Nearing the end of the final assembly line. Notice conveyor track set in floor and device which moves the dolly slowly along as work proceeds on the ship.

CONVEYORS

Successfully Used by Bell Aircraft

By HENRY K. BEEBE, Sr.
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Success surpassing our most optimistic hopes has been the record, during the few months they have been in operation, of two systems of mechanical conveying of Airacobra parts during our manufacturing and assembly processes, and a third system, which will be in operation by the time this article finds its way into public print, holds similar promise. We in the aviation industry today are beginning to adopt mechanical methods of carrying parts around our plants, and are finding that such techniques are sound.

At Bell Aircraft Corporation's plants in Buffalo and Niagara Falls, two systems have been in operation for about three months. The more spectacular of these is an endless chain conveyor system sunk into the floor of our new assembly plant at Niagara Falls. Moving at a rate of about ⅝ inch a minute, this chain provides constant motion to the final assembly line. A total of four of these lines have been installed—two now being in regular operation — with space available for two more lines.

Our second conveyor system now in operation is much smaller and less pretentious. It is, literally, a homemade arrangement which provides for mechanical dipping into baths of paint of tens of thousands of small parts daily. Our people in the shop, some of whom were frankly skeptical when first suggestions about the proposed arrangement were made, today say that this paint conveyor equipment is worth its weight in gold, and has already paid for itself.

Before discussing either system in detail, or considering the third type of mechanical handling which Bell Aircraft is adopting for aircraft production, I should like to say a few words about the apparent slowness of the aeronautical industry to utilize mechanical carrying methods which have been well thought of by such mass production industries as the automobile business, mechanical refrigerator manufacturers, etc., for years. The answer, in a nutshell, is that until 1941, the aviation industry hasn't had orders justifying mass production, or anything like it.

Why Not Aircraft Conveyor Lines?

The automobile business, in a good year, turns out anywhere from 3,500,000 to 4,500,000 cars. Mechanical refrigerators are manufactured, also by the million.

In the aviation industry, a whopping big production order for one company totalled less than a hundred, up to 1939 or 1940. Even now, the largest orders placed with individual companies are for substantially less than 10,000. Henry Ford, General Motors and Chrysler—to mention the big three in the auto industry—build more automobiles in a single day than the entire aviation industry built planes during the 12 months of 1940!

Now, the aircraft industry is beginning to produce, on something approaching a mass scale basis. Monthly production of military aircraft, including training equipment, is something like 1500 units per month, as of mid-summer. With every governmental agency calling for accelerated production, the use of time and labor saving devices, such as mechanical conveyors, may be justified in the aviation industry for the first time.

Take the Bell Airacobra, not counting the 54,000 or so rivets which go into its construction, this single-engine interceptor pursuit airplane is made up of no fewer than 9000 parts! Most of these have to be painted before they are assembled into the sub-groups and finally brought together for final assembly.

Cleared Up Bottlenecks

Our paint shops found that painting, first with a protective coat of chrome yellow and later with a second coat of dark green, all these parts was a tremendous job. Even when the latest available types of spray equipment were used, the task was almost hopeless, and a bottleneck in our production system began to develop. Trays of small parts began to pile up, waiting for the spray room.

At about this time, O. L. Woodson. our vice-president and assistant general

(*Concluded on page 26*)