

A PACKAGING SYSTEM

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The two most commonly used packing methods in the paper bag are:

1. About 1000 seedlings are placed in the paper bag with a small amount of some moisture holding medium and the bag is sealed.
2. 1000 or 2000 seedlings are placed root to root and wrapped in waterproof paper with the seedling tops out either end.

Other methods used are crates, boxes and the jelly roll.

This discussion will be to explain the method we are developing to pack the root to root method. Seedlings wrapped in paper with the tops out either end.

We are all familiar with the packing table and for many years a large number of nurseries have been working with variations of this. In the old days, a tub of moss was placed on one side and a container of seedlings on the other. Each packer completed his own package and when it was lifted away the package was ready to ship. The completed package usually contained 2000 seedlings often 3000 and weighed about 75 lbs. A good man might put up as many as 100 packages of this type in one days work. If we wanted to increase production, we simply built more tables and fed more men into packaging. Five men with five helpers could package up to one million seedlings in a day.

However, this method took much space and soon it was evident that men were no longer available to do this work. The packing circle was then built. The packing table was placed on a platform which was pushed about on an 8' circle of wheel conveyor. The paper remained in one place. The seedlings were clay dipped and placed in the package at one stop on the circle and the steel strap was placed on the package at the last stop. Then, the empty frame was pushed around to start a new package. By this method, eight women with one helper could package 500 packages of 2000 each per day or one million. This packing circle was used with much success for a number of years at New Kent. Two circles were used, one circle for each 500 M seedlings.

However, several years ago we began to hear complaints about the heavy 2000 packages. Soon we were asked to develop a method to pack everything in groups of 100 each.

To package 1 million seedlings in packages of 1000 each requires that 1000 packages be completed each day. This was just twice the work ever required of us before and would require four packing circles, 16 women and several helpers or a total of at least eighteen people.

The space requirements and complications of supply made things look impossible for four circles. As a result, we set out in another direction.

In the conveyor system, the seedlings come down a shoot from the grading table. They are placed on a conveyor, root to root, in groups of 200. With the roots in the center across the belt there is enough space between each group of 200 that the groups can be counted as they fall to the second conveyor.

The groups of 200 are fed into the package. Someone places the precut paper, the conveyor is turned on and moved into position, then stopped. The other conveyor is turned on and groups of 200 drop into the paper.

Five groups of 200 seedlings gives one bundle of 1000 seedlings. This second conveyor is then stopped and the first conveyor turned on again moving the package further down the line. At this point last year, the clay was flooded into the package with a nozzle. Next year, we plan some changes. While the top of the package is being closed, a new package is being filled.

When the final conveyor is turned on, it moves the package out of the conveyor far enough to place the first steel strap. The second strap is placed by pushing the package out of the conveyor with the following package. When the second strap is in place, the following package pushes it onto a conveyor and the completed package rolls away.

This may explain a number of questions concerning construction of these conveyors. The danger here is to make the drawing so complicated that it does not properly show the detail, therefore, much has been left out.

Rather than these conveyors being belts they are #50 drive chains. The pulleys are chain sprockets. The chain has pads every five links to which wood strips are bolted. Canvas is stapled to each wood strip, thus, we have a conveyor with a slight depression in which to place the groups of seedlings.

The conveyor which handles the package is also made of #50 chain with pads every other link to which wood strips are bolted. This conveyor is designed so that both sides and bottom move; thus,

there is no drag to distort the package. Chain and sprockets were used instead of belting to aid in cleaning. One side is adjustable to handle different sizes of packages.

We plan some changes for this year. Last year, we used just one conveyor covered with canvas. We plan to replace the canvas with 1/2 inch plastic screen this year. We will build the second conveyor if needed. Under each conveyor, we will have a drip pan. In this manner, we hope to treat the roots with clay, using one or more spray nozzles, before the seedlings are placed in the package. The purpose of so much conveyor is to allow the roots to drip dry and in this way avoid dripping packages.

By using this method, we were able to package 1000 packages of 1000 seedlings each per day with seven people. One of these seven was a highly skilled man, who looked after the strapping machine. The others required very little training.

SUMMARY

To increase our production, we soon reach a point where we must mechanize to do the job.

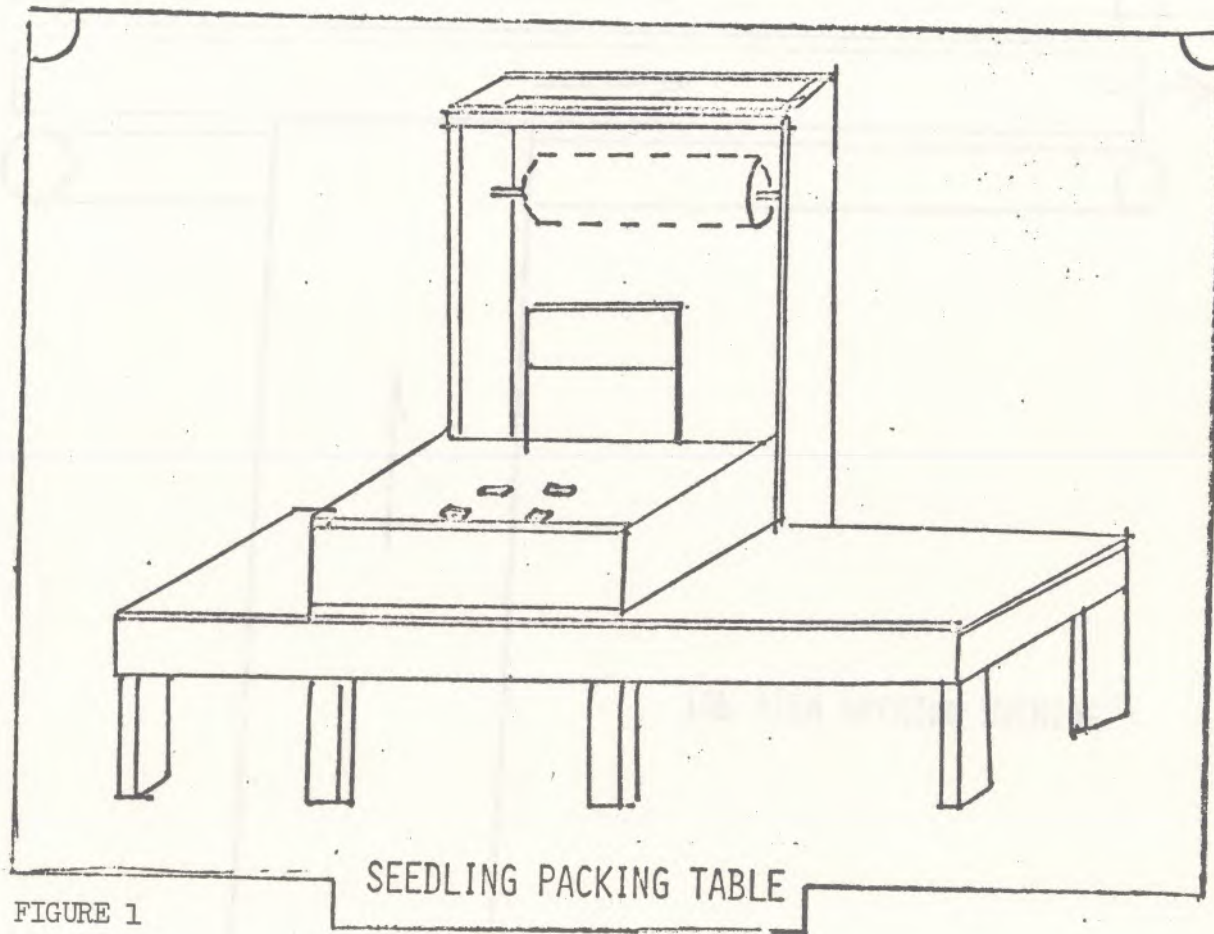


FIGURE 1

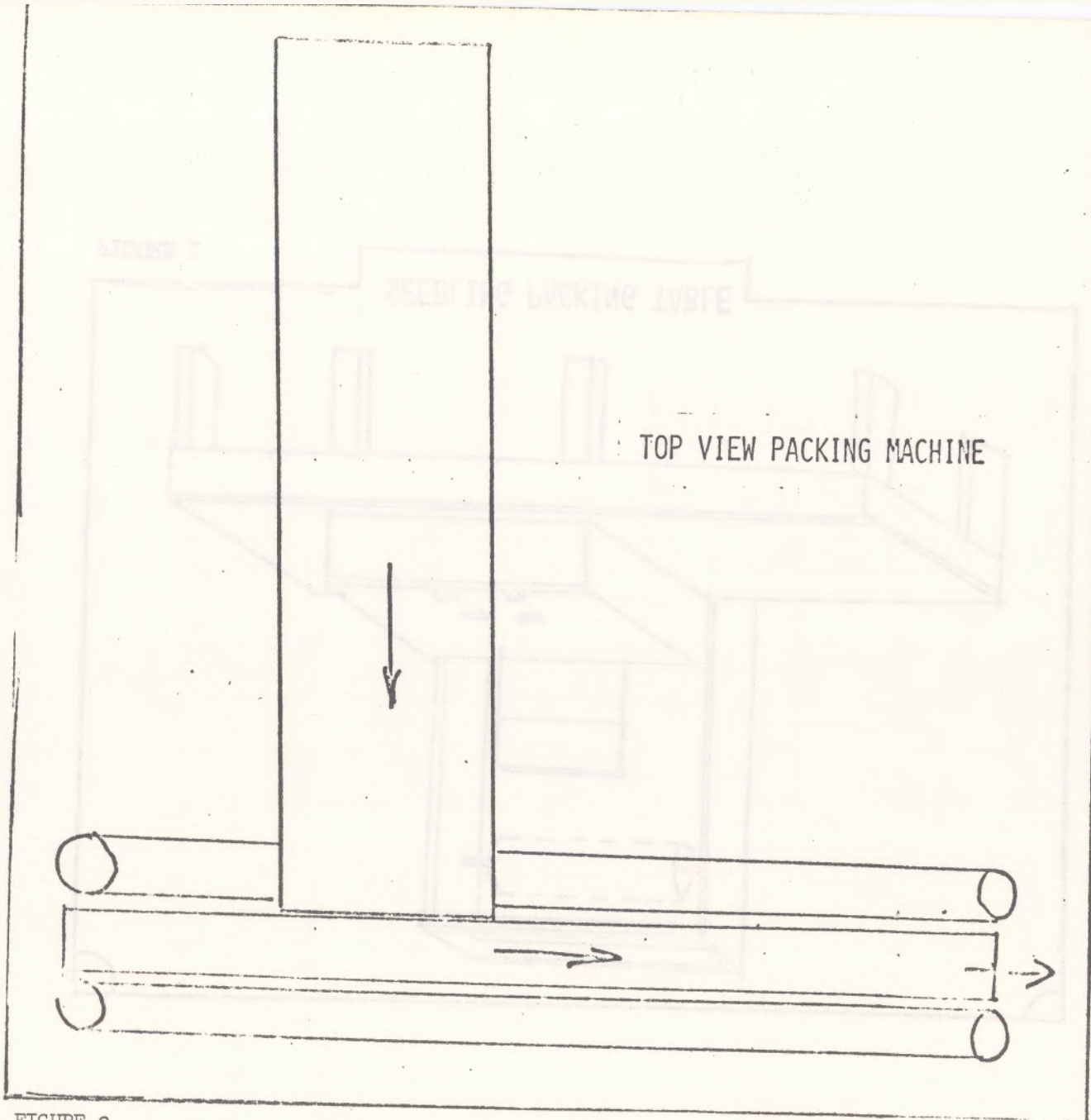


FIGURE 2

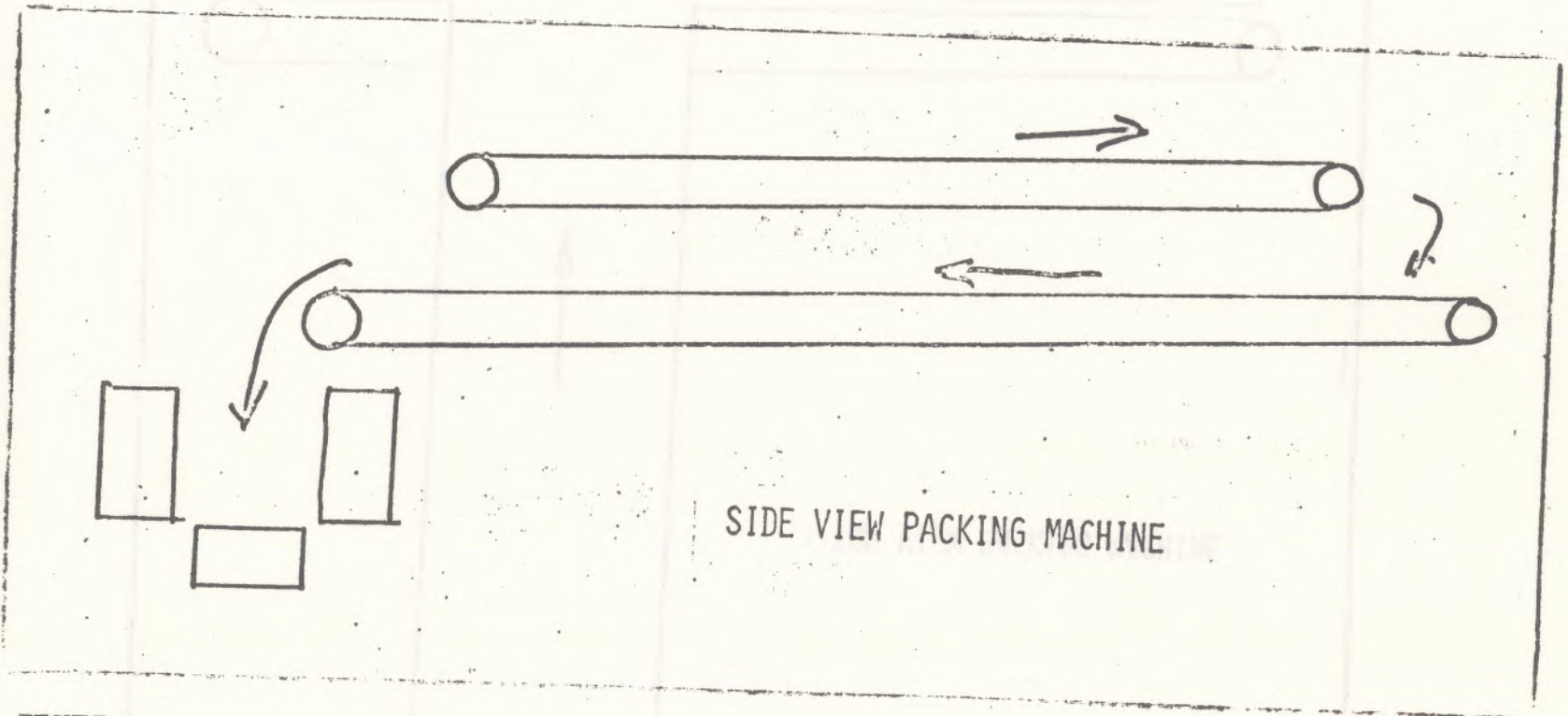


FIGURE 3.

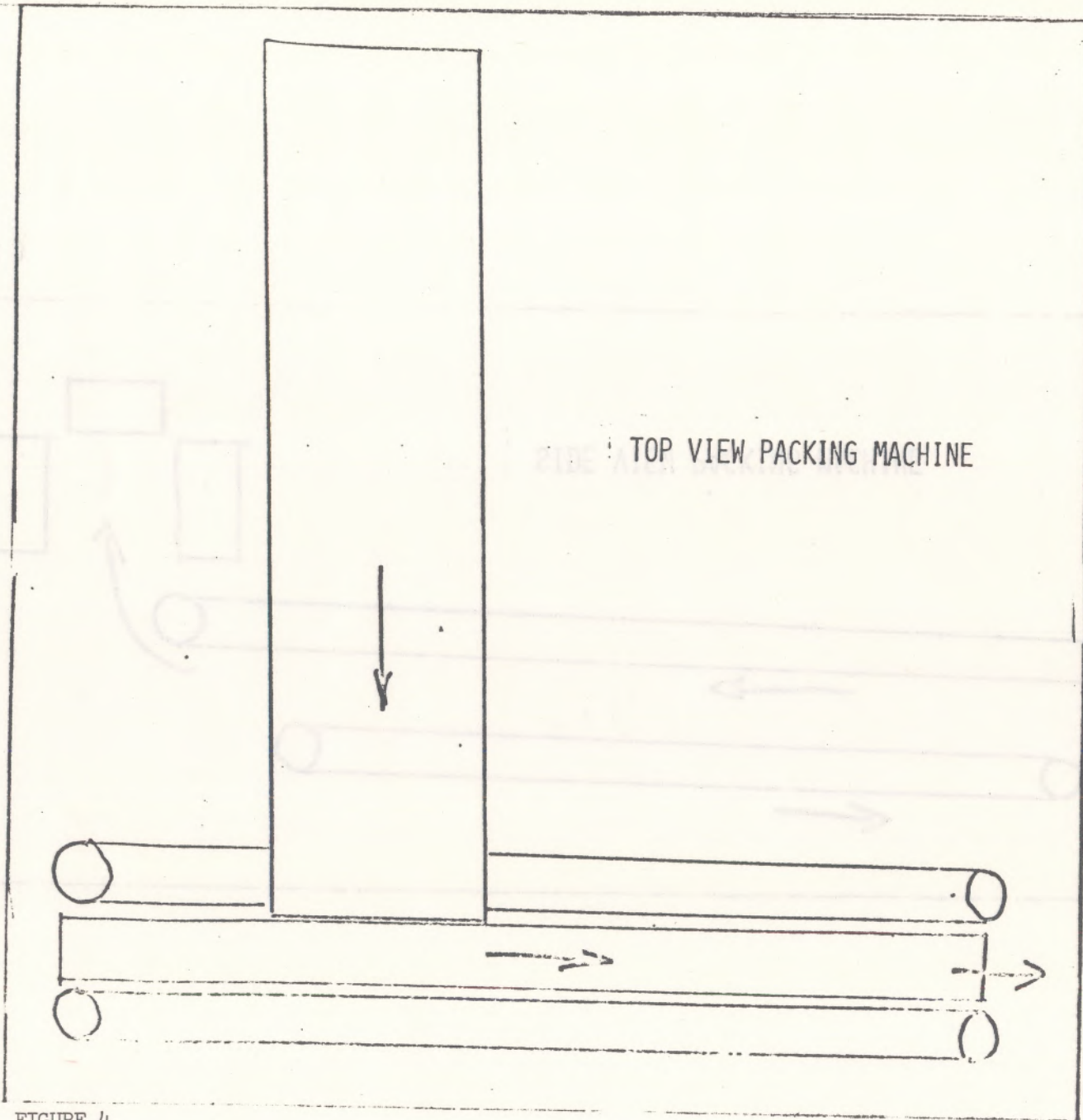
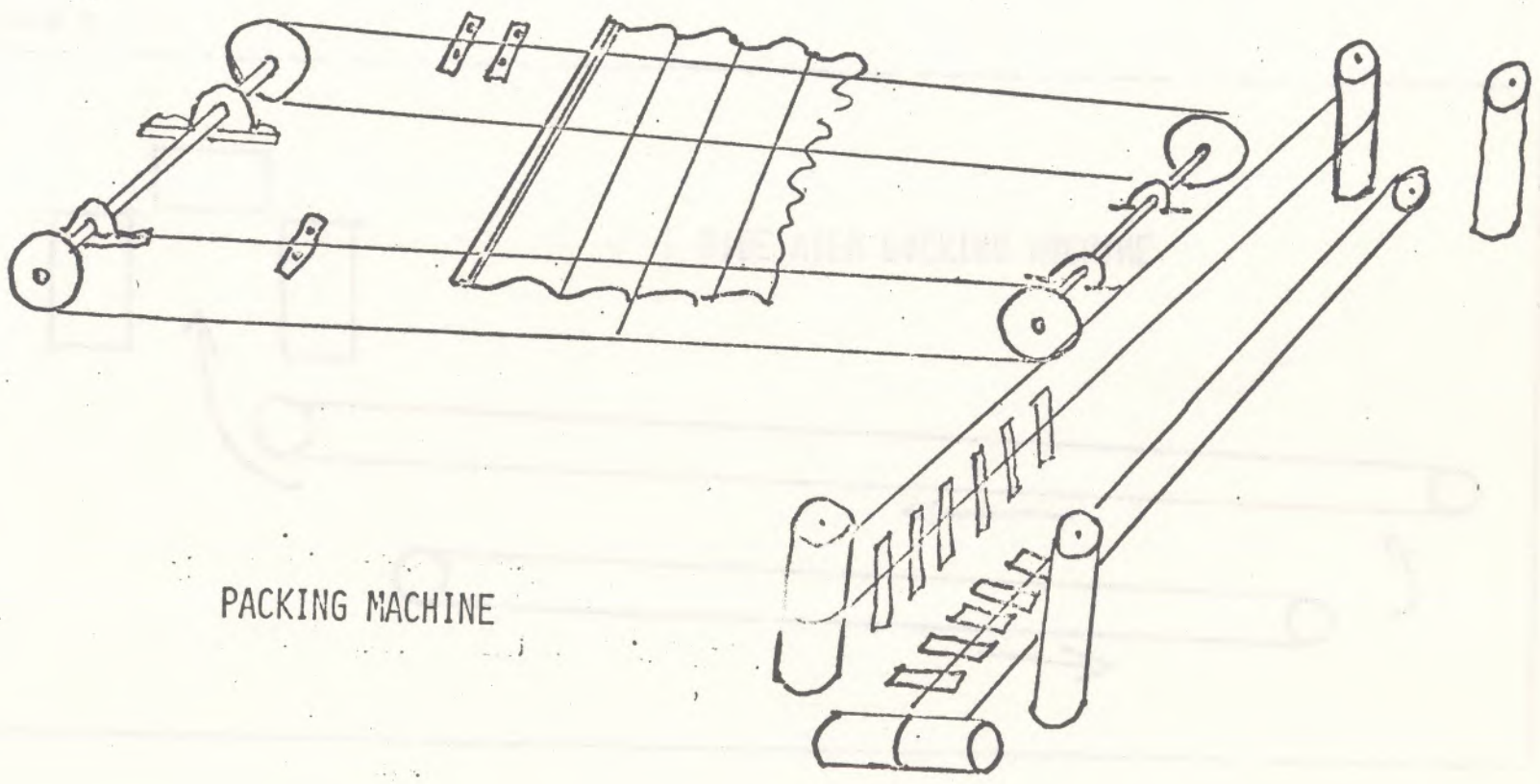


FIGURE 4



PACKING MACHINE

FIGURE 5

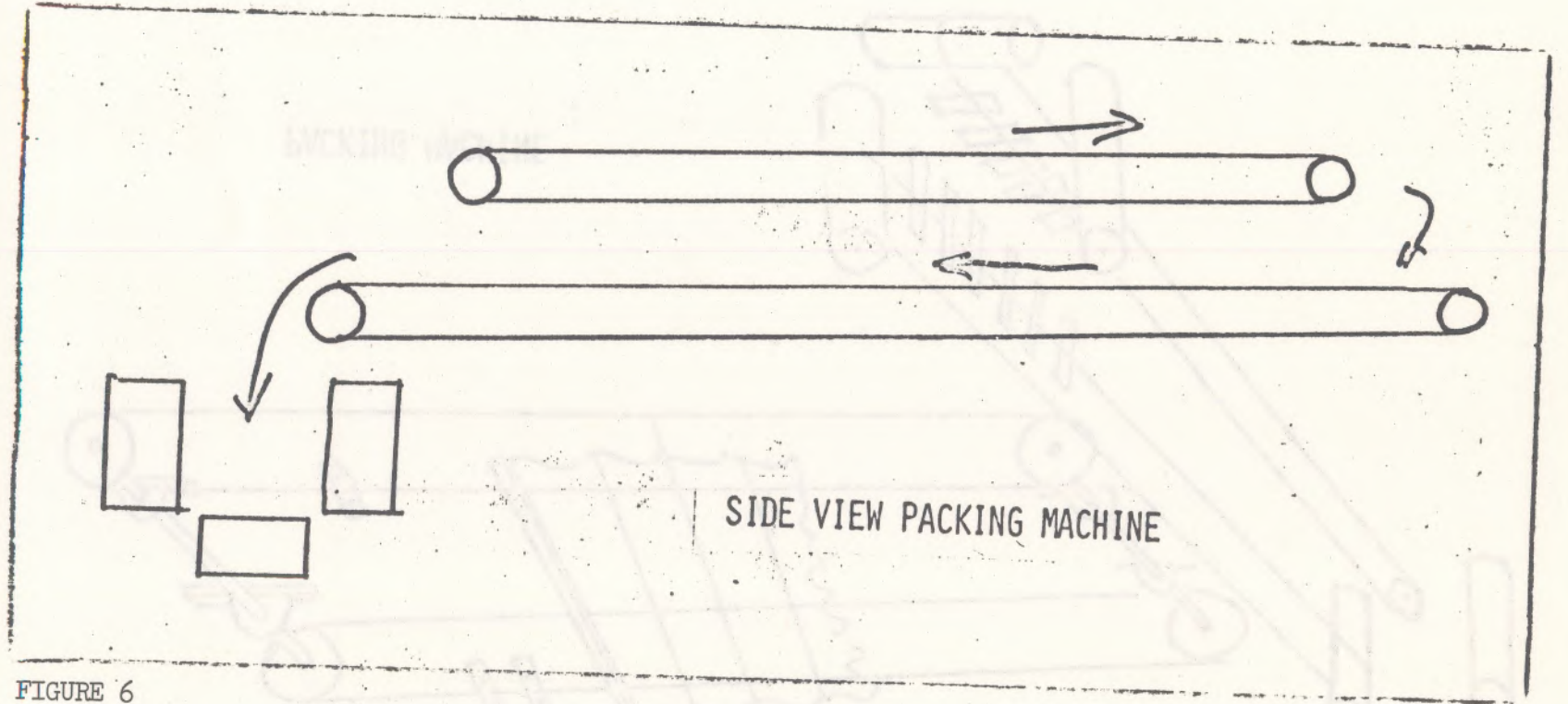


FIGURE 6

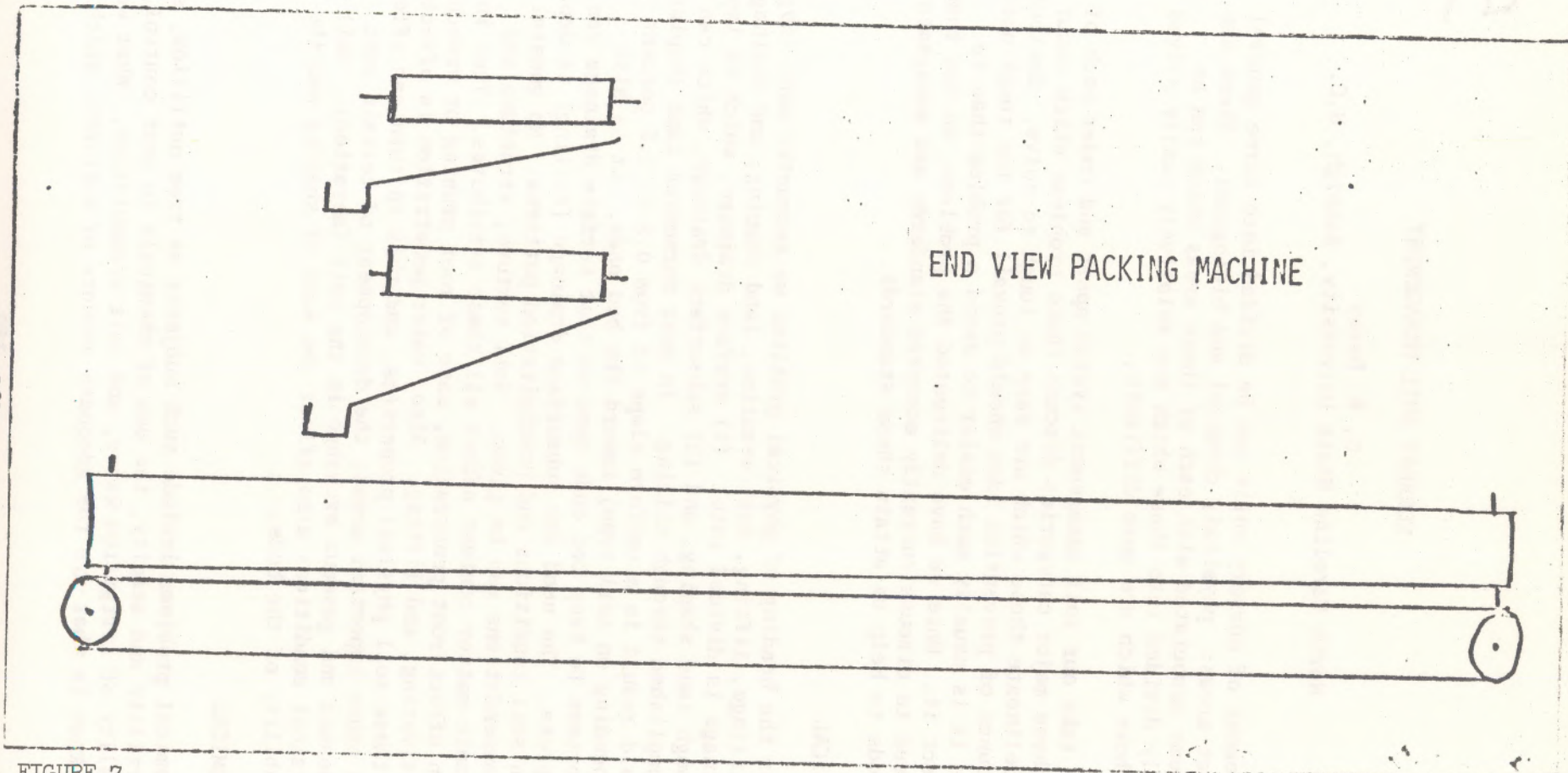


FIGURE 7