

lacing of railway lines exist. It is not necessary that the cars should be equipped with patent wheels all at one time; but as the old wheels wear out (city passenger railroad wheels last, on the average, about one year), they may be replaced by new wheels of the new construction at a trifling expense. When it is done, the patent frogs can be laid down without the cars losing a trip or the regular business of the road being in any way disturbed.

If, at any time, owing to the obstruction of the streets by fires or from other causes, it is desired to



WHARTON'S PLAN FOR CITY RAILROADS.

run the cars temporarily upon other routes than their own, it is effected by means of a short bar of wrought iron, weighing about eight pounds, which may be carried in the car for that purpose.

That the economy of dispensing with switch tenders can be successfully accomplished, is fully demonstrated by the experience of the railway companies now using the invention.

Patents for this invention were secured in Europe through the Scientific American Patent Agency. Date of American patent, Dec. 13, 1859; re-issued April 3, 1860.

The inventor will grant licenses, upon favorable terms, to other railroad companies to use this improvement; and, when desired, will contract to do the work, guaranteeing its success. For further particulars, address William Wharton, Jr., inventor and patentee, No. 28 South Third-street, Philadelphia, Pa.

RED RAIN.—A paper has lately been published by M. Giovanni Campani, professor of chemistry at Sienna, in which he describes two falls of red rain, which occurred in that place on the 23th of December last. He states that the red rain was confined to a particular quarter of the town, near the Meteorological Observatory, and that it was not general. A shower of red rain is recorded to have fallen in 1819 at Blankenburg, when the rain, upon analysis, was found to contain cobalt. But none of this substance, has been discovered with rain which fell lately at Sienna.

ELECTROTYPING WATER FOUNTAINS.—The cast iron fountains of the Place de la Concorde, which are admired by all visitors to Paris for the richness and elegance of their designs, and the sparkling effect of the volume of water they daily throw up, are being taken to pieces in order to receive yet further improvements from one of those scientific proceedings which have lately been so much used in the decoration of the avenues and boulevards of the metropolis. On their first erection, these fountains, with the figures of the Tritons, Nereids, and other allegorical personages which adorn them, were painted to imitate Florentine bronze, the draperies simulated bronze verd-antique, and the ornaments and other accessories were gilt. This painting, however, was obliged to be renewed every two years, and even so, from exposure to the inclemencies of the weather and the action of the water, it proved very insufficient. It is now intended to apply galvanism in order to give the appearance and duration of bronze to all these figures and ornaments, as well as to the twenty columns and figures which decorate the Place de la Concorde, and the two hundred and twenty candelabras which serve to light it and the adjoining avenue, the Champs Elysées. Three million pounds of iron castings are thus to be electroplated with copper.

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The **SCIENTIFIC AMERICAN** is indispensable to every inventor, as it not only contains illustrated descriptions of nearly all the best inventions as they come out, but each number contains an Official List of the Claims of all the Patents issued from the United States Patent Office during the week previous; thus giving a correct history of the progress of inventions in this country. We are also receiving, every week, the best scientific journals of Great Britain, France, and Germany; thus placing in our possession all that is transpiring in mechanical science and art in these old countries. We shall continue to transfer to our columns copious extracts from these journals of whatever we may deem of interest to our readers.

To the Mechanic and Manufacturer!

No person engaged in any of the mechanical pursuits should think of "doing without" the **SCIENTIFIC AMERICAN**. It costs but four cents per week; every number contains from six to ten engravings of new machines and inventions, which cannot be found in any other publication. It is an established rule of the publishers to insert none but original engravings, and those of the first-class in the art, drawn and engraved by experienced persons under their own supervision.

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The **SCIENTIFIC AMERICAN** will be found a most useful journal to them. All the new discoveries in the science of chemistry are given in its columns, and the interests of the architect and carpenter are not overlooked; all the new inventions and discoveries appertaining to these pursuits being published from week to week. Useful and practical information appertaining to the interests of millwrights and mill-owners will be found published in the **SCIENTIFIC AMERICAN**, which information they cannot possibly obtain from any other source. Subjects in which planters and farmers are interested will be found discussed in the **SCIENTIFIC AMERICAN**; most of the improvements in agricultural implements being illustrated in its columns.

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MUNN & CO., Publishers,
No. 37 Park-row, New York.

FROM THE STEAM PRESS OF JOHN A. GRAY.