May 15, 1923. 1,455,160

B. YOSHINAGA

MARKER

Filed Nov. 11, 1919

Fig. I.

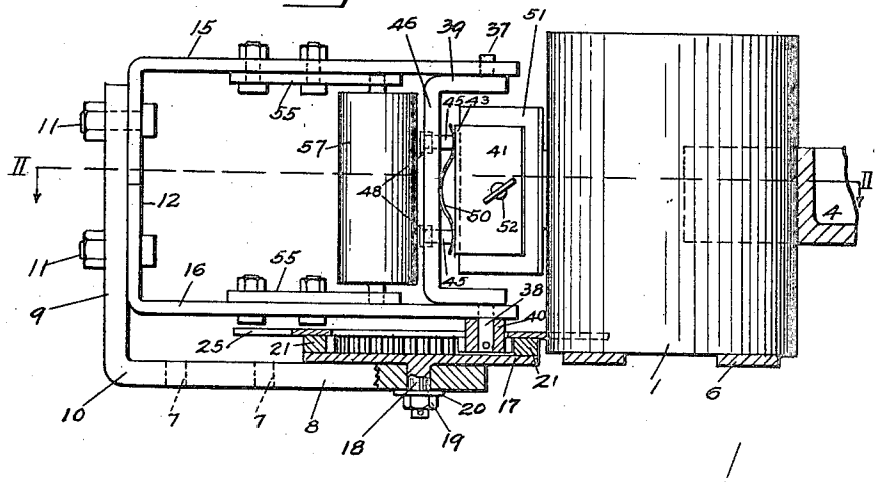


Fig. II.

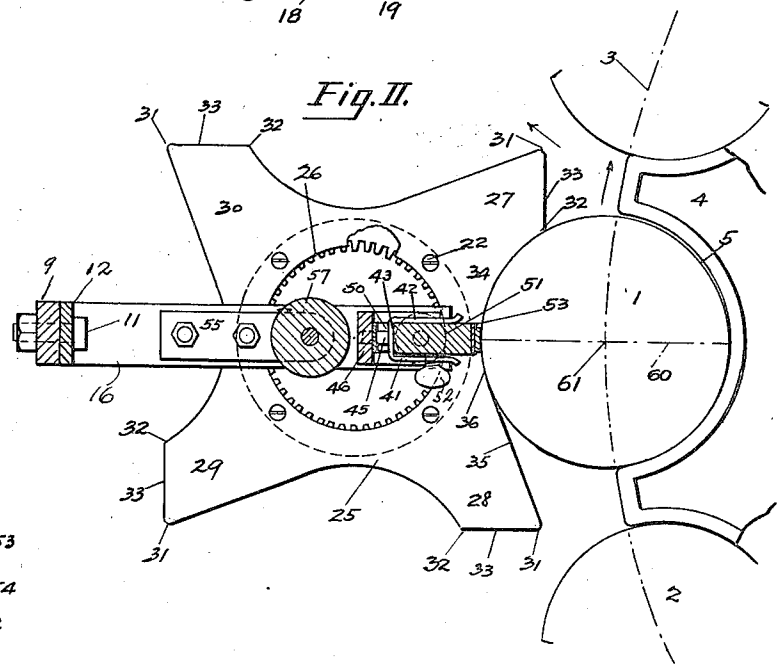
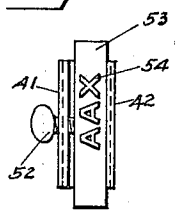


Fig. III.



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UNITED STATES PATENT OFFICE.

BUNZUCHI YOSHINAGA, OF VANCOUVER, WASHINGTON.

MARKER.

Application filed November 11, 1919. Serial No. 337,132.

To all whom it may concern:

Be it known that BUNZUCHI YOSHINAGA, a subject of Japan, and resident of Vancouver, in the county of Clarke, in the State of Washington, has invented certain new and useful Improvements in Markers, of which the following is a specification, reference being had to the accompanying drawing.

My invention relates to markers, and has for its object the production of an improved automatic machine for applying to preferably round objects, such, for example, as fruit cans, the imprint of a date or other matter.

My machine is designed and adapted, by the aid of simple and inexpensive mechanism, to facilitate and expedite the making of a legible imprint upon an object as above described, without blurring, as from a square or flush-faced type-plate which is preferred because it is the simplest and least expensive form of plate.

What constitutes my invention will be hereinafter specified in detail and succinctly set forth in the appended claims.

In the accompanying drawing,

Figure I is a side elevation, partially in section, of my invention in preferred form of embodiment, located in operative juxtaposition to a can and its carrier, and showing the type-plate of the machine in operative contact with the side of the can.

Figure II is a section on the line II—II of Figure I.

Figure III is a face view of a type-plate block and its holder proper, detached.

Referring to the numerals on the drawing, 1 indicates, diagrammatically, one can of a series, and 2 the next can of the series in regular order of succession. The longitudinal axis of each can is adapted to be driven in a symmetrical arc 3 of any convenient and preferred radius, by means, for example, of an indented wheel 4 which, confining each can in one of its indentations 5, causes it to travel in definite relative disposition along a track 6 by an impelling force communicated through rotation of the wheel 4 upon its axis.

Mechanism for rotating the wheel 4 is not illustrated because, although it, or some equivalent thereto is essential to the operation of my device, its relation is only incidental to my invention. The diagrammatical illustration above described is believed to afford sufficient representation of all that is essential to my invention, namely, any suitable rotative mechanism for driving cans in regular order of succession and in spaced relationship one to another.

Within operative proximity to the side of each can, at a predetermined point in its line of travel, along the arc 3, for example, I provide, upon any suitable means of support not illustrated but whose presence is sufficiently indicated by bolt holes 7, a marker-supporting-member which preferably consists of a bottom 8 and a side plate 9 united thereto at right angles by a bend 10.

To the side plate 9 is secured, as by bolts 11, an end plate 12 from the opposite ends of which and at right angles thereto, extend legs 15 and 16, the leg 16 being spaced a suitable short distance above the bottom plate 8. The aforesaid members, 8 to 16, inclusive, represent in simple, and therefore preferred, form of embodiment, any suitable frame which may be preferred for operatively supporting my device.

Revolubly mounted in the space between the members 8 and 16 is the main driving member or actuator of my device. It preferably comprises, in the form of embodiment of my invention shown, a horizontal disk 17, having a depending arbor 18 journaled in a bearing provided for it in the plate 8 and rotatably secured therein as by a nut 19 and an intermediate washer 20. Secured to the disk 17 and of corresponding diameter, is an internally-toothed annular gear 21, to the upper face of which is secured, as by tap-screws 22, a driving wheel 25, having a circular opening 26, whose diameter is a little greater than the interior diameter of the gear 21, whereby the teeth of said gear or a portion thereof project internally inside of the circle of the opening 26 as shown, for example in Figure II.

The wheel 25 is provided with four prongs 27, 28, 29, and 30 each corresponding with another in shape and dimensions. Each prong is distinguished by two actuating corners or snub-faces, namely, a toe 31 and a heel 32, and by an intermediate bearing-face 33. Between the toe of one prong and the heel of the prong next adjacent, in order of rotation of the wheel 25, for example the prongs 27 and 28 as indicated by the left oblique arrow on Figure II, extends a contour-defining line of the said wheel that is composed of two parts 34 and 35, the former

being preferably a curved face proportioned to fit the shape of an object corresponding to a can body, for example the can 1, and the latter being a straight or plane face which merges into the face 34 substantially at the point 36.

Mounted between the legs 15 and 16 in bearings provided for its trunnions 37 and 38, is a rectangular frame 39 that is open on that side of it that is adjacent to the trunnions 37 and 38. The trunnion 38 carries a fixed pinion 40 for whose accommodation it is preferably elongated so as to enable the pinion 40 to intermesh with the teeth of the gear 21, and those parts are geared together in the proportion of one to four; that is to say, the pinion 40 makes one complete revolution to each quarter turn of the gear 21

Within the hollow of the frame 39 is provided a block-holder preferably consisting of two cheek-pieces 41 and 42 united by a back-piece 43 from which project studs 45 that are supported in apertures provided for them in the back-piece 46 of the frame 39. The studs 45 are preferably screw-studs threaded into the back-piece 43, and provided, respectively, with heads 48 adapted to limit their movement in one direction through the apertures wherein they are set to unite them to the back-piece 46, in which direction the block-holder is impelled as by a bow-spring 50 interposed between the opposing faces of the back-pieces 43 and 46.

Between the cheekpieces 41 and 42 is provided a printing block that is detachably held in place as by a winged set-screw 52. Upon its forward edge the block 51 carries a type-plate 53 which is preferably flush-faced and made of india rubber, and which presents printing characters 54 of any preferred selection. The characters 54 may, of course, project beyond the face of the plate 53 or be counter-sunk therein, as preferred for printing effect.

Behind the back-piece 46 is revolubly mounted, as in opposite plates 55, bolted, for example, respectively, to the legs 15 and 16, an inking roller 57 of any suitable and preferred type.

The operation of my machine may be described as follows.

The normal position of its parts may be regarded as that which is well shown in Figure II, which is the printing position of the block 51, and to which it continues automatically to return in the operation of the machine upon the completion of its cycle of operation.

Each can of the series becomes, successively, in turn, a mechanical prime-mover to the wheel 25 with which operative engagement is effected through its respective prongs, actuated in succession.

Take, for example, the can 1, which, in Figure II is shown in the position in which its diameter 60 is at right angles to the plane of the face of the type-plate 53. In that position the type-plate is brought into imprinting contact with the surface of the can under yielding compulsion of the spring 50. It should be observed in this connection that the drawing shows the printing block 51 bearing its type-plate advanced, under the impulse of said spring, to the extreme limit of its movement. Such illustration is deemed to be conducive to clearness, but it should be accepted with the understanding that the advance of the face of the type-plate 53 is, in respect to its printing function, limited by contact with the periphery of a can. With this explanation, which makes the representation of the can rather diagrammatical than actual, it is assumed that the can 1 in Figure II is in position to receive imprint from the type-plate 53. In that position, the periphery of said can sits snugly against the face 34 to whose contour it conforms. The time of printing contact between the type-plate 53 and the periphery of the can is, in the operation of the machine, momentary, and is determined by the regular movement of the axis 61 of the can in its travel along the arc 3, for example. From the position of the can indicated by the line 60 in Figure II, the face of the can and the face of the type-plate 53 begin to recede one from the other. Their separation is occasioned in part by the movement of the axis 61 along the arc 3, and in part by rotative movement of the wheel 25. Said rotative movement is, in the instance under consideration, imparted to the wheel by engagement of the periphery of the advancing can 1 with the heel 32 of the can-engaging prong 27. Rotation of the wheel 25 is, by such engagement, continued to be imparted to it through advance of the can 1, the face 35 affording clearance between the periphery of the can and the next advancing prong 28, until the toe 31 thereof engages the periphery of the can 2, that is to say, with the can which is next in series to the can 1. This engagement takes place substantially at the moment when the heel 32 of the prong 27 ceases to engage with the can 1. Consequently, the rotation of the wheel 25 continues uninterruptedly through engagement of each can in succession with the successive prongs of the wheel. In the example under consideration, the can 1 engages successively with the toe 31, the intermediate stretch 33, and the heel 32 of the prong 28, until the can 2 reaches a position corresponding to that occupied by can 1, as shown in Figure II of the drawing. By that time the wheel 25 will have made a quarter turn.

In consequence of the engagement between the gear 21 and the pinion 40, the frame 39 will have been making rotation upon its

trunnions 37 and 38 during the advance of the can 2 above described, and will have made one complete revolution by the time said can reaches the position of can 1, as above set forth.

Substantially at each half turn of the frame 39, the type-plate 53 is brought for a space into operative contact with the inking roller 57, and is thereby supplied with ink for the next succeeding imprint. By keeping the roller 57 duly supplied with ink, the printing operation of the type-plate 53 of the block 51 is effected upon each can as it is advanced in the successive order in the travel of the cans in series.

By the synchronization, which is the object of the mechanism above specified, of the movement of the several cans with the movement of the wheel 25, and especially through means by which printing contact between the face of the type-plate 53 is made dependent upon the movement of a can itself, all possibility of blurring the imprint upon the surface of a can is substantially avoided and to all practical purposes completely eliminated.

What I claim is:

1. In a machine for the purpose described, the combination with a rotatory printing member, and horizontally disposed rotatable means for actuating the same with printing effect upon the side of each of a succession of objects, of rotative mechanism operating in a plane parallel to that of the said rotatable means to effect the constant movement of objects in regular spaced order through a fixed arcuate course intersecting that of the said rotatable means with operative impelling force against the rotatable means.

2. In a machine for the purpose described, the combination with a rotatory printing member, of a horizontally disposed rotatable pronged wheel in geared connection therewith for actuating said printing member with rolling printing effect upon the side of each of a succession of objects, of an endless circular conveyor operative in a plane parallel with that of the said rotatable wheel for constantly moving said objects along a fixed arcuate course in operative actuating proximity to said rotatable wheel, and means incorporated with said conveyor for localizing the objects thereon so as to constitute them in effect cogs of a driving gear in a train of intermeshing gears adapted to transmit power to effect the individual printing of said objects while engaged with the conveyor and the rotatable wheel.

3. In a machine for the purpose described, the combination with a frame, and a rotatable pronged wheel thereon, of a rotatory printing member carried by the frame, an internally toothed annular gear on the rotatable wheel, a coaxial pinion on the printing member meshing therewith, and means for effecting constant movement of objects in regularly spaced succession past said pronged wheel and in operative proximity thereto for rotating the same to effect individual printing of said objects.

4. In a machine for the purpose described, the combination with a frame, and a rotative, pronged driving wheel thereon, of a rotatory printing member carried by the frame, an internally toothed annular gear on the driving wheel, and a coaxial pinion on the printing member meshing therewith.

5. In a machine for the purpose described, the combination with a frame, and a rotative, pronged driving wheel thereon, of a rotatory printing member carried by the frame, an internally toothed annular gear on the driving wheel, and a coaxial pinion on the printing member meshing therewith, said gear and pinion being timed to make one complete revolution of the printing member to each quarter turn of the driving wheel.

In testimony whereof, I have hereunto set my hand in the presence of two subscribing witnesses.

BUNZUCHI YOSHINAGA.

Witnesses:
C. J. CLEAR,
F. J. BURK.