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THE DEVELOPMENT OF A POTATO COORDINATOR

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A potato co-ordinator to measure the three co-ordinates of tubers from a single plant with reference to some chosen point on the hill, has been designed and successfuly tested. This co-ordinator incorporates in itself the basic features of simplicity, easy to fabricate and is accurate enough to furnish reliable data on potato distribution in the soil.

INTRODUCTION

The distribution of potatoes in the ridge at the harvest time is an important feature affecting the design of new potato harvesters and the performance of existing ones. Potato distribution data tell the potato harverster designer, how wide and deep its digging section should cut. The effort has, therefore, been made to develop a simple potato co-ordinator to furnish the necessary data for the potato harvester designer.

REVIEW OF LITERATURE

Bailey described a co-ordinator which he used for measuring co-ordinates of potatoes in the ridge (Fig. 1). The co-ordinator consisted of a steel rail fifteen feet long, marked at 3 inches interval. A horizontal bridge rested at one end of the rail road carried a spirit level and a graduated scale The second support of the bridge was so arranged that the bridge could be levelled. The bridge also carried a cursor which in turn carried a vertical sliding member with a pointer at its lower end, and a graduated scale. The horizontal and vertical scales were so arranged that the zero of the horizontal scale corresponded to the tip of the pointer being on the centre line of the rail, and the zero of the vertical scale to tip of the pointer being on the level of the bottom of the rail.

To measure the co-ordinates of the potatoes. Bailey removed the soil until the top and the sides of the tuber were accessible. The co-ordinates across the ridge and for depth were taken for the top of the tuber. He

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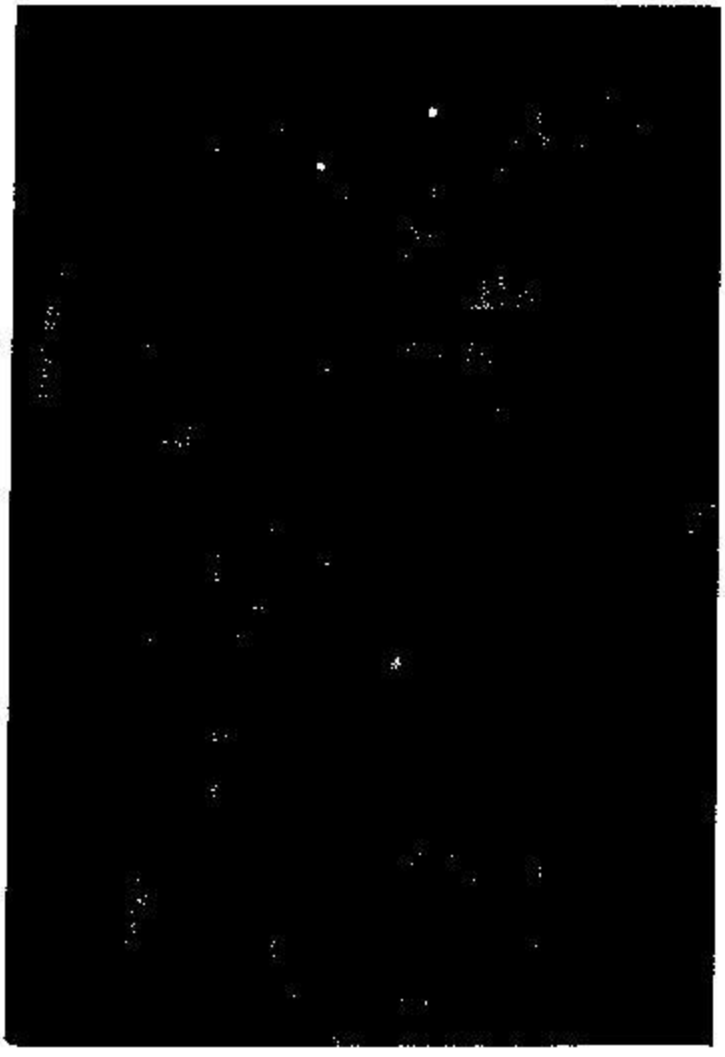


Fig. 1. Co-ordinator for Potato Distribution Measurements (4)

then removed the tuber and took the co-ordinates for its bottom points. Bailey repeated this procedure till no more tubers were found.

DESIGN AND PROCEDURE

The new potato co-ordinator is simple and secured the potatoes to their actual positions prior to the removal of soil covering the tubers and measurements of their co-ordinates.

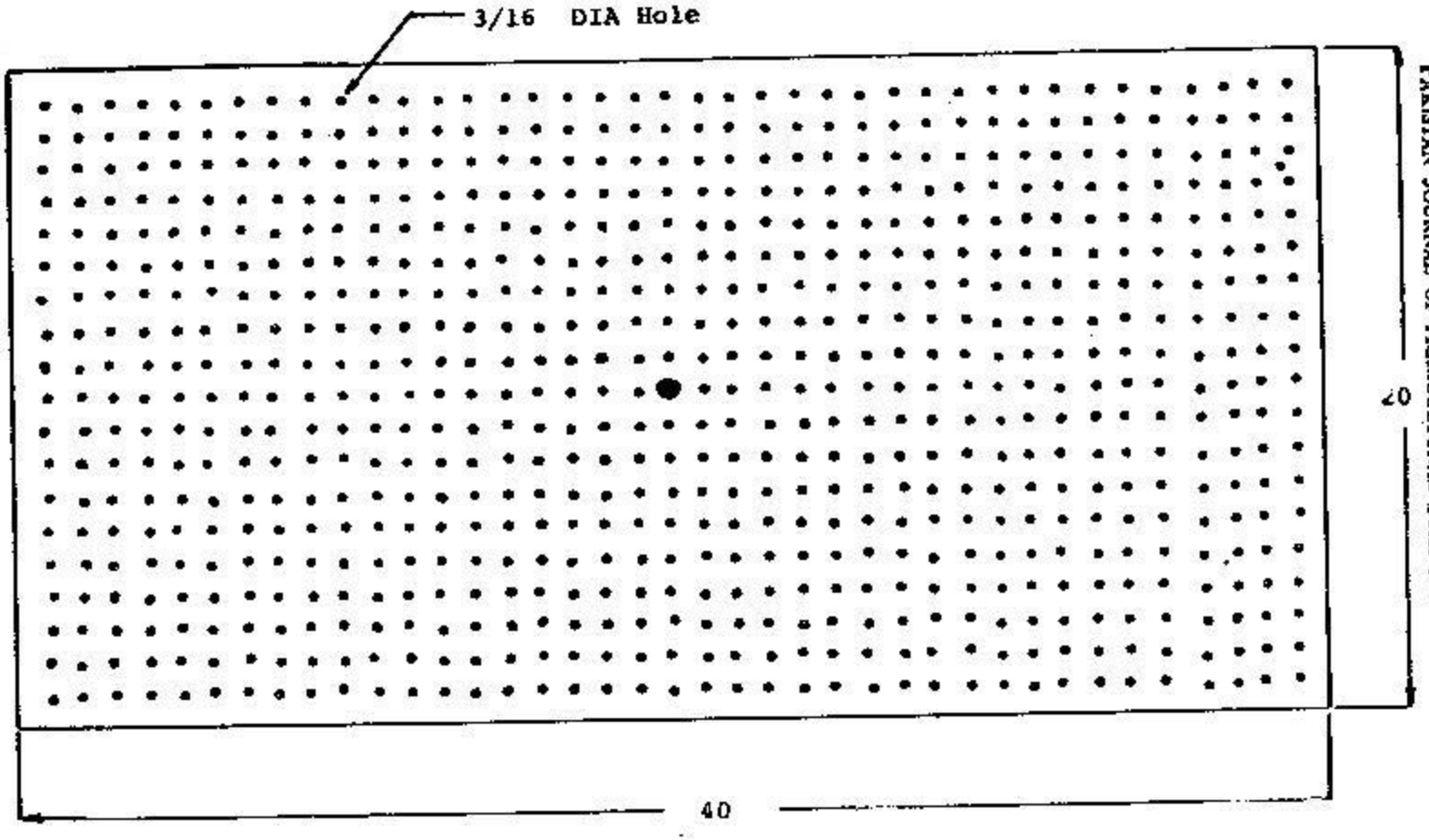
The potato co-ordinator consists of two side plates (fig. 2), a cover plate (fig. 3) and 2 ft. long 1/8" dia steel rods, sharpened at one end. To proceed with the measurements of potato co-ordinates, the tops of the selected plant are cut off with a knife. Two side plates, 10 inches from the main stem of the plant are then pounded to at least 10 inches deep into the ground. The cover plate is now placed on the side plates in such a position that the centre of cover plate is directly above the point on the hill with reference to which the co-ordinates are to be measured. An identifiable steel rod is driven into the ground to locate the reference point on the hill. The other steel rods are then driven into the ground through the cover plate all around the reference steel rod on a 2 inch square grid out to 8 inches. It is hoped here that steel rods would fix each and every potato in position, on the plant (fig. 4). The soil covering the tubers is removed very carefuly with hand until all of the them on the plant are clear of the ground. The X and Y co-ordinates of tubers are measured from the cover plate and Z co-ordinate by measuring along the steel rod piercing the tuber (fig. 5).

DISCUSSION

Bailey's co-ordinator requires special skills and facilitates to fabricate, and does not secure the potatoes to their natural position prior to the removal of soil. Therefore, one has to be extra ordinarily careful while taking measurements with the help of Bailey's co-ordinator and make sure that the tuber do not move during the soil is removed from them.

The new potato co-ordinator is simple in design and needs no special skills to build. It secures the potatoes to their natural position prior to the removal of soil. This provides much more freedom to the one, taking measurements of potato co-ordinates with the new potato co-ordinator.

Figure 2 Cover Plate
(Mat. 3/16 inch Black Iron)



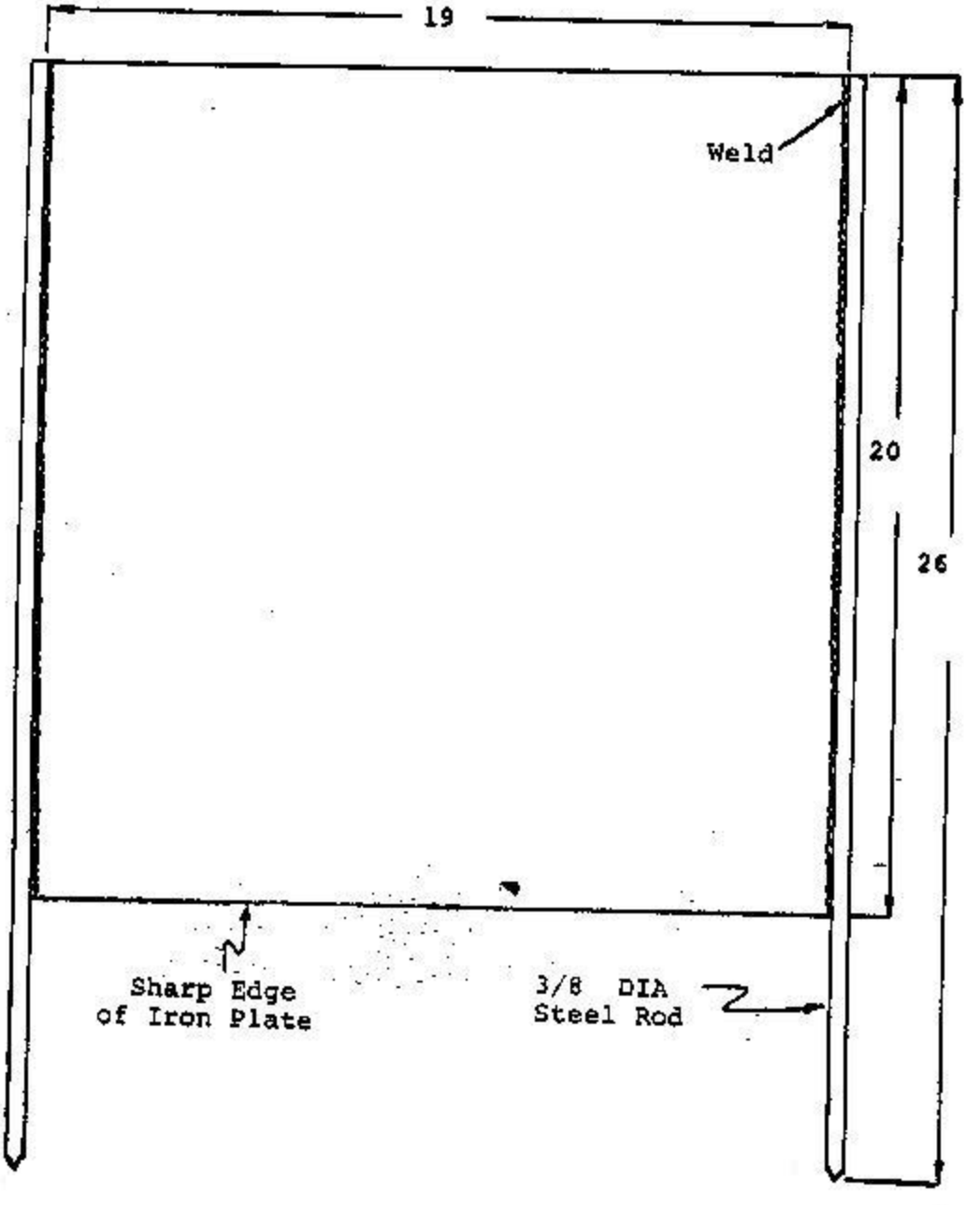


Figure 3 Side Plate
(Mat. 3/16 inch Black Iron)

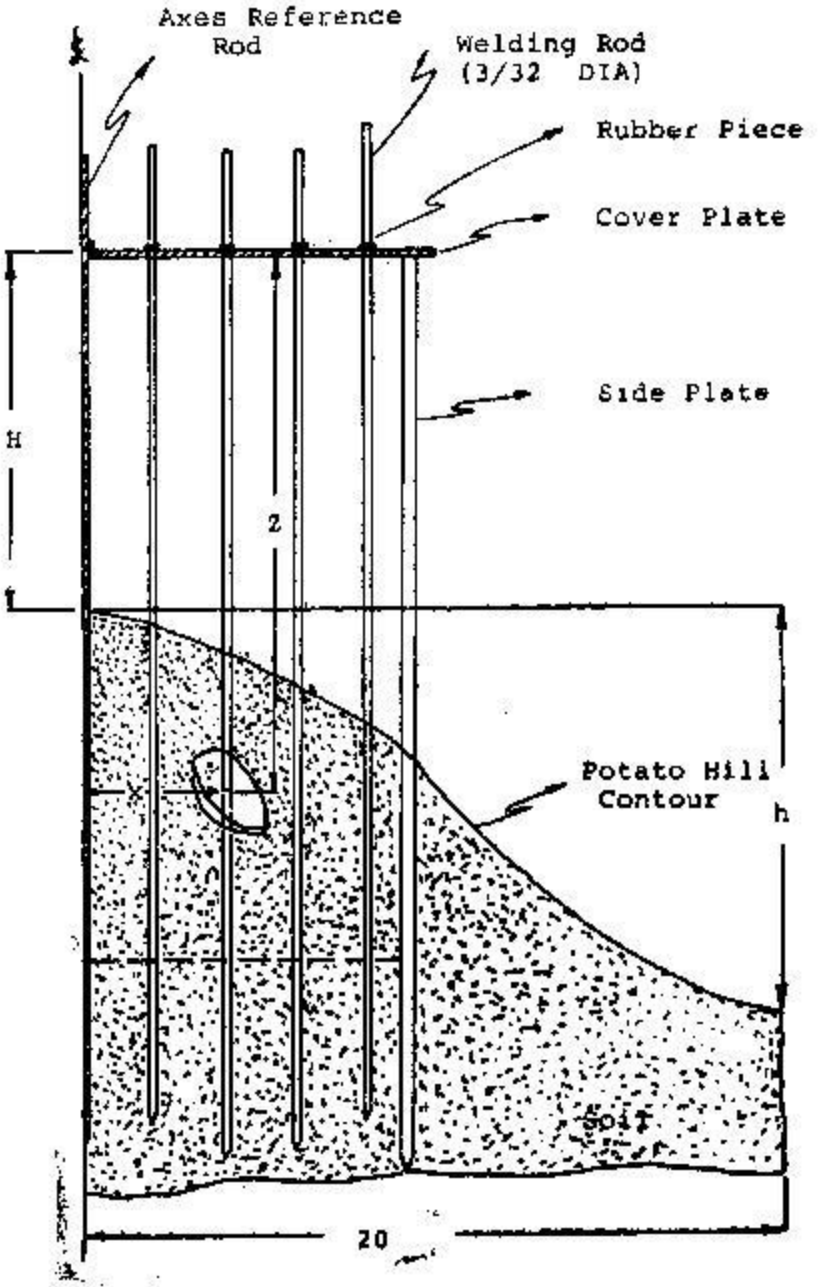


Figure 4 Half-section of Side View Showing Potato Distribution Measurements.

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