Power Limiting Circuit Reduces Load a Maximum of 30 per Cent

THE contract under which power is supplied for the operation of the electrified divisions of the Chicago, Milwaukee & St. Paul Railway involves a minimum payment per month of 60 per cent of the kilowatts for which the railway company has exercised an option, the power company standing ready to serve at any instant the number of kilowatts so optioned for. It thus becomes highly desirable for the railway to be in a position to hold its maximum demand down to a minimum—in other words, to run at as high a load factor as possible. The power indicating and limiting system for securing this result consists of a 1200-volt circuit running from the first to the last substation, and fed from a very small motor-generator in the load dispatcher's office. In each substation where there is a power company feed tap, there is installed a contact-making wattmeter, which introduces into the power indicating and limiting circuit an additional ohmic resistance whose amount varies with the load supplied at such feed tap.

There is also in each substation automatic apparatus which, when the total kilowatts used in the system reaches the amount optioned for and consequently when the current in the power indicating and limiting circuit has a certain value, causes resistance to be inserted in the fields of the substation generators of the motor-generator sets. This reduces the voltage on the trolley system, causing the speed of all trains to be decreased.

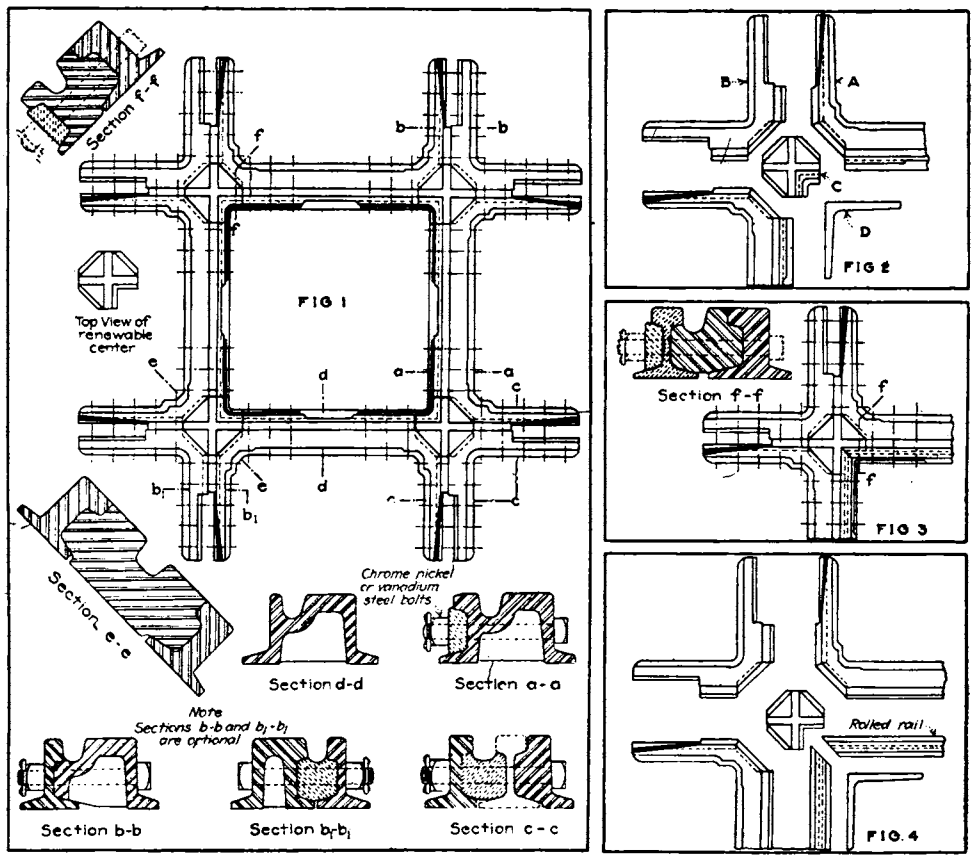
The maximum reduction in load thus obtainable is about 30 per cent of that which would be used in case the power indicating and limiting system were not provided. The apparatus is so arranged as to reduce the voltage of the most heavily loaded substations first, and also to reduce the voltage of any individual substation so as to throw this load on the other substations when the load on such substation reaches the certain amount for which the apparatus may have been adjusted. In the dispatcher's office there is a switchboard on which is mounted apparatus for controlling the small motor-generator set supplying the system, and also indicating and curve drawing wattmeters which show for any instant the total kilowatts supplied by the power company.

This work, like other electrical features of the St. Paul electrification, is in immediate charge of R. Beeuwkes, electrical engineer.

Articulated Cast Manganese Crossing with Renewable Centers

SINCE the description of the plain articulated cast manganese crossing, in the issue of the ELECTRIC RAILWAY JOURNAL for Jan. 26 was published, the inventor, Stephen Balkwill, president The Balkwill Manganese Crossing Company, Cleveland, Ohio, has secured patents on a renewable center crossing. The general principle used in this crossing is the same as that underlying the earlier one, but the new crossing has renewable centers, flexibly supported, around which the other parts of the articulated crossing are assembled. The details of construction are shown herewith by a number of line drawings.

Fig. 1 is a general assembly plan of a right-angle crossing of the new type, while Fig. 2 shows the separate pieces ready to put together. A complete crossing consists of four U-shaped pieces, like *A*, four corner pieces like *B*, four centers like *C* and four angle bars on knee-braces like *D*, together with chrome nickel or vanadium heat-treated steel bolts for fastening all together.



AN ARTICULATED TRACK CROSSING WITH RENEWABLE CENTERS

Fig. 1—Plan of right-angle cast manganese crossing
Fig. 2—Separate parts of crossing represented in Fig. 1
Fig. 3—Plan of right-angle crossing with rolled rail guards
Fig. 4—Parts of crossing represented in Fig. 3

In the drawings a number of cross-sections have been reproduced in order more clearly to show the construction. It will be noted that cross-sections *b* and *b*1 are stated to be optional. The only difference between the construction as indicated in the two sections is that in *b* the two pieces forming the section at this point are directly connected together. In the alternative construction shown in section *b*1 a filler block or separator is used between the two main pieces, which are recessed