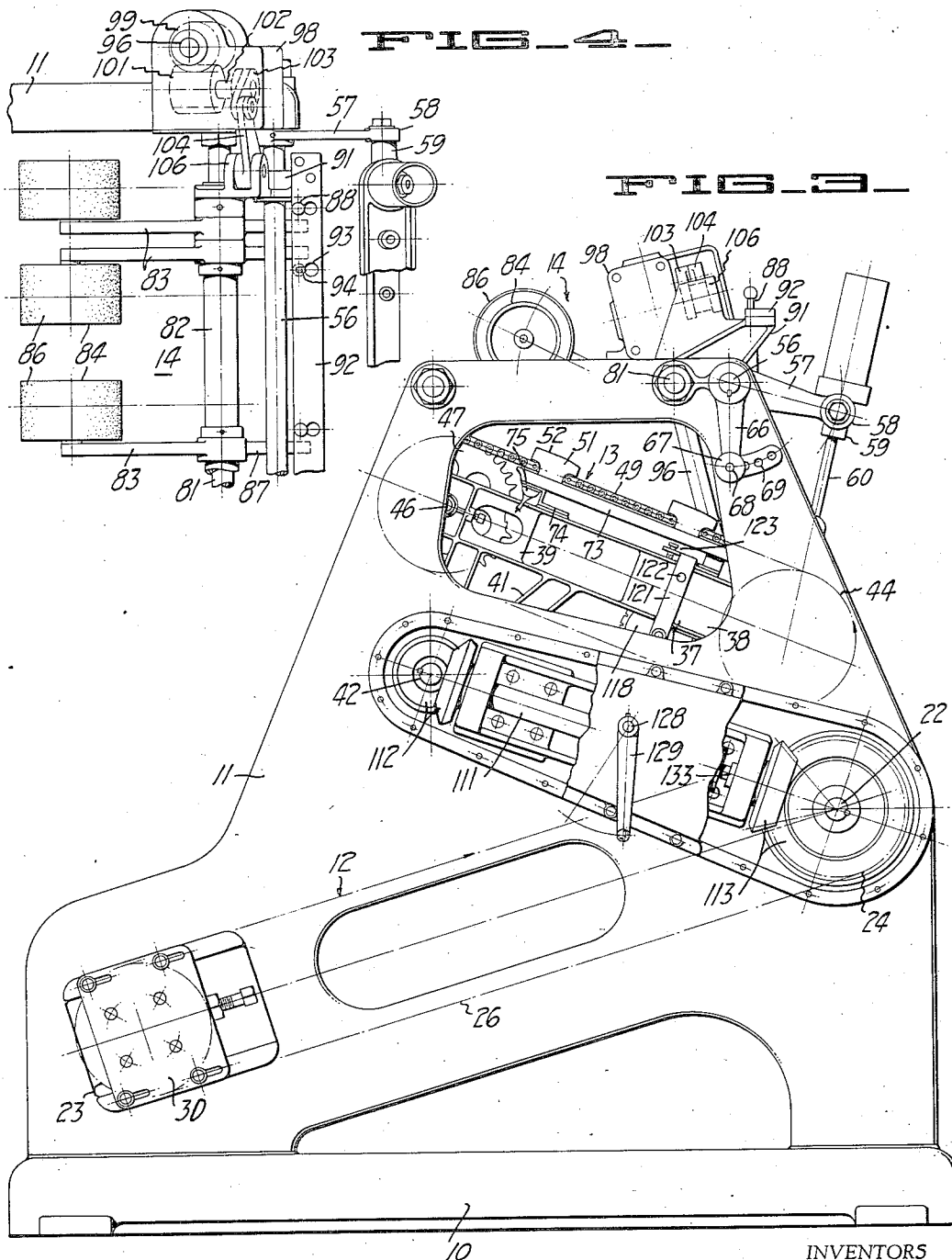


2,040,525

FRUIT MARKING MACHINE

Filed July 26, 1935

5 Sheets-Sheet 2



INVENTORS
HAROLD J. MUMMA
FRANK AHLBURG

BY

Paul D. Flehr
ATTORNEY.

May 12, 1936.

H. J. MUMMA ET AL

2,040,525

FRUIT MARKING MACHINE

Filed July 26, 1935

5 Sheets-Sheet 3

FIG. 6

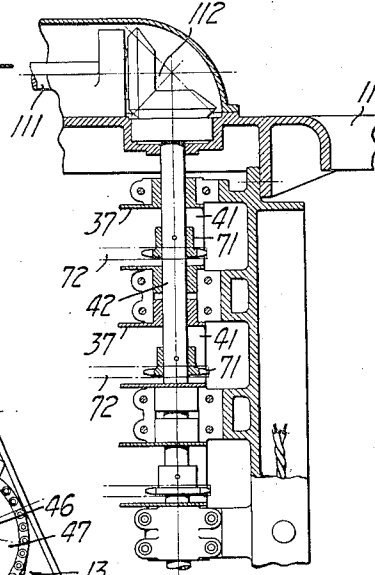
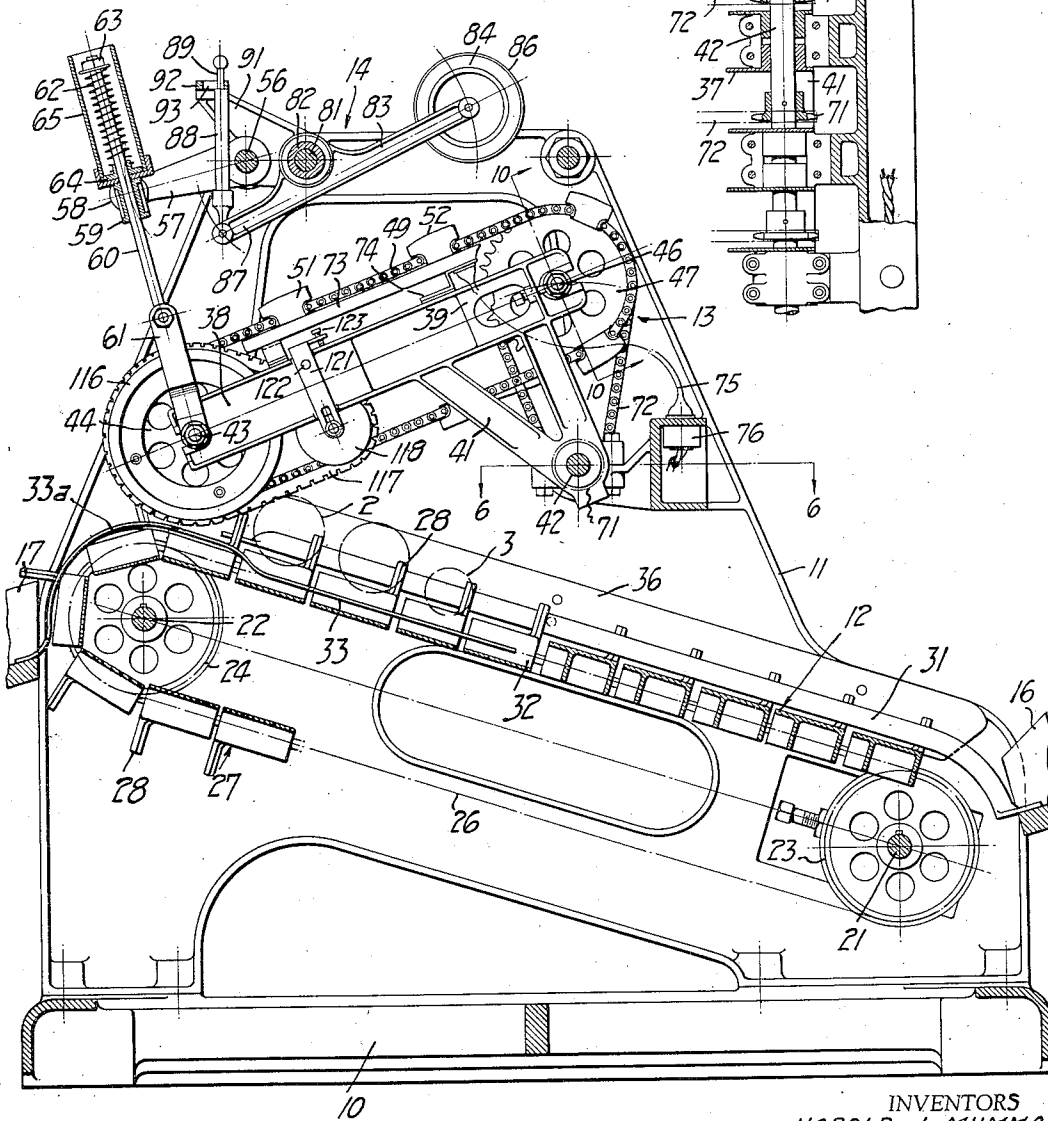


FIG. 5



INVENTORS
HAROLD J. MUMMA
FRANK AHLBURG

BY

Paul D. Flehr
ATTORNEY.

May 12, 1936.

H. J. MUMMA ET AL

2,040,525

FRUIT MARKING MACHINE

Filed July 26, 1935

5 Sheets-Sheet 4

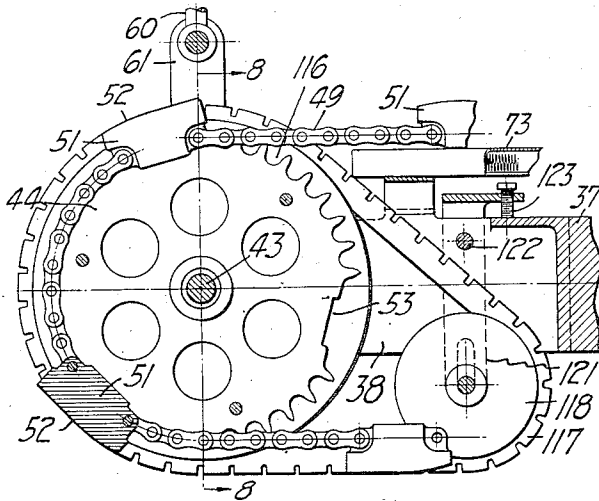


FIG. 7

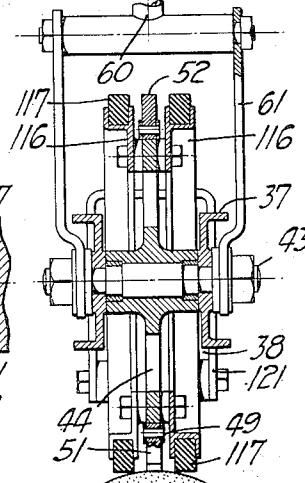


FIG. 8

FIG. 9

FIG. 10

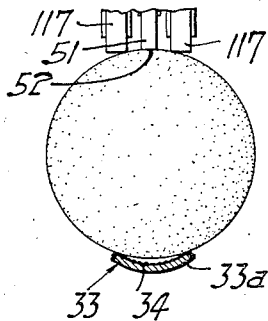


FIG. 11

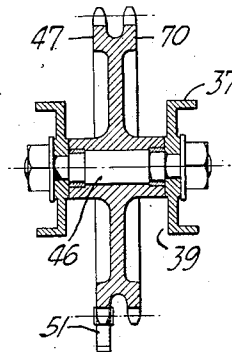
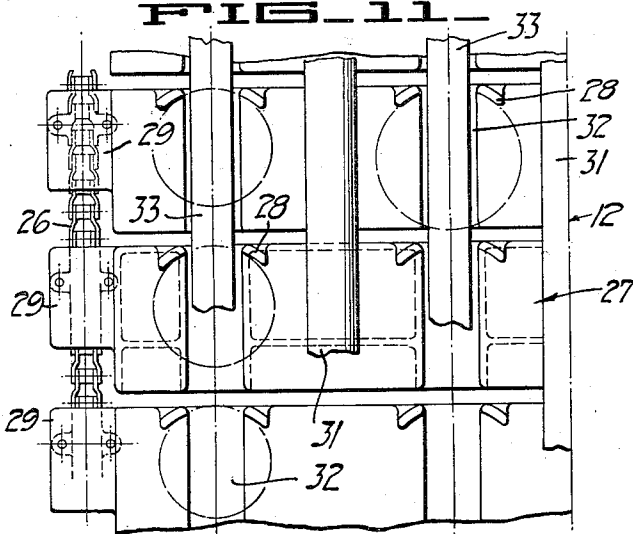
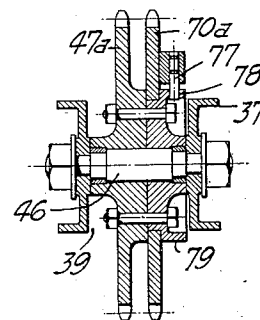


FIG. 12



INVENTORS
HAROLD J. MUMMA
FRANK AHLBURG

BY

Paul D. Flehr
ATTORNEY.

May 12, 1936.

H. J. MUMMA ET AL

2,040,525

FRUIT MARKING MACHINE

Filed July 26, 1935

5 Sheets-Sheet 5

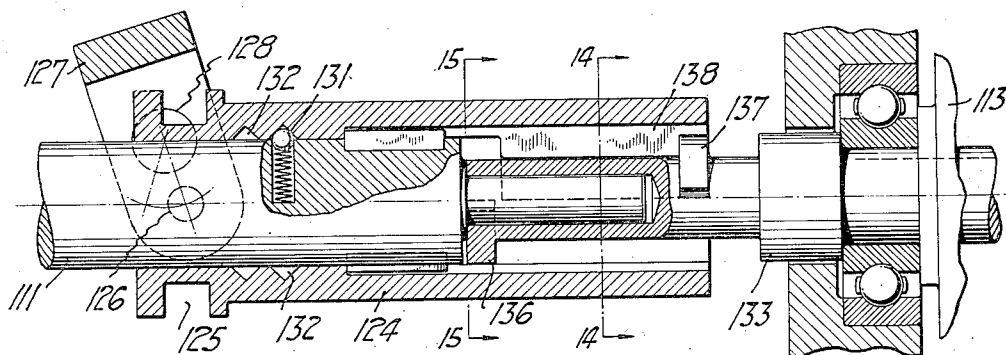


FIG. 13

FIG. 15

FIG. 14

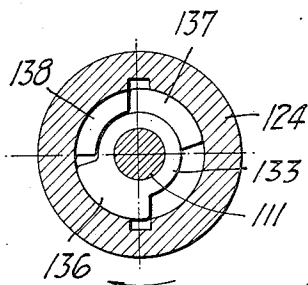
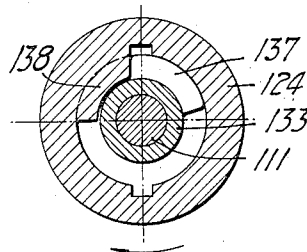
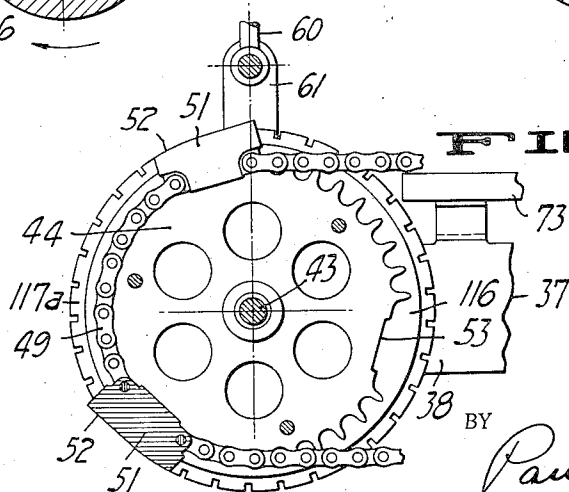


FIG. 16

INVENTORS
HAROLD J. MUMMA
FRANK AHLBURG

BY
Paul D. Flehr
ATTORNEY.

UNITED STATES PATENT OFFICE

2,040,525

FRUIT MARKING MACHINE

Harold J. Mumma, Glendale, and Frank Ahlburg,
Los Angeles, Calif., assignors to Ahlburg Com-
pany, Los Angeles, Calif., a corporation of Cali-
fornia

Application July 26, 1935, Serial No. 33,232

14 Claims. (Cl. 101—37)

This invention relates generally to machines for applying markings or brands to articles of fruit. Such machines have found particular application in the citrus industry, for applying trade names or brands to oranges, lemons, grapefruit, and the like.

It is a general object of the invention to provide a machine of the above character, capable of high-speed operation, with a correspondingly high capacity for a machine of a given size.

Further objects of the invention can be briefly outlined as follows:—To enable clear and legible marking of the fruit without smudging, even when the machine is operating at high capacity; to afford flexibility of application, so that various types and sizes of fruit can be marked by the same machine; to minimize possibility of injury to the fruit during its progress through the machine; to afford a simplified but reliable form of inking means; and to facilitate making manual adjustments such as may be required from time to time to adapt the machine for different types or sizes of fruit.

Further objects of the invention may appear from the following description in which a practical embodiment of the invention has been set forth in detail in conjunction with the accompanying drawings. The appended claims, while having reference to the specification, are to be accorded a range of equivalents consistent with the state of the prior art.

Referring to the drawings:

Fig. 1 is a side elevational view showing the drive of a machine incorporating the present invention.

Fig. 2 is a cross-sectional detail taken along the line 2—2 of Fig. 1.

Fig. 3 is a view similar to Fig. 1, but looking toward the other side of the machine.

Fig. 4 is a fragmentary plan, illustrating a part of the inking means which is preferably employed.

Fig. 5 is a side elevational view, similar to Fig. 1, but with the main conveyor and other parts being illustrated in cross-section.

Fig. 6 is a cross-sectional detail taken along the line 6—6 of Fig. 5.

Fig. 7 is a fragmentary detail, partly in cross-section, showing the marking die-carrying chain and supporting elements for the same.

Fig. 8 is a cross-sectional detail taken along the line 8—8 of Fig. 7.

Fig. 9 is a cross-sectional detail showing the fruit rolling into contact with the marking means.

Fig. 10 is a cross-sectional detail taken along the line 10—10 of Fig. 5.

Fig. 11 is a fragmentary detail in plan, looking toward the lower run of the fruit carrying conveyor.

Fig. 12 is a cross-sectional detail, similar to Fig. 10, but showing a modification.

Fig. 13 is a cross-sectional detail showing the clutching means for advancing the die blocks.

Fig. 14 is a cross-sectional view taken along the line 14—14 of Fig. 13.

Fig. 15 is a cross-sectional view taken along the line 15—15 of Fig. 13.

Fig. 16 is a view, similar to Fig. 7, showing a modification of the fruit-engaging elements.

The machine as illustrated in the drawings utilizes a number of duplicate parts in order to secure the capacity required for a given unit. It is to be understood, however, that the number of such parts may vary in different installations, or that such duplication may be omitted entirely for a simplified machine.

The machine as illustrated utilizes a suitable supporting base 10, serving to carry the upstanding side supports 11. In general, the operating elements may be grouped together to include a main fruit conveyor 12, a fruit marking means 13 overlying the conveyor 12, and an inking means 14. Delivery means 16 has been indicated at the front of the machine, for presenting articles of fruit to one end of the conveyor 12, while means 17 is indicated at the rear of the machine, for removing fruit after the marking operation. Power is supplied to the machine by an electric motor or other suitable mechanism, Fig. 1 showing the power being applied to sprocket 18 and stub shaft 19.

Fruit conveyor

While details of the conveyor 12 may vary in practice, the construction illustrated is as follows:—A pair of spaced parallel shafts 21 and 22 extend horizontally through the machine and have their ends journaled in the supporting members 11. Mounted upon the end portions of shaft 21 are the sprockets 23, while shaft 22 carries similar spaced sprockets 24. A pair of chains 26 have their ends engaging sprockets 23 and 24 and serve to carry the laterally-extending fruit receiving structures 27 (Fig. 11). Assuming that a plurality of rows of fruit are to be continuously passed through the machine, the structures 27 are in the form of bars, which can be made of wood or skeletonized metal as shown in Fig. 5, with spaced pairs of fingers 28 extend-

ing upwardly from their trailing or leading edges.

For the upper run of the conveyor, where the structures 27 are in a common plane, the fingers 28 serve to elevate articles of fruit, as shown in Fig. 5. The dimensions of bars 27 and fingers 28 are such that the largest articles to be handled by the machine may be accommodated. However, smaller articles of fruit can also be handled, irrespective of whether or not the fruit may be substantially elongated or practically spherical. Suitable expedients can be utilized to properly secure the ends of structures 27 to chains 26. Thus, as shown in Fig. 11, the ends of these structures are provided with extensions 29, which in turn are secured to links of the chains 26.

It will be noted in Fig. 5 that shaft 22 is located at an elevation considerably higher than shaft 21, so that the upper run of the conveyor is at an inclination to carry fruit upwardly to the marking position. The marking position generally overlies shaft 22, so that immediately after a marking operation the fruit is discharged from the machine. In order that excess slack in the conveyor may be properly taken up, shaft 21 is shown journaled in the bearing blocks 30 (Fig. 1), which can be adjusted toward or away from shaft 22.

Segregation of the fruit, while being handled by the conveyor, into separate rows, is insured by the spaced separator bars 31. Beneath each row of fruit, the bars 27 are notched, as indicated at 32 (Fig. 2), to accommodate the relatively flat bars 33. Bars 33, which can be of metal or like material, have their ends attached to the stationary parts 16 and 17 of the machine. In the region overlying the upper sprockets 24, bars 33 have elevated portions 33a, which as will be presently explained, form runways over which the fruit is rolled during a marking operation. The upper surfaces of portions 33a are cupped longitudinally (Fig. 9) and are provided with a surfacing 34 of frictioning material, like cloth or resilient rubber.

Near the sides of conveyor 12 it is desirable to provide guards 35 to properly confine fruit to the upper run of the conveyor and to avoid possible jamming of or injury to the fruit.

Fruit marking means

Above the conveyor 12 are a plurality of frames 37, one frame being afforded for each row of cavities 28a and 28b on the conveyor 12. This frame can be formed of suitable structural elements, affording forked end portions 38, 39 and also affording a depending bracket 41. The bracket 41 for each frame is journaled upon a horizontal shaft 42, extending laterally through the machine between the supporting members 11. The forked end portion 38 of each frame carries a shaft 43, to which a sprocket 44 is journaled. Likewise, the forked end portion 39 of each frame carries a shaft 45 upon which the sprocket 47 is journaled. Shaft 46 also carries a pair of pulleys 116, which rotate together with the sprocket 47. It will be noted that when a frame 37 is in a representative operating position (see Fig. 5), the axis of shaft 46 generally overlies the axis of shaft 42. Thus, sprockets 44 and the corresponding end of the frame may swing in a vertical plane about the axis of shaft 42 and relative to the upper end of the conveyor 12.

Engaging the sprockets 44 and 47 there is an endless chain 49 which includes the die blocks 51. These blocks 51 can be formed of suitable metal and, as shown more clearly in Fig. 7, they are

spaced at regular intervals along the chain 49 and take the place of certain links of the chain. The outer face 52 of each block is in relief to afford the impression desired. It has been found that a better impression is secured if the leading half of the outer face of each block is substantially flat, as shown in Fig. 7, with the trailing half curved on a radius extending to the axis of shaft 43. The pins serving to secure these blocks to the adjacent ends of the chain 49 can be readily removed, to enable replacement of the blocks when desired.

In order to afford a firmer retention of the die blocks upon the sprockets 44 during a marking operation, thus tending to avoid smudging, it is desirable to provide the sprockets 44 with blank or cut-away portions 53 upon which the blocks 51 may seat. These cut-away portions are of course afforded at properly spaced intervals about the periphery of sprockets 44, corresponding to the spacing between the blocks 51.

Pulleys 116 are engaged by flexible belts 117, formed of fabric reinforced rubber or like suitable material. These belts also engage idler pulleys 118 which are adjustably carried by the frame 37. Thus, these pulleys have been shown mounted on a shaft 119, which in turn is adjustably carried by a bracket 121.

The bracket 121 has a pivotal connection 122 with frame 37, and its positioning can be adjusted by set-screw 123, to secure proper tensioning of belts 117. The outer faces of belts 117, where these belts bend about pulleys 116, are substantially coincident with the outer faces of the adjacent die blocks 51, and they travel at the same speed.

Because of the weight of frame 37 and the parts carried by the same, it is evident that the free end of the marking means represented by sprocket 44 tends to swing downwardly towards the upper end of conveyor 12. To afford suitable counterbalancing means, so that proper pressure will be applied in making a mark, and so that adjustments can be made to secure proper marking action, means is provided as follows:—A shaft 56 extends laterally through the machine and has its ends journaled in the side support members 11. A pair of arms 57, one at each side of the machine, are secured to shaft 56, and the free ends of these arms serve to pivotally carry collars 58. Connected to the collars 58 is a cross-bar 59, and slidably extending through this cross-bar 59 there are rods 60 which have their lower ends connected to the corresponding shaft 43 of the marking means, by a yoke 61. Above the bar 59, the rods 60 are surrounded by a compression spring 62, the upper end of which bears upon a thrust nut 63, and the lower end of which bears upon a cup-shaped washer 64 which in turn rests upon bar 59. A tubular shell 65 may rest upon cup 64 to protect spring 62. By turning nut 63, it is evident that the tension of spring 62 can be varied.

At one side of the machine (Fig. 3) the shaft 56 is secured to a lever 66, the free end of which is provided with an operating handle 67. By the provision of suitable locking means, such as a pin 68, adapted to engage in any one of apertures 69, the lever 66 and the shaft 56 can be adjusted to different angular positions to afford simultaneous elevation or lowering of all of the marking means in unison.

In order to supply driving power to the chain 49 of each marking means, mechanism is afforded as follows:—Mounted adjacent the sprocket 47

of each marking means, and rotatable with the same, there is a sprocket 70. Corresponding to each sprocket 70 there is a pinion 71 on the shaft 42. Each of these pinions is operatively connected to its corresponding sprocket 70 by chain 72 (Fig. 5).

As is well known, the marking of citrus fruit is made possible by the use of marking or stamping dies heated to an elevated temperature. As a suitable heating means for this purpose, there is shown an electrical heating element 73, of the type having an outer metal sheath, which is supported on the associated frame 37 as by means of brackets 74. The upper flat surface of element 73 is in proximity to the upper run of chain 49, so that as this chain is operated the die blocks 51 are caused to slide over element 73 with their inner faces in heat-transferring contact with the same. Current can be supplied to each of the heating elements 73 through suitable flexible electrical cords 75, which lead to electrical receptacles 76.

It may be explained at this time that in some instances it is desirable to make a quick change in the mark afforded by the machine, without removing the die blocks 51. In such instances, two sets of die blocks can be provided on each chain 49, with the spacing between the blocks diminished by one half of that illustrated in Fig. 5, and with the blocks of the two sets alternated. During a normal operation of the machine, with the speed of movement of chains 49 synchronized with the speed of movement of conveyor 12, only one set of die blocks will contact with fruit to effect a marking. If it is then desired to employ the other set of blocks, the phase relationship between the chains 49, or any one of them, and the conveyor 12, can be changed to utilize the other set of dies for marking purposes. A convenient arrangement for quickly changing the phase relationship is illustrated in Fig. 12. In this instance, sprockets 47a and 70a, corresponding to the sprockets 47 and 70 of Fig. 10, are formed separately. Normally they are locked together by a detent pin 77, which engages in one of the apertures 78 formed in hub 79. By temporarily releasing pin 77, it is evident that the angular relationship between sprockets 47a and 70a can be shifted a predetermined amount which is proper to bring the other set of die blocks into contact with the fruit. Another arrangement for the same purpose will be presently described in connection with the general drive connections.

The inking means afforded serves to properly apply ink to the surfaces of the die blocks 51 while the machine is in operation. Referring to Figs. 4 and 5, a rod 81 extends laterally of the machine and has its ends secured to the supports 11. Slidably carried by this rod there is a tubular shaft 82. Fixed to the shaft 82 at spaced intervals are the levers 83, the free ends of which carry inking rollers 84. These rollers may vary in construction, but their peripheries should be provided with an ink-absorbing surface 86 capable of transferring the proper amount of ink to the die blocks 51. Normally during operation of the machine, rollers 84 are in a lowered position with respect to that shown in Fig. 5, so that they ride upon the die blocks 51.

To provide means whereby any one roller can be elevated and retained in a non-inked position, the levers 83 are shown provided with rearwardly extending arms 87. Each of these arms is pivotally connected to the lower end of a rod 88, the upper end of which carries a pin 89. Extend-

ing laterally of the machine, and supported by suitable brackets 91, there is a bar 92. This bar has apertures 93 in which pins 89 are accommodated. Note in Fig. 4 that apertures 93 are sufficiently large to accommodate rods 88 but are also formed to afford off-set slots 94 which are of sufficient width to accommodate only the pins 89. Thus, by forcing one of the rods 88 downwardly, the corresponding roller 84 is elevated, and then by translating pin 89 into the corresponding slot 94, the rod 88 can be locked in such depressed position.

It is evident that if substantially the same circular area on each roller 84 were continuously contacted by the die blocks, this limited area would soon become impoverished of ink. To afford a longer useful life for the inking rollers, means is provided for automatically and recurrently shifting the rollers back and forth in a lateral direction. Thus a shaft 96 is provided on one side of the machine (Fig. 1), which has its lower end connected to shaft 22 of conveyor 12 by the worm and gear drive 97. The upper end of shaft 96 connects to a gear box 98, the operating elements of which include a worm 99 secured to the shaft 96 and a worm gear 101 carried by a countershaft 102. Shaft 102 carries a crank arm 103 which is pivotally connected to a connecting rod 104 (Fig. 3). Mounted upon one end of the tubular shaft 82 (Fig. 4) there is one of the brackets 91, provided with ears 105 to which the other end of connecting rod 104 is attached. Thus it is evident that shaft 96 is rotated upon operation of the conveyor 12, and the rotation of this shaft causes slow back-and-forth reciprocation of tubular shaft 82, with corresponding lateral reciprocation of the levers 83 and the inking rollers 84.

General drive connections

The chains 49 for the marking means are driven at a speed which is twice the speed of movement of the fruit conveyor 12. One practical arrangement is to effect a suitable ratio drive connection between shaft 22 of the conveyor 12 and shaft 42 of the several marking means. Thus, as shown in Fig. 3, at one side of the machine an intermediate shaft 111 is provided, which has a bevel gear drive connection 112 to the shaft 42 and a bevel gear connection 113 to the shaft 22. The main drive sprocket 18 (Fig. 1) may apply power to the shaft 42 through the speed-reducing gear box 114.

As an alternative or supplement to changing the phase relationship between the conveyor and each individual die chain by mechanism such as shown in Figs. 3 and 13, phase changing means can be incorporated between bevel gears 112 and 113, thereby making possible a phase change to all of the die chains simultaneously. Thus, referring to Figs. 3, 13, 14, and 15, a sleeve 12a is shown splined to the shaft 111. One end of the sleeve is formed with a groove 125, into which pins 126 project. These pins are carried by a U-shaped yoke 127, which in turn is secured to the shaft 128. The outer end of shaft 128 is provided with a hand shift lever 129. In order that sleeve 12a may remain in either one of two positions, a spring-pressed detent 131 is provided in shaft 111, and the projecting end of this pin releasably engages in either one of two annular grooves 132. One of the bevel gears 113 is fixed to a stub shaft 133, which extends into sleeve 124. Within the sleeve 124, shaft 133 carries two spaced lugs 136 and 137, which co-operate with a lug 75

or key 138 fixed to the sleeve 124. Normally, shafts 111 and 133 rotate in unison, the drive being through key 138 and one of the lugs 136 and 137. When lever 129 is shifted, sleeve 124 is moved to its other operating position, thus permitting the two shafts 111 and 133 to rotate 180° with respect to each other, before they are again locked together. Because of the drive ratio afforded by gears 113, the phase relationship between all of the die chains and the conveyor is shifted a proper amount to coordinate the second set of die blocks with the fruit.

Operation of our machine can now be briefly reviewed as follows:—Assuming that articles of fruit, such as oranges, are being continuously supplied to the lower end of the conveyor 12, the individual articles of fruit are picked up by the conveyor and caused to travel upwardly on an incline by the fingers 28. As illustrated in Fig. 5, both large articles of fruit 2, such as a grapefruit, and smaller article 3, will engage the fingers 28 because the fruit naturally tends to roll back by gravity. In any event, irrespective of the size of the fruit, and irrespective of the existence of a spherical or an elongated contour, the fruit takes a position generally aligned with the vertical center plane of the corresponding set of marking dies. This is a desirable feature of the present machine, because if the fruit is not properly centered as it passes beneath the marking dies a smudge or illegible marking may result. As the fruit approaches the upper end of the conveyor 12, it is engaged by the raised portions 33a of bars 33 and thereby elevated to a position to be rolled forwardly. At such time the fruit is engaged by the lower faces of belts 117, and the speed of these belts is such as to roll the fruit forwardly over portions 33a, at a rate sufficient to avoid crowding. Thus the fruit is moved forwardly at the fingers 28, with which it was previously in engagement, and during such rolling movement, it is brought into engagement with one of the marking dies. After the marking operation the fruit is discharged free of the conveyor. It may be noted at this point that, as illustrated in Fig. 5, the frame 37, is in a relatively low position, such as might be suitable for comparatively small articles of fruit. For large articles of fruit, such as indicated by numeral 2, all of the marking means would be adjusted to normally assume a considerably higher position, by shifting the position of the arm 66 (Fig. 3).

One particular characteristic of the present machine is that it is capable of high speed operation thus affording a high capacity for a machine of a given size. Furthermore, when operating at high speed it will afford a distinct, legible marking substantially free of smudging. Good impressions are made possible by the manner in which the fruit is being rolled during a marking operation, without lateral restraint. Good impressions are also secured because of the existence of proper pressure between the die blocks and the fruit during a marking operation. In this connection, the belts 117 take a part of the pressure on the fruit, so that the pressure between the die blocks and the fruit is definitely limited, thus obviating bruising or mutilation of the fruit. Likewise, frictional engagement between the belts and the fruit insures an absence of slippage between the dies and the surface being marked. Absence of objectional jerky movement is afforded by the fact that each frame pivots about an axis located below the sprockets 47 from which the drive to

sprockets 70 is established, whereby up-and-down movement of the frames causes no appreciable acceleration or deceleration in the travel of the die blocks.

In place of belts 117 operating on idler pulleys 118, the idler pulleys can be omitted as shown in Fig. 16, and the pulleys 116 can be provided with belt-like facings 117a, to function as rollers. In such event the facings 117 are formed of resilient material, like soft vulcanized rubber, and function to engage the fruit in the same manner as the belts 117.

Aside from the characteristics pointed out above, the simplicity and durability of the machine will be evident. A minimum of moving parts is afforded, and all of the working parts are capable of affording long operating service, with a minimum of attention and repair.

While the machine has been described particularly for use in the citrus industry, it has been used successfully in the marking of other agricultural products, such as melons.

We claim:

1. In a fruit marking machine, an endless conveyor having its upper run adapted to carry articles of fruit in spaced relationship one after the other and being inclined upwardly from a position at which the fruit is delivered to a position at which the fruit is marked, fruit marking means overlying the conveyor, and means for simultaneously driving the conveyor and the fruit marking means, said fruit marking means including an endless chain carrying spaced marking dies, spaced sprockets over which the chain engages, a frame pivoted for vertical movement relative to the conveyor to which the sprockets are journaled, and means forming travelling fruit engaging surfaces extending alongside said chain and moving at the same rate of speed as the chain.

2. In a fruit marking machine, an endless conveyor adapted to carry articles of fruit in spaced relationship one after the other, the upper run of the conveyor being inclined upwardly from a position at which the fruit is delivered to a position at which the fruit is marked, fruit marking means overlying the conveyor, and means for simultaneously driving the conveyor and the fruit marking machine, said fruit marking means including a pair of spaced endless belts, an endless chain carrying spaced marking dies and disposed between said belts, a pair of spaced sprockets over which the ends of the chain are looped, a frame carrying said belts and said sprockets, said frame being normally positioned in such a manner that one of said sprockets is arranged adjacent said fruit marking position while the other of said sprockets is at a substantially higher elevation, and means serving to support said frame for pivotal movement in a vertical plane, the axis of said pivotal movement being spaced below said endless chain.

3. In a fruit marking machine, an endless conveyor adapted to carry articles of fruit in spaced relationship one after the other, said conveyor including pairs of spaced fingers, the fingers extending upwardly along the upper run of the conveyor, the upper run of the conveyor being inclined upwardly from a position at which the fruit is delivered to a fruit marking position, fruit marking means overlying the conveyor, and means for simultaneously driving the conveyor and the fruit marking means.

4. In a fruit marking machine, an endless conveyor adapted to carry articles of fruit in spaced relationship one after the other, said conveyor

including a plurality of pairs of spaced fingers, said fingers extending upwardly along the upper run of the conveyor, the upper run of the conveyor being inclined upwardly from a position at which the fruit is delivered towards a fruit marking position, fruit marking means overlying the conveyor, means forming a runway near the delivery end of the conveyor over which fruit advanced by the conveyor is caused to roll past said fruit marking position, said runway being disposed between said fingers, and means for simultaneously driving the conveyor and the fruit marking means, said fruit marking means including an endless chain carrying spaced marking dies, sprockets over which the chain engages, and a frame carried for pivotal movement in a vertical direction to which the sprockets are journaled, one of said sprockets being in proximity to said marking position.

5. In a fruit marking machine, an endless conveyor adapted to carry articles of fruit in spaced relationship one after the other, the upper run of said conveyor being inclined upwardly from the position at which the fruit is delivered to a fruit marking position, fruit marking means overlying the conveyor, and means for simultaneously driving the conveyor and the fruit marking means, said fruit marking means including an endless chain carrying spaced marking dies, a pair of spaced toothed sprockets over which the ends of the chain engage, one of said sprockets being located above said fruit marking position, with the lower run of said chain being inclined upwardly from said fruit marking position, said one sprocket having spaced blank portions serving to accommodate said marking dies.

6. In a fruit marking machine, an endless conveyor adapted to carry articles of fruit in spaced relationship one after the other, the upper run of the conveyor extending upwardly at an inclination from a position at which the fruit is delivered to a fruit marking position, fruit marking means overlying the conveyor, and means for simultaneously driving the conveyor and the fruit marking means, said fruit marking machine including an endless chain carrying spaced marking dies, sprockets over which the chain engages, one of said sprockets being located above said fruit marking position, and a frame pivoted for movement in a vertical plane to which the sprockets are journaled, said dies having convexly curved marking faces.

7. In a fruit marking machine, an endless fruit-carrying conveyor, the upper run of said conveyor being adapted to carry articles of fruit in spaced relationship one after the other from a position at which the fruit is delivered to a fruit marking position, fruit marking means overlying the conveyor, and means for driving the conveyor and the fruit marking means, said fruit marking means including an endless chain carrying spaced marking dies, sprockets over which the chain engages, a frame pivoted for movement in a vertical plane to which the sprockets are journaled, one of said sprockets being located above said fruit marking position, and inking means for said marking dies, said inking means including an inking roller adapted to overlie said die-carrying chain whereby its periphery is engaged by said dies, an arm serving to rotatably support said roller for movement in a vertical direction, and means actuated by said driving means for recurrently shifting said inking roller laterally in a horizontal direction.

8. In a fruit marking machine, an endless con-

veyor having its upper run adapted to carry articles of fruit in spaced relationship one after the other, from a position at which the fruit is delivered to a fruit marking position, fruit marking means overlying the conveyor, said fruit marking means including an endless chain carrying spaced marking dies, a pair of spaced sprockets over which the chain engages, a frame pivoted for movement in a vertical plane to which the sprockets are journaled, one of said sprockets adapted for movement in a vertical direction being located above said marking position, a common drive means for said conveyor and said die-carrying chain, and means enabling adjustment of the phase relationship between said conveyor and said die-carrying chain.

9. In a fruit marking machine, a frame supported for movement in a vertical direction, a pair of spaced parallel pulleys carried for rotation at one end of the frame, a sprocket mounted between said pulleys and rotatable together with the same, a die chain engaging the sprockets, means forming a facing of resilient material for said pulleys, a runway underlying said sprocket, a conveyor for advancing articles of fruit upon the runway, and means for driving the pulleys and the die-chain at a speed greater than the speed of movement of the conveyor, the conveyor serving to move articles of fruit upon said runway and into frictional contact with the facings of the pulleys whereby the fruit is moved into marking engagement with the dies of the die chain.

10. In a fruit marking machine, an endless conveyor having its upper run adapted to carry articles of fruit in spaced relationship, the upper run of the conveyor extending from a point at which the fruit is presented to a point at which the fruit is marked, the upper run being inclined upwardly towards said fruit marking position, fruit marking means overlying the conveyor, means for simultaneously driving the conveyor and the fruit marking means, and means forming a stationary surface over which the fruit is rolled during a marking operation, a portion of said surface being co-extensive with the upper run of the conveyor.

11. In a fruit marking machine, an endless conveyor adapted to carry articles of fruit in spaced relationship one after the other, said conveyor including a plurality of structures linked together and each provided with a pair of upwardly extending fingers for engaging articles of fruit, fruit marking means overlying the conveyor, and means associated with said marking means for rolling the fruit into engagement with the fruit marking means at a speed greater than the speed of movement of the conveyor.

12. In a fruit marking machine, an endless conveyor adapted to carry articles of fruit in spaced relationship one after the other, fruit marking means overlying the conveyor, and means for driving the conveyor and the fruit marking means, said fruit marking means including an endless chain carrying spaced marking dies, sprockets over which the chain engages, one of said sprockets being normally located above said fruit marking position, a frame pivoted for movement in a vertical plane to which the sprockets are journaled, and die-heating means carried by said frame, said die-heating means extending between said sprockets and adjacent one run of said die-carrying chain.

13. In a fruit marking machine, an endless conveyor, said conveyor including a series of fingers arranged in pairs and projecting upwardly from

the upper run of the conveyor, each pair of fingers serving to engage and advance an article of fruit, a stationary runway extending adjacent the upper run of the conveyor and between the paths traversed by said fingers, whereby an article of fruit advanced by a pair of fingers is caused to roll upon said runway, and fruit marking means disposed above said runway for engaging and rolling the fruit along the runway independently of the conveyor.

14. In a fruit marking machine, an endless conveyor, the upper run of the conveyor being adapted to advance articles of fruit one after the other, to a fruit marking position, a frame disposed above the conveyor, means for pivotally supporting the frame for movements in a vertical

plane, a pair of spaced sprockets carried by the frame, one of said sprockets being disposed directly above said fruit marking position, an endless chain carried by said sprockets, fruit marking dies carried by said chain, a pair of pulleys disposed on opposite sides of said one sprocket and concentric with the same, said pulleys being rotatable together with said one sprocket, and resilient facings forming the peripheral surfaces of said pulleys, said surfaces and the marking surfaces of dies engaging said one sprocket, being at substantially the same radial distance from the axis of the pulleys.

HAROLD J. MUMMA.
FRANK AHLBURG.