July 15, 1924. 1,501,817

F. J. SÉVIGNÉ

MACHINE FOR MARKING ROUND ARTICLES

Filed Sept. 22, 1922 2 Sheets-Sheet 1

Fig.1.

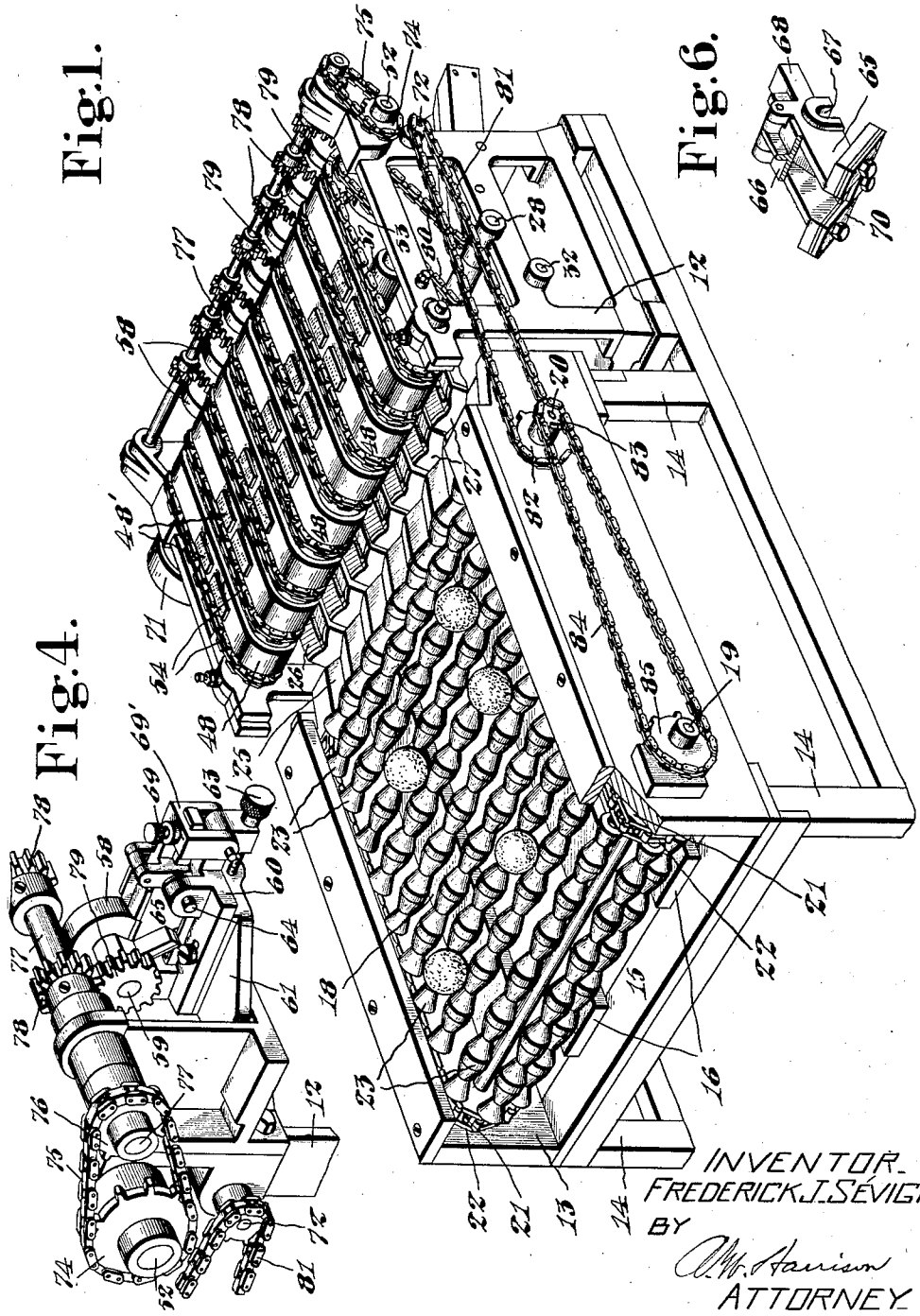


Fig.6.

Fig.4.

INVENTOR.
FREDERICK J. SÉVIGNÉ.
BY
A. W. Harrison
ATTORNEY.

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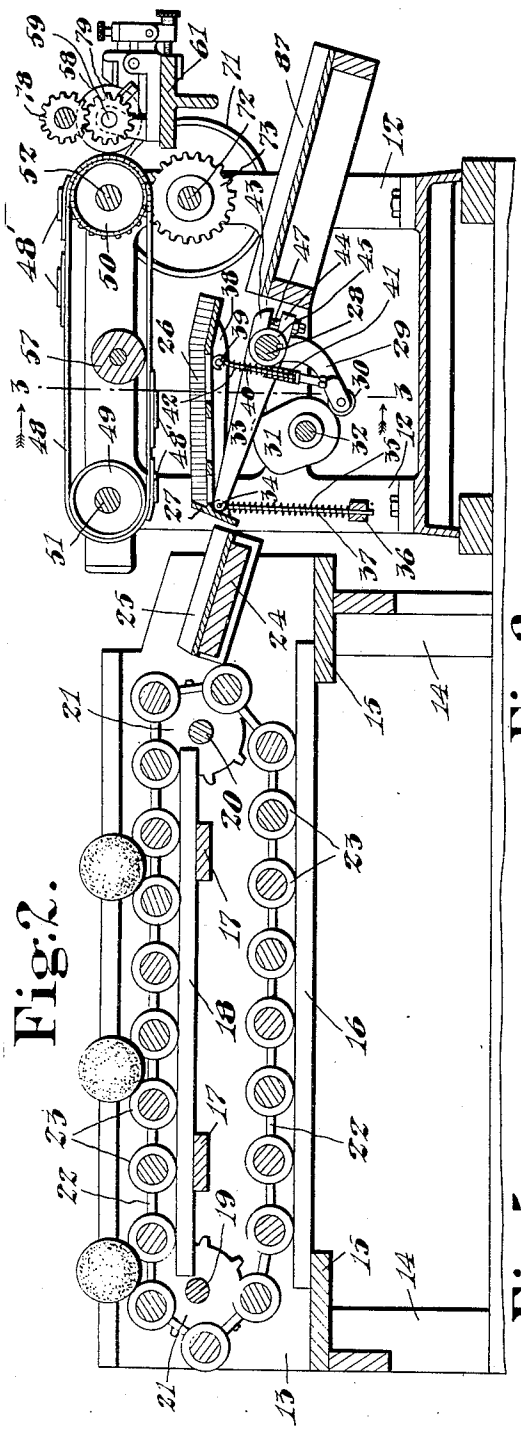


Fig. 2.

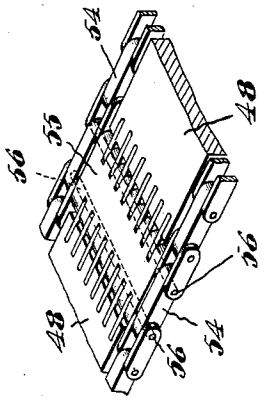


Fig. 4.

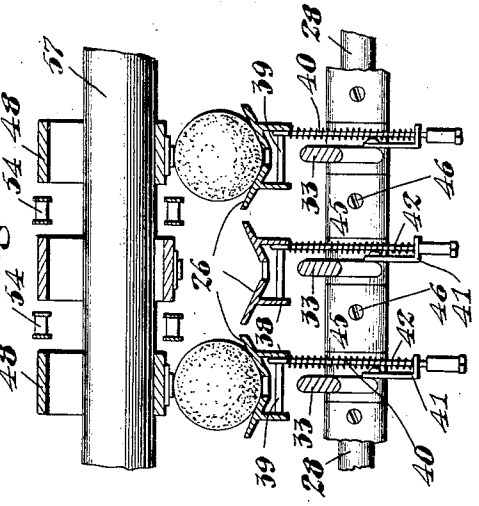


Fig. 3.

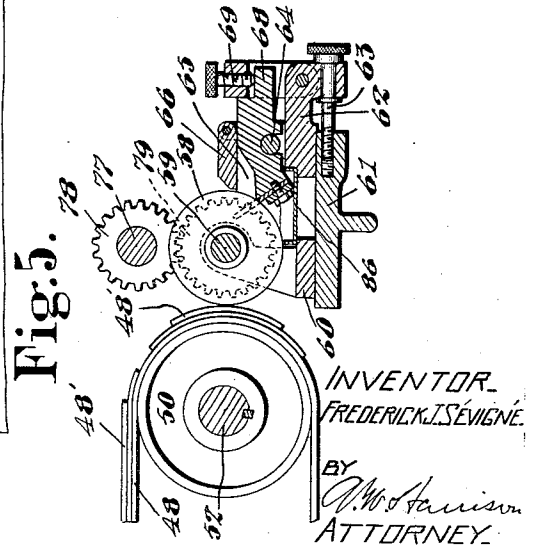


Fig. 5.

INVENTOR
FREDERICK J. SÉVIGNÉ
BY
W. W. Harrison
ATTORNEY

Patented July 15, 1924. 1,501,817

UNITED STATES PATENT OFFICE.

FREDERICK J. SÉVIGNÉ, OF MILFORD, NEW HAMPSHIRE.

MACHINE FOR MARKING ROUND ARTICLES.

Application filed September 22, 1922. Serial No. 589,793.

To all whom it may concern:

Be it known that I, FREDERICK J. SÉVIGNÉ, a citizen of the United States, and resident of Milford, in the county of Hillsborough and State of New Hampshire, have invented certain new and useful Improvements in Machines for Marking Round Articles, of which the following is a specification.

This invention relates to the treatment of substantially spherical articles such as oranges and grape fruit, so as to mark their surfaces with identifying trade-marks, names or words.

In order to provide a satisfactory machine for printing or branding citrous fruits, it is necessary to meet and overcome the obstacles arising from the fact that such articles vary greatly as to size and also, to a considerable extent, as to shape. Some are far rounder than others.

One of the objects of my invention is to enable citrous fruits or other substantially spherical articles to be marked in an identifying manner without requiring any fine preliminary sorting or size grading.

Another object is to provide an improved machine which will simultaneously operate on a very large number of the articles.

Another object is to provide an economical method and machine for effecting the marking of either one row or plurality of rows of rapidly passing articles moving continuously, neither the articles nor any parts of the machine employed having any reciprocating motions or points of rest.

With these and other objects in view, my invention consists in the apparatus or machine substantially as hereinafter described and claimed.

Of the accompanying drawings:—

Figure 1 is a perspective view of the complete machine.

Figure 2 represents a longitudinal section of the same.

Figure 3 represents a section on line 3—3 of Figure 2.

Figure 4 is a perspective view of a detail of the machine.

Figure 5 represents a section of the same.

Figure 6 is a perspective view of another detail.

Figure 7 illustrates a portion of one of the belts, with the chains which drive them uniformly.

Similar reference characters indicate similar parts in all of the views.

A suitable frame for that portion of the machine which effects printing is indicated at 12. Before describing the printing mechanism however, the mechanism for supplying or feeding the articles to the printing mechanism will be explained.

The frame of the feeder, in the embodiment of the invention illustrated, comprises legs 14, side walls 13, cross strips 15 and cross strips 17. Supported by the strips 15 are longitudinal strips 16, and supported by the strips 17 are longitudinal strips 18.

Shafts 19 and 20 are mounted in suitable bearings provided in the side walls, said shafts carrying sprockets 21 for two endless chains 22. Idly mounted on studs carried by the links of the chains are rolls 23 which, at regular intervals longitudinally thereof, are circumferentially recessed. In other words, the rolls are longitudinally fluted. The recesses or flutes of all of the rolls are in line with each other in the direction in which the endless series of rolls travel when feeding, so as to form a series of travelling troughs in which the articles, such as oranges or grape fruit rest in definitely spaced positions as they are advanced toward the printing mechanism. I do not limit myself to mounting the members 23 so that they are free to rotate on their axes. I have referred to them as rolls, but it is to be understood that they may be non-rotatable bars. The chains and their fluted bars or rolls 23 are driven as hereinafter described, those which are carrying articles to be printed being supported by the upper longitudinal strips 18 and those which are returning being supported by the lower longitudinal strips 16. Mounted on a cross strip 24 are troughs 25 in line with the recessed or smaller portions of the bars or rolls 23, said troughs being inclined so that the articles delivered thereto by the travelling troughs will roll toward the printing mechanism.

In line with each trough 25 is a yieldingly mounted runway 26 having a stop wall 27 at its receiving end extending high enough so that when the runway is in the elevated position shown in Figure 2 any article on the trough will come to rest against the end of the runway and will be prevented from passing onto the said runway until the latter is automatically temporarily lowered as presently described.

A rockshaft 28 has an arm 29 carrying a roll 30 which is acted upon at the proper

times by a cam 31 carried by a shaft 32. Pivotally supported by the rock shaft 28 are lever arms 33, one for each runway 26 (Figs. 2 and 3), the outer ends of the said arms being pivotally connected at 34 to the front or receiving ends of the runways. Extending down from each of the pivots is a rod 35 the lower end of which passes through a guide hole in a strip 36. A spring 37 coiled about each rod 35 exerts an upward pressure to yieldingly hold the front end of the runway elevated as shown in Figure 2.

Each runway 26 is longitudinally strengthened by depending flanges 38. Extending across the space between each pair of flanges, near the rear ends of the runways, is a pin 39 from which a rod 40 extends down through a guide ear 41 secured to arm 33 (Fig. 3). A spring 42 coiled about each rod 40 exerts an upward pressure to yieldingly hold the rear end of the runway elevated.

Each arm 33 has a rearwardly projecting portion or ear 43 (Fig. 2) below which is a toe 44 the hub 45 of which (Fig. 3) is firmly secured to the rock shaft 28 by a set screw 46. A screw 47 adjustably mounted in each toe 44 projects up to form a stop for the arm ear 43 above it. Since all the toes 44 are secured to the rock shaft, while the arms 33 having ears 43 are pivotally supported on said shaft, each time that the cam 31 acts on the arm 29 of the rock shaft to swing said arm down and rock the shaft, all of the screws 47 act on the ears 43 in an upward direction to cause the outer ends of the arms 33 to pull the receiving ends of the runways 26 down against the actions of the springs 37 and permit articles on the fixed troughs 25 to roll onto the runways. Then, as soon as the cam 31 ceases to act, the runways are automatically returned to their normal upper positions by the springs. The screws 47 serve to adjust the normal points of elevation of the outer receiving ends of the runways according to the sizes of the spherical articles to be operated upon.

Above each runway 26 is an endless belt 48 carrying printing stamps 48′, and the timing of the operation is such that a printing stamp reaches an article just after the spring-actuated upward movement of the runway raises the received article against the belt 48 which then rolls it along the runway. The belts 48 are mounted upon pulleys 49, 50, carried by shafts 51, 52, the latter of which is driven as hereinafter described. Adjacent the sides of each belt 48 (Figs. 1, 3 and 7) are chains 54 driven by sprockets 53 one of which is shown in Figure 1. The sprockets are secured to the drive shaft 52 and certain connections presently described between the chains and the belts are provided to avoid any possibility of the belts slipping or creeping. This is to cause the printing stamps of the plurality of belts to travel side by side so that all will reach position at the same time to act on articles on the runways 26 all of which rise at the same time. To connect the chains with the belts for the purpose mentioned, each belt 48 (Fig. 7) has a short link or coupling 55 connected by suitable lacings to the customary ends of the strip of rubber material of which the belts are made, and pins 56 extend from the links of one chain through the coupling 55 into the links of the chain along the other edge of the belt, thereby ensuring uniformity of travel of all the belts with the chains driven from shaft 52.

As illustrated in Figures 1 and 2 a roll 57 is preferably employed to support the lower operative runs of the belts 48, to prevent the belts from yielding as the fruit passes.

The printing stamps 48′ of each belt are supplied with ink by a roll 58 carried by a shaft 59 (Figs. 4 and 5) which is mounted in suitable bearings in uprights of a casting 60. There is a casting 60, a shaft 59, and a roll 58, for each of the belts, and each casting is independently adjustable in a slideway 61 supported by the frame 12, by means of an adjusting screw 63 passing through an ear 62 of the casting into the slideway. The casting is recessed and has a cross pin 64. Removably fitting in the recess of the casting is an ink receptacle 65 having a hinged cover 66, the bottom of the receptacle having a transverse groove 67 fitting over the cross pin 64 when in operative position. The receptacle has a rear lug 68 extending under a screw 69 supported by a bracket 69′, and the open front end of the ink receptacle has an adjustable scraper 70 closely fitting the periphery and portions of the sides of the roll 58. By adjusting the screw 69 the ink receptacle can be tilted more or less on the pivotal support 64, and by adjusting the screw 63 the fountain receptacle and the roll 58 can be moved forward as a unit to ensure proper contact of the belt stamps 48′ with the inking roll 58.

A pulley 71 (Figs. 1 and 2) for a suitable driving belt, is carried by a shaft 72 which has a gear 73 meshing with a gear carried by the shaft 52. The shaft 52 (see also Figure 4) has a sprocket 74 which is connected by a chain 75 with a sprocket 76 carried by a shaft 77 to which are secured a plurality of gears 78 each of which meshes with a gear 79 carried by the short shaft 59 of an ink roll 58.

A chain 80, a portion of which is shown in Figure 1, connects sprockets carried by the shaft 52 and the cam shaft 32 to drive the latter. A chain 81 connects a sprocket secured to shaft 72 with the larger member of a compound sprocket 82, 83, which is loosely mounted on the end of shaft 20, the

smaller member of said compound sprocket being connected by a chain 84 with a sprocket 85 secured to shaft 19. The gearing and chain connections described are such that all of the parts operate at the relative times hereinbefore described.

Each time that the printing stamps 48′, which are preferably of rubber compound, pass the inking rolls 58, said stamps are coated with ink. Any surplus ink which may escape past the scrapers, will be deposited in removable trays 86.

In the drawings a few oranges are represented as the articles being operated upon. To represent a greater number might render the parts of the machine itself less clear. It is to be understood however that a very large number can be simultaneously operated upon, and that none require care in locating them. If several dozen are dumped on the travelling platform of the feeder, they will automatically fall or roll to position in longitudinal rows. The depressions or smaller portions of the bars or rolls 23 are all in line so that the endless series thereof, constantly travelling in feeding direction, constitute a series of parallel endless travelling troughs, the alternating smaller and larger portions of said bars or rolls providing means for holding the oranges in lateral spaced relationship. The distance between the bars or rolls 23 is sufficient to permit each orange to settle to position so that all of the oranges in any longitudinal row are spaced apart far enough to prevent an accumulation on the fixed troughs 25. The preferable timing is such that even if there are as many oranges in each row approaching the printing mechanism as there are bars 23, so that an orange will fall onto a trough 25 each time that a bar 23 passes below the shaft 20, that orange will have been taken onto a runway 26 before the next orange behind it reaches the lower end of the trough 25. In other words, each runway 26 is lowered to receive an orange which has been arrested by its stop 27, and then rises again, before another orange can reach the lower end of the fixed trough 25. The moment that an orange is on a runway 26 and the latter rises, it is rolled along by the belt 48 above it and is marked by a stamp 48′, after which it may roll off over an inclined chute 87 into any suitable receptacle.

As indicated in Figures 1 and 2, in connection with Figure 3, each runway 26 is trough-shaped in cross section and its upper surface is not smooth but is ribbed or roughened. This is to render it certain that a belt 48 will roll an orange along and not slide it. If the orange slid, it would not receive proper printing.

In operation, oranges or other substantially spherical articles may be deposited in considerable quantity upon the platform comprising the endless series of transverse bars 23 having alternating large and small portions which cause the articles to assume definite lateral and longitudinal spaced relationship regardless of different sizes of the articles deposited thereon. Each line or row of the smaller portions of the bars 23 constitutes a travelling trough which delivers a succession of articles to a marking unit 26, 48, in line therewith, and, as hereinbefore explained, the several marking units are timed in operation to accord with the delivery of articles thereto by the platform troughs. Each article which arrives upon a runway 26 is rolled along it by a belt 48 the marking element 48′ of which makes an impression upon the surface of the article while it is being rolled along toward the discharge chute 87. Little attention need be paid to grading the oranges as to size because, except for excessively large or very small ones, all will be treated alike. This is due to the fact that the runways 26 are yieldingly mounted, the springs exerting a constant tendency to press each runway toward the belt 48 above it and permitting it to rock or tilt endwise as an orange rolls along. It will be readily understood that since the runways have no longitudinal movement, the oranges travel along at one-half the speed of movement of the printing stamps 48′, so that a stamp "catches up" with an orange at some point of its travel along its yieldingly-mounted runway.

I do not limit myself to the employment of markers which need to be inked in order to apply to the articles something to identify their origin, as any other suitable markers may be employed in lieu of the printing stamps 48′.

While my invention has particular reference to the marking of citrous fruits, I do not limit myself thereto since some kinds of apples and vegetables and nuts are of such nearly spherical shape as to be capable of similar treatment. And of course various kinds of game balls could be similarly treated. And it is obvious that by making slight changes in the shape of the large and small portions of the bars 23, and also in the lateral or transverse shape of the runways 26, the articles to be rolled along and marked might be short cylinders such as paper boxes of tubular form.

Having now described my invention, I claim:

1. A machine of the character described, having a plurality of marking units and a travelling platform for delivering articles thereto, said platform comprising endless chains, bars connected to said chains and having alternating large and relatively small portions, and a straight support for the upper run or series of bars.

2. A machine of the character described, having a travelling platform, a plurality of marking units each comprising an independently yieldable support and an endless forwarder and marker, and inclined troughs between and in line with the said platform and marking units for directing articles from the former to the latter.

3. A machine of the character described, having a travelling platform, a plurality of marking units each comprising an independently yieldable support and an endless forwarder and marker, inclined troughs between and in line with the said platform and marking units for directing articles from the former to the latter, and stops for temporarily arresting articles on the inclined troughs.

4. In a machine of the character described, a yieldingly mounted runway having a stop member at its receiving end, a combined forwarder and marker mounted to move in a direction substantially parallel with said runway, means for delivering articles against said stop member, and means for intermittently lowering said runway and its stop member.

5. A machine of the character described, having a plurality of yieldingly mounted runways, combined forwarders and markers above the runways, means for delivering articles to position on the runways, and means for simultaneously lowering all of the runways at predetermined times to admit the articles thereonto.

6. A machine of the character described, having a plurality of independently yieldable runways for articles to be marked, a plurality of combined forwarders and markers above the runways, and connections between the plurality of forwarders and markers to ensure equal and uniform movement of all.

7. A machine of the character described, having a series of runways side by side, springs for supporting each runway to permit it to tilt endwise, a combined forwarder and marker above each runway, means for feeding articles toward the runways, and means for intermittently lowering the receiving ends of the runways simultaneously.

8. A machine of the character described, having a series of runways side by side, each runway having a stop wall at its receiving end, springs for supporting each runway to permit it to tilt endwise, a combined forwarder and marker above each runway, inclined troughs having their lower ends adjacent to the stop walls of the runways, means for delivering articles to said inclined troughs, and means for intermittently lowering the ends of the runways having the stop walls.

9. A machine of the character described, having a plurality of runways for articles to be marked, belts having marking members above the runways, chains alternating with the belts and connected thereto, and means for equally operating the chains.

10. A machine of the character described, having a plurality of combined forwarders and markers side by side, a corresponding plurality of runways below said forwarders, springs for permitting the runways to independently tilt endwise, a rock shaft having a series of arms each being connected to the receiving end of a runway, and means for intermittently actuating said rock shaft.

11. A machine for marking round articles, said machine including two members one of which is an endless forwarder and the other a longitudinally straight guideway, said two members being relatively positioned to roll articles in a substantially straight path between them, and one of said members being bodily yieldable relatively to the other, one of said members having means for marking the articles while being rolled along, and means being provided for preventing lateral shifting of the articles while between said members.

12. A machine for marking round articles, said machine including two members one of which is an endless forwarder and marker and the other a guideway, one of said members being bodily yieldable relatively to the other, means being provided for ensuring travel of the articles in a straight path while being rolled along the guideway by the forwarder.

13. A marking machine comprising in its construction a substantially horizontal endless belt carrying a marking member, and a longitudinally stationary runway vertically yieldable throughout its length below said belt.

14. A marking machine having a longitudinally stationary runway for articles to be marked, said runway being yieldably supported at both ends, and an endless combined forwarder and marker mounted to move in a direction substantially parallel with said runway.

15. A marking machine having a runway for articles to be marked, said runway being yieldingly supported at both ends, and an endless belt having a marking member in position to act upon the articles supported by the runway.

16. A marking machine comprising an endless belt provided with a marking member, and a longitudinally stationary guide below the belt and spaced therefrom to permit articles to be rolled lengthwise of the guide by the belt, said guide being yieldingly mounted at both ends and constructed to prevent lateral movement of the articles as they are rolled along.

17. A marking machine comprising an endless belt provided with a marking mem-

ber, and a guide spaced therefrom to permit articles to be rolled lengthwise of the guide by the belt, said belt and guide being constructed and arranged to permit one to yield bodily or at either end relatively to the other.

18. A machine of the character described having a runway, springs for supporting the runway to permit it to be lowered at either end, a combined forwarder and marker above the runway, and means for delivering articles singly and successively between one end of the runway and the forwarder, means being provided for intermittently depressing the end of the runway which receives the articles.

19. A machine for printing substantially spherical fruit, said machine having two cooperating members one of which is a longitudinally stationary guide and the other an endless belt, said members having substantially parallel smooth cooperating surfaces to permit the fruit to be freely rolled along between them, the operative portion of one of said members being equally yieldable relatively to the other member throughout the length of said substantially parallel surfaces, means being provided for printing the fruit as it is rolled along the guide by the belt.

20. A machine for printing substantially spherical fruit, said machine having two cooperating members one of which is a longitudinally stationary guide and the other an endless belt, said members having substantially parallel smooth cooperating surfaces to permit the fruit to be freely rolled along between them, the operative portion of one of said members being equally yieldable relatively to the other member throughout the length of said substantially parallel surfaces, means being provided for printing the fruit as it is rolled along the guide by the belt, and means for delivering the separate articles of fruit singly and in spaced relationship between the said two members.

In testimony whereof I have affixed my signature.

FREDERICK J. SÉVIGNÉ.