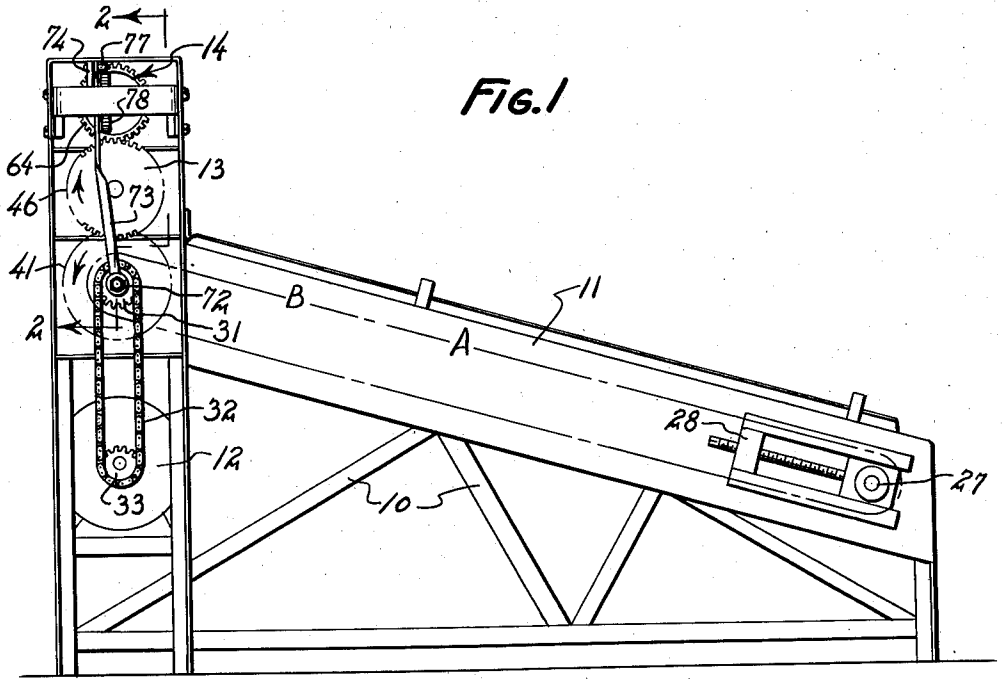
May 2, 1961 F. AHLBURG 2,982,203

POTATO MARKING DEVICE

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FIG. 1



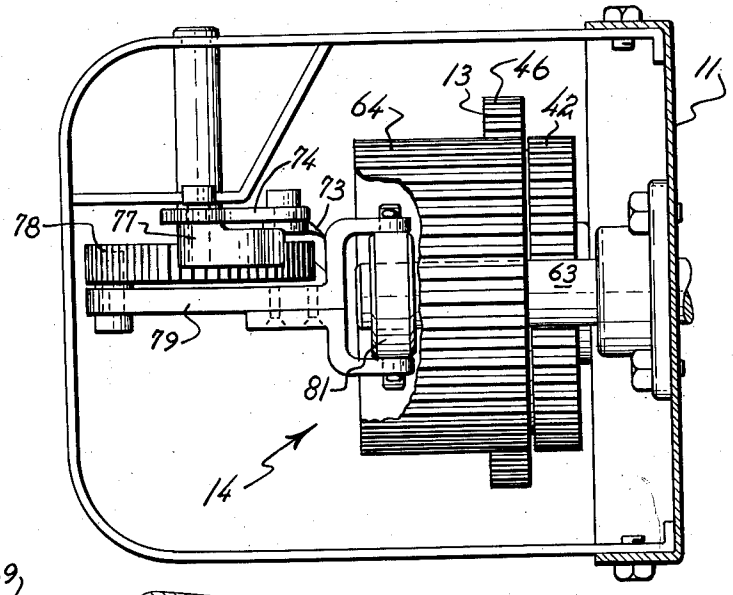


FIG. 5

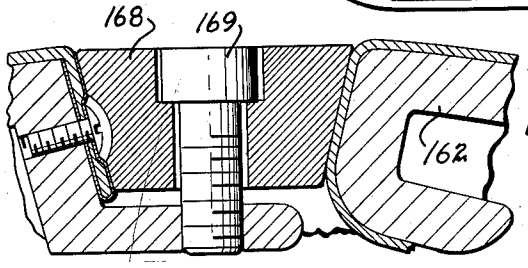


FIG. 9

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POTATO MARKING DEVICE

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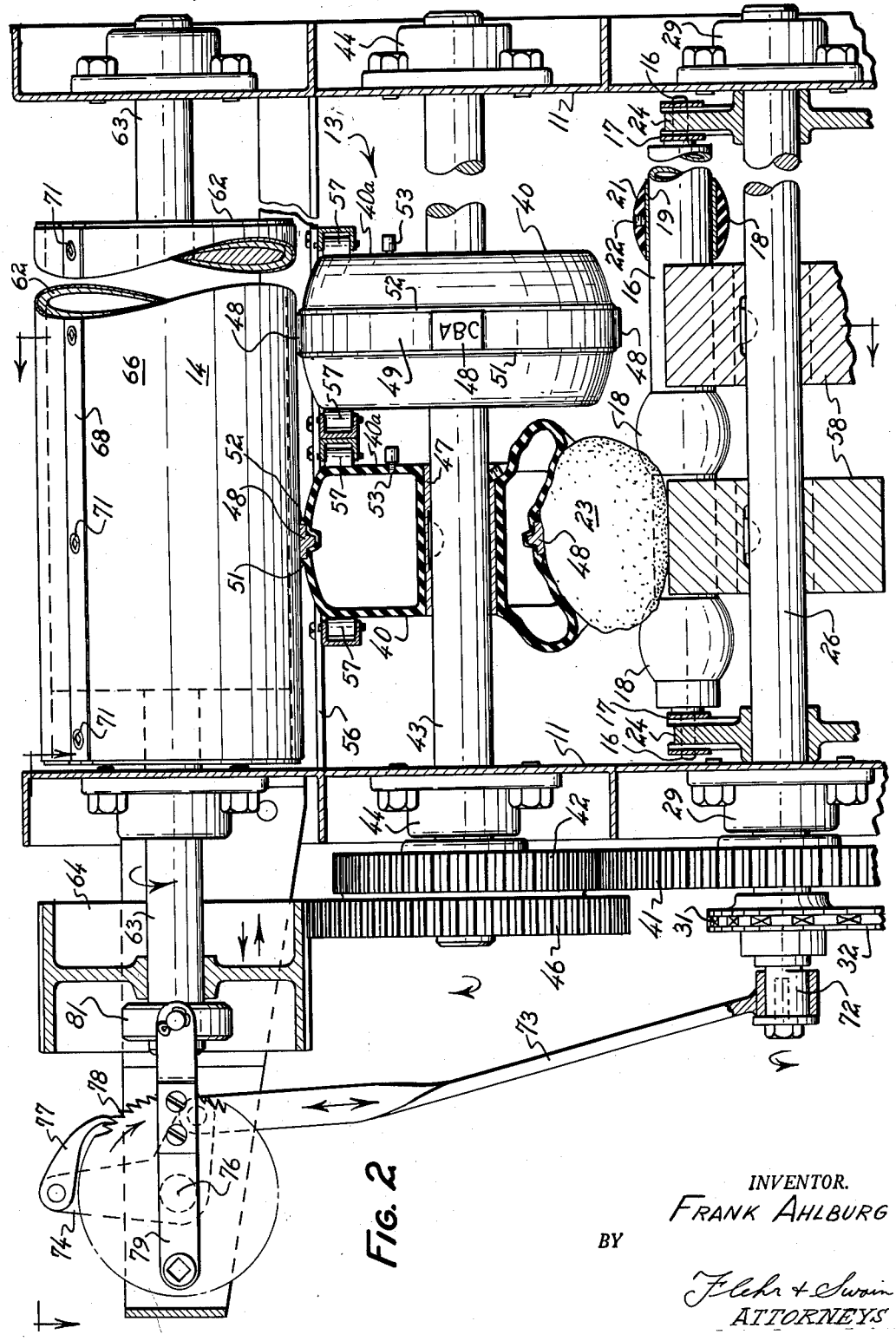


FIG. 2

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FIG. 3

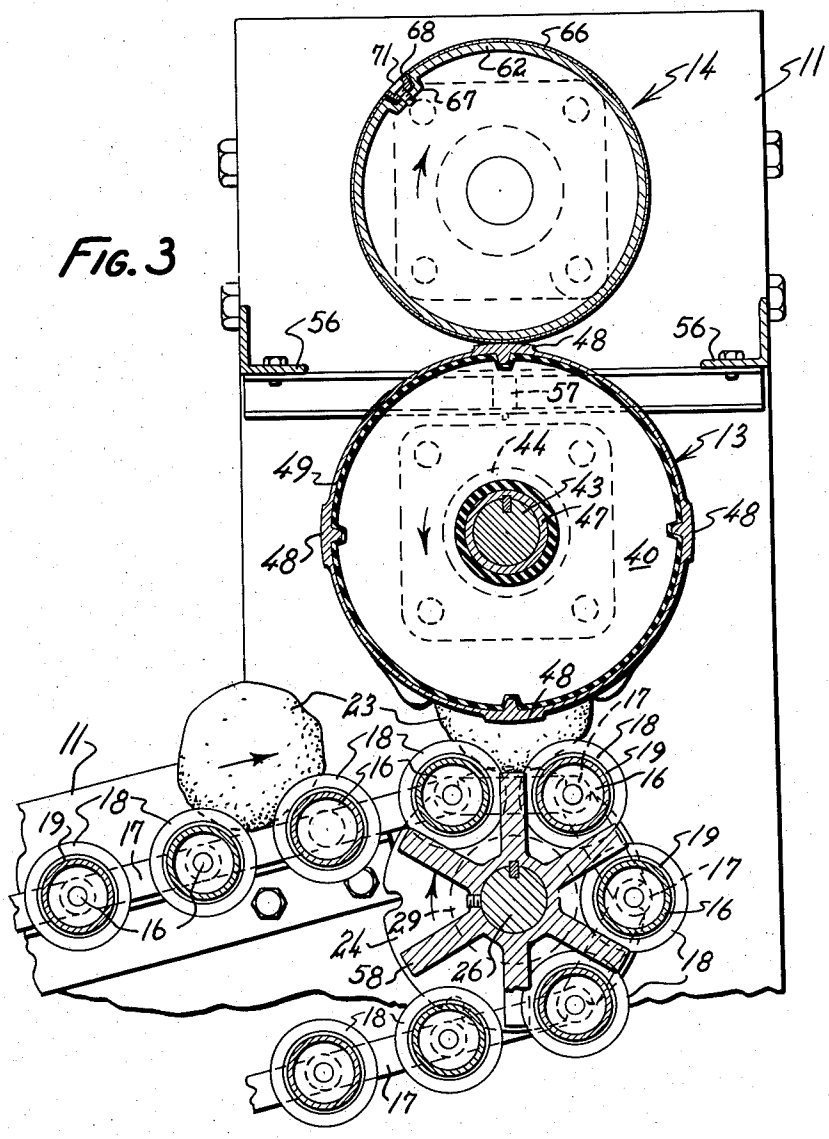
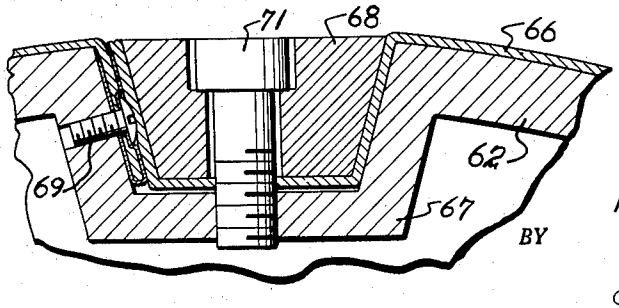


FIG. 4



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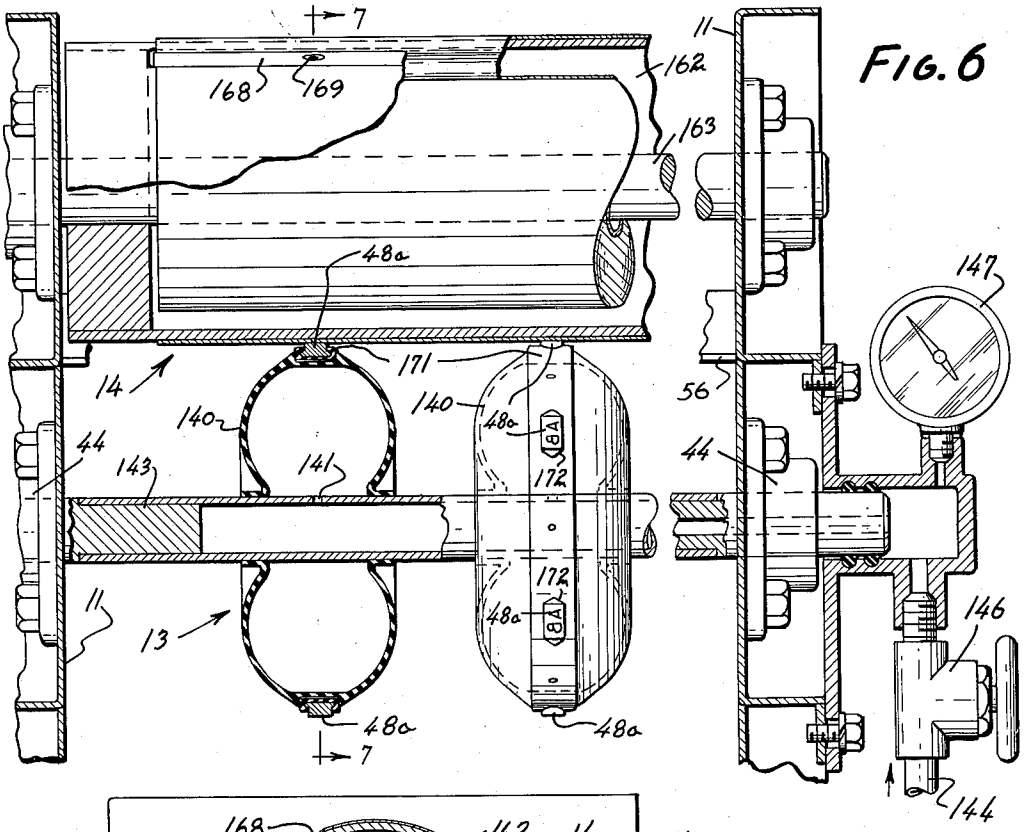


FIG. 6

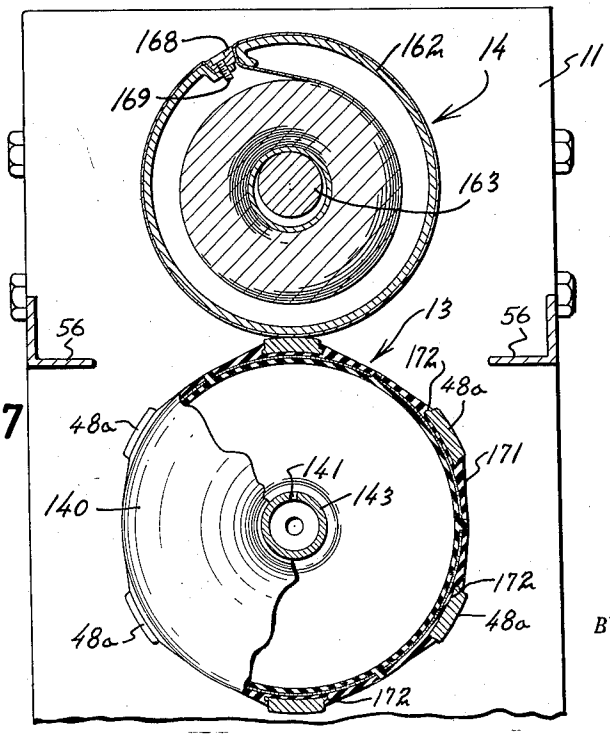


FIG. 7

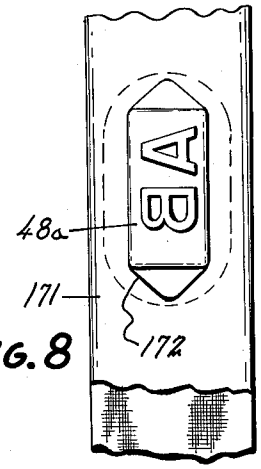


FIG. 8

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United States Patent Office 2,982,203 Patented May 2, 1961

2,982,203

POTATO MARKING DEVICE

Frank Ahlburg, Los Angeles, Calif.

Filed Nov. 25, 1955, Ser. No. 549,000

3 Claims. (Cl. 101—37)

This invention relates to potato marking devices and particularly to devices which cause the potato to be engaged by an ink carrying die.

Many attempts have been made to mark potatoes, but because of their irregular size and shape they have presented problems which have not been overcome prior to my invention. Special inks have been utilized and I have made use of these inks, because potatoes, which are largely grown in silty areas, require for their correct marking an ink having special qualities. However, although I have utilized previously known inks, I have not utilized any other commonly accepted dies, means of supporting the dies or other components of a vegetable marking machine.

It is an object of this invention to provide a device which will mark potatoes or other fruit or vegetables regardless of their size or shape.

It is a further object of this invention to provide a potato marking device which will handle potatoes of all sizes and shapes whereby eliminating any need for grading as to size before the potatoes are marked.

It is a further object of this invention to provide a suitable means for supporting a die or a plurality of dies in such a manner that the full surface of each die will engage the potato which it is intended that it engage.

It is a further object of this invention to provide a readily changeable form of die.

It is a further object of this invention to provide an ink transfer mechanism in which ink may be transferred to dies between each marking.

It is a further object of this invention to provide an inking mechanism which may be readily changed in a simple manner and by inexperienced help and with the minimum of downtime.

Other objects and advantages of my invention will appear from the following specification taken in conjunction with the accompanying drawings in which:

Figure 1 represents a side elevational view of the device incorporating my invention;

Figure 2 represents a fragmentary cross-sectional detail taken along the line 2—2 of Figure 1;

Figure 3 represents a cross-sectional detail taken along the line 3—3 of Figure 2;

Figure 4 represents an enlarged fragmentary view of the means for securing the ink carrying pad to its backing or support, as illustrated in Figure 3;

Figure 5 is an enlarged view taken along the line 5—5 of Figure 2.

Figure 6 is a view, similar to Figure 2 in which the rubber tire members are mounted upon a single shaft and are in pneumatic communication with each other;

Figure 7 is a cross-sectional view taken along the line 7—7 of Figure 6 showing a new method of mounting the inking tape;

Figure 8 is a plan view of the printing insert and the method of mounting the same upon the tire; and

Figure 9 is an enlarged detail of a portion of Figure 7 showing the means of feeding the inking member from the inking roll and securing the same thereto.

As indicated generally in Figure 1, I provide a suitable framework **10** which is adapted to support an elevator or conveyor mechanism indicated generally at **11**, a drive mechanism shown generally at **12**, a die supporting and carrying mechanism **13**, and an inking mechanism **14**. The framework **10** consists of numerous parts, some of which will be referred to specifically hereinafter, but which generally must be understood to be included within the comprehensive reference to a "frame."

Potatoes are adapted to be positioned upon the conveyor **11** at the right-hand side of Figure 1, and to be carried by the conveyor **11** generally upwardly and to the left until they pass over the end of the conveyor **11** and into engagement with the die carrying mechanism **13**. The potatoes are then carried away by any suitable mechanism which is not shown, as for example, a chute. The conveyor mechanism **11** and the die carrying mechanism **13** and inking mechanism **14** are all driven from a single power source **12**.

As indicated in Figures 2 and 3, the conveyor mechanism **11** consists of a plurality of cross shafts **16** which are joined together near their ends by links **17** which thus form, in effect, a pair of endless chains which support the shafts **16** to form an endless conveyor. On the shafts **16** I have provided a plurality of tapered tubular members **18** which, as indicated, are provided with cylindrical metal cores **19** and resilient rubber outer surfaces **21**. The members **18** may be shaped differently but are preferably formed generally as shown and are slidable longitudinally along the shafts **16**, and are adapted to be retained in predetermined positions by the set screws **22**. Since the members **18** are mounted upon parallel shafts **16**, they are thus aligned laterally with respect to the conveyor assembly **11**. The members **18** on various cross shafts **16** are likewise positioned longitudinally with respect to the conveyor belt **11** so that four of them serve to form aligned recesses to hold the potatoes **23**, for example. The links **17** are supported at both ends by suitable sprockets **24**, the upper of which is carried by cross shaft **26** and the lower of which is carried by a cross shaft **27**. The cross shaft **27** is mounted in bearing blocks **27***a* which are movable longitudinally with respect to the conveyor **11** by means of a lead screw arrangement **28** whereby the tension of the conveyor **11** may be increased or decreased. As shown, the upper shaft **26** is mounted in suitable bearings **29** which are secured to the frame **10** in any suitable manner. One end of the shaft **26** is provided with a pulley **31** which is adapted to be engaged by a belt **32** which is reaved about a pulley **33** on the shaft of motor **12** whereby the shaft **26** will be driven by motor **12**. When the shaft **26** is driven the conveyor **11** is likewise caused to advance in a manner which has been previously described. As the potatoes **23** are placed upon the conveyor **11**, they will automatically align themselves thereon since each potato will tend to find a recess created by four of the members **18**. Between the points A and B, the lower side of the upper run of the conveyor **11** frictionally engages rails, not shown, whereby the shafts **16** are caused to rotate. This rotation of the shafts **16** and members **18** is transmitted to the potatoes **23** which are supported thereby and it has been found that this rolling action tends to align the potatoes so that their longitudinal axes are parallel to the transverse axis of the conveyor **11**. Thus, as the potatoes approach the upper end of the conveyor **11**, they are aligned transversely thereof and are spaced a predetermined distance apart, because of the spacing of the shafts **16** with respect to each other.

The shaft **26** also carries a toothed gear **41** which is

in constant mesh with a similar gear **42** mounted upon a cross shaft **43**. The shaft **43** is carried by the frame **10** and suitable bearings **44**, and also carries a toothed gear **46** whose purpose will more fully hereinafter be described.

The cross shaft **43** carries the dies and their supporting mechanism. As viewed particularly in Figures 2 and 3, the die supporting mechanism consists of a resilient tubular rubber wheel arrangement **40**. The wheel arrangement **40** may comprise a resilient, yieldable, annular tube or toroidal member **40***a* which may be mounted upon a cylindrical metal sleeve **47** which is keyed to shaft **43** as shown. The member **40***a* may be provided with generally parallel side walls interconnected by a circumferential or peripheral wall having a normally transverse convex surface upon which may be supported a die means including a plurality of circumferentially spaced dies **48**. Each die **48** may be made of a suitable material such as metal or rubber and provided with selected embossed characters. In the example four dies **48** are shown spaced 90° apart and are carried by a pliant band or strap **49** of suitable material such as rubber, a fabric or metal. The strap **49** may be held in selected position on the circumferential surface of the member **40***a* by a pair of parallel spaced, circumferentially extending ribs **51** and **52** which may be formed integral with the circumferential wall of member **40***a*. The member **40***a* is provided with an air inlet valve **53** and is normally kept at an air pressure of about five pounds per square inch and thus it will be seen that the same is adapted to be deformed when engaged by a potato **23** generally as shown in Figures 2 and 3, and that the die **48** which is supported thereby will also come into engagement with the potato **23**. Because of the readily deformable characteristics of the member **40***a*, the die **48** will engage the potato regardless of the particular plane of the surface at which it engages the potato. The members **40***a* are positioned on the shaft **43** in such a manner that the dies **48** are located midway between the longitudinal parallel rows of members **18** so that they will engage the potatoes **23** at approximately the points indicated in Figure 2. A cross frame member **56** supports a plurality of rotatably mounted rollers **57** which are adjustable toward and away from the side walls of the members **40***a* thereby tending to overcome any deformity which may occur therein and in such a manner that the dies **48** will always be urged upwardly against the ink roller **14** in a manner which will more fully hereinafter be described. By moving the rollers **57** into and out of engagement with the side walls of members **40***a* the contact of the dies **48** against the member **14** may be controlled.

Since the gears **41** and **42** are in constant mesh it is obvious that the dies **48** may be moved to a predetermined position with respect to the advancing potatoes and the conveyor **11** in predetermined time relationship. For example, as viewed in Figure 2, when the potato is directly over the cross shaft **26**, the lowermost die is directly over the same and in engagement with a potato. It should be pointed out here that I have provided a plurality of so-called star wheel kickout members **58** which are substantially paddle-shaped and whose purpose is to engage the potato **23** and provide a firm base when the potato is in the marking position illustrated generally in Figures 2 and 3 in such a manner that the potato will not be wedged between adjacent rollers **18**. Moreover the star wheel kickout **58** tends to reject the potato from the conveyor **11** at the end of the run.

The inking mechanism consists generally of a drum **62** which is secured to a shaft **63** which is rotatably mounted in bearings on the frame **10**. The shaft **63** is adapted to be driven by a gear **64** which is in constant mesh with gear **46** and which is secured to the shaft **63** and which, with the shaft **63** is adapted to be moved longitudinally in a manner to be presently hereinafter described.

The drum **62** supports a blanket **66** which may be formed of any suitable ink retaining material, such as paper, cardboard, felt, etc., and which constitutes a wick containing ink which will be transferred to the die **48** when the die **48** engages the member **66**. The means for securing the wick or blanket **66** to the drum **62** is shown particularly in Figure 4. The drum **62** is provided with a longitudinal trough **67** which is adapted to receive a similarly formed keeper shaft **68**. One end of the member **66** is secured to the side wall of the trough **67** in any suitable way as, for example, by means of screws **69**, as shown, and the other end is wrapped around the member **62** and placed in the trough **67** generally as shown. The keeper shaft **68** is then placed in the position indicated and retained in that position by the set screw arrangement **71**.

As indicated particularly in Figure 2, the shaft **26** supports an eccentric **72**, which through a connecting rod **73** actuates L-shaped crank **74** about point **76**. The crank **74** supports a pawl **77** which engages a ratchet wheel **78**. The ratchet wheel **78** drives link **79**, the remote end of which is secured to a collar **81** on the shaft **63**. As the shaft **79** is urged to the right as viewed in Figure 2, it urges the collar **81** into engagement with the hub of the gear **64**, thereby urging the gear **64**, the shaft **63** and the member **66** to the right so that upon each actuation of the connecting rod **73** a new area of the wick **66** will be presented to the next advancing die **48**. In this manner, a fresh inked area is presented to each die, thus assuring fresh inking.

Operation of the device may be briefly described as follows: The wick **66** is inked and is positioned about the drum **62** in the manner which has previously been described.

The members **40***a* are inflated to approximately five pounds per square inch pressure and the members **57** are positioned in such a manner that as the members **40***a* rotate, each die will contact the rotating and laterally driven member **66** in such a manner that the proper quantity of ink will be transferred from the member **66** to the die **48**.

A number of potatoes may be placed upon the conveyor **11** and the entire apparatus will be driven by the motor **12**. The conveyor **11** will be advanced upward and to the left, as viewed in Figure 1. The lower side of the upper run of the conveyor will engage the rails previously described herein in such a manner that the shafts **16** will rotate about their longitudinal axes and the potatoes will likewise be caused to rotate, thus causing the potatoes to be aligned with their longitudinal axes parallel to the transverse axis of the conveyor **11**. The potatoes will be carried upwardly until they approach the position illustrated generally in Figure 3. Through the gears **41** and **42**, the shaft **43** will likewise be rotated, and because of the timed relationship which will have been established, die **48** will be caused to engage the potato **23** as the same is carried into the position illustrated in Figure 3. Because of the resiliency of the member **40***a*, the die will be caused to engage the potato **23** regardless of the particular portion thereof which is presented to the die, and the ink mark will be transmitted thereto. In the meantime, the shaft **73** will have actuated the crank member **74** with the result that the pawl **77** will have engaged the ratchet teeth **78** thereby urging the member **13** to the right, as viewed in Figure 2, with the result that a new inking surface will be presented to the die which next engages the same.

In the modification illustrated in Figures 6 and 7 it will be noted that the shaft **143** is hollow and that the resilient members **140** are in communication through orifices **141** with the interior of the shaft **143**. The shaft **143** is in constant communication with a source of air pressure **144** and the introduction of the air into the shaft **143** is controlled by valve **146** and is determined by a gauge **147**. In all other respects the operation of the

devices illustrated in Figure 6 is substantially the same as the previously described mode of operation in connection with the device illustrated in Figure 2.

However, as illustrated in Figure 7, I provide a continuous inking strip **148** which is mounted upon the shaft **163** and which may be withdrawn from within the roller **162** through a slot therein. A cross bar **168** is adapted to be maintained in the slot by means of a bolt **169**. It may also be removed by removing the blot **169** in which event a fresh portion of the inking paper may be removed and wound around the cylindrical member **162**. I also show, in Figures 7 and 8, an auxiliary method of mounting the dies **48***a* on the periphery of the resilient member **140**. An endless band **171** is provided with slots **172** which are adapted to accommodate a preformed die **48**.

I claim:

1. In a marking machine including an inking roll means, the provision of: a frame means; a plurality of axially spaced, deformable wheel members mounted on the frame means and provided with resilient, yieldable, deformable surfaces extending around the circumference of said wheel members; die means positioned on the deformable surface of each member and movable in a selected path; and means carried by the frame means in the space between adjacent deformable members for overcoming deformity in said members at a position in their path opposite to the ink roll means to afford pressure contact of the die means with the ink roll means.

2. A marking machine as stated in claim 1 wherein said means between adjacent deformable members include antifriction spacer members in pressure contact with said deformable members.

3. In a marking machine for fruits, vegetables and like articles of irregular shape and size, the combination

of: means to support a plurality of discrete articles to be marked; a die supporting means in cooperable relation to each article support means, said die support means including a plurality of axially spaced wheel means under fluid pressure, each wheel means being provided with a deformable circumferential surface; a plurality of die means positioned on said circumferential surface in circumferentially spaced relation, said surface including surface portions extending laterally from said die means, said surface being deformable into concave configuration by an article to be marked whereby said lateral surface portions and said die means are under generally uniform pressure during stamping of said article, said lateral surface portions gripping said article and conforming thereto for limiting relative movement between said article and said die means; an ink roll means cooperable with said die means; and means between adjacent wheel means for overcoming deformity thereof to assure pressure contact of said die means with the ink roll means.

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