

R ASPIRIN"
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Headache
Lumbago
Rheumatism
Pain, Pain

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At all Druggists.
WOODBURY, N. J.

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At all Druggists.
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Head Noises
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SERT IN NOSTRILS
AFNESS" on request
70 FIFTH AVE., N. Y.

Bright's Disease

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SENT ON REQUEST

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REALSAM

Removes Corns, Cal-
luses, restores softness to the
feet by mail or at Druggists.

WITH WORMS
LP QUICKLY

minutes if your
stomach is
If he grinds
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Worms

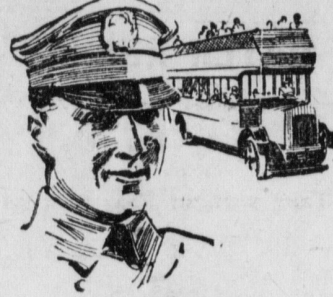
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HMA
EDY

restless, sleepless
tically relieved and
of the remedy that
ends of suffering.

LEACH

One complete box of
the most complete
of Dr. H. H. Leach

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Bus Driver

Dependable service—
that's what counts when
you are responsible for
carrying passengers.



CHAMPION
Spark Plugs

Men as Clock's Works
When a broken pin caused the
faithful clock in St. Paul's cathedral,
London, to stop recently, men acted
as the works. Recognizing the fact
that thousands depended on the clock
for time, officials of the church
placed behind the face of the time-
keeper moon, who turned the hands
every minute during the daytime until
repairs were completed.

Big Electric Locomotives

The most powerful electric loco-
motives in the world of the motor-gen-
erator type are now hauling Great
Northern trains over the Cascades.
Each locomotive weighs 350 tons.

You'll join the
Children in praising
Duff's
Molasses

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Our burner is listed as standard by Underwriters and Board of Standards and Appeals, N. Y., on a special sales proposition for your territory is open; salesman, appliance man, oil burner dealer. Individuals write. Our power burner is the simplest and lowest in price. Write to: NATIONAL ROTARY OIL BURNER CO., 80 Church St., N. Y. C.

NEW and USED
TIRES and TUBES

Table with columns for Tires and Tubes, listing various sizes and prices.

FEATHERETTES
The New Sanitary Pad

Luckings, Thousands weekly. Prices now reduced. Mammoth White Pinks, lawn-white Indian Runner and Buff Orpington ducklings now only \$22 per 100. We pay postage and guarantee delivery. Courteous treatment and prompt shipment. Order now. Also Mammoth Pinks and Indian Runner breeding ducks and drakes at \$2.50 each. Duck eggs \$10 per 100. MAPLEHURST STOCK FARMS, West Mansfield, Ohio.

Dr. Thomas H. Martin
OPTOMETRIST

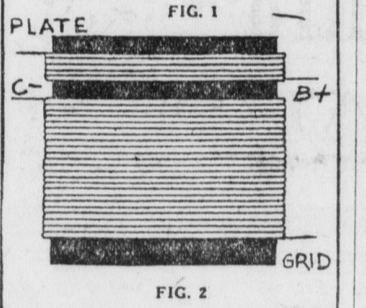
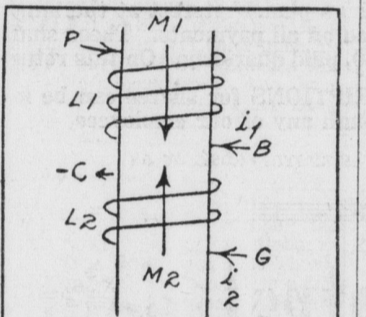
Announces
Opening New Offices for
Examination of Eyes and
Fitting Glasses

Value of Proper
Coil Connections

Knowledge of Lenz' Law
Necessary to Understand
Phase Selection.

By BRUSTEN BRUNN
In Radio World
For a proper understanding of the
subject of coils and phase relations
it is necessary to know something
about Lenz' law.
Suppose that a sensitive current meter
be connected in series with a coil
of wire. If a bar magnet is sud-
denly inserted into this coil and
brought to rest there will be a deflection
of the current meter, showing
that the act of introducing the bar
magnet produces a current in the coil.
As soon as the magnet comes to rest
the current stops. Now, if the magnet
is suddenly withdrawn there will again
be deflection of the meter, but this
time it is in the opposite direction
from the first deflection.

The current set up in the coil exerts
a back force on the bar magnet,
that is, the induced current opposes
the motion of the magnet. That is
Lenz' law or an application of it.
Effect of Second Coil.
Now suppose that instead of a bar
magnet we use a second coil which
is carrying a steady current. There is
a magnetic field about this coil just
as there is about the magnet. In fact,
the coil carrying the steady current is
an electromagnet. When this is
brought up suddenly to the coil which
is connected across the current meter
there will be a deflection of the meter.
Again when the current-carrying coil
is withdrawn from the other coil there
will be a deflection in the meter, but
in opposite direction. In this case also
the current, induced in the coil and
meter by the motion of the steady
current-carrying coil, exerts a back
force on the moving coil which is
always opposing the motion. This also
comes under Lenz' law.



The directions of the coil fields and
the proper way to connect an RF
transformer are shown at left, while
at right is a pictorial representation
of the same method of connection.
The RF applies where more than
one RL transformer is used in a cir-
cuit.

Secondary's Retarding Effect.
The current in the secondary, pro-
vided that this coil is closed, also will
be alternating, but the current in the
secondary will retard the current in
the primary. The effect of the current
in the secondary is always to oppose
any variation in the current in the pri-
mary. This also comes under Lenz'
law. Whatever may be the cause of
the interaction, the current in the sec-
ondary will always be such as to keep
the magnetic field unchanged.

As an illustration of this law con-
sider Fig. 1. This may well represent
any ordinary radio frequency trans-
former having two windings, L1 and
L2. Suppose that an alternating cur-
rent is flowing in the primary L1, and
that at some instant the direction of
the current is such that the magnetic
field may be represented as to direction
by the arrow M1, that is, inside
the coil. The current in the primary
induces a current in the secondary, or
an emf if the circuit is open, and the
direction of this induced current or
emf is such that its magnetic field is
opposed to that of the primary. The
arrow, M2, indicates the direction of
the magnetic field in the secondary
and this is opposite to M1. The direc-
tion of the currents in the two coils
is indicated by the short arrows at-
tached to the wiring. The direction

of the two windings is the same and
the directions of the current are oppo-
site.

Fields Are 90 Degrees Apart.
From this explanation it must not
be taken that the two fields are 180
degrees apart in time. They are only
90 degrees apart. This means that
when the intensity of the magnetic
field of the primary current is max-
imum that of the secondary is zero,
not minimum. At the instant that
the primary current is maximum there
is no change in the magnetic field, and
hence, no current is induced in the
secondary at that instant. When the
primary current is zero the magnetic
field about it changes most rapidly
and then the induced current in the
secondary is maximum for that reason.

When connecting a radiofrequency
or any other transformer, the termi-
nals should be connected as shown in
Fig. 1. P should go to the plate of
the first tube, B should go to the plate
battery, F should go to minus C and
G to the grid of the succeeding tube.
This gives the most stable connection
where the circuit contains more than
one such transformer. There is also
another advantage and that is that the
capacity coupling between the primary
and the secondary is the least. Not
only is the capacity least but the cur-
rent through this capacity is the least
for a given capacity and frequency.
The reason for this is that the two
terminals which are at the greatest
potential difference are farthest apart
in space as well.

Fine Wire for Primary.
An important consideration in the
design of radiofrequency coils is the
size of wire in the primary winding.
Many have thoughtlessly made this
of heavy wire in order to reduce the re-
sistance in the circuit. This coil may
have a resistance of an ohm or two
while it is connected in series with
the plate resistance which may be
from 5,000 to 50,000 ohms. Obviously
nothing can be gained by reducing the
resistance of the primary winding.
Much, however, can be gained by mak-
ing the primary of fine wire. The finer
the wire is in this winding the less
will be the eddy currents, which are
induced in it by the current in the
secondary. The fine wire in the pri-
mary will materially increase the se-
lectivity of the secondary, or, in other
words, reduce the resistance in the
secondary. Still another advantage is
gained by using fine wire, and that is
the reduction of distributed capacity
between the two windings. The finer
the wire in the primary is the less will
be the capacity between the windings,
since capacity is largely a matter of
dimensions. Reducing the capacity
will increase the voltage that is in-
duced in the secondary and hence will
increase the sensitivity of the set. Still
another advantage of fine wire is the
space required. Fifty turns of No. 40
wire, say, can be placed on the coil
without any appreciable increase in
the dimensions, whereas the use of
No. 20 wire would require increased
space even if only a few turns were
used in the primary winding. Even if
the wire is as fine as No. 40 a good
many turns could be put on the wind-
ing form before the added resistance
could be appreciable in comparison
with the plate circuit resistance of the
tube.

Seeking Loud Speaker
That Will Match Set
Radio owners are missing a good
opportunity for still better results by
not keeping in mind the matter of
using a loud speaker which matches
the set. That the manufacturers them-
selves appreciate the importance
of this feature is best demonstrated
by their recommendation that the
buyer of the set also use the speaker
either made by or recommended by
the set maker. This is not all sales
talk.

It should be remembered that a
manufacturer's first aim is to make
his set deliver best results, and he
would be shortsighted indeed were he
to recommend a speaker that spoiled
the set, even if he made the speaker.
With the many power sets it is im-
portant to have a speaker that will
stand the higher voltages. Likewise it
is important to refrain from using a
high voltage speaker on a set that cannot
feed to it the power it requires.

400 Tourists at Durban
Hear Programs of WGY

Stopping over at Durban, South Af-
rica, 400 American tourists from the
Royal Mail liner Asturias listened to
an entire program broadcast from
WGY, the General Electric station at
Schenectady, N. Y., one recent morn-
ing. The signals came direct and
therefore traveled a distance of ap-
proximately 8,500 miles.

Walter Damrosch's lecture on
"Tannhauser," David Lawrence's po-
litical talk, and popular melodies by
dance orchestras were heard. The
program was picked up on the short
wave length by the radio station at
Durban and then relayed to the folk
aboard the vessel. The program was
received with much enthusiasm.—
Radio World.

Banishing Noises

Noises that get into the set through
the eliminators and which originate
in the power lines bringing current to
the house can be banished in various
ways. Some eliminators are provided
with a ground post so that they can
be grouped as one means of eliminat-
ing these stray noises. Another,
and simpler method, is to reverse the
connections at the plug. That is, just
pull out the plug for the eliminators
and turn it around half way before
plugging into the wall socket again.

BLOUSE AND SKIRT IN CONTRAST;
MATCHED ACCESSORIES IN VOGUE

THE two-piece frock which con-
trasts fancy patterned fabric for
the blouse with solid color for the
skirt or vice versa is a popular theme
of the mode. The combination does
not necessarily involve two kinds of
material, for one of the outstanding
successes of this season is the dress
of either silk or wool crepe, the blouse
of which is all-over metal embroidered
in tiny design. The frock in the pic-
ture is typical of this mode. It is
styled of hunter's green wool crepe
with tiny silver flowers embroidered
on the blouse. Dresses on this order
are developed in every fashionable
shade. Those in black with gold or
silver are exceedingly dressy, while
white with touches of metal on the
waist is very winsome.

Not only diminutive embroidery ef-
fects, but the littler silk prints are dis-
tinctively a product of this season. Es-
pecially does the costume of tiny fig-

flowers, which do not trellis the back-
ground but rather accent each flower
separately or in little individual bou-
quets, will be a popular theme.

Now is the season of day-dreams,
when one visions a program of
pretty clothes, the possession of which
means so much of pleasure and satis-
faction for the not-far-distant sum-
mer vacation time. Apropos of charm-
ing accessories here is a bit of news
to bring a flutter of joy to the femi-
nine heart—gay parasols will contrib-
ute their picturesque charm to the
summer picture.

This revived interest in sunshades
is proving an incentive to the stylist
to include matching parasols in the
fancy scarf, hat and bag sets, which
bespeak for themselves such a wide-
spread vogue.

Striped taffeta brings a modish as-
pect to the trio of hat, bag and para-
sol to the right in the picture, for both



BLOUSE CONTRASTED TO SKIRT

ured silk carry with it the conviction
of being the latest. Quite a pretty
fashion is just in at its beginning—
that of the skirt of tiny silk print,
worn with a knit jumper or sweater.
Sometimes the skirt is very finely
printed.

Speaking of this finely printed and
plaided silk, a new vogue is to use the
smooth silk for the top part of the
dress, with the accordion or knife-
pleated silk for the skirt portion.

In fact unique treatment is an added
note of interest to these charming
miniature prints. Very cunning em-
broideries are made entirely of these
silks. Sometimes they are in three-
piece, a blouse, a shirt and a long
loose coat or a below-the-waist cape.

In nearly every instance the print
is bordered with a solid color. There

stripes and taffeta are important
items in the season's styling.

Scenic silk, that novelty which has
so captured the fancy of women of
fashion for frock, for blouse, for
beach coat, negligee and what not, is
the medium selected for the other hat
and parasol in this illustration. Hand-
some floral motifs are embroidered
with colorful radia straw, one on the
hat and one on the parasol.

Novelty is outstanding in the new
parasol sets. In addition to luminous
silk prints, taffeta and georgette, cre-
tonnes, gingham and other cotton
weaves are employed most intriguingly
in the creating of these accessories.

Nothing is smarter, according to
latest advices from Paris, than polka-
dots—these are especially contributing



PARASOL AND BAG MATCHED TO HAT AND SCARF

is a disposition to accent the combi-
nation of red and navy in the plain-
trimmed printed frock.

Not only is the small silk print used
for the fashioning of the one, two or
three-piece costume, but it appears in
parade on the skirt, scarf and hat sets
time and time again. There is this to
be said for these little prints, their charm
grows upon one. They were not at
first accepted with any unusual degree
of enthusiasm, but their favor has in-
creased right along until at this mo-
ment they are one of the big style
items.

Speaking of prints, the mode has
shown a sudden favor for those of
vivid color on black backgrounds.
These are especially attractive in
floral patterns, each separate flow-
er standing out in startling relief
against its jet blackness. Also for
mid-summer, white grounds with gay

6 things
to understand
about used car
allowances
1 When you trade-in your used car for
a new car, you are after all making a
purchase, not a sale. You are simply ap-
plying your present car as a credit toward
the purchase price of the new car.

GENERAL
MOTORS
"A car for every purse and purpose"
CHEVROLET • PONTIAC • OLDSMOBILE • OAKLAND
BUICK • LASALLE • CADILLAC
GMC TRUCKS • YELLOW CABS AND COACHES
FRIGIDAIRE—The Electric Refrigerator

SCHWEGLER'S THOR-O-BRED BABY
"Live and Lay" CHICKS
Wise Old Owl!
The Only Exception

Children Cry for
Fletcher's
CASTORIA
MOTHER:—Fletcher's
Castoria is a pleasant, harm-
less Substitute for Castor Oil,
Paregoric, Teething Drops
and Soothing Syrups, espe-
cially prepared for Infants in arms and Children all ages.

Cuticura Preparations
Unexcelled in purity, they are regarded by
millions as unrivaled in the promotion
of skin and hair health. The purifying,
antiseptic, pore-cleansing properties of
Cuticura Soap invigorate and preserve the
skin; the Ointment soothes and heals
fashes and irritations. The freely-lather-
ing Shaving Stick causes no irritation, but
leaves the skin fresh and smooth. The
Talcum is fragrant and refreshing.