

sheets from dealers; in this way you will avoid waste of time and trouble. One card index must be kept in the purchasing office giving full particulars of all purchased articles or quotations, also full instructions so that they can be located instantly no matter where they are. (See purchasing office: its appliances, forms required, and instructions for handling same—to be published later.).

Let us now consider form No. 27, which is to be used when articles are to be manufactured in your own establishment.

In a previous chapter we have dealt with the making of form No. 27, traced its travel until it reaches the production office in department No. 4. The duty of this department is to consider the nature of each respective article and determine in which section of works it can suitably be made,

then issue order at once to the department interested. This order is made as follows: Prepare form No. 29 and send the last copy to the cost office as a warrant, or record, etc. The original goes to the general store receiving office, for inspecting and receiving purposes. This original form must be returned to cost office as soon as all the articles indicated thereon have been inspected and received by the general store, care being taken to attach inspector's report to each original form No. 27. Upon reception of the original form No. 27, with inspector's report attached, the cost office will immediately remove the copy they have already on file, and place it next the original in its own file, awaiting the arrival of other copies. At this stage, the reader naturally asks the question, how many other copies are there? What are they for?

(Continued.)

## MANUFACTURE OF BROAD FLANGE STEEL BEAMS

The rolling mill, and endless variety of steel shapes or "sections" made thereon, are familiar subjects to all interested in the great industries of iron and steel.

It will suffice, therefore, to say, that the rolling mill as it has existed from the middle of the last century to the present day, consists essentially of two parallel rolls driven in opposite directions in such manner as to draw the piece

with regard to the height and width of the sections. (2) That the system of forming the flanges by pressure of the metal into grooves in the rolls, whilst being adequate for the small light sections, leaves something to be desired where a thoroughly sound beam of substantial dimensions is required.

The necessity for large sections, both as girders and

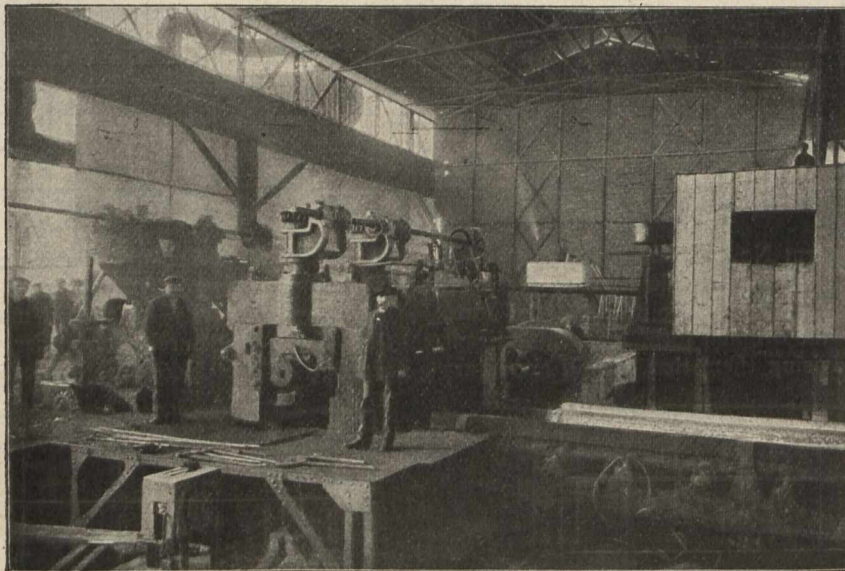


Fig. 1.—"Grey" Mill: Metal Entering Rolls.

of hot metal through, and reduce it to the required "section."

Although various innovations have been made from time to time in the driving machinery, operating mechanism, and form of housings, the rolling mill in its general design and mechanical principles has changed very little; at any rate so far as the production of rolled steel girders is concerned.

struts, has, of course, been met by the use of "compound" sections composed of beams and plates, plates and angles, and various other combinations.

All these have their uses, but nevertheless a great gap remained for a long time unfilled. This was the obvious necessity for a rolled steel girder, with liberal limits as to height and width, and carrying power in comparison to

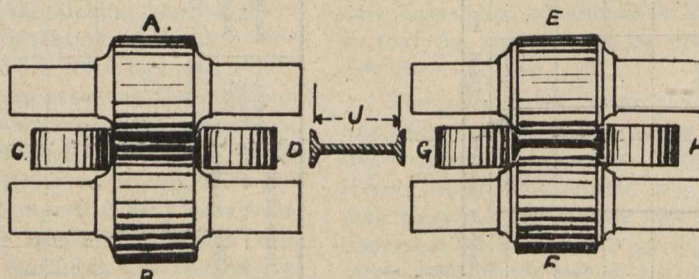


Fig. 2.—"Grey" Mill: Arrangement of Rolls.

The ordinary rolled steel joist of commerce was designed as a bar of metal possessing a maximum carrying power (used longitudinally or transversely with a minimum weight of material. In its conception the shape is an ideal one, and its universal excellence can only be qualified by two limitations:—(1) That the dimensions of rolled steel girders produced by ordinary means are strictly limited

weight in excess of anything previously obtained.

Ordinary rolling mills and conventional methods are altogether unequal to the manufacture of such sections. Their extreme limit as regards flange width, viz., eight inches, being in itself an insurmountable barrier to the production of anything adequate from an ordinary mill.

Hence, the "Grey" universal mill was designed, to pro-