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ELECTRIC RAILWAY JOURNAL

Volume 46
Number 26
December 25, 1915

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We wish you all a
very Merry
Christmas and a
Happy and Prosper-
ous New Year, and
may the horn of plenty
overflow with all the
good things you
desire.



Joe's Christmas Gift to the General Manager

"Certainly an impressive sight, Joe," said the General Manager early Christmas Eve, as he gazed spellbound upon the seething mass of holiday shoppers crowding the streets below, and the endless chain of traffic threading its way through the merry throngs. "A marked contrast to the service we could extend to the public before we equipped all our cars with Westinghouse modern motors and good old 'HL' Control, and used 'train operation' for these heavy traffic swings."

"Looks good to me, too, Boss," replied Joe, grinning happily. "I sure am proud of those equipments. Everything on the Main Street and Grand Ave. Lines is a two-car 'HL' train, and the Traffic Manager just told me over the 'phone that they can easily handle the bunch—that every car is out, and that everything is moving as smooth as silk."

"A splendid report for Christmas Eve, my boy," said the General Manager. "You couldn't have presented me with a more welcome Christmas gift, and I'm sure that happy crowd down there would like to tell you the same thing."

Westinghouse Electric and Manufacturing Co.

Sales Offices in All
Large American Cities



East Pittsburgh,
Pennsylvania

Electric Railway Journal

New York, December 25, 1915

Volume XLVI No. 26

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R. C. Cram demonstrates that, as corrugation is caused by excessive pressure or force per unit area at the wheel tread, increasing the tread area by conforming the rail-head contour to that of the worn wheel reduces corrugation.

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Electric Car Maintenance 1251

Appearance of cars reflects the grade of service which is rendered. J. F. Layng tells of the value of charting defects and scientific inspection of equipment.

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Safety Appliances in Car Shops 1252

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Skip Stops Held Up in St. Louis 1254

Plans for faster schedules have been approved by a four-to-one popular vote. Adoption now awaiting favorable action by the Public Service Commission.

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The National Safety Council and Its Electric Railway Section 1257

H. A. Bullock briefly reviews the history of the council, explains its aims and analyzes the benefits which accrue to its members.

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The New Jersey Public Service Commission refuses to allow the Trenton & Mercer County Traction Corporation to withdraw six-for-a-quarter tickets.

ELECTRIC RAILWAY JOURNAL, Dec. 25, 1915. 2¼ cols.

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Senator Oscar W. Underwood will speak at mid-winter meeting. Details of executive committee session, including resolution recommending affiliation of Manufacturers' Association with parent body. Meeting of joint committee on block signals. Company section activity.

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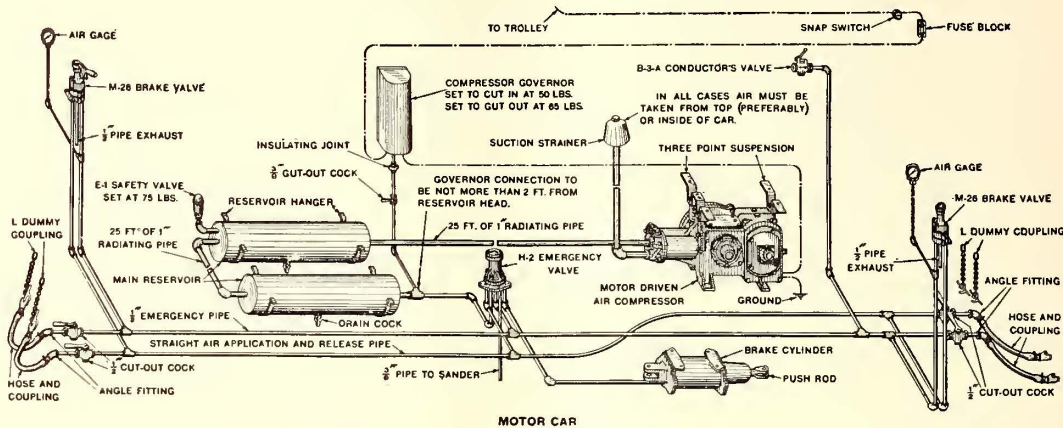
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Circulation of this issue 7750 copies.

"Featherweight"

Straight Air Brake with Emergency Feature



Economical Features

- 1—Low First Cost
- 2—Light Weight
- 3—Small Current Consumption
- 4—Low Maintenance
- 5—Long Life

Meets all requirements of city and suburban service where moderate speeds prevail. Possesses the flexibility of the simple, straight air brake in service application and release.

Carries the automatic, instant-acting, full-pressure features of the standard automatic air brake in emergencies.

Whether used normally on a single motor car, or on a two-car motor and trailer train during rush hours, it is equally effective and reliable, and retains at all times the integrity of its various characteristic features.

When each car is fitted with a conductor's application valve, the emergency brake may be applied by the conductor from any point in either car or on the car platforms.

Likewise, pressure escaping from the emergency pipe line, due to pipe breakage, hose rupture, or hose separation, will automatically cause an emergency application of the brake.

High speed suburban and interurban trains of three cars or more, whose more intensive service requires higher power and control, should be fitted with the corresponding type of Westinghouse standard automatic air brakes.

The specially exacting service of elevated, subway and electrified steam road divisions is admirably met by the Westinghouse electro-pneumatic brake.

Our engineering and inspection force of practical, "firing line" men is maintained at considerable expense to assist our patrons in working out all air brake problems of operation and maintenance.

These experts are yours. Use them.

Westinghouse Traction Brake Company

Works: Wilmerding, Pennsylvania

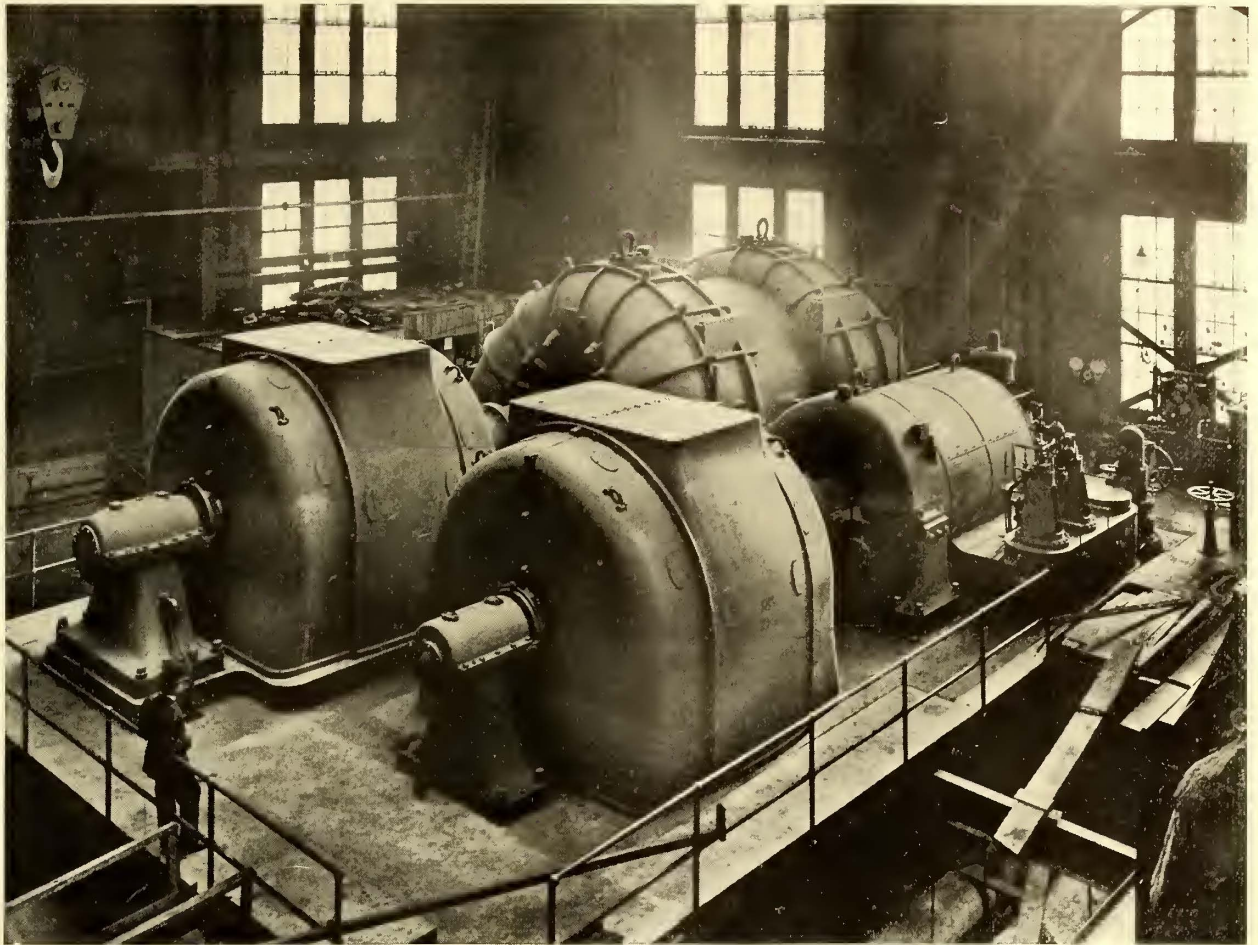
Pittsburgh: Westinghouse Building

Chicago: Railway Exchange Building



New York: City Investing Building

St. Louis: Security Building



The first of three 30,000 KW. Cross-Compound Turbo-Generator Units
for the Interboro Rapid Transit Co., New York City

The Most Economical Turbine

Since placed in operation the 18th of December, 1914, this turbine has been carrying loads up to 32,000 KW., and has established a record for ruggedness and reliability. As determined by accurate tests made by the purchaser, the economy of this turbine has never been equaled. Two duplicate units have since been placed in service, and their operation has borne out the record made by the first.

Westinghouse Electric & Manufacturing Co. East Pittsburgh, Pa.

Atlanta, Ga.
Baltimore, Md.
Birmingham, Ala.
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Boston, Mass.
Buffalo, N. Y.
Butte, Mont.

Charleston, W. Va.
Charlotte, N. C.
Chicago, Ill.
Cincinnati, Ohio
Cleveland, Ohio
Columbus, Ohio
*Dallas, Tex.

Dayton, Ohio
Denver, Colo.
Detroit, Mich.
*El Paso, Tex.
*Houston, Tex.
Indianapolis, Ind.
Joplin, Mo.



Kansas City, Mo.
Louisville, Ky.
Los Angeles, Cal.
Memphis, Tenn.
Milwaukee, Wis.
Minneapolis, Minn.

New Orleans, La.
New York, N. Y.
Omaha, Neb.
Philadelphia, Pa.
Pittsburg, Pa.
Portland, Ore.
Rochester, N. Y.

St. Louis, Mo.
Salt Lake City, Utah
San Francisco, Cal.
Seattle, Wash.
Syracuse, N. Y.
Toledo, Ohio
Washington, D. C.
*W. E. & M. Co. of Texas

Some Misconceptions Regarding Advertising in the Electric Railway Field

IT is one of the fundamental laws of the action of the human mind that when a subject is suggested to us we think of it first and most clearly in that particular aspect of the subject which is most familiar to us.

For instance when we speak of war, the average mind thinks of great masses of men in uniform, marching regiments, military bands, and waving flags, the outward and familiar display of military preparation.

Comparatively few think of the questions of transportation, commissary, ammunition, communication, and the many other vital things which are of such supreme importance in warfare.

In the same way, when we speak of advertising, the average man thinks of the great dominating advertising campaigns, of which he sees the evidence every day, which are directed to the general public and which stare at him from the pages of his magazine, or daily newspaper, spring at him from every corner billboard, or command his attention as he rides on the street car.

From such a conception the average man gains the idea that this kind of activity, and this only, is advertising.

A Much Abused Phrase

IT is from such misconception of advertising that we get the timeworn and much overworked phrase which attempts an all-inclusive definition of advertising by saying that it is the art of "keeping your name before the public"—a phrase frequently used even by sellers of commodities in which there is no appeal to the general public whatsoever.

There is no sense in this epigrammatical definition as it stands, anyhow, because a name by itself alone means nothing. It is only as it identifies the thing for which it stands that a name means anything or has any use.

What sense would there be in John Smith & Company "keeping their name before the public," if they did not connect with that action a clear understanding of the commodity they have for sale, and its value to the buyer?

What this much overworked and much misunderstood phrase really means, then, is to keep your name before the public in connection with information as to the commodities or products for which that name stands.

In the second place, the public is an all-inclusive term, unless you qualify it. It means the *whole* public, which, of course, includes men, women and children, lawyers, doctors, clerks, farmers, teamsters, and persons in any and every other line of occupation, who make up the public.

What sense would there be in keeping before "the public" the name of the manufacturer of a Concrete Mixer, or a Hoisting Engine, or an Electric Railway Controller, or a specially designed machine for the reducing and refining processes used in manufacturing plants?

And yet manufacturers of these very commodities do, apparently without much thought, consider advertising purely from the standpoint of "keeping their name before the public."

The Dominant Minority

OF course, what they mean when they say this, is keeping their name, in connection with the *merits* of their commodities, before *their* public, that is, before the comparatively small number of persons in the *whole* public who might be interested in their products, or have a controlling or contributing influence in the purchase of such products.

This distinction, of course, is one of fundamental importance, and yet it is a question whether such a manufacturer as we have cited, in using the term, is generally conscious that he is making this distinction.

To many persons this discussion may seem theoretical and far-fetched, but, from such misconceptions and misunderstandings of the purposes and functions of advertising, spring many of the abuses of advertising, and many of the disappointments and failures in the use of advertising.

The seller who, consciously or unconsciously, thinks of advertising only in the form and expression in which he is most familiar with it in campaigns to the general public, is very likely to think that all there is to advertising is the use of "clever catch phrases and pretty pictures."

That these have their place for certain kinds of advertising is unquestionably true. The trouble is that they are often *misplaced*.

And the root of the trouble is that it is not understood generally that every advertising campaign, no matter how small or large, is an *individual* and distinctive problem, and to be most profitable and successful must be handled on individual and distinctive lines.

Every Problem Is Different

THE kind of advertising which will induce a housewife to demand a cake of soap by name is not always, or even rarely the kind of advertising which will lead an engineer to determine whether a certain machine is the one he wants to specify for a special purpose.

Again, from this misconception of the application and use of advertising (particularly in the fields of sale of special commodities, appealing only to special classes of buyers), there arises the obsession, which possesses the minds of so many manufacturers, that if they put their name in connection with their commodity in some place or position where it may be constantly seen by the possible buyers in their field, that they are using advertising in an efficient way. In other words, that keeping their name and their commodity before the public is the aim and end of all advertising.

Many a manufacturer is obsessed with the idea that if he places his *business card* in some reference book, or directory, or periodical, where it may be *looked for* by the prospective purchaser who is looking for his kind of commodities, that he is thus doing for himself all that can be done in the way of advertising.

He may have a product, the advantages of which would require hours of personal argument on the part of an expert salesman to demonstrate to the buyer, yet he fails to see the opportunities which exist for him in the *proper use of advertising* for doing this demonstration work.

Successful advertisers almost universally utilize advertising for its *educational* value. They use it in *advance* of actual demand.

They utilize advertising not merely to let a man already in the market know where he may obtain a given product, but to *convince him beforehand*, that when he is in the market, they have the product which will give him the service for which he is seeking.

They use it not merely to let the buyer know where he may get a thing that he *knows he wants*, but to convince him, *before* he arrives at that stage, that they have the thing which he needs and should use.

Creative Advertising

SUCH advertising is educational. It is suggestive. It is creative. It supplies information. It purchases confidence in advance. It induces the buyer in advance to favor the product advertised. It directs and largely influences demand.

It does not wait, nor depend, upon an *inquiry* from the man in the market, but it *creates* a market by convincing the buyer in advance that he needs the commodity offered.

Such advertisers "tell their story" from every possible angle of appeal and interest. *They put themselves in the place of their possible buyer*. They point out to that possible buyer the special conditions which he may have to meet, which will make their product particularly valuable for *his* service.

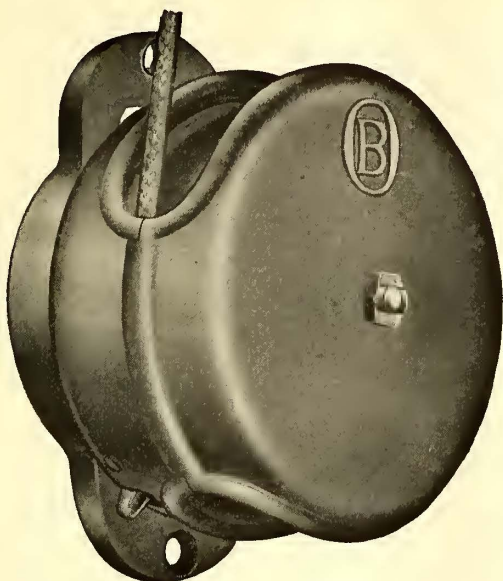
They do not *await* demand, they *create* it.

They do not merely *supply* the market, they *make* a market.

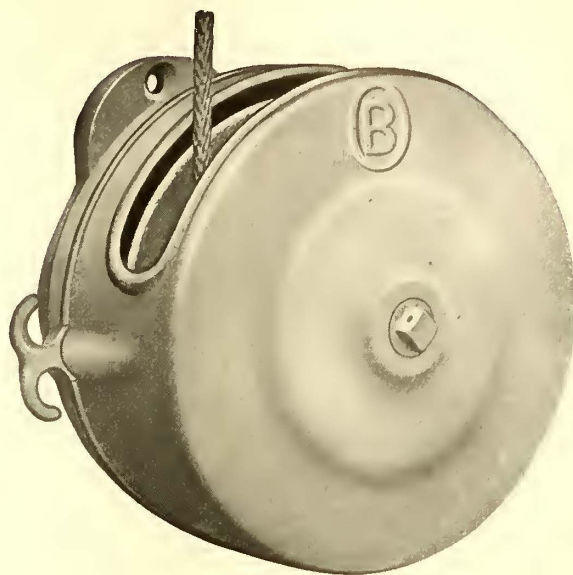
This is the kind of advertising which is of service and profit, not only to the advertiser, but also to the purchaser.

It is the kind of advertising for which Electric Railway Journal Service stands.

For any seller of products or service which have *or may create* a market in the Electric Railway field, *this* kind of advertising, through Electric Railway Journal Service, offers one of the most efficient, powerful and certain methods for the profitable development of business.



O-B Catcher (Pat. App'd For)



O-B Retriever (Patented)

O-B Trolley Catchers and Retrievers are Trouble Eliminators

You can put either of these devices on your cars and then forget about it; there will be no further cause for worry. Special attention to the details of design and manufacture guarantee successful operation under the most severe conditions. The mechanism is simple and efficient.

Try at Our Expense

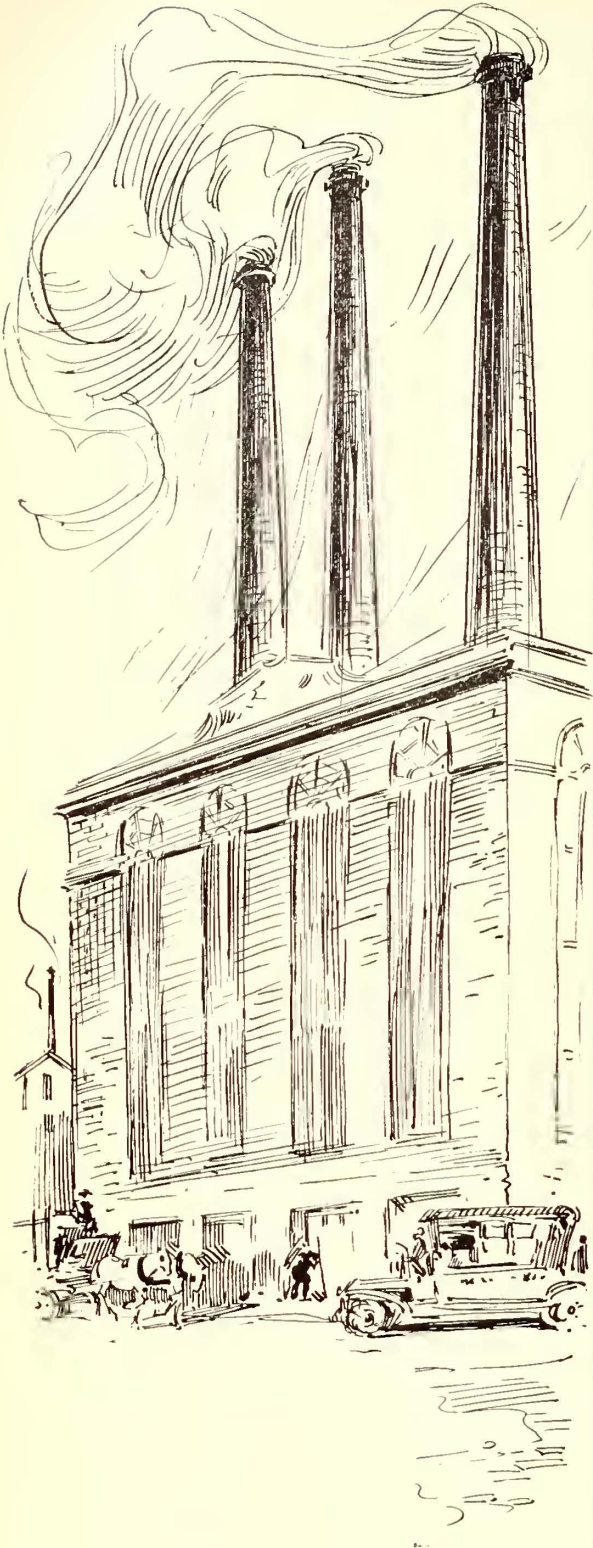
We will gladly send a Catcher or Retriever for service trial on your road.

Put it on a car, give it some rough treatment and see how it does its work.

If you are not satisfied, return it at our expense.

It costs you nothing to investigate.

THE OHIO BRASS CO.
Mansfield, Ohio



Get the Outside Viewpoint on the Inside of Your Power House

Consider lubrication. It's a far-reaching subject. Under your present system, its cost-reduction may be impossible because the men are **too close to the proposition** to see any weak points. The application of the **outside viewpoint** is why

Galena Oils and Galena Service

combined, reduce lubricating costs. We come to you with a contract—it **guarantees** to reduce your lubrication cost 10%

below what you are now paying for other oils.

We don't work against your men. We work **with them**.

Why not get the details of our cost-cutting co-operation?

Galena-Signal Oil Co.

Franklin, Pa.





Do You PERMIT this?

The conductor has thrown the signal and he is looking to make sure that he has **correctly** thrown it.

He is probably a careful conductor.

But **all** conductors aren't so careful.

Looking-again-to-make-sure takes time—causes delays whether the conductor is careful or not.

Why should he be forced to leave his car anyway?

United States Electric Signals take the responsibility of **making sure** out of human hands.

Safety is automatic.

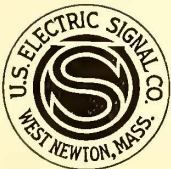
Do you PERMIT the safety of cars and passengers to rest entirely on the good (or poor) judgment of the conductor?

It costs LESS to let U. S. Electric Signals take care of safety

—and schedules.

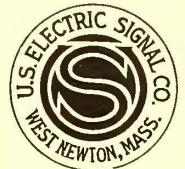
United States Electric Signal Company

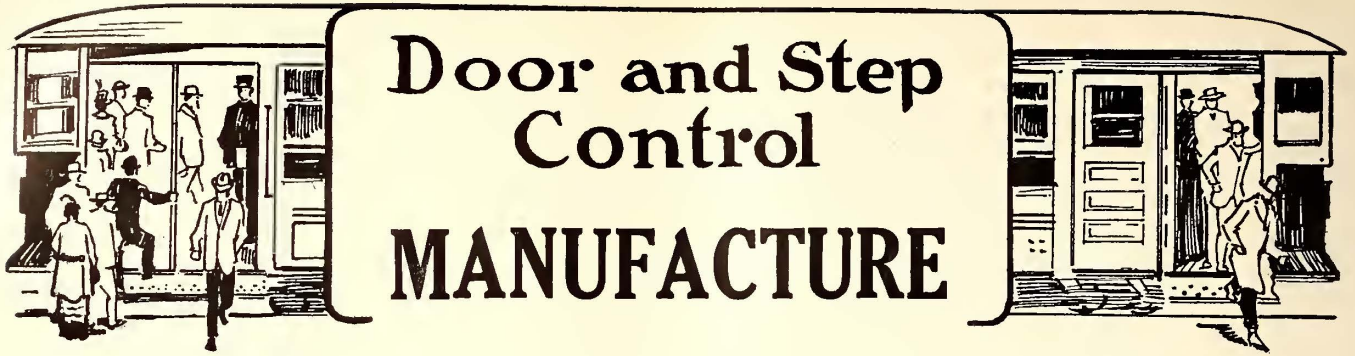
West Newton, Massachusetts



Foreign Representatives:

Forest City Electric Services Supply Co., Salford, England



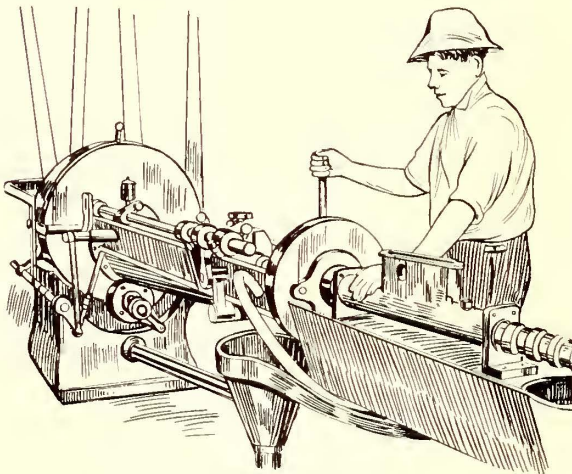


As specialists in door and step control, we use special tools to attain the highest degree of accuracy and reliability.

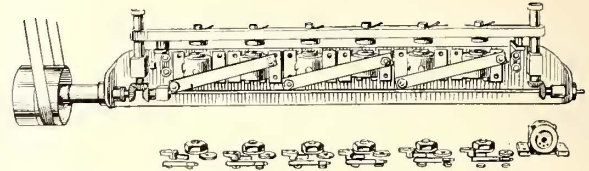
Here are a few examples:

The faces of NATIONAL pneumatic engine castings are ground off perfectly on a horizontal carborundum grinder.

The castings of NATIONAL pneumatic engines are broached by a tool which gives the accurate bore of a rifle barrel.



Broaching a National Pneumatic Engine



Our Automatic Oscillating Valve Grinder does perfect work

The valves of NATIONAL pneumatic equipments are placed on an oscillating grinder which grinds every valve with an unvarying exactness impossible in hand operation.

These are but a few reasons why you should correspond with us for either manual or pneumatic door and step control.

A clean-cut product pre-supposes a clean-cut maker. You will find that our manufacturing and business standards go hand in hand.

NATIONAL PNEUMATIC COMPANY

50 Church St. New York

515 Laflin St. Chicago

The Railway Field Book of Today

The fifth edition of Allen's Railroad Curves and Earthwork, with Field and Office Tables (published in 1914) is now in wide use among electric railway men. Its growth has not come by luck, but through a careful, systematic study of the needs of the engineer and prompt adaptation to his changing requirements.

For example, Prof. Allen was the first to produce his book in two parts for convenience in field use. He has also been early to recognize the value of the Standard Spiral of the American Railway Engineering Association, and has added special tables to facilitate its field use.

In the same manner the typography, illustrations, arrangement of the text and tables, treatment of the various problems—briefly, every detail has been studied carefully and improved whenever improvement seemed possible.

You have the privilege of free examination of this book. Merely return the attached coupon. You can return the book without obligation if it does not seem of value to you.

Allen Railroad Curves and Earthwork Field and Office Tables

By C. FRANK ALLEN

Prof. of Railroad Engineering, Mass. Inst. of Tech.
PUBLISHED IN TWO FORMS

A—Two Parts in One Volume.

516 pages, flexible leather, pocket size, gilt edges, \$3.00 (12/6) net, postpaid.

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RAILROAD CURVES AND EARTHWORK.

234 pages, \$2.00 (8/4) net, postpaid.

FIELD AND OFFICE TABLES.

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Sent for Free Examination

We will send this book or any book published by the McGRAW-HILL BOOK COMPANY, Inc., to any subscriber to the Electric Railway Journal or any member of the American Institute of Electrical Engineers or American Electric Railway Association for ten days' free examination.

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You may send me on 10 days' approval:

- Allen's
- ... Railroad Curves and Earthwork, \$2.00 net.
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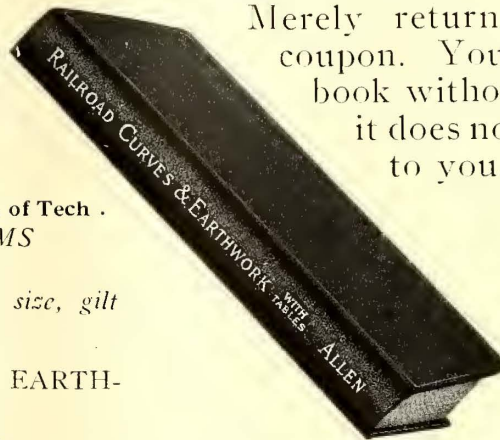
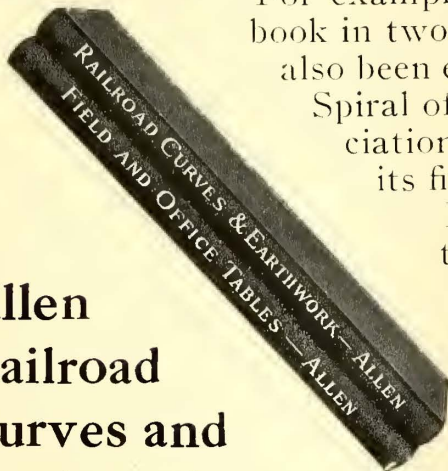
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- I am a regular subscriber to the Electric Railway Journal.
- I am a member of A. I. E. E. or A. E. R. A.

(Signed)

(Address)

Reference E 12-25
(Not required of subscribers to the Electric Railway Journal or members of A. I. E. E. or A. E. R. A.)



Reapplying Old Bonds



PREST-O-LITE

Gas-Weld Rail Bonding

(Oxy-Acetylene Process)

Reapplying certain types of bonds that have become defective is one of the simplest and most effective means of proving quickly the efficiency and savings to be made by the Prest-O-Lite Process—provided you prefer to experiment in your own way before adopting this method for *all* of your future bonding work.

Cost of necessary equipment is only a fraction of what you would have to pay in the purchase or lease of bonding apparatus—thoroughly high-grade apparatus only \$60 (Canada \$75)—acetylene and oxygen in portable cylinders on an extremely liberal basis—prompt service everywhere.

This is a time for enforcing methods of strictest economy—in rail bonding as well as in all other departments of maintenance work. Consider the leakage of profits owing to defective bonds. This loss can be immediately checked by employing the Prest-O-Lite Process. One tester and one welder can pick out and repair defective bonds without interfering with traffic in any way.

The savings that the Prest-O-Lite Process will show you in rail bonding alone will surprise you. The same portable welding outfit has enormous possibilities of savings in shop and yard repairs.

Let us send you some interesting data on oxy-acetylene welding—how you can save your road a lot of time and money with this low-cost process. Your request for information will not oblige you in any way. Write—

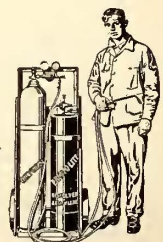
The Prest-O-Lite Company, Inc.

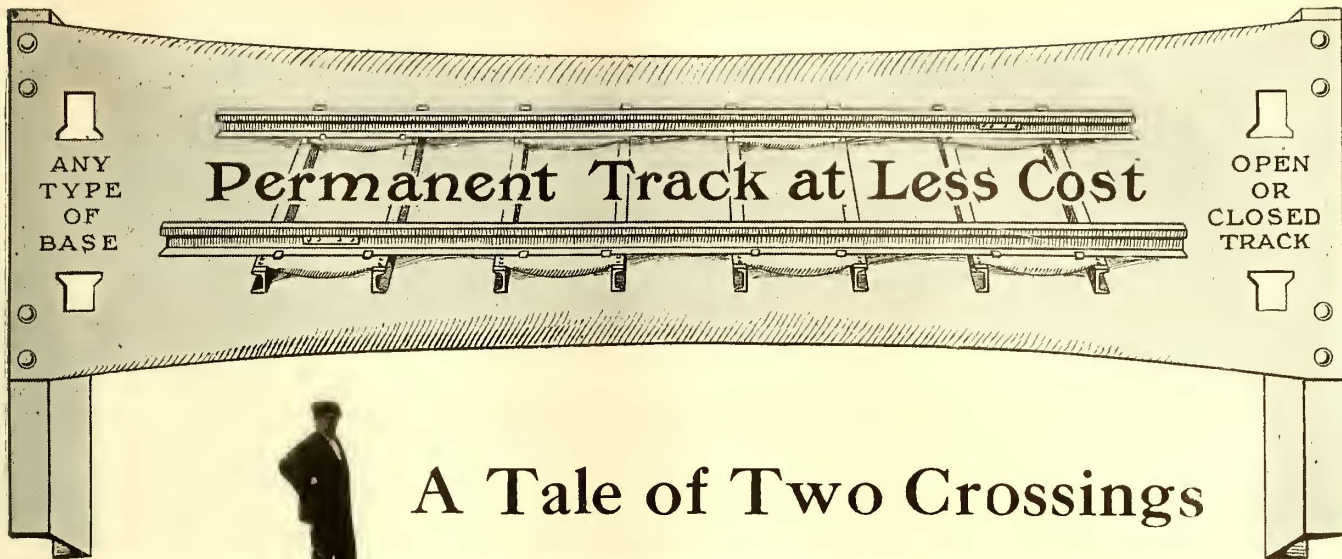
The World's Largest Makers of Dissolved Acetylene

805 Speedway, Indianapolis
53 Branches and Charging Plants

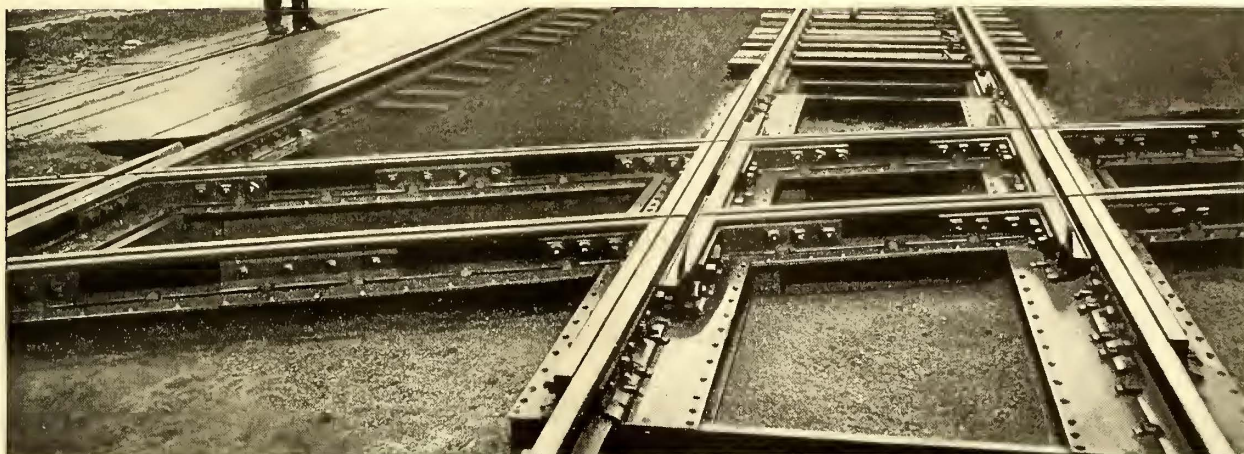
Canadian Main Office and Factory
Merritton, Ontario

Do Your Next Bonding by the Prest-O-Lite Process





A Tale of Two Crossings



They are side by side, only 30 ft. apart on the Union Traction Co. line at Muncie, Ind.

Here's what C. A. Prentice, Division Engineer of the U. T. Co., writes about them in the Electric Railway Journal of Nov. 20.

Both crossings went in within 5 days of each other in December, 1912. One is as GOOD AS NEW. It is on an INTERNATIONAL STEEL CROSSING FOUNDATION.

The other is "nearly worn out"—to quote Mr. Prentice. It rests upon timber ties.

An International Steel Crossing Foundation relieves your crossing frogs of bending stress, because of its uniform, full length support of the whole frog. It conserves the life of the crossing and minimizes the work of keeping it in line and surface. The Big Four Railway crossing first mentioned has only cost \$56.81 in three years for tamping.

Look into the economy of International Steel Foundations and Steel Ties. They mean lower costs and BETTER TRACK.

Write for all the facts.

The International Steel Tie Company

General Sales Office and Works: Cleveland, Ohio

REPRESENTATIVES

Parrott & Company,
San Francisco, Cal.
Los Angeles, Cal.

Western Eng'g Sales Co.,
Seattle, Wash.,
Portland, Ore.

R. I. Cooper Co.,
Salt Lake City, Utah.

J. E. Lewis & Co.,
Dallas, Texas.

Maurice Toy,
Philadelphia.

William H. Ziegler,
Minneapolis, Minn.



Type F C Bond



Type P 4 P Bond

Every "Protected" Rail Bond You Install Saves Money—Here's Why

Because its terminals are made of soft, dense copper, forged to shape in dies. They are very soft and ductile and will not crack under compression.

Because the body of the bond is made of pure lake copper, in both cable and flat wire types. This gives you a flexible bond, one that absorbs vibration perfectly and one in which the strands won't break or crack.

Because body is forged and welded to the terminals by a special process; and on every "Protected" Rail Bond, whether compressed terminal type, pin driven type or duplex stud type, this provides a mechanically protecting sleeve—a "shot-over" sleeve—around the strands at their point of emergence from the terminal. It allows the cables or wires to emerge from the terminals in their original form, neither flattened, distorted, reduced in area nor burnt.

In every "Protected" Rail Bond, where vibration is most severe—at the junction of terminal and strand, you get new, live, unburnt, mechanically protected copper to absorb it. This is why "Protected" Rail Bonds don't crack at this point.

In considering your bonding, remember that "Protected" Rail Bonds are furnished in both compressed terminal and pin driven types; remember that every one has the valuable "shot-over" sleeve features; and remember that the proof of their service lies IN THE EIGHTEEN YEARS' EXPERIENCE BEHIND THEM AND IN THE OVER EIGHT MILLIONS THAT ARE NOW IN USE.

Wouldn't our broad experience in connection with every class and kind of rail bonding problem be of great value to you right now?

It is yours for the asking, without the slightest obligation on your part.

ELECTRIC SERVICE SUPPLIES Co.
Manufacturer of Railway Material and Electrical Supplies

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JOHNS-MANVILLE SERVICE



EVERY product sold under this emblem is backed by J-M Responsibility—a new order of Service pledged by a nation-wide organization that has had over half a century of experience in solving YOUR problems.

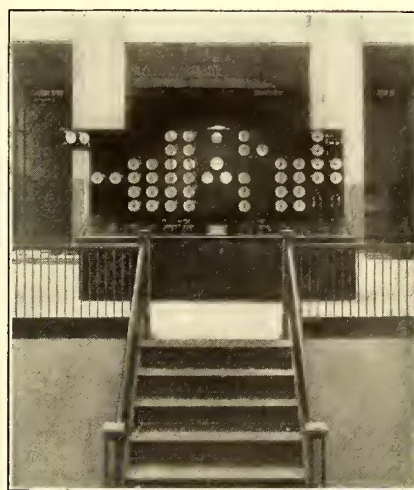
J-M Products are made not merely to sell but to give satisfaction in use. Hundreds of J-M Service Representatives everywhere give this assurance. That's J-M Responsibility.

More rugged than slate—more serviceable than marble— J-M EBONY ASBESTOS WOOD

This should suggest many uses around the station to the electric railway engineer.

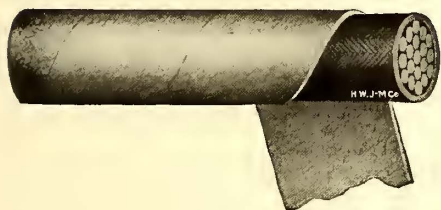
The fact that this material is tough, highly dielectric and at the same time resistant to the heat of the arc makes it admirable for any electrical mounting that is needed in service.

You can machine and tool this material in your own shop without loss due to breakage, and you won't be worried with metallic veins or flaws. Write our nearest branch for "Switchboard Materials" booklet to-day.



Central Switchboard Cordelia Street Station, Pacific Gas & Elec. Co., Oakland, Cal.—Made of J-M Transite Ebony Asbestos Wood

A "Short" in a Cable may mean a Fire in a Manhole—unless the Cable is wrapped with J-M Niagrite



A fire in a manhole is a nasty thing to fight. And it can do a lot of damage in a few minutes—unless the cables are protected with J-M Niagrite.

J-M Niagrite is a tough, heavy woven asbestos tape about three inches wide. Wrapped tightly about a cable and covered with the special J-M cement used with it, it hardens into a fireproof armor. Even a "short" in that cable can't spread fire to other cables similarly protected.

To wrap your cables with J-M Niagrite is to insure them against fire. It's a big factor in minimizing service interruptions. J-M Niagrite is a cable protector that every Central Station needs.

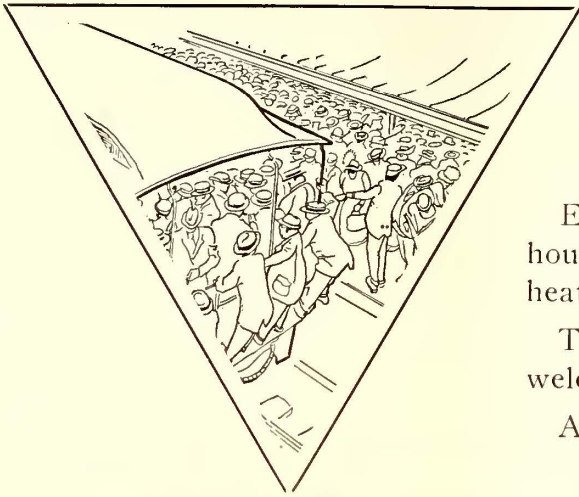
Write for complete data on J-M Niagrite service.

H. W. JOHNS-MANVILLE COMPANY

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THE CANADIAN H. W. JOHNS-MANVILLE CO., Ltd., Toronto, Winnipeg, Montreal, Vancouver.
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—Electric Weld Rail Bonds

Every pound of coal put into the power house boilers is pulling passengers—not heating rail joints. Because—

The Electric Weld Rail Bonds virtually weld the entire return circuit into one rail.

And they don't corrode at the terminals.

Send a line for the list of users.



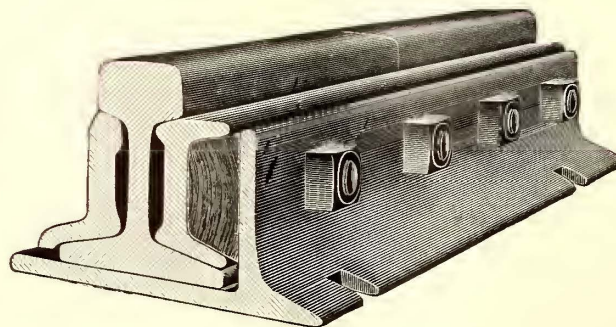
**The Electric Railway
Improvement Co.**

Cleveland, Ohio

The Rail Joint Company

185 Madison Avenue
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**ROLLED
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Makers also of CONTINUOUS, WOLHAUPTER and ONE HUNDRED PER CENT. RAIL JOINTS for Standard, Girder and Special Rail Sections. Also Joints for Frogs and Switches; Insulated Rail Joints and Step or Compromise Rail Joints

PATENTED IN UNITED STATES AND CANADA



Now—
Get These Facts
about the

V-K

OILLESS TROLLEY WHEEL
and
NON-ARCING HARP

You can obtain more mileage from the wheel with least wear on the expensive overhead construction. You can be sure of a greater and more even flow of current and stop that destructive arcing due to wear and looseness of the axle pin. You can save the expense entailed in lubricating wheel bearings and damage to car roofing by dripping oil and shopmen's feet.

The V-K Equipment will do it because of—

- the high conductivity of the wheel metal.
- the perfect finish and uniform balance of the wheel.
- the patented (V-K) self-lubricating, non-insulating graphite and bronze gauze bearing.
- the most efficient form of contacts.
- the patented (V-K) pin-locking device which prevents arcing, and the building up of heat so destructive to the wheel.

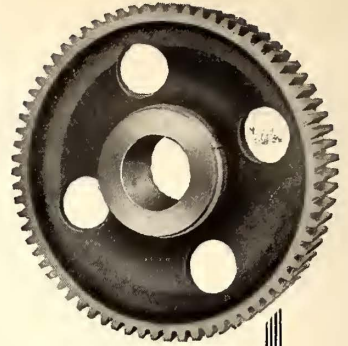
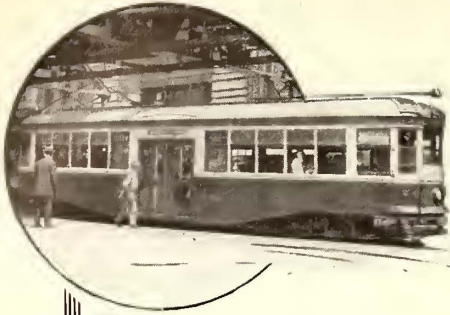
On the basis of service rendered, there is no other form of Trolley Equipment that will give you the economies obtainable with the V-K.

More-Jones Brass & Metal Co.
St. Louis, Mo.

Manufacturers of

Trolley Wheels and Harps, Contact Springs, Motor Axle Bearings, Armature Bearings, Truck Journal Bearings, Air Compressor Bearings, Armature Babbitt Metal and similar products.

Send for our new illustrated catalog. It contains full information on sizes, styles, etc., covering our whole line of wheels and harps.



Brooklyn Rapid Transit Orders Grade M Gearing

One of the largest supply gear orders ever placed has just been awarded by the Brooklyn Rapid Transit Company for G-E Grade M Gearing.

This Company operates over 4500 cars in Greater New York and has been using a number of Grade M gears on its lines for several years. As a result of their satisfactory operation this new order for 2800 gears and an equal number of pinions was placed.

Grade M Gearing owes its unprecedented success, not to its excellence in laboratory tests, but to its unfailing efficiency and economy in actual service.

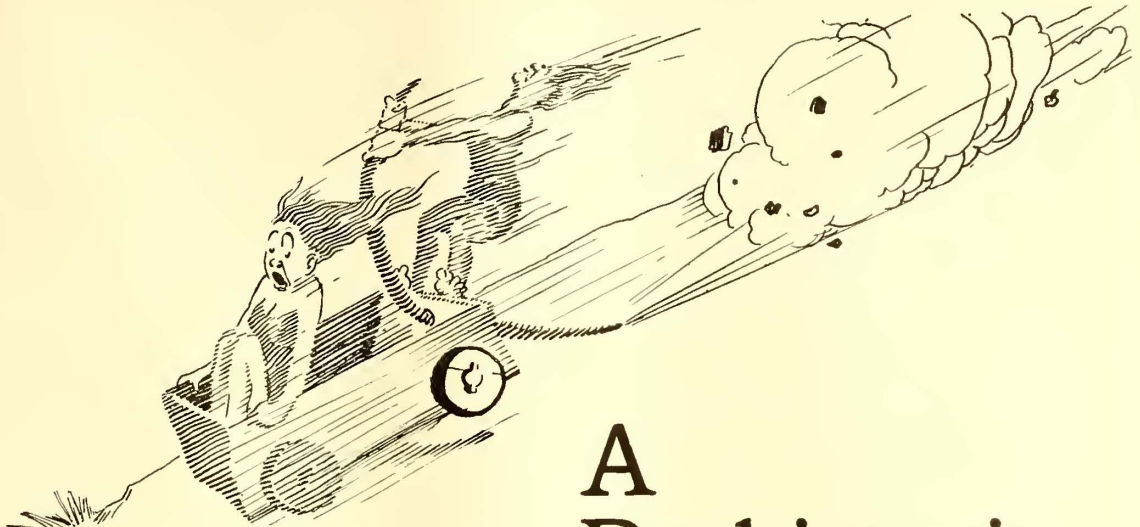
General Electric Company

General Office:



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A Prehistoric Brake

It was a big idea for one of our ancestors to discover that he could stop a moving vehicle by getting leverage on a stick and pressing it into the earth.

The stick was good enough at first only, for bye and bye it had to make room for something more reliable.

So, too, the old-fashioned trolley car hand brake has had to give way to the Improved Peacock Brake. Instead of overworking the motorman and jarring the car, the Improved Peacock Brake provides the ease, the elasticity and the sure control of the air brake, including instant application of power to the brake shoe and positive prevention of skidding wheels.

In the crisis of an emergency application the Peacock does not lose an instant in getting a good hold on the wheels. The motorman does not have to scratch gravel to take up slack chain—the Peacock leaves none to take up.

It gets through the preliminaries and down to real business *quick*.

That's what you want in a brake!



The Eccentric Drum



National Brake Co.

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Inspection Railway Equipment & Materials
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The For Sale pages are a weekly "Bargain Sale"—the biggest to be found anywhere, because the JOURNAL publishes more ads of this kind than can be found in any other paper in its field.

Every issue contains offers of equipment and machinery that are real bargains. It is a habit counting for economy to look over the For Sale pages every week whether or not you intend to buy anything at the moment. This keeps you in touch with what is available—and where—when you must buy.

Keep an eye on the Want columns at the same time. They afford an easy means of marketing equipment for which one concern may have no further use, but which may be just what another concern wants.

Altogether the Want and For Sale pages of the ELECTRIC RAILWAY JOURNAL form an "Opportunity Department" that hardly anybody in the electric railway field can pass by without losing money.

Tell us Your Wants and let us help you

ELECTRIC RAILWAY JOURNAL
239 West 39th Street, New York



There's One Thing About
These
Western Electric
SELECTORS

that makes a great "big hit with us," said the maintenance man on one of the big railroad systems; "it's the fact that we can take any one and put it in at any way-station—without having to send it back to the factory for readjustment."

This interchangeability is but one of many of the good points to be found in these selectors—of which there are now over 17,000 in use on large and small railroad systems all over the world.

Write to us for further details and let us help you in solving your dispatching problems.

Western Electric Company

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EQUIPMENT FOR EVERY ELECTRICAL NEED
Member Society for Electrical Development. "Do it Electrically"

The On-Time Advertiser

who gets his copy and cuts to us well before the day his advertisement should go to press, gets better type composition, better location and a better opportunity to make necessary corrections on the proofs which can then be submitted before publication.

The Last-Hour Advertiser

whose copy and cuts come in at the last minute or even later, gets the best attention we can possibly give him. We work overtime to do what we can for him. But the lack of sufficient time makes it physically impossible to do as well for him as for the advertiser whose instructions come in well before the last hour.

Get Your Copy and Cuts in Early

Do this, not on our account, but for the sake of your own advertising. We want to serve all advertisers equally well—but we can't put more hours into a day, and the advertiser who gives us the most time gets the best results.

Copy and cuts should be in our hands by Thursday of the week preceding the date of issue. This means that Thursday is the *last* day on which copy can be handled normally.

After that we cannot promise proofs, and we cannot insure classification.

For good advertising, get your cuts and copy in every week *before* Thursday.

Electric Railway Journal
239 West 39th Street, New York



A Factor in Successful Line Material —AETNA Insulation

Its durability survives seasons of changing temperature, changing atmospheric conditions and the blows and jars consequent to service. It is a maintenance reducer as well as a protection against costly breakdowns.

Twenty years' manufacture of Aetna insures an

"experience plus" product where it is used in line material.

If you haven't studied Anderson economies from the standpoint of your work, get the Anderson Complete Catalog. It is *more* than a Catalog. Find out why. Write.

ALBERT & J. M. ANDERSON MFG. CO.

Established 1877

289-293 A Street, Boston, Mass., U. S. A.

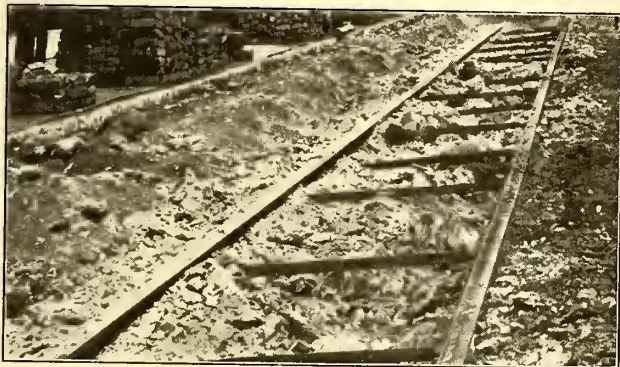


New York, 135 Broadway.
Chicago, 105 So. Dearborn Street.

BRANCHES:

Philadelphia, 429 Real Estate Trust Bldg.
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New Track Costs Dollars where grinding old track would have cost cents

You know what new track costs. Against that we pit rail grinding costing as low as 2 cents per foot.

The Reciprocating Track Grinder

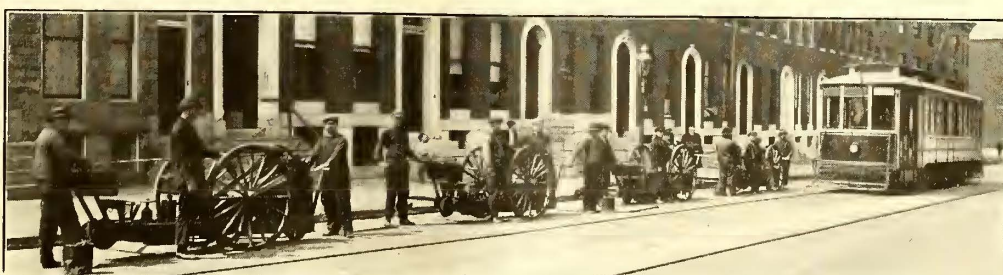
A Universal Grinder Adapted to All Sorts of Grinding

Roads all over the country are keeping old track up to new track standards with the "Reciprocating." One of its features is its use of un-

skilled men. No skill needed to apply the *flat* grinding surface of the Reciprocating. And not an ounce of metal wasted in the operation.

Get *all* the facts. Write!

Railway Track-work Co., Philadelphia



Steel for Service

CARNEGIE STEEL COMPANY

General Offices: Pittsburgh, Pa.

CROSS TIES

In making up your cross tie renewal program, have you considered the advantage of substituting steel for wood ties?

If not, we believe we can submit some facts that will be interesting to you.

In many instances we can show that the use of steel ties will effect a saving of money.

Our representative will be glad to confer with you and submit complete data.

Birmingham, Boston, Buffalo

DISTRICT SALES OFFICES

Chicago, Cincinnati, Cleveland

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UNITED STATES STEEL PRODUCTS COMPANY, Pacific Coast Departments:

Los Angeles, San Francisco, Portland, Seattle

Export Representatives: UNITED STATES STEEL PRODUCTS COMPANY, New York, N. Y.



Your Motors
can easily be made
oil-proof
water-proof
acid-proof
but you must use

Packard

**Black Elastic
Baking Varnish**

Get a sample of this varnish and try it.

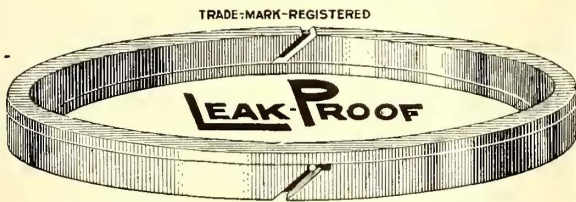
The Packard Electric Company

525 Dana Ave., Warren, Ohio

Prepared for Winter

Operating conditions in winter time are hard enough without having air brake trouble to contend with.

You're vitally concerned therefore in anything that will insure efficient, dependable brake action at all times. Be prepared—equip your air compressors with



Piston Head Packing Rings

(Made by McQuay-Norris Mfg. Co.)

Prevent cylinders from leaking—secure quick recharge of air storage—save power and undue wear on the motor.

LEAK-ROOF Packing Rings are light and elastic, but strong and durable. Have no sharp-cornered segments to cut and score the cylinder wall. Give longer life to compressor and entire brake equipment.

A set of rings FREE for any test—write Dept. L.

McQuay-Norris Mfg. Co.

St. Louis, U. S. A.

Canadian Factory

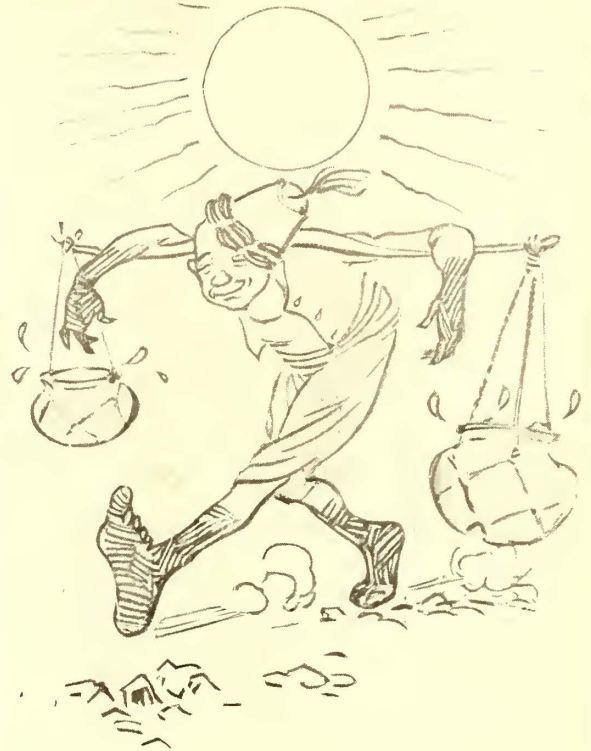
W. H. Banfield & Sons, 372 Pape Ave., Toronto

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Pow aur Harth

Some natives of Egypt stain their hands and feet with Henna. They say it prevents the skin from becoming too tender and sensitive.

So you see them trudging along with pow and harth looking like the artistic color scheme of a Sunday comic section.

But it's only imaginary protection—nature would have provided it if it had been essential.

Just as Morganite brushes provide necessary lubrication in themselves which obviates the foolish expedient of slopping lubrication on the commutator.

"Then it's cheaper to use Morganite brushes alone than cheap brushes plus *lubricant*"—you say. *Sure* it is! and, what is more, with Morganite brushes you get *engineering service* to prescribe the exact type of Morganite your service calls for.

Save your money by getting your prescription now.



Factory, Brooklyn, N. Y.

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Electrical Engineering & Mfg. Co.
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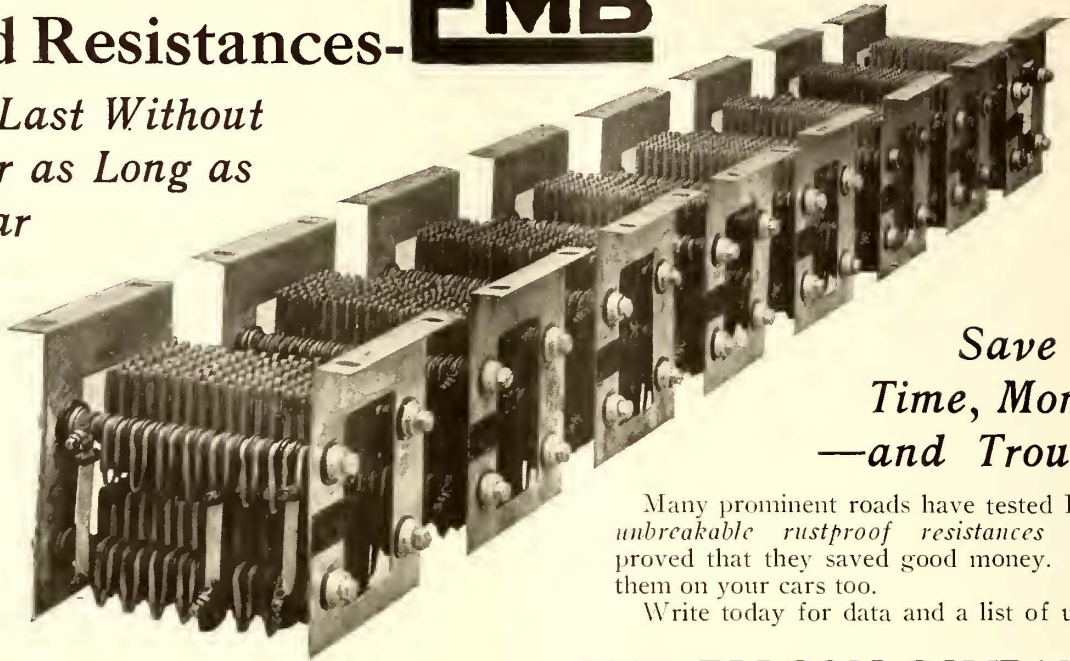
Canadian Representative:

Neville G. Johnson, 43 Hillsboro Ave., Toronto

Put On These Grid Resistances-

EMB

*They Last Without
Repair as Long as
the Car*



*Save
Time, Money
—and Trouble*

Many prominent roads have tested EMB *unbreakable rustproof resistances* and proved that they saved good money. Test them on your cars too.

Write today for data and a list of users.

THE ELLCON COMPANY

50 Church Street, New York

GREAT BRITAIN:

Electro-Mechanical Brake Co., Ltd., West Bromwich, Eng.

AUSTRALIA:

J. G. Lodge & Co., 109 Pitt Street, Sydney

Safety and Economy in Electric Railway Wheels



Electric railways strive to maintain their rolling stock with the least possible expense; that is, they must keep their cars out of the repair shops. To do this necessarily means they must use wheels that will not require frequent renewals.



F. C. S. Wheels

are one-wear wheels that do not have to be shopped for frequent turning—all that is necessary to remove flat spots is to run the car onto a pit grinder for twenty to forty minutes at night when in the barn and the wheels are ground truly cylindrical and are as good as new, saving the expense of removal from truck.

The composition of the flange and tread insure a hard wearing surface indicative of long service.

Tests that have been made prove that brake shoe wear on chilled iron wheels is twenty to twenty-five per cent. less than on any other type of wheel.

F. C. S. wheels are designed to meet the demands to be imposed upon them by the weight of car, speed, brake pressure, condition of track, etc., on each individual system, therefore insuring safety to a maximum degree.

GRIFFIN WHEEL COMPANY

PLANTS: Chicago Detroit Denver Los Angeles St. Paul Tacoma Kansas City Boston

THE "STANDARD" BRAND ON YOUR MATERIAL IS AN ASSURANCE OF EVENTUAL ECONOMY

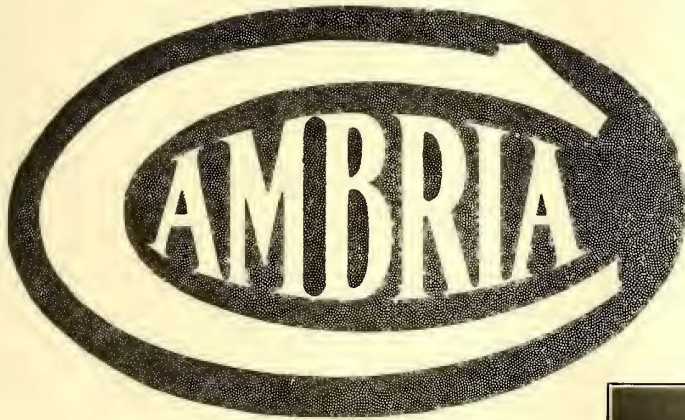


STANDARD STEEL WORKS CO.

Portland, Ore.
San Francisco, Cal.
City of Mexico, Mex.
St. Louis, Mo.

MORRIS BUILDING
PHILADELPHIA

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New York, N. Y.
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T-RAILS

All weights, 12 lb. to 125 lb.
per yard

Open Hearth
and Bessemer

Track Bolts
and Nuts

AXLES

Cambria Special

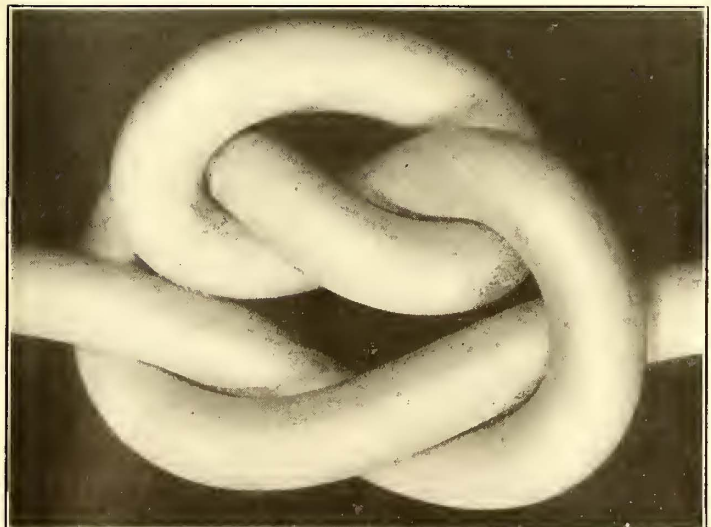
Rolled in the old way—the Cambria way. Slow reduction from ingot means maximum density and homogeneity.

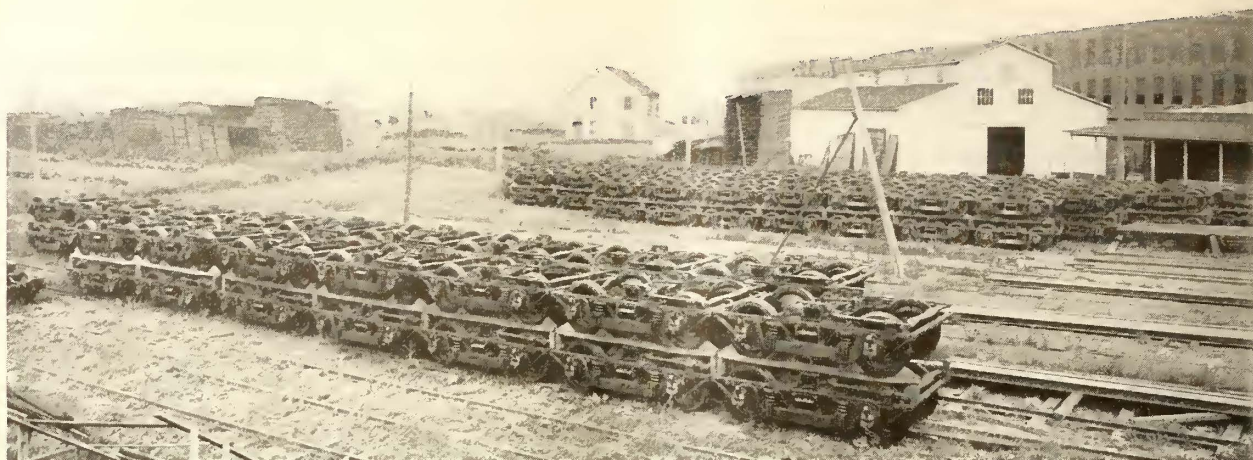
Our axles represent the highest development in the art of heat treating. Axles for street and interurban lines, our Specialty.

CAMBRIA STEEL COMPANY

General Sales Office: Morris Bldg.,
PHILADELPHIA

Sales Offices: Atlanta, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Detroit, New York, Philadelphia, Pittsburgh, St. Louis, San Francisco, Tacoma, Montreal. Works at Johnstown, Pa.





In 1914, 266 Baldwin Class B Trucks were built for the Northwestern Elevated Railway Co. of Chicago. Subsequently a "repeat order" was placed for 244 similar trucks; and these are shown in the illustration, ready to be placed under the cars.

Repeat orders like these are proof of Baldwin quality.

THE BALDWIN LOCOMOTIVE WORKS

Philadelphia, Pa.

REPRESENTED BY

Charles Riddell, 625 Railway Exchange, Chicago, Ill.

C. H. Peterson, 1210 Boatmen's Bank Building, St. Louis, Mo.

F. W. Weston, 50 Church Street, New York, N. Y.

George F. Jones, 407 Travelers' Building, Richmond, Va.

A. Wm. Hinger, 722 Spalding Building, Portland, Ore.

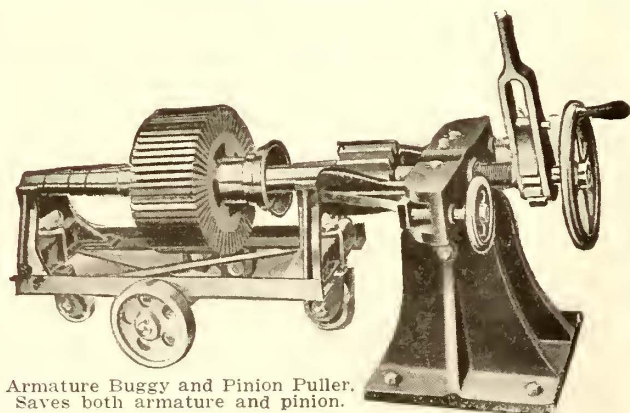
Williams, Dimond & Co., 310 Sansome St., San Francisco, Cal.

J. A. Hanna, Niles, Ohio.

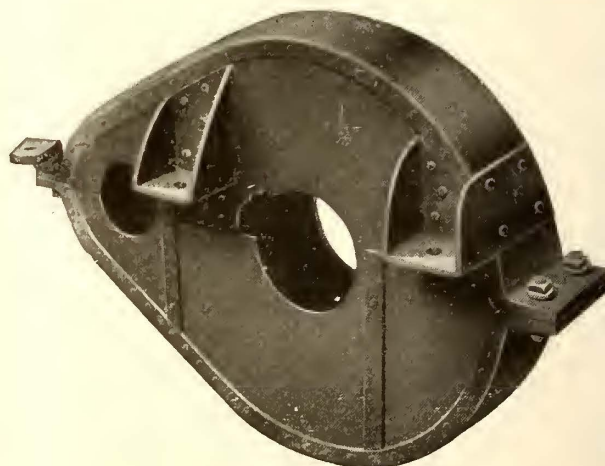
Columbia Car and Shop Equipment

make the hard-earned nickel go
a long way.

They build up the efficiency of the men. They
reduce cost in every operation.
Get acquainted with the whole list.



Armature Buggy and Pinion Puller.
Saves both armature and pinion.



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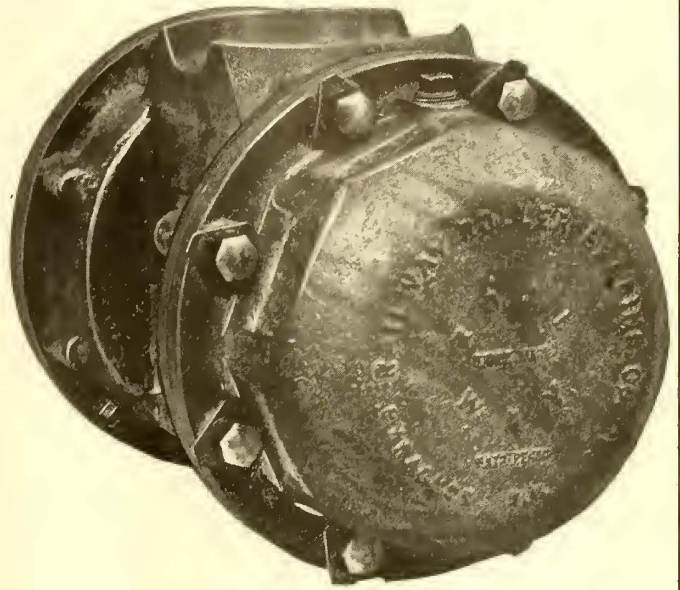
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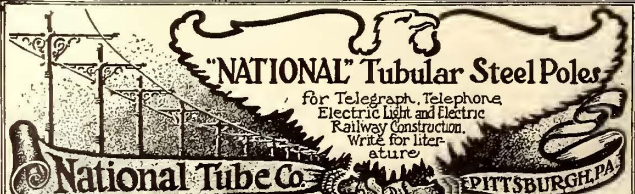
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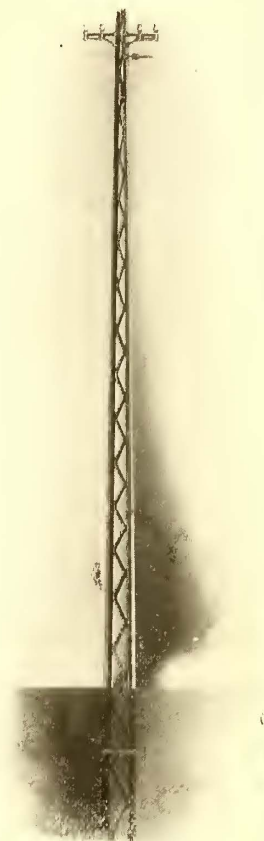

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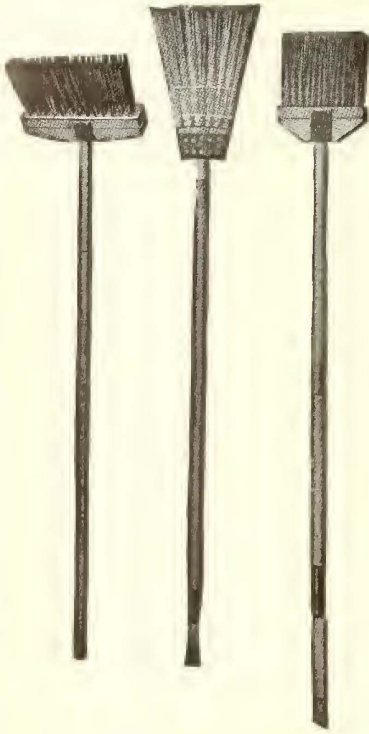
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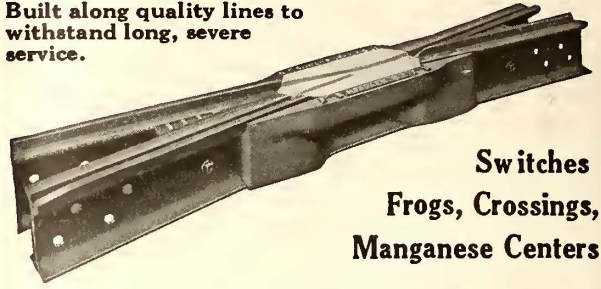
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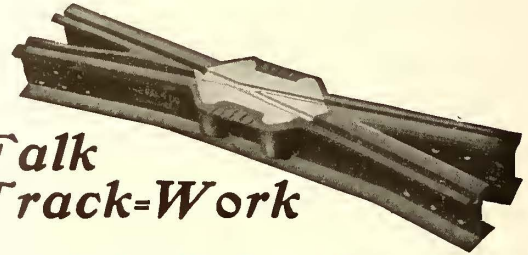
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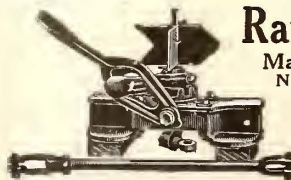
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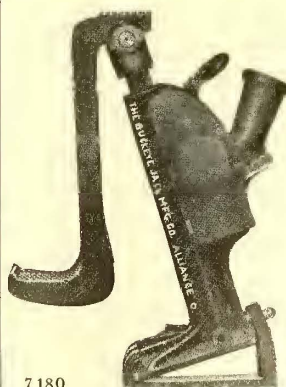
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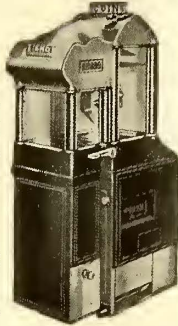
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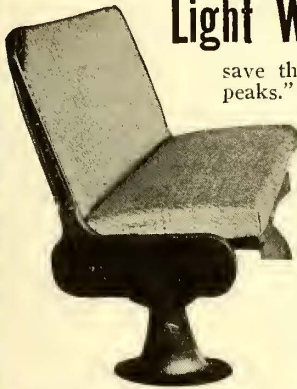
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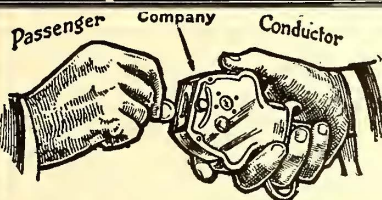
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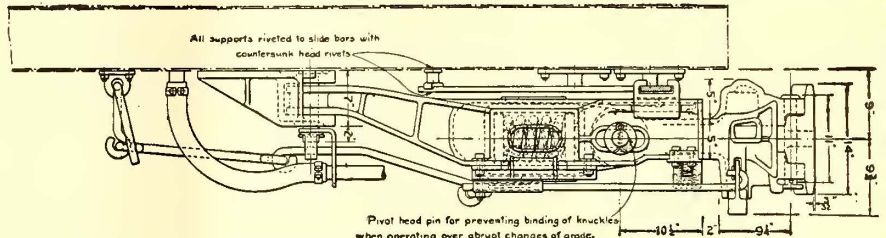
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General Sales Agents

READY - REFERENCE INDEX

to products manufactured by advertisers in this issue of Electric Railway Journal

Over 300 different products are here listed.
The Alphabetical Index (see eighth page following) gives the page number of each advertisement.
As far as possible advertisements are so arranged that those relating to the same kind of equipment or apparatus will be found together.

This ready-reference index is up to date, changes being made each week.

If you don't find listed in these pages any product of which you desire the name of the maker, write or wire Electric Railway Journal, and we will promptly furnish the information.

- Acetylene Apparatus.** (See Cutting Apparatus, Oxy-Acetylene.)
- Acetylene Service.**
Oxweld Acetylene Co.
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- Advertising, Street Car.**
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- Air Cleaners.**
Lord Mfg. Co.
- Alloys, Steel & Iron.**
Titanium Alloy Mfg. Co.
- Alloys and Bearing Metals.** (See Bearings and Bearing Metals.)
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Western Electric Co.
Westinghouse Elec. & M. Co.
- Automobiles and Busses.**
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- Axle Straighteners.**
Columbia M. W. & M. I. Co.
- Axles.**
Bemis Car Truck Co.
Brill Co., The J. G.
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Carnegie Steel Co.
Cincinnati Car Co.
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- Bearings and Bearing Metals.**
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Columbia M. W. & M. I. Co.
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More-Jones Brass & Metal Co.
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Railway Roller Bearing Co.
S K F Ball Bearing Co.
- Bells and Gongs.**
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- Benders, Rail.**
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- Blow Torches for Soldering and Brazing.** (See Cutting Apparatus, Oxy-Acetylene.)
- Blowers.**
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Westinghouse Elec. & M. Co.
- Boiler Cleaning Compounds.**
Dearborn Chemical Co.
Johns-Manville Co., H. W.
- Boiler Coverings.**
Johns-Manville Co., H. W.
- Boiler Graphite.**
Dixon Crucible Co., Joseph.
- Boiler Tubes.**
National Tube Co.
- Boilers.**
Babcock & Wilcox Co.
- Bond Clips.**
Electric Railway Improve. Co.
- Bond Testers.**
American Steel & Wire Co.
- Bonding Apparatus.**
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Ohio Brass Co.
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Prest-O-Lite Co., Inc., The.
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Electric Railway Improve. Co.
Electric Service Supplies Co.
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Electric Service Supplies Co.
General Electric Co.
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Ohio Brass Co.
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Western Electric Co.
- Book Publishers.**
McGraw-Hill Book Co., Inc.
- Boring Tools, Car Wheel.**
Niles-Bement-Pond Co.
- Braces, Rail.**
Kilby Frog & Switch Co.
- Brackets and Cross Arms.** (See also Poles, Ties, Posts, Piling and Lumber.)
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Bates Expanded Steel Truss Co.
Electric Service Supplies Co.
International Creo. & C. Co.
Lindsley Bros. Co.
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- Brakes, Brake Systems and Brake Parts.**
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- Bridges and Buildings.**
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Cutter Electrical & Mfg. Co.
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Western Electric Co.
Westinghouse Elec. & M. Co.
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General Electric Co.
Klein & Sons, M.
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- Cleaners and Scrapers, Track.** (See also Snow-Plows, Sweepers and Brooms.)
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Columbia M. W. & M. I. Co.
D & W Fuse Co.
General Electric Co.
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— the only means at your disposal to accurately measure the power consumption of cars. You can well afford to investigate. Bulletin 416.

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For complete information regarding Model 310 Wattmeters (Illustrated) and Model 329 Portable Polyphase Wattmeters write for Bulletin No. 2002. Other Models in this group are Model 341 A.C. and D.C. Portable Voltmeter, described in Bulletin No. 2004; and Model 370 A.C. and D.C. Portable Ammeter, described in Bulletin No. 2003.



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If Not,
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General Electric Co.
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Western Electric Co.
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- Condensers.**
General Electric Co.
Westinghouse Elec. & M. Co.
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Lord Mfg. Co.
- Controller Handles.**
Lord Mfg. Co.
- Controller Regulators.**
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Westinghouse Elec. & M. Co.
- Controlling Systems.**
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Westinghouse Elec. & M. Co.
- Converters, Rotary.**
General Electric Co.
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American Bridge Co.
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- Cord, Bell, Trolley, Register, etc.**
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Imperial Rubber Co.
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- Cord Connectors and Couplers.**
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Samson Cordage Works.
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The.
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National Pneumatic Co.
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- Fencing, Wire.**
American Steel & Wire Co.
- Fenders and Wheel Guards.**
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- Fibre Insulation.**
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American Mason Safety T. Co.
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- Forgings.**
Standard Steel Works Co.
- Furnaces. (See Stokers.)**
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- Gaskets.**
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- Gas Producers.**
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- Gear Cases.**
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- Generators, Alt.-Current.**
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- Generators, Dir.-Current.**
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Morgan Crucible Co.
- Grates, Chain.**
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- Greases. (See Lubricants.)**
- Grinders, Portable, Electric.**
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- Grinders and Grinding Wheels.**
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- Guards, Trolley.**
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400° Fahrenheit



You'd say Goodbye to a great many insulating tapes long before that temperature was reached. But until you reach that figure you can't put a kink into the insulating qualities of

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It is just the right "blend" of asbestos fibre and a special insulating compound.

Its particular value lies in the fact that while it is a good electrical insulator, it is also a *splendid conductor of heat*. Your coils can't stay blanketed when the temperature comes up.

Deltatape can be supplied in any width, and in thicknesses between 10 and 25 mils. The 10 mil tape requires 2500 volts to puncture it, while 5000 volts is required to break down the 25 mil tape.

You ought to get all the facts. It will pay you. For your car operation will always be at the mercy of motor conditions.

So we say—WRITE

D & W FUSE CO.

Providence, R. I.

2

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This is the cry of every industry. In yours it is attained by using

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A Chain Hoist that excels in every feature. It has Planetary Gears, Steel Parts, 3½ to 1 factor of Safety. It's the only Block that carries a five-year guarantee.

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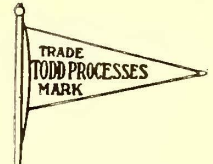
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Barrett Emergency Car Jacks
Duff Ball Bearing Screw Jacks
Duff Motor Armature Lifts

The Duff Manufacturing Co., Pittsburgh, Pa.

Sterling Insulating Varnishes Sterling Iron Enamel Paints

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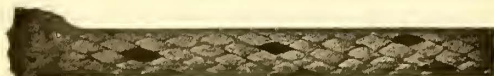
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Compact, Durable, Easily and Speedily Operated and Fire-proof. Openings of any size may be equipped and the doors motor-operated if desired. Manufactured by the KINNEAR MANUFACTURING CO., Columbus, Ohio
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Made of fine cotton yarn braided hard and smooth. Inspected and guaranteed free from flaws. Proved to be the most durable and economical. Samples and information gladly sent.

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For Armature Banding, Coil Winding, Taping, Pinion Pulling, Commutator Slotting and Pit Jacks, Armature Buggies and Armature Removing Machines

Manufactured by

AMERICAN GENERAL ENGINEERING CO.
253 Broadway, New York, U. S. A.

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- Heaters, Car, Hot Water.**
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Smith Heater Co., Peter.
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Ohio Brass Co.
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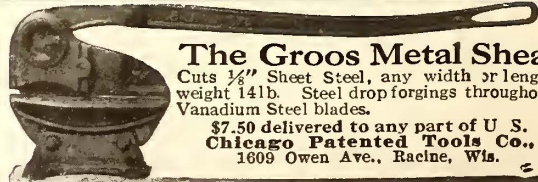


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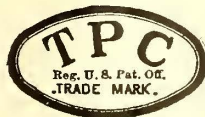
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ENGINEERING DEPARTMENT

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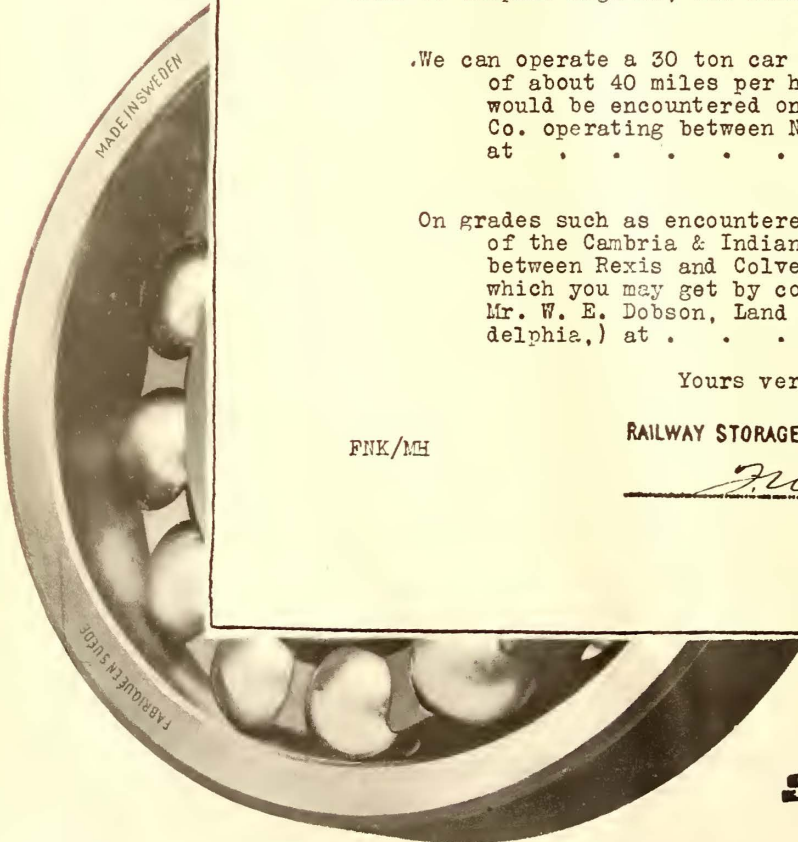
On grades such as encountered in the operation of the Cambria & Indiana Rd. Co., operating between Rexis and Colver Heights (profile which you may get by communicating with Mr. W. E. Dobson, Land Title Bldg., Philadelphia.) at 2.19 K.W.Hr.

Yours very truly,

FNK/MH

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J. W. ...
Chief Engineer.



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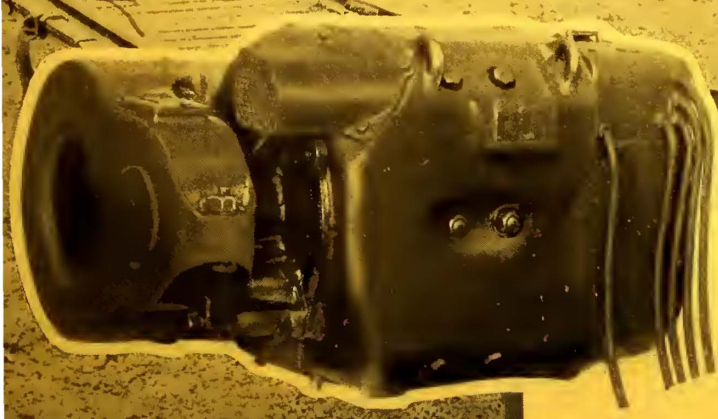
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