TECHNOLOGY

Moving the Mail—Modern Style

'Next day delivery' anywhere in the country may soon be a reality thanks to engineering 'pioneers' working to help keep the postal service as modern as science can make it.

See Front Cover

➤ AUTOMATION now with still more in the future is the Post Office's route to better mail service.

An electronic robot to shoot the letter on its way to the proper ZIP Code destination, an electronic brain to record the address for proper slotting—these and others are the tools with which the Post Office hopes to realize its goal of "next day delivery" anywhere in the United States.

The U.S. Postal Service is the world's largest communications system and the volume of work expected is growing virtually each day. For example, the more than 45,000 post offices around the country handled some 72 billion pieces of mail in 1965.

The challenge facing the postal service and engineering firms in the field is to develop new machines to keep pace with the work load. Machines have been built to read, sort and sack mail automatically. Many of these are already in use with many more in the drawing board or experimental stage.

One of the most enthusiastic devotees of planning postal improvements, and a pioneer in the field, is Jacob Rabinow, head of Rabinow Electronics, Rockville, Md. Mr. Rabinow, holder of some 136 patents and a number of scientific awards, reports that even with the construction of many new devices in recent years, engineers are still in the primitive stages of developing new and improved mechanized mail machines.

Wide Open Field

"This is a wide open and exciting field," says Mr. Rabinow, "the surface has not even been scratched yet."

Much of the "scratching" that has been done has taken place in the Rabinow laboratories in the last decade.

The electronic robot, actually an optical scanner, and possibly the most advanced automated post office device yet, has been undergoing recent intensive study by a number of companies, including Rabinow, under Post Office contract. The machine is designed to automatically scan and recognize ZIP Code addresses on letters at the rate of six envelopes a second.

The machine, attached to an existing letter sorter, will examine the face of each envelope, locate the ZIP Code number and read and instruct the letter sorter where to distribute each envelope.

The reader "is really the icing on the ZIP Code cake," reported Postmaster General John A. Gronouski recently.

The five digit ZIP (Zoning Improvement Plan) Code has been adopted very widely since it was first announced in July of 1963. The system was devised to cut down the number of individual handlings between deposit and delivery, replacing the zone numbers throughout the country.

When fully developed, optical reading equipment will be installed in large post offices throughout the country. The first one was to be installed in a major post office by the end of 1965, Mr. Gronouski predicted.

Automatic Facing-Canceling

Automatic facing-canceling machines and letter sorting machines have also undergone extensive study by engineers, with Rabinow pioneering in much of the work.

After mail has been culled, or separated according to size, it goes to a facing-canceling machine. This device first "looks at" the mail with an electronic eye and orients it so that it all faces in the same direction. With the aid of the eye the stamps are searched out and canceled as the letters whiz past on a conveyor. The machine then automatically fills letter trays for sorting.

The next stop for the letter is a sorting machine. An operator sitting at a keyboard reads the address on each letter as it rides by and punches a coded version of its destination into an electronic memory system. The coded letter is carried along the conveyor, then dropped off onto another conveyor that carries it to one of 300 destination boxes. The mail is then removed from individual boxes at regular intervals.

Shown on this week's front cover is a parcel sorter in operation in Biscayne Annex in Miami, Fla. It is the first semi-automatic keyboard-controlled sorter used to make both primary and secondary separation of parcels. A keyboard code operator reads the address on the parcel and keys the destination number into the system as the package is pushed to the synchronized cross-conveyor belt.

The latest experimental mail sorting device, designed by Rabinow engineers, can sort mail to 1,000 different destinations. The device, now being tested at the postal laboratories, is controlled by a computer which uses a synchronized memory system to keep track of where the mail goes. Attached to the sorter is a bundling machine, so that as the mail is sorted, it is taken out, labeled, tied and sacked—all in one assembly-line operation.

This device may be installed in the larger post offices around the country within the next two years to help speed the mail, which is growing in volume at a rate of more than two billion pieces a year. This yearly increase is enough mail to fill a train of box cars more than 90 miles long.

Three years ago Mr. Rabinow, along with Harold J. Rosenberg, Silver Spring, Md., was granted a patent for a small inexpensive letter sorting machine that can sort almost any mail toward its destination regardless of the letter's condition. The machine is able to process mail regardless of the texture and thickness of the letters, even to the extent of handling letters that are partly mutilated.

Basic to the invention is a sorting structure made of a number of spaced guides over which the flat-lying letters are moved. The gates open and close to do the actual sorting.

At present Rabinow company engineers are busy working on a "whole new generation" of sorting machines, Mr. Rabinow reports. These smaller and more flexible devices are the products of years of research and improvement, he added.

Many Important Patents

Born in 1910 in Kharkov, Russia, Mr. Rabinow holds many important patents. In 1959 he was awarded the Edward Longstreth Medal from the Franklin Institute for inventing the magnetic fluid clutch used on ships, foreign cars, machines and oil well drilling equipment. In addition, he owns a patent covering the automatic clock regulation used in all American automobile clocks.

One of his most recent patents was for an optical scanning device that can automatically "drive" a car by scanning the highway ahead. He has also been awarded a number of patents for invention and improvements in optical reading machines, similar to the ZIP Code readers to be used by the post office.

Mr. Rabinow, who became an American citizen in 1931, received baccalaureate and electrical engineering degrees from the City College of New York in 1933 and 1934. He joined the National Bureau of Standards in 1938 and did secret defense work under the auspices of the National Defense Research Committee during World War II. There he did pioneering work in the field of safety devices for ordnance, automatic controls for guided missiles and bomb releasing devices. In 1954 he left the National Bureau of Standards to establish his own consulting firm.

Future Prospects

What are some of the future prospects of speeding mail at the post office?

Computer-controlled mail sorting and supersonic jets will in the next few years let a person on the West Coast receive a letter mailed that morning on the East Coast, Mr. Rabinow predicts.

The goal of "next day delivery" to any two cities in the United States is indeed not very far away.

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