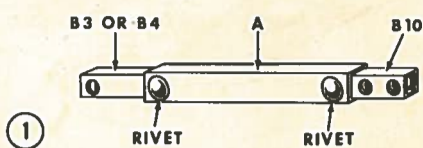
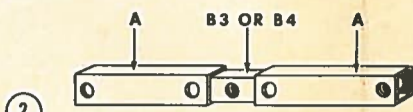


# CHART OF SUB-ASSEMBLY DIAGRAM

The Sub-Assemblies illustrated here show basic building techniques which you can use to assemble your models. Practice putting these Sub-Assemblies together until you are thoroughly familiar with the various methods.



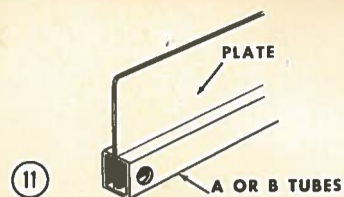
1 INNER AND OUTER TUBES



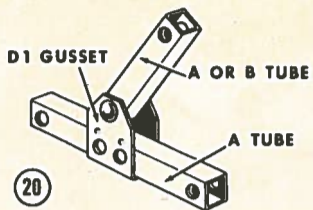
2 COMBINATION PROVIDING FOR LOCATION OF HOLE IN MIDDLE OF A MEMBER



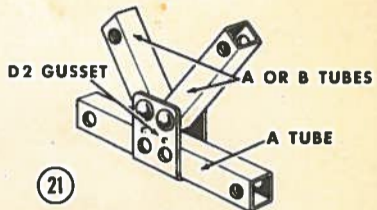
10 HOW A PLATE MAY BE BENT TO FORM A FENDER



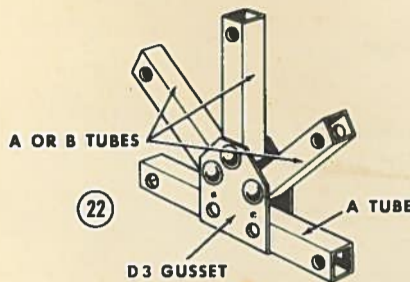
11 HOW PLATE CAN BE LOCATED IN SLOT OF A TUBE



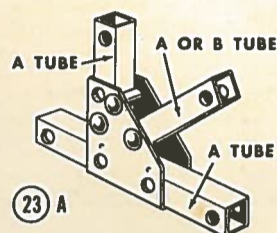
20 2 TUBES CONNECTED WITH A D1 GUSSET



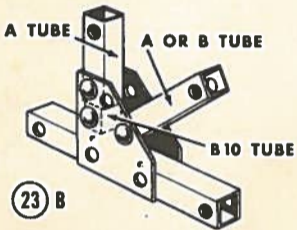
21 3 TUBES CONNECTED WITH A D2 GUSSET



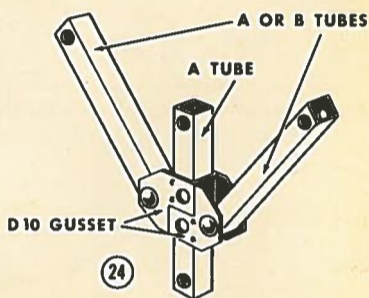
22 4 TUBES CONNECTED WITH A D3 GUSSET



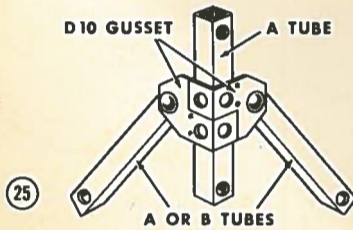
23 A 3 TUBES CONNECTED WITH A D4 SQUARE.



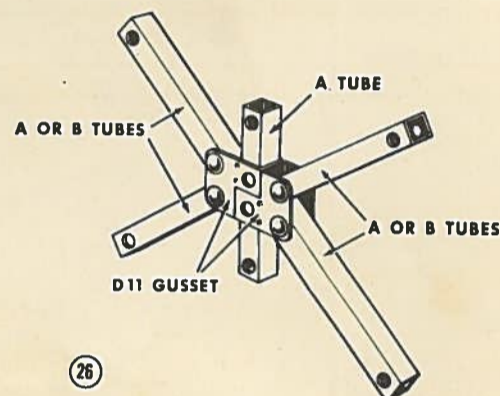
23 B 3 TUBES CONNECTED WITH A D4 SQUARE.



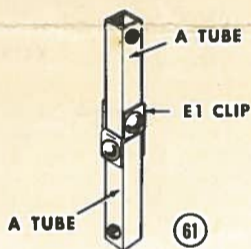
24 3 TUBES LOCATED IN THE SAME PLANE CONNECTED WITH 2 D10 GUSSETS



25 3 TUBES LOCATED IN 2 PERPENDICULAR PLANES CONNECTED WITH 2 D10 GUSSETS



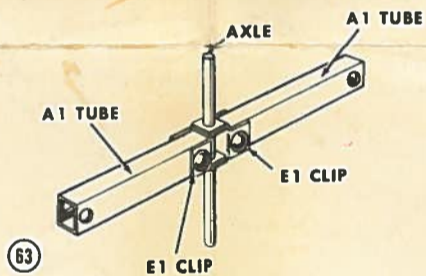
26 5 TUBES LOCATED IN THE SAME PLANE, CONNECTED WITH 2 D11 GUSSETS



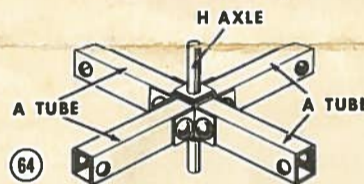
61 2 A TUBES IN LINE CONNECTED WITH AN E1 CLIP



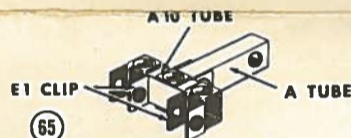
62 COMBINATION OF AN E1 CLIP WITH A D1 GUSSET



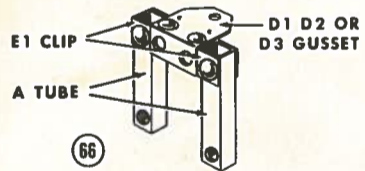
63 COMBINATION OF 2 E1 CLIPS WITH 2 A TUBES



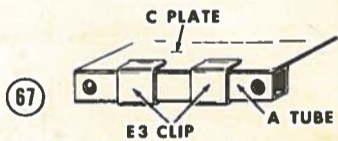
64 COMBINATION OF 4 E1 CLIPS AND 4 A TUBES



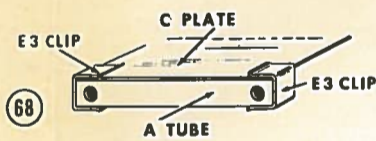
65 COMBINATION OF 3 E1 CLIPS, 1 A TUBE, AND 1 A10 TUBE



66 COMBINATION OF 2 E1 CLIPS WITH 1 D1, D2, OR D3 GUSSETS



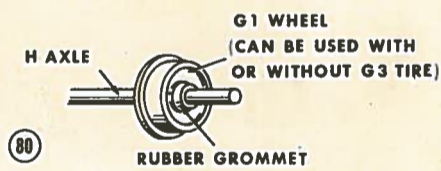
67 METHOD OF FASTENING PLATE C TO AN A TUBE WITH E3 CLIPS



68 ALTERNATE WAY OF FASTENING THE PLATES C WITH THE A TUBES



69 ATTACHING 2 E1 CLIPS AT RIGHT ANGLES



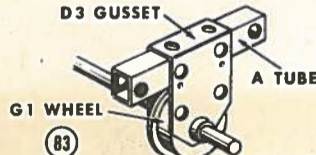
80 AFFIXING G1 WHEEL TO AXLE



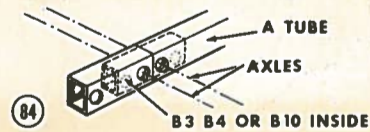
81 METHOD OF FIXING AXLE THROUGH THE HOLES OF AN A OR B TUBE



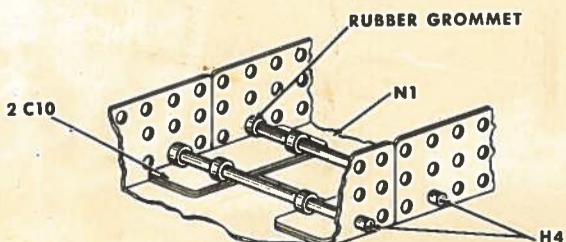
82 AXLE FIXED THROUGH THE HOLES OF A GUSSET



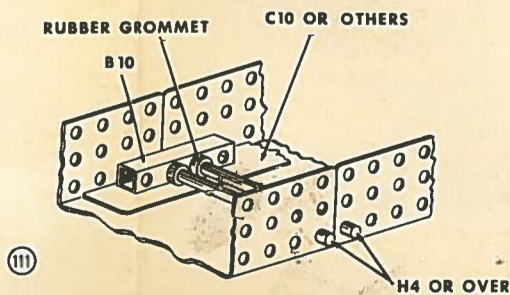
83 SHOWING HOW WHEEL IS PLACED INSIDE A D3 GUSSET



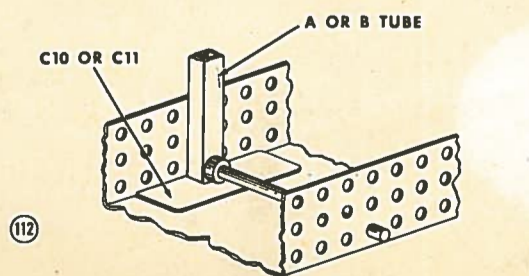
84 LAYOUT FOR TRACK. DO NOT USE RIVETS AND RUBBER GROMMETS — SUBSTITUTE AXLES



110 HOW TO FASTEN 2 PLATFORMS N1 TOGETHER END TO END



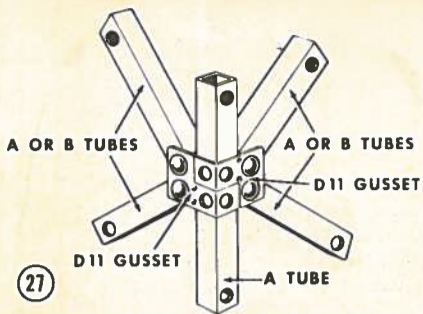
111 HOW TO FASTEN 2 PLATFORMS N1 TOGETHER END TO END WITH AXLES, STRIPS, B10 AND GROMMETS



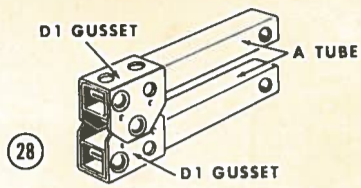
112 SHOWING WAY OF FASTENING AN UPRIGHT TUBE TO PLATFORM, USING A C10 OR C11 STRIP TO MAKE IT RIGID

# IS KEYED TO MODEL INSTRUCTIONS

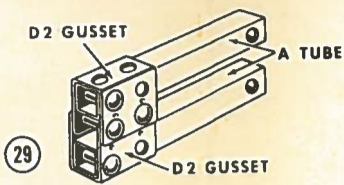
will employ in making Lionel Construction Kit models. Practice putting these various methods of joining such parts as Tubes, Gussets, Strips and Plates.



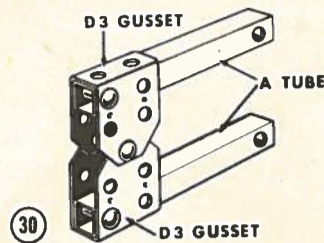
27 5 TUBES LOCATED IN 2 PERPENDICULAR PLANES CONNECTED WITH 2 D11 GUSSETS



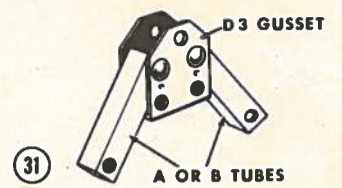
28 2 PARALLEL TUBES CONNECTED WITH 2 D1 GUSSETS



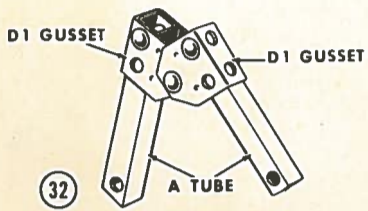
29 2 PARALLEL TUBES CONNECTED WITH 2 D2 GUSSETS



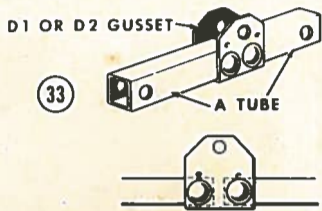
30 2 PARALLEL TUBES CONNECTED WITH 2 D3 GUSSETS



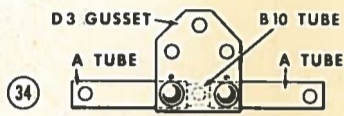
31 RIGID ANGLE OBTAINED WITH A D3 GUSSET



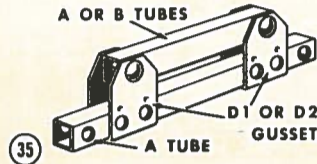
32 ANGLE OBTAINED WITH 2 D1 GUSSETS



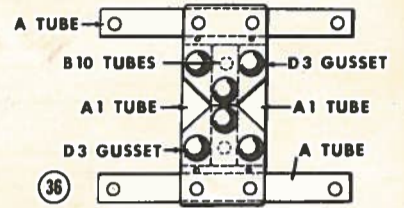
33 2 A TUBES CONNECTED WITH A D1 GUSSET. (FREE INTERVAL BETWEEN THE TUBES)



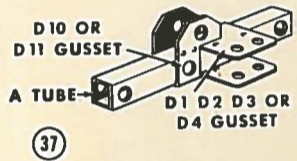
34 2 A TUBES CONNECTED WITH A B10 TUBE, AND TIED TO A D3 GUSSET



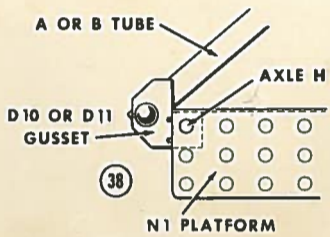
35 2 PARALLEL TUBES CONNECTED WITH 2 D1 OR D2 GUSSETS



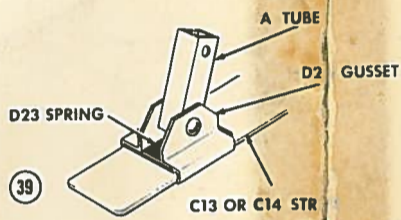
36 RIGID FASTENING OF 2 PARALLEL TUBES BY MEANS OF— 2 D3 GUSSETS 2 A1 TUBES 1 B10 TUBE



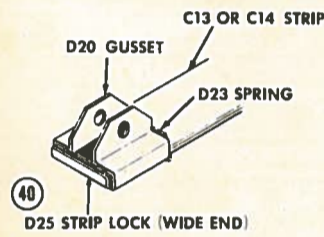
37 COMBINATION OF D10 OR D11 GUSSET WITH D1, D2, D3 OR D4 GUSSETS



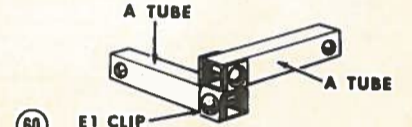
38 FASTENING A D10 OR D11 GUSSET TO PLATFORM N1



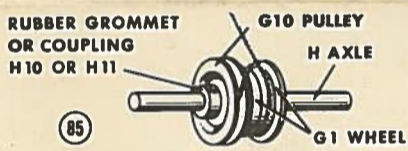
39 METHOD OF ATTACHING AN A TUBE TO C13 OR C14 STRIP USING D20, D21, OR D22 GUSSET



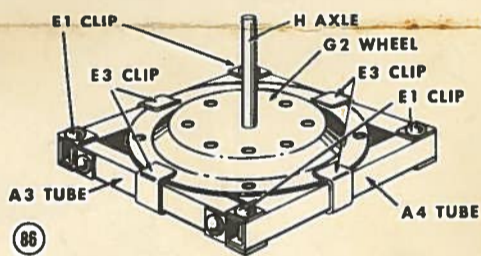
40 FASTENING D20 OR D21 GUSSET TO C13 OR C14 STRIPS WITH STRIP LOCK D25



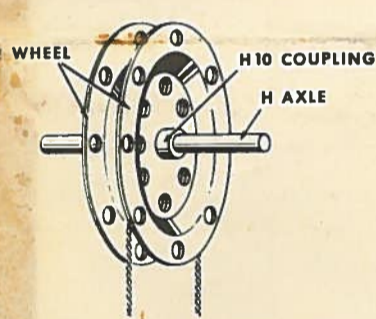
60 FASTENING 2 PERPENDICULAR A TUBES WITH AN E1 CLIP



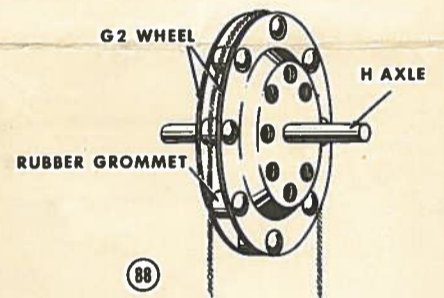
85 TIE STRING IN GROOVE OF PULLEY AND LOOP OVER WHEEL



86 A SWIVEL PLATFORM



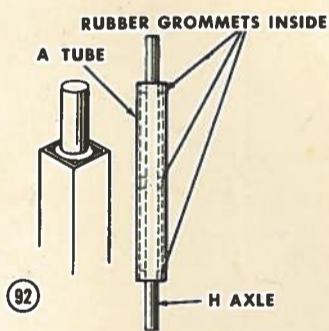
87 LARGE PULLEY MADE WITH 2 G2 WHEELS



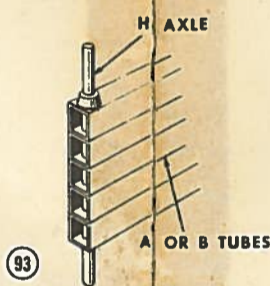
88 ANOTHER TYPE OF PULLEY MADE WITH 2-OPPOSITE G2 WHEELS



90 HOW TO FASTEN AXLE WITH RUBBER GROMMETS



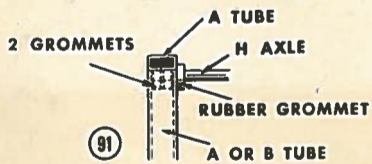
92 METHOD OF CENTERING AXLE H IN THE MIDDLE OF AN A TUBE



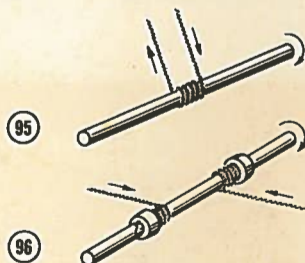
93 FORMING A FLAT SURFACE BY MEANS OF A OR B TUBES AND AN H AXLE



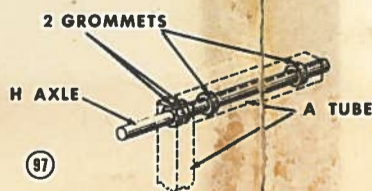
94 METHOD OF TYING A STRING ON HANDLE, CRANKSHAFT OR AXLE



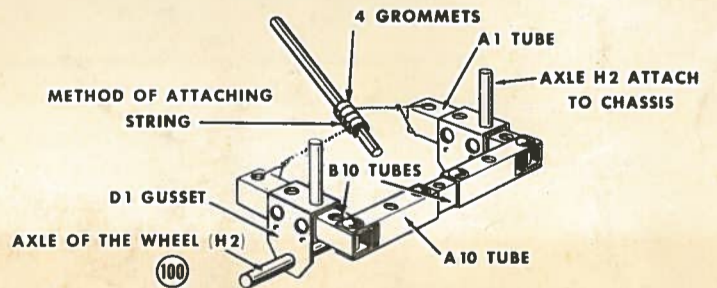
91 ANOTHER WAY OF FASTENING AXLE (WHEN TOO SHORT)



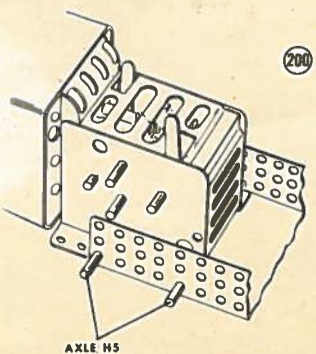
95



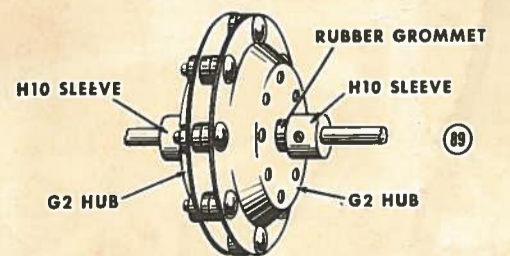
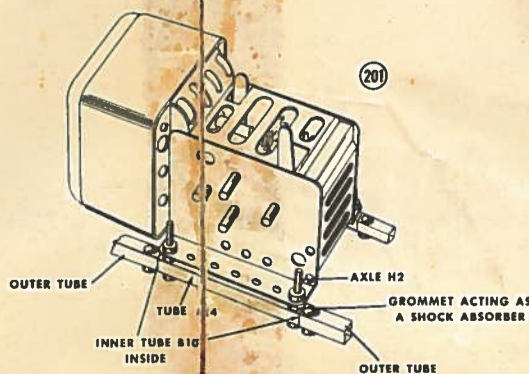
97 FASTENING OF 2 PERPENDICULAR TUBES WITH AXLE AND GROMMETS



100 ASSEMBLY SHOWING MOVEMENT OF THE FRONT WHEELS ON CARS OR TRUCKS



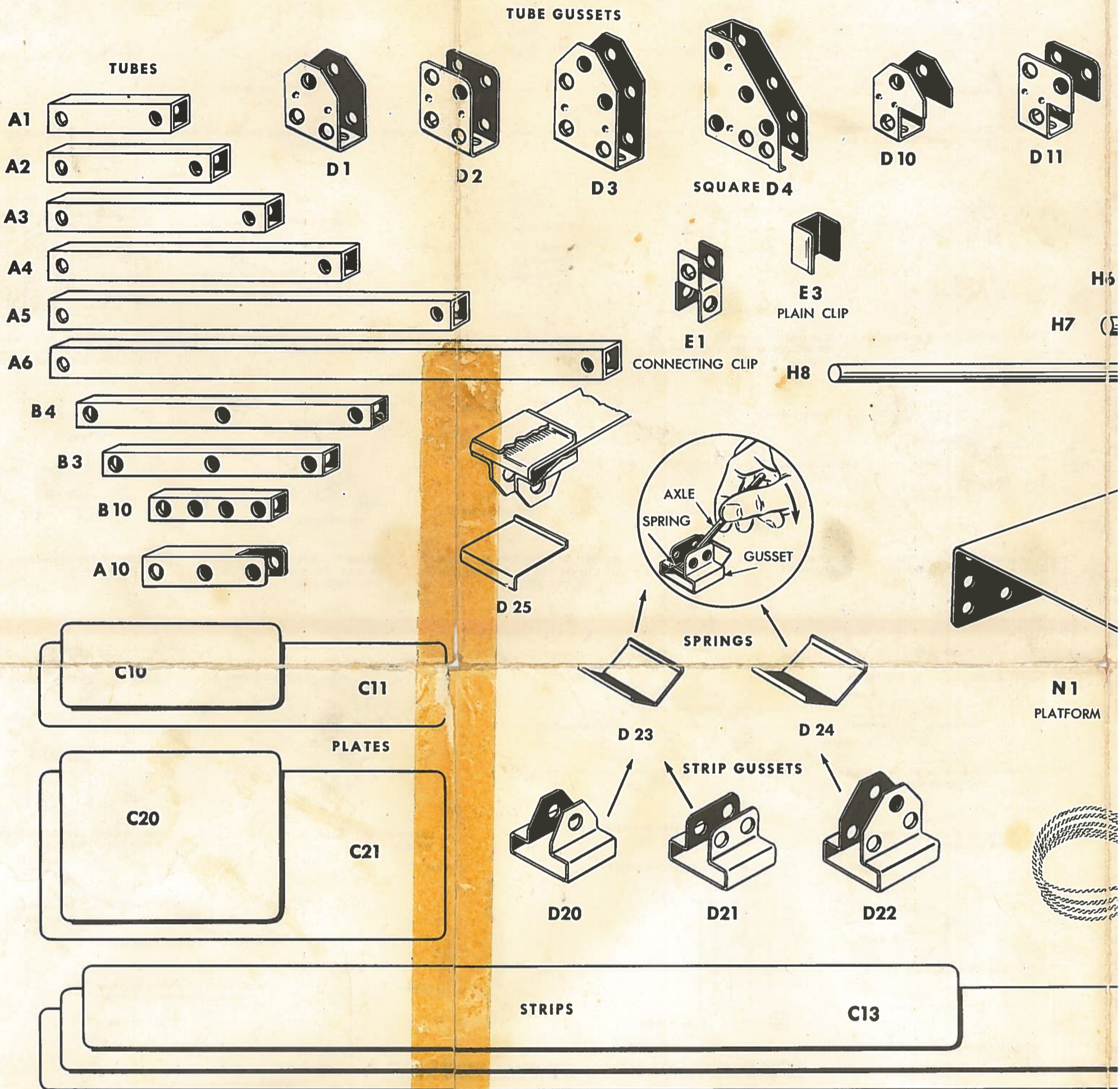
200 Illustrating two methods of mounting Lionel electric motors for operation of models. Study the drawings above and select the method that best meets your requirements.



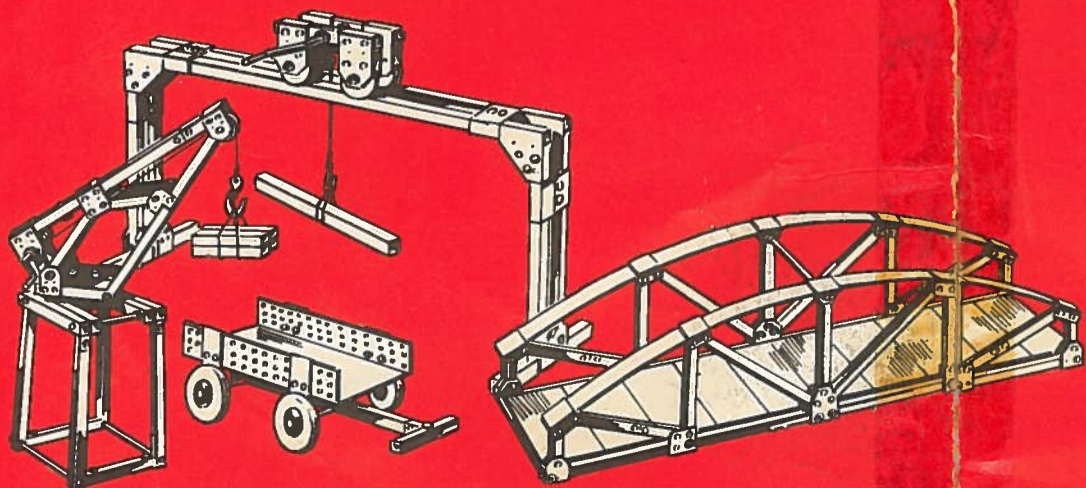
89 WHEN NECESSARY TO HAVE AXLE AND PULLEY ROTATING TOGETHER PUT PRESSURE AGAINST THE WALLS OF BOTH G2 HUBS BY THE H10, AS SHOWN ON THE ABOVE DRAWING.

# LIONEL CONSTRUCTION

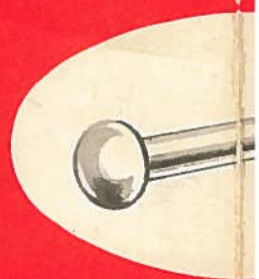
ACTUAL SIZE REPRODUCTION  
LIONEL CONSTRUCTION



Keep This Chart Handy for Ready Reference  
in Making Construction



Illustrated above, in full life-size, are all the parts packed with Lionel Construction Kits. This chart is designed to aid you in familiarizing yourself with the appearance of the parts and the names by which they are called. All building diagrams in the Construction Kit manual refer to these parts by number. Therefore, when directions ask for an A10, a B3 and a C21, for example, you will know — by referring to this chart — that these parts are, respectively, an Open End Tube, an Inner Tube and a Plate of the size shown on the chart. KEEP THIS CHART BEFORE YOU AT ALL TIMES when building. You will find it extremely helpful.



NO NUTS  
THE MODERN WAY

MADE BY THE MAKERS OF THE FA

# CONSTRUCTION KIT CHART

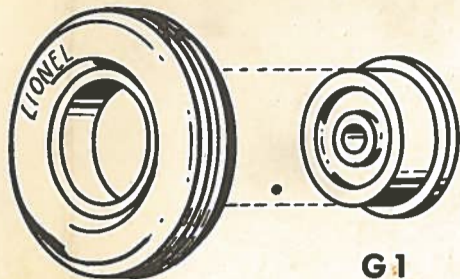
OF ALL PARTS CONTAINED IN CONSTRUCTION KITS

When, because of a heavy load, greater friction is required on the Pulley, you can prevent slipping by (1) wrapping a rubber band around the Pulley, or (2) by rubbing resin on the string.

## AXLES



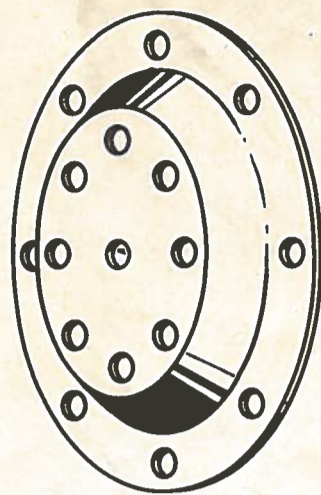
G10  
PULLEY



G3  
TIRE



G1  
WHEEL



G2  
HUB



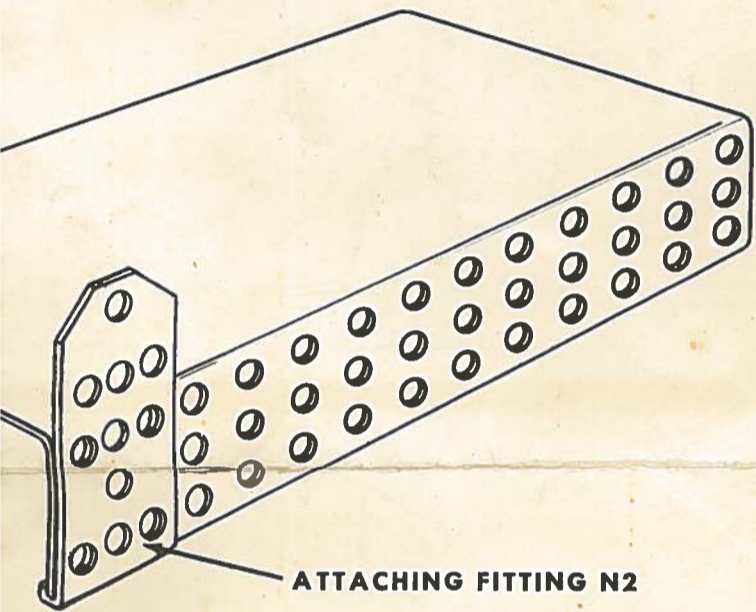
M1  
SET SCREW



H10  
SLEEVE



H11  
COUPLING



ATTACHING FITTING N2



I3  
HANDCRANK



L1  
HOOK



K1  
CRANK SHAFT



T1  
SCREW DRIVER

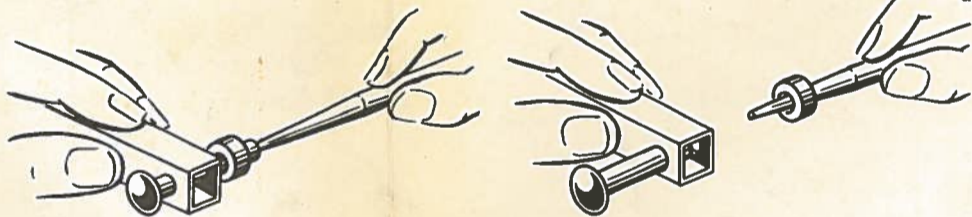


T2  
LOCATING PIN

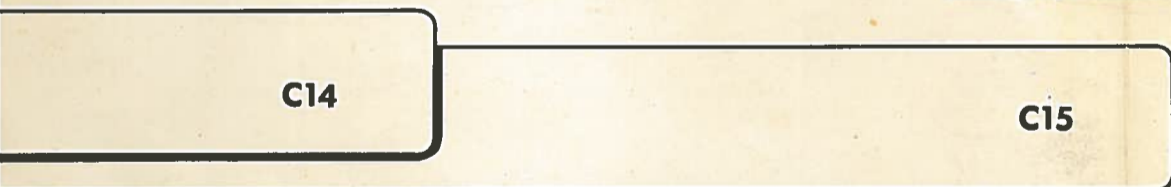
Since the Locating Pin T2 is made of smooth-surfaced metal, you will find it easier to use if you place about five rubber grommets on the end, to act as a handle.



STRING



This shows the quickest and simplest way to remove rivets and rubber grommets from assembled models. First, press Locating Pin firmly against rivet and behind grommet and push forward. Next, remove rivet after it has become displaced from holes. Note that rubber grommet will have seated itself on Locating Pin, as shown, from which it can be easily taken off.



C14

C15



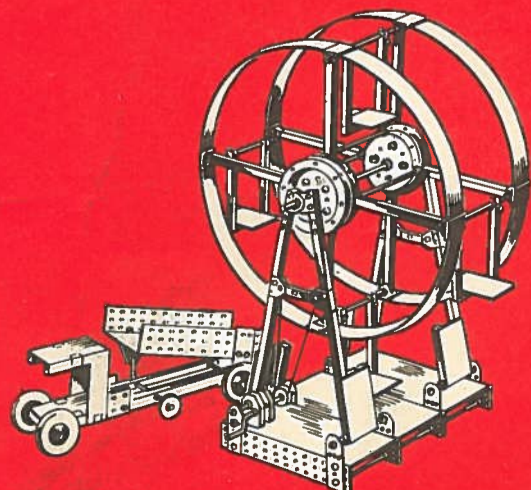
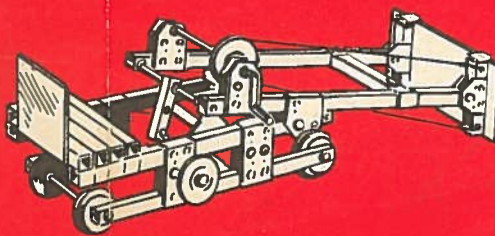
F10  
GROMMET



F1  
RIVET

reference. You Will Find It a Constant Aid in Building Construction Kit Models

On the reverse side of this chart you will find easy-to-follow Sub-Assembly diagrams which should be studied carefully before you begin making any models. Each of the basic building techniques is illustrated in detail. The diagrams will show you the many combinations which can be obtained from different parts, in order to meet all requirements of the builder. Since every Construction Kit model employs several of these Sub-Assemblies, you will need the chart for constant reference.



FOR BOLTS!  
EASY WAY TO BUILD.

FAMOUS LIONEL ELECTRIC TRAINS