

1911

1912

# CATALOGUE, No. 22

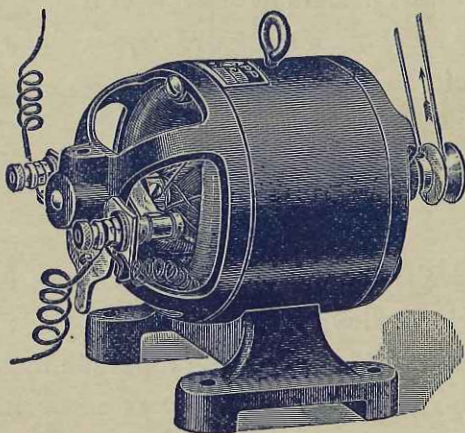
ESTABLISHED 1890

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## KNAPP MODELS IN MINIATURE BATTERY MOTORS

110 Volt Motors



### DYNAMO-MOTORS

### RAILWAYS :: SPECIALTIES

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KNAPP ELECTRIC and NOVELTY CO.

511 WEST 51st STREET

NEW YORK

# *Terms*

Cash with order or C. O. D. if sufficient remittance is made to cover express charges.

Remit by N. Y. Bank draft, Post Office order or Express Money Order.

We will not be responsible for the safe arrival of cash remittances.

In ordering be careful to describe goods as per catalogue and whether to be shipped by freight or express.

To established dealers in our line of trade only, we will open a 30-day account on stock orders, provided satisfactory New York reference is received.

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## *Experimental Work*

We are well equipped to develop ideas and execute general experimental work, also to build goods under contract for parties wishing to handle the trade themselves and avoid the annoyances pertaining to the manufacture of goods.

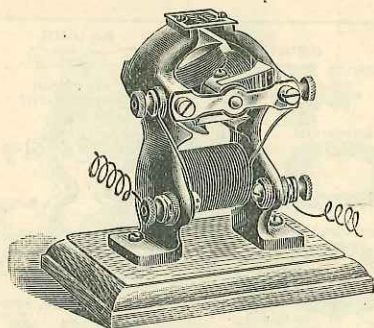
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## *Manufacturing Under Royalty*

To parties having patented articles and a desire to be relieved of all responsibility, we will manufacture and sell the same; paying a royalty on the amount of sales.

Ideas and suggestions solicited.

# Little Hustler Motor



List 100

This well-known motor, ever leading in efficiency and value, is a complete specimen of electrical science and workmanship.

The binding posts are mounted on the field, to avoid disturbing the connections when it is desired to use the motor without the base.

It is  $3\frac{1}{2}$  in. high, finished in black enamel, with nickel-plated trimmings. Has a three-pole armature, causing the motor to start without assistance when the current is applied.

The  $\frac{1}{8}$  in. shaft is fitted with a pulley for running mechanical toys, models etc. and drives a fan at a high rate of speed.

One  $6 \times 2\frac{1}{2}$  in. dry cell or a cell that will run any motor will drive the "Little Hustler."

List 100, Price, Motor . . . . . \$1.00

(By mail in U. S., 15c. additional!)

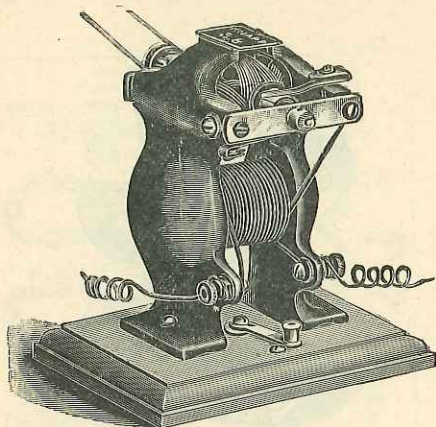
List 101, Fan  $4\frac{1}{2}$  in., nickel-plated . . . . . .25

(By mail in U. S., 2c. additional)





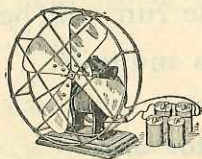
# Knapp Motor, Type B.B.



List 104

Type B. B. is larger and stronger than type A. Replaces our well known type B and is much better in design and efficiency. Has Armature  $1\frac{3}{8}$  in. diameter, laminated. Shaft .148 diameter. Pulley  $\frac{1}{16}$  diameter  $\frac{1}{8}$  in. groove. Starting switch,  $4\frac{1}{2}$  in. high. Will drive 6 in. fan at high speed, operates models, etc. It is finished in black enamel, nickeled trimmings.

## As a Fan



For intermittent work, one or two dry cells,  $6 \times 2\frac{1}{2}$  in. will be sufficient. For practical fan use, four connected, two in series, two multiples will more than double the running time. Worked two hours per day, about twenty-five hours can be obtained from four good cells. The motor will also run on one storage cell, or any cell for closed circuit work.

## PRICES

List 104, Motor, 2 volts	.	.	\$2.50
(Shipping weight $2\frac{1}{4}$ lbs.)	.	.	
List 105, Fan, 6 in., 4 blades	.	.	.50
(Mail in U. S., 8c. additional)	.	.	
List 108, Guard	.	.	.50
(Mail in U. S., 7c. additional)	.	.	

## Knapp Motor, Type G

The efficient, compact and symmetrical lines of the well-known ring types have made them more popular than all other designs. Here is a little one for the boys, with lots of go, full of fun and instruction. No trouble to learn about motors from this perfect electrical and mechanical machine.

There is no chance for electrical leakage in the field, and the frame and pole pieces are cast in one. The armature is three-pole.

The  $\frac{1}{8}$  in. steel shaft is fitted with a pulley.

The brushes are removable without tools, yet tightly fastened, causing less resistance and making a more perfect circuit than loose ones. Their flat surface give best results for low voltage.

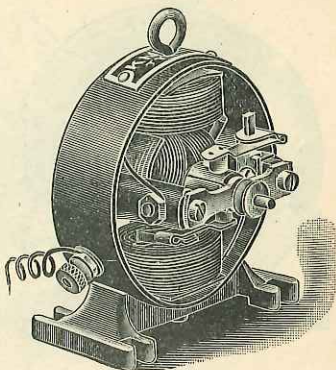
For continuous work and longer life, copper gauze brushes can be furnished at slight additional cost.

One  $6 \times 2\frac{1}{2}$  in. dry cell will drive the motor or two cells when more power is required. Height,  $3\frac{1}{2}$  inches.

List 120, Price

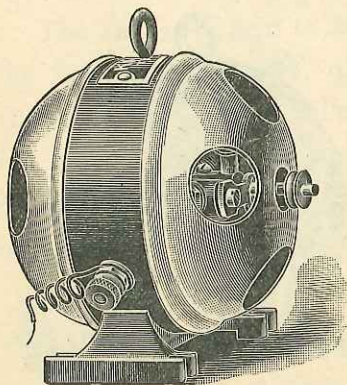
\$1.25

(By mail in U. S., 18c. additional)



List 120

## Knapp Motor, Type H



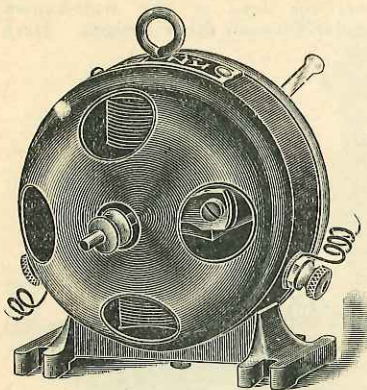
List 121

A handsome duplicate in miniature of the semi-enclosed types. Well protected, yet properly ventilated. This is a step forward in the right direction. The features of construction and operation are the same as Type G, with the protecting caps added, and these caps are easily detached for inspecting every part of the motor.

List 121, Price. . . . \$1.50

(By mail in U. S., 20c. additional)

## Knapp Motor, Type J



List 123

Type J is most interesting from the fact that it has a reversing switch, enabling the operator to start, stop or run his motor in either direction at will. This motor also embodies all points of construction of Types G. and H.

One  $6 \times 2\frac{1}{2}$  in. dry cell will drive the motor or two cells when more power is required.

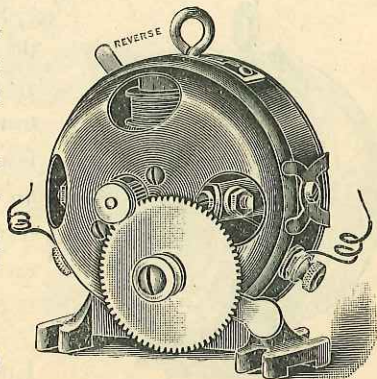
List 123, Price . . . \$2.00  
(By mail in U. S., 22c. additional)

## Knapp Motor, Type K

Type K has a reducing gear, with which the high speed of the motor may be transformed to power and slow speed.

The motor has a reversing switch and all the details of excellence contained in our other similar types, making the most complete two-speed model ever produced.

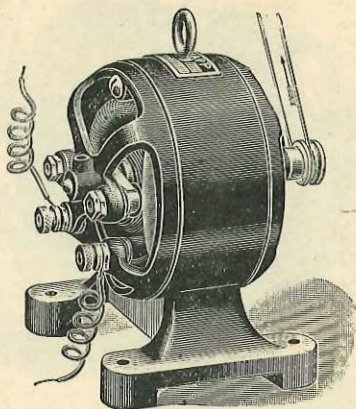
List 124, Price . . . \$2.50  
(By mail in U. S., 22c. additional)



List 124



# Knapp Type XX



List 106

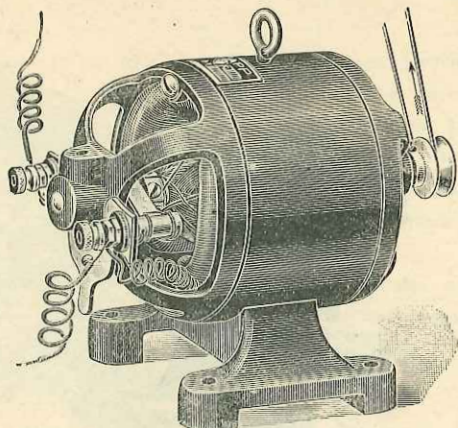
The up-to-date boy can see at a glance the superior lines of this motor and combine fun, theory and practice while operating a model, which so clearly resembles large machines.

The two pole field is cast solid, with form wound coils. The Armature is  $1\frac{3}{8}$  in. diameter, drum type, laminated with .148 shaft and 9-16 pulley. The brushes are spring tension and operate most beautifully. The finish is black enamel with nickered trimmings, is  $4\frac{1}{4}$  in. high including base and ring,  $2\frac{3}{4}$  in. diameter, less base and ring.

List 106, Type XX - - - Price \$2.25

(Shipping weight  $2\frac{1}{2}$  lbs.)

# Knapp Dynamo Motor. Type D



List 125

The dynamo places the boy in possession of current at will. By its use he learns the lesson and method of conversion of mechanical energy, begins to understand the great fundamental laws of mechanics, and all in a delightful way, which constantly spurs him on to renewed experiment and endeavor.

With current at hand he can electroplate, charge storage batteries, run lamps, motors, trains of cars, induction coils, etc., in fact, the number of his experiments is only limited by his knowledge and desire.

As with our other electrical novelties, this Dynamo is a miniaturized duplicate of machines in actual commercial operation.

The type "D" Dynamo may be attached to a gas engine, a sewing machine or other driving power.

## Points of Construction.

Field—Cast solid, with coils form wound and connected in multiple. Armature  $1\frac{1}{2}$ " diameter, drum type, six slots, laminated. Shaft, .188 diameter. Brushes—spring tension. Rocker arm—for turning the brushes to the best lines of commutation. Pulley  $\frac{3}{4}$ " diameter, grooved for  $\frac{3}{16}$  round belt. Finish—black enamel.  $4\frac{1}{2}$ " high including base and ring.  $3\frac{1}{8}$ " diameter, less base and ring.

Approximate output at 3500 revolutions. Open circuit, 7 volts. Safe maximum load 4 volts,  $1\frac{1}{2}$  amperes.

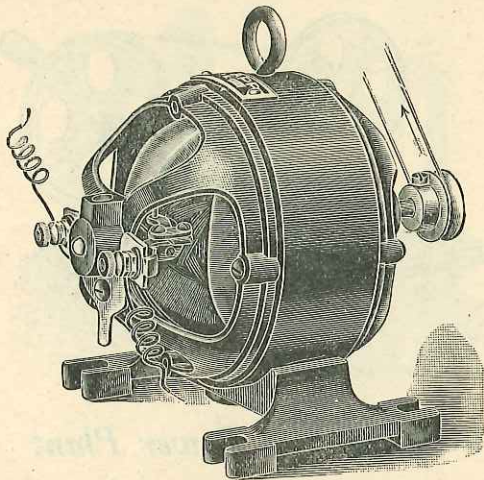
## As a Power Motor, 6 Volts.

The shunt connected fields increases the power at slow speed. If changed to series, high speed may be obtained.

List 125. Price . . . . . \$3.75

(Weight boxed 4 lbs)

# Knapp Dynamo Motor, Type S



List 128

**Has No Competitors**

**is larger and more powerful than our *Type D*.**

## Points of Construction

Field—cast solid, with coils form wound and connected in multiple;  
Oil Cups: Armature— $1\frac{3}{4}$  in. diameter, drum type, six slots, laminated.  
Shaft  $\frac{1}{4}$  in. Brushes—adjustable with set screw. Rocker Arm—for turning  
the brushes to the best line of commutation; Pulley—1 in. diameter, grooved  
for 3-16 in. round belt. Finish—black enamel.  $5\frac{1}{2}$  in. high including  
base and ring.  $4\frac{1}{4}$  in. diameter less base and ring.

Approximate output at 3000 revolutions.

Open circuit 9 volts.

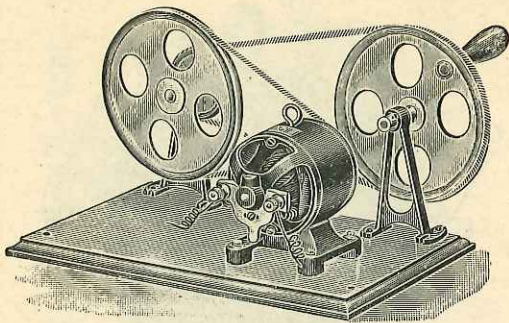
Safe maximum load 6 volts, 4 amperes.

As a power motor Type S shows good results on 4 to 6 volts.

List 128 . . . . . Price \$5.00

(Weight boxed  $6\frac{1}{2}$  lbs.)

# Hand Drive For Dynamo



List 115

## *A Miniature Power Plant*

Invaluable for experiment and demonstration. A practical and inexpensive double transmission with which the operator can easily obtain the required speed at the dynamo.

The  $\frac{1}{4}$  in. spiral spring belts eliminate all unnecessary friction and are used under a tension of about  $1\frac{1}{2}$  times their length. The two large pulleys are 6 in. diameter. The small one 2 in. diameter. The base is 12 x 7 in. and as the pulleys, are formed from sheet steel, combine strength and beauty.

Our regular stock dynamo types D and S are interchangeable with the driver.

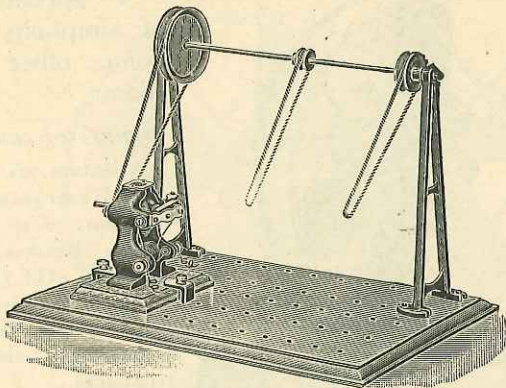
List 115. Hand Drive, (less Dynamo) . \$2.75

(Shipping weight 4 lbs.)

List 116. Extra belts  $18 \times \frac{1}{4}$  in. each . .25

(Mail in U. S. 4c. additional.)

# A High Grade Countershaft



List 114

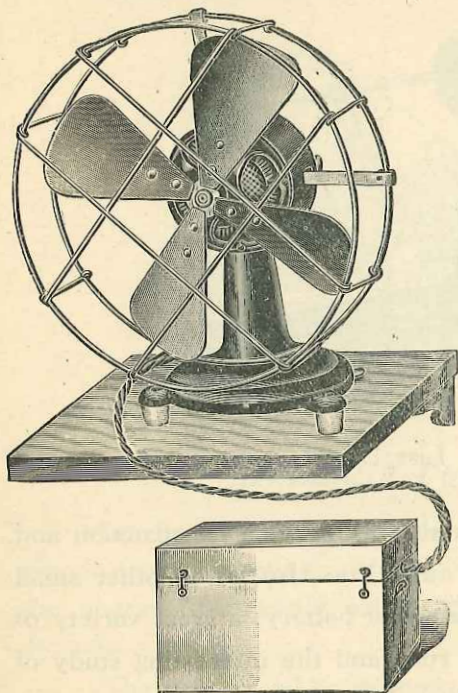
Something more than the ordinary in construction and finish. By driving with our Little Hustler or other small motor, by one of our dynamos or battery, a great variety of mechanical toys may be run, and the interesting study of transforming high speed from the motor to power, or slow speed by means of the different diameter pulleys will be found most interesting.

Pulleys  $\frac{3}{4}$ —1—2 inch.  
Uprights 6 in. long.  
Shaft 12 in. x 3-16 in.  
Steel Base 12 x 7 in.

List 114 . . . . . Price (less motor) \$1.75  
(Shipping weight 2 lbs.)

List 113—Extra Belts 10 in. x  $\frac{1}{8}$  in. . . each .05  
(Mail in U. S. 2c additional.)

# Knapp Battery Fan, Type F



A portable model of simplicity for the home, office or sick-room.

## *Points of construction*

Armature, six poles, drum type, laminated,  $1\frac{1}{2}$  in. diameter. Shaft, .188 diameter. Brushes, Spring Adjustment. Oil Cups. Base, fitted with starting switch and rubber feet, Black enamel and nickel plated trimmings.

## *Battery*

This is an ideal outfit with a six volt storage battery. 20 good dry cells  $6 \times 2\frac{1}{2}$ , connected 5 in series, 4 multiples, if run 3 hours per day will last for 200 hours upward; more continuous work will lessen the total run.

The box for 20 dry cells is wired complete and a diagram furnished, showing how to put in the cells and connect.

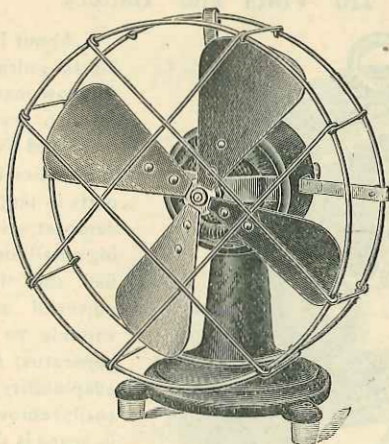
Approximate speed 1500 revolutions at 6 volts, 8-10 ampere.

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## PRICES

List 126 Type F. Motor, 8 in. fan and guard	\$6.50
(no cord or battery)	
(Shipping weight 6 lbs.)	
112 Box for 20 cells (less cells)	1.00
110 Six feet connecting cord, flexible	.50

# *Knapp Battery Fan*



**TYPE E**

A 10 in. fan driven by a larger motor and designed for circulating more air than our smaller type "F". Runs well on 8 to 12 volts, either storage battery or dynamo.

## *Approximate results*

12 volts,  $1\frac{1}{2}$  amperes, Speed, 1800 R. P. M.

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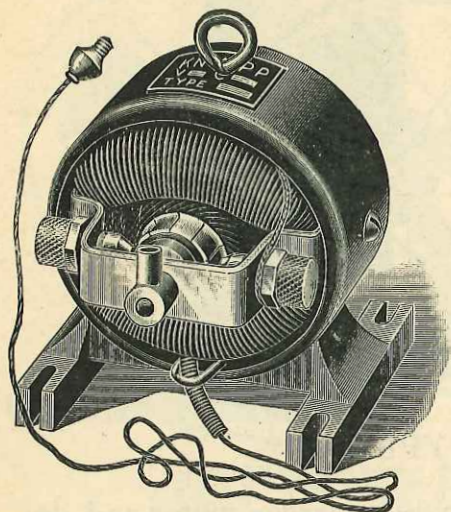
## **PRICE**

List 107. Type E Motor, 10 in. Fan and Guard  
(no cord or battery) . . . . . \$8.00

(Shipping Weight 9 lbs.)

# Knapp Motors

110 Volts and Battery



List 134

*Universal for 110 Volts A. C. and D. C.*

About 1-40 H. P. according to voltage and winding. The low cost is made possible through exhaustive experiment and expensive tools, to automatically produce the parts in large quantities. For demonstration, and for operating small devices many will find this light weight yet powerful motor especially suitable to their particular apparatus, and flexible in its adaptability. The base is easily removed where a saving in space is desired.

Builders of flying machines and boats can procure an extension shaft and connecting collar for same.

The requirements for propeller blades are so varied that we do not make them.

## POINTS OF CONSTRUCTION.

- Field, 2 poles laminated.
- Armature,  $1\frac{1}{8}$ " Diameter, 10 slots, laminated.
- Commutator, 10 segments, Mica insulation.
- Shaft, .148 diameter 3  $\frac{5}{16}$ " long.
- Bearings, Bronze.
- Pulley, 9-16" diameter  $\frac{1}{8}$ " groove.
- Brushes, Carbon, 5-32 diameter, spring feed.
- Enclosing Case, Steel, Black Japan finish.
- Height over all 4".
- Diameter without shell and base  $2\frac{3}{4}$ ".

## Prices

List 134 Type L.	110 Volts Universal for both A. C. & D. C.	\$6.50
List 136 Type O.	6-8 Volt Battery	\$6.00
	(Shipping weight of each about $2\frac{3}{4}$ lbs.)	
List 144	Extention Shaft 10" long with connecting collar	.25



# Knapp Motors

## *Brushes*

L.H-A-B.B-G-H-J-K-per pair	-	-	-	-	-	-	.05
same brush used on all the above							
X.X.	-	-	-	-	-	-	.10
D.	-	-	-	-	-	-	.10
E. F.	-	-	-	-	-	-	.10
S.	-	-	-	-	-	-	.15

## *Commutators*

L.H-A-B.B-G-H-J-K-X.X-(Less Shaft)	-	-	-	-	-	.20
above take the same commutator						
E. F. (Less Shaft)	-	-	-	-	-	.50
D. (Less Shaft)	-	-	-	-	-	.50
S.        "	-	-	-	-	-	.50
L.        "	-	-	-	-	-	1.00

## *Fans and Guards*

4½ inch fan 4 blades	-	-	-	-	.25
6   "       " 4   "	-	-	-	-	.50
6½ inch guard	-	-	-	-	.50
8   inch fan 4 blades	-	-	-	-	.75
8½ inch guard	-	-	-	-	1.00
10 inch fan 4 blades	-	-	-	-	1.00
10½ inch guard	-	-	-	-	1.00

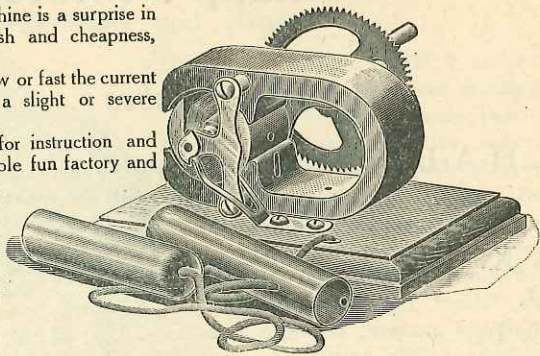
# Knapp Electric Thriller Magneto

This little shocking machine is a surprise in mechanical perfection, finish and cheapness, and free from danger.

By turning the crank slow or fast the current can be regulated so that a slight or severe shock can be produced.

Every boy wants one for instruction and experiment. It is a veritable fun factory and in a group, side-splitting laughter is created by the many amusements and tricks the machine is capable of producing.

It strengthens the nervous system, costs nothing to run, can be applied without aid and supersedes induction coils and medical batteries.



List 150

Furnished complete with hand electrodes, crank, multiplying gear, etc., etc.

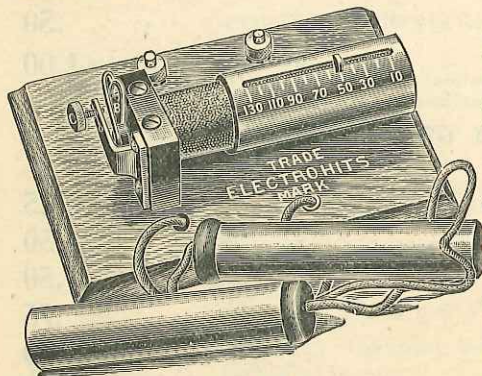
Must be seen to be appreciated.

List 150, Price, complete . . . . . \$1.00  
(By mail in U. S., 25c. additional)

## “Electrohits”

Electrohits is a complete medical coil with the features of a more expensive machine, and is mounted on a polished base  $4\frac{3}{8} \times 3\frac{3}{8}$  in., metal parts nickeled, current regulating tube with graduated scale, fastened to coil.

The full current will make a strong man dance or can be regulated at will so as a child can hardly feel it.



List 151

**Boys Delight** in its scientific, instructive and experimental demonstrations. It is entertaining and many tricks with it can be sprung on a group that will create roars of laughter.

### Medical Use

In cases of nervous disorders, rheumatism, gout, etc., it is easily applied by the patient at home without assistance.

Any dry or liquid cell that will operate any coil will operate **ELECTROHITS**.

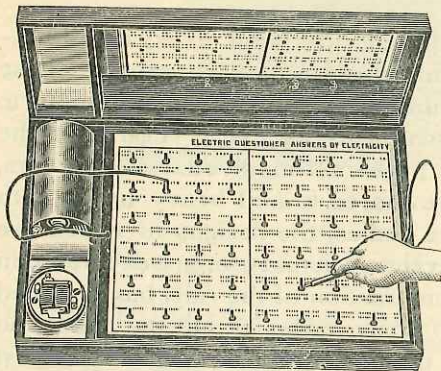
List 151, Price . . . . . \$1.00  
(By mail in U. S., 10c. additional)

List 152, Dry Cell,  $6 \times 2\frac{1}{2}$  in. . . . . \$0.35  
(By mail in U. S., 35c. additional)

# Knapp Electric Questioner

Answers by Electricity

Funny, Entertaining, Instructive.



This article enjoys the best continuous sale of any electrical specialty of its price, and should be in the hands of every child in the land.

Twelve cards, numbered one to twelve, embracing all sorts of subjects, accompany each Questioner.

Extra sets of cards can be procured. Also Blanks to make up questions and drawings at home.

Description.—There are 48 pins on top of desk, over which a perforated card is placed, with 24 questions on the left side, and 24 answers on the right.

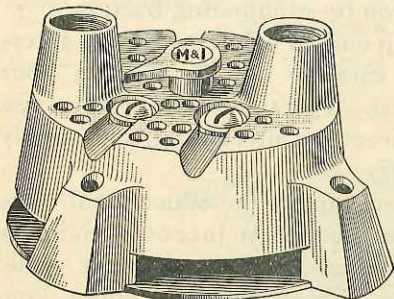
To Operate.—Place the key attached to the left flexible cord on any of the twenty-four questions desired. Take the pointer attached to the right flexible cord and tap pins consecutively until the signal is given, when the answer can be taken from around that pin.

## List 200

- |  |        |
|--|--------|
| List 200, Price, complete  | \$2.50 |
| List 201, Dry Cell No. 3, $1\frac{3}{4} \times 3\frac{3}{4}$ in., for recharge | 25     |
| (By mail in U. S., 15c. additional)  |        |
| List 202, Cards, miscellaneous subjects, Nos. 13 to 24                         | .50    |
| (By mail in U. S., 6c. additional)   |        |
| List 203, Cards, Blank set of 6, two sides.                                    | .50    |
| (By Mail in U. S. 6c.)   |        |

## 110-Volt Direct

## Current Reducer

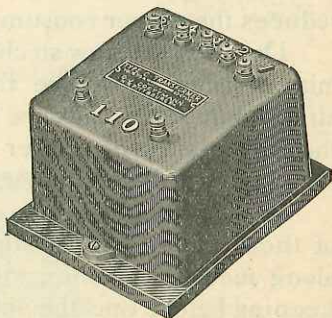


To modify direct house current for running motor cars. Has speed regulator. The price includes two lamps and connecting cord.

- |                            |         |
|----------------------------|---------|
| List 294, Price            | \$10.00 |
| (Shipping weight, 10 lbs.) |         |

## Alternating

## Transformer



## 110 Volts—60 and 133 Cycles.

A miniature transformer, converting the high pressure alternating house current to suitable tension. Cost to run motor cars,  $\frac{1}{2}$ c. per hour.

- |                            |         |
|----------------------------|---------|
| List 295, Price            | \$10.00 |
| (Shipping weight, 17 lbs.) |         |

# *Introduction*

## *Electric Trains and Trolleys—Two-Inch Gauge*

**A**FTER months of careful consideration, every detail having received the fullest attention, we present these outfits, which are not toys, but railways in miniature.

They have been constructed with every regard for the scientific and mechanical problems involved. The motors, of most efficient types, are geared to pull heavy trains with maximum efficiency. The bodies, the designs of which are faithful reproductions of trains in actual use, are decorated in attractive colors. The construction of the rails has received most careful attention, no sharp edges to cut the hands, no soldered joints to come undone, and yet withal the most rigid track on the market.

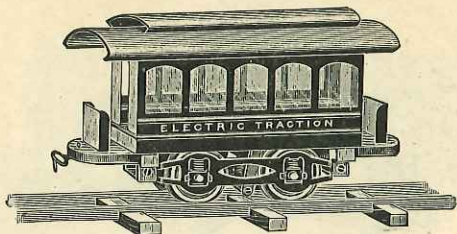
The current is conveyed to the trains by the separate rails of the track, which are insulated from each other by the wood ties. This method is less complicated than the third rail.

Eight sections of the curved track constitute a circle three feet in diameter, nine feet long. This is the smallest circle possible for the proper running of the trains. The use of additional lengths of straight track is strongly advised, as it reduces the power consumption by eliminating friction.

Dry cells are now so cheap and so efficient that for intermittent running, where the cars do not simply run hour after hour, these cells are best. For those who wish to use the house current, either direct or alternating, we supply the apparatus listed on page 17.

It is hardly possible to overestimate the educational value of these outfits, which supply a constant incentive to study along mechanical lines, stimulating to fresh endeavor while keeping before one the limits of mechanical freedom, continually showing the relation between cause and effect, bringing up to the user the conditions which are met in engineering practice. These lessons rightly learned spell success for the enquirer.

# Electric Traction



List 210

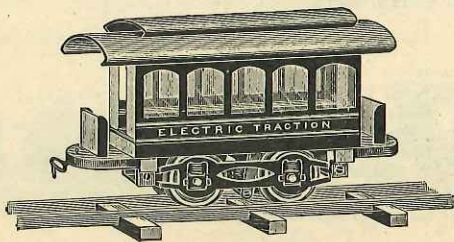
4 Volts, 1 Ampere.  $9\frac{1}{2}$  in. Long,  $5\frac{1}{2}$  in. High.

The motor, horseshoe type, excels in durability and simplicity and is sufficiently powerful to pull trail cars, yet light running. The brushes are easily removed without disturbing any other connection. The wheels are  $1\frac{1}{2}$  in. in diameter, the bodies beautifully decorated in colors.

Runs on 3 dry cells, our dynamo or on the house current, either direct or alternating, by means of our special apparatus, described on page 17.

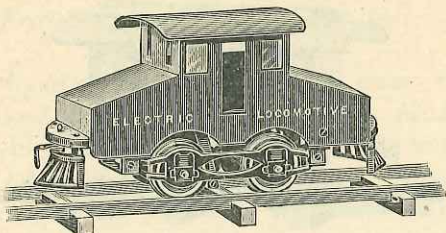
Packed with 1 pair track binding posts, 9 feet (8 sections) 2 in. gauge T-rail track—making a 3-foot circle—to which other shapes, switches, etc., may be added.

List 210, Electric Traction, with Track	. . .	\$4.50
(Shipping weight, $5\frac{1}{2}$ lbs.)		
List 211, Motor Car only	. . .	3.25
(Shipping weight, $2\frac{1}{2}$ lbs.)		
List 212, Trailer, single, same as Traction Car, without Motor	. . .	1.50
(Shipping weight, $1\frac{1}{2}$ lbs.)		



Trail Car 212

# Electric Locomotive



List 215

4 Volts, 1 Ampere. 10½ in. Long, 5½ in. High.

Motor and Wheels same as 210.

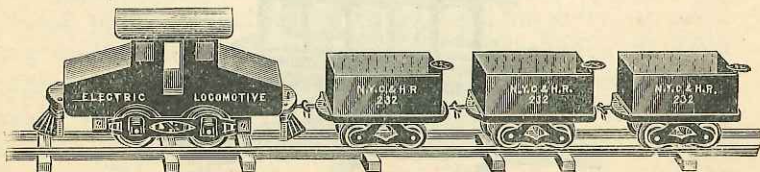
Body—Mining Type. Most effective and interesting trains may be made by adding Coal Cars, No. 232. Runs on 3 to 4 dry cells, according to number of trailers; the house current, either alternating or direct, with our special apparatus described on page 17 or by our Dynamo.

Packed with 1 pair track binding posts, 8 sections curved and two sections straight—2 in. gauge T-rail track, to which different shapes, switches, crossings, etc., may be added.

List 215, Outfit (less battery and trailers) . . . . \$5.00  
(Shipping weight, 5¾ lbs.)

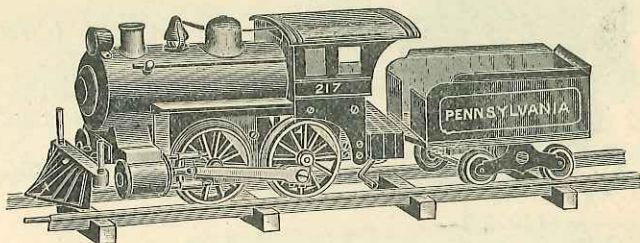
List 216, Motor Car (less track) . . . . 3.50  
(Shipping weight, 2¾ lbs.)

List 232, Coal Cars, each . . . . .50  
(Shipping weight, 10 oz.)



A Suggestion for a Train, but Packed Separately

# Electric Switch Engine



List 217

4 to 6 Volts, 1 to 1½ Amperes

The Steam Type Switching Engine driven by an electric motor provides a fascinating study in three things dear to the heart of every boy—Electricity, Mechanics and Locomotives—with nothing but fun while learning.

The danger arising from the use of steam is eliminated. The engine is light-running and geared for pulling trains made up from our large assortment of trail cars. Is durable, efficient, reasonable in price, equipped with the same motor as our 210—215, and a starting switch to reverse the direction.

Runs on 4 to 6 dry cells, according to the length of train; the street current, either A. C. or D. C., with our special apparatus; or by our Dynamo.

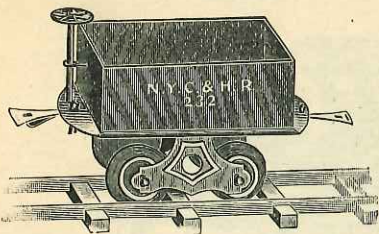
To more easily assist purchasers in making their varied selections it is packed without track.

Locomotive 11 in. long, 5½ in. high; Driving Wheels 2½ in. diameter, Tender 6 in. long, 3¾ in. high; Wheels 1 in. diameter.

List 217, Locomotive and Tender and one pair track  
binding posts, less track . . . . . \$7.50  
(Shipping weight, 4 lbs.)

For 2-in. gauge tin T-rail sectional track, switches, etc.,  
see page 24

# Trail Cars, Two-Inch Gauge



List 232

## Coal Car

5 in. long, 3½ in. high

(Shipping weight 10 oz.)

List 232,

Price \$0.50

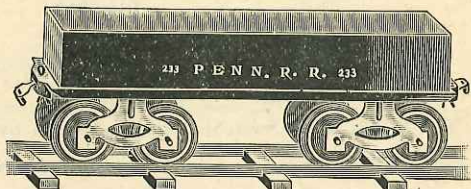
## Gondola Flat Car

11 in. long, 4 in. high.

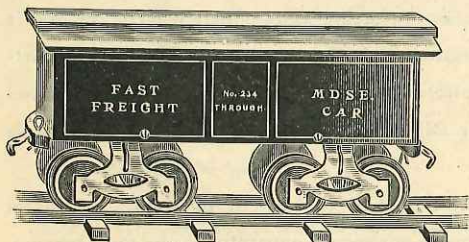
(Shipping weight, 1½ lbs.)

List 233,

Price \$1.00



List 233



List 234

## Box Car

11 in. long, 5 in. high,

(Shipping weight, 2 lbs)

List 234,

Price \$1.25

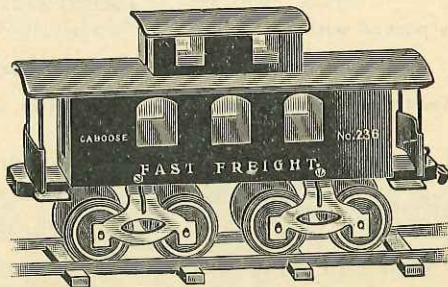
## Caboose

11 in. long, 6 in. high.

(Shipping weight, 2 lbs.)

List 236,

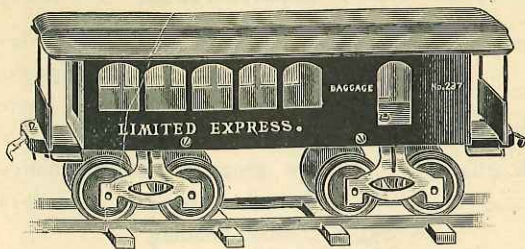
Price \$1.25



List 236



## Trail Cars, Two-Inch Gauge



List 237

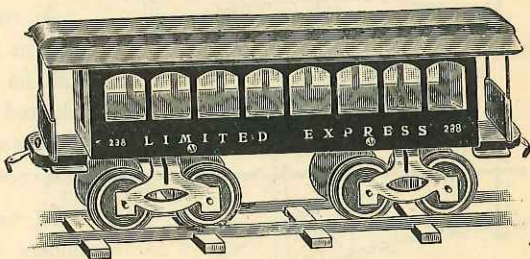
### Combination Car

13 in. long, 5 in. high.  
(Shipping weight, 2 lbs.)  
List 237, Price, \$1.50

### Passenger Car

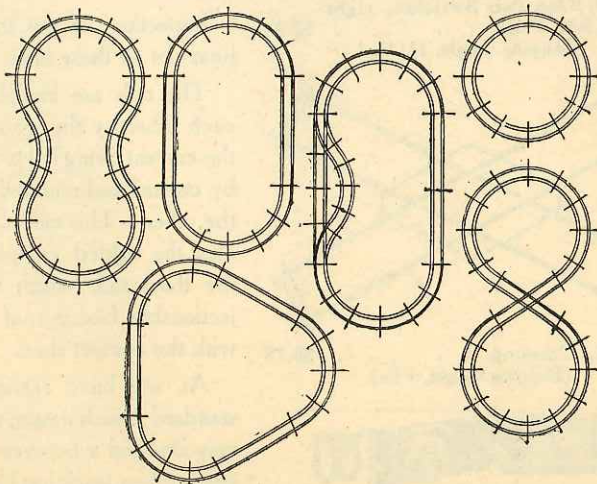
13 in long, 5 in. high  
(Shipping weight, 2 lbs.)

List 238, Price, \$1.50



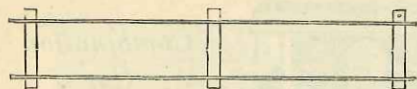
List 238

## Two-Inch Tin T-rail Sectional Track

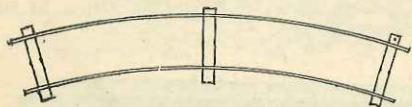


Illustrating a few of the many shapes of track that may be formed.

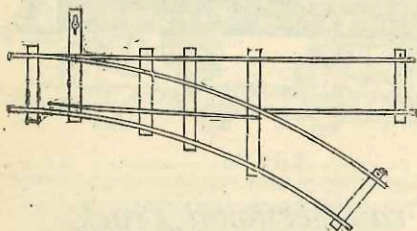
# Two-Inch Tin T-rail Sectional Track



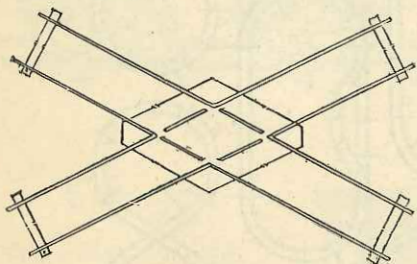
List 297, 8 (12½ in.) Straight Sections, Price . . . \$1.25  
(Shipping weight, 2 lbs.)



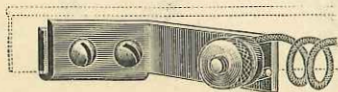
List 298, 8 Curved Sections for 3-foot Circle, Price . . . \$1.25  
(Shipping weight, 2 lbs.)



List 299, One Pair Switches, right and left, Price . . . \$2.50  
(Shipping weight, 1¼ lbs.)



List 301, Crossing . . . \$0.75  
(Shipping weight, 1 lb.)



List 310, Track Binding Post, pair \$0.25

The track is a much more important part of the equipment than is usually supposed, there being considerable tendency of the gauge to become untrue through warping as a result of constant bending.

At considerable expense we have at last perfected a track, with no sharp edges, rigid, no soldered joints, screws or nails, and one which preserves the electrical continuity of the circuit.

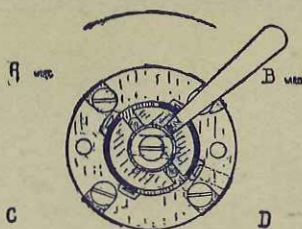
By new and improved machinery we are able to supply this at a price heretofore charged for track inferior in every particular.

Inspection of the track will bear out all these facts.

The rails are insulated from each other by the wooden ties, the current being led to the train by one rail and returned through the other. This method eliminates the added complexity of the third rail, which was objectionable because of friction with the contact shoe.

As we have retained the standard 2-inch gauge, our track may be used wherever the old steel ribbon track has heretofore been employed.

## Knapp Reversing Switch



List 304

The Knapp reversing switch, connected to motors, enables the direction of rotation of the armature to be changed at will.

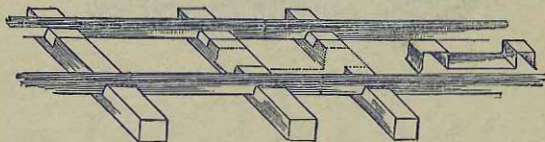
List 304, Price . . . . . \$0.50

(By Mail in U. S., 10c. additional.)



## Railway Tie Connectors

Firmly clamping the sections together. Beneficial where extra heavy work is required.



List 305

List 305, Tie Connectors, per dozen . . . . . \$0.25

(By mail in U. S., 10c., additional)

List 306, Wheels, 1 inch, set of 4 with axles . . . . . .40

(By mail in U. S., 10c. additional)

List 307, Wheels, 1½ inch, set of 4 with axles . . . . . .50

(By mail in U. S., 10c. additional)

List 308, Wheels, Locomotive, 2⅛ in. diameter, set of 4 with axles. 1.00

(By mail in U. S., 12c. additional)

List 311, Motor, with gear and pinion, 4 wheels, 1½ in., with axles  
(same as used in 210 and 215) . . . . . 2.00

(Shipping weight, 1 lb.)

List 309, Brushes, gauze, 1 pair, for 220A, 221A, 222A . . . . . .15

(By mail in U. S., 2c. additional)

List 312, Brushes, 1 pair, for 210, 215, 217 . . . . . .15

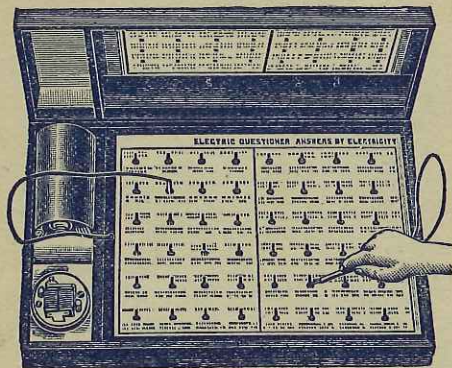
(By mail in U. S., 2c. additional)

# KNAPP

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## ELECTRICAL



## SPECIALTIES

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## MODELS IN MINIATURE