Nov. 17, 1925. 1,562,085

E. F. FOSTER

LABELING MACHINE

Original Filed April 29, 1921 2 Sheets-Sheet 1

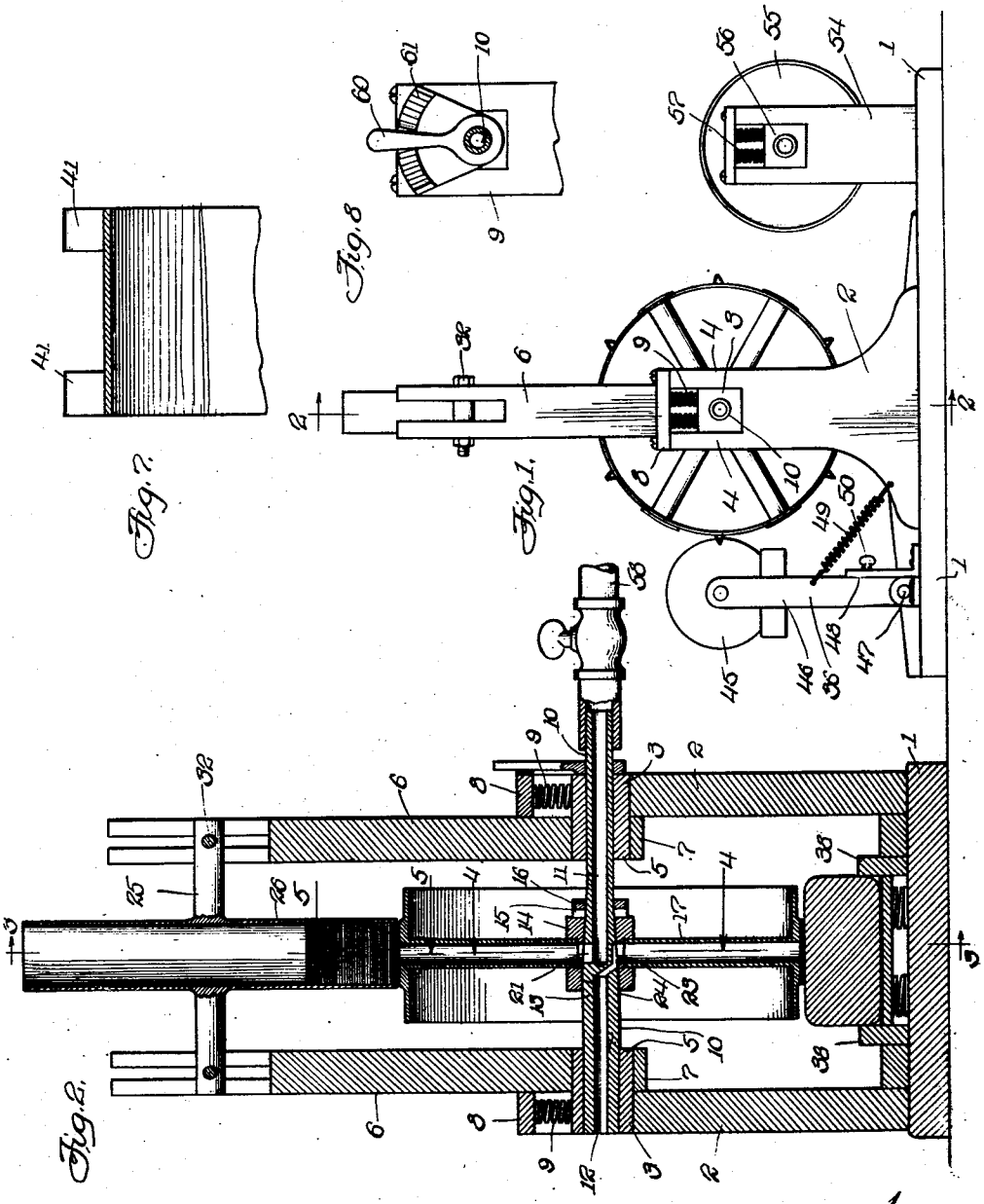


Fig. 2.

Witness:
W. C. Olson

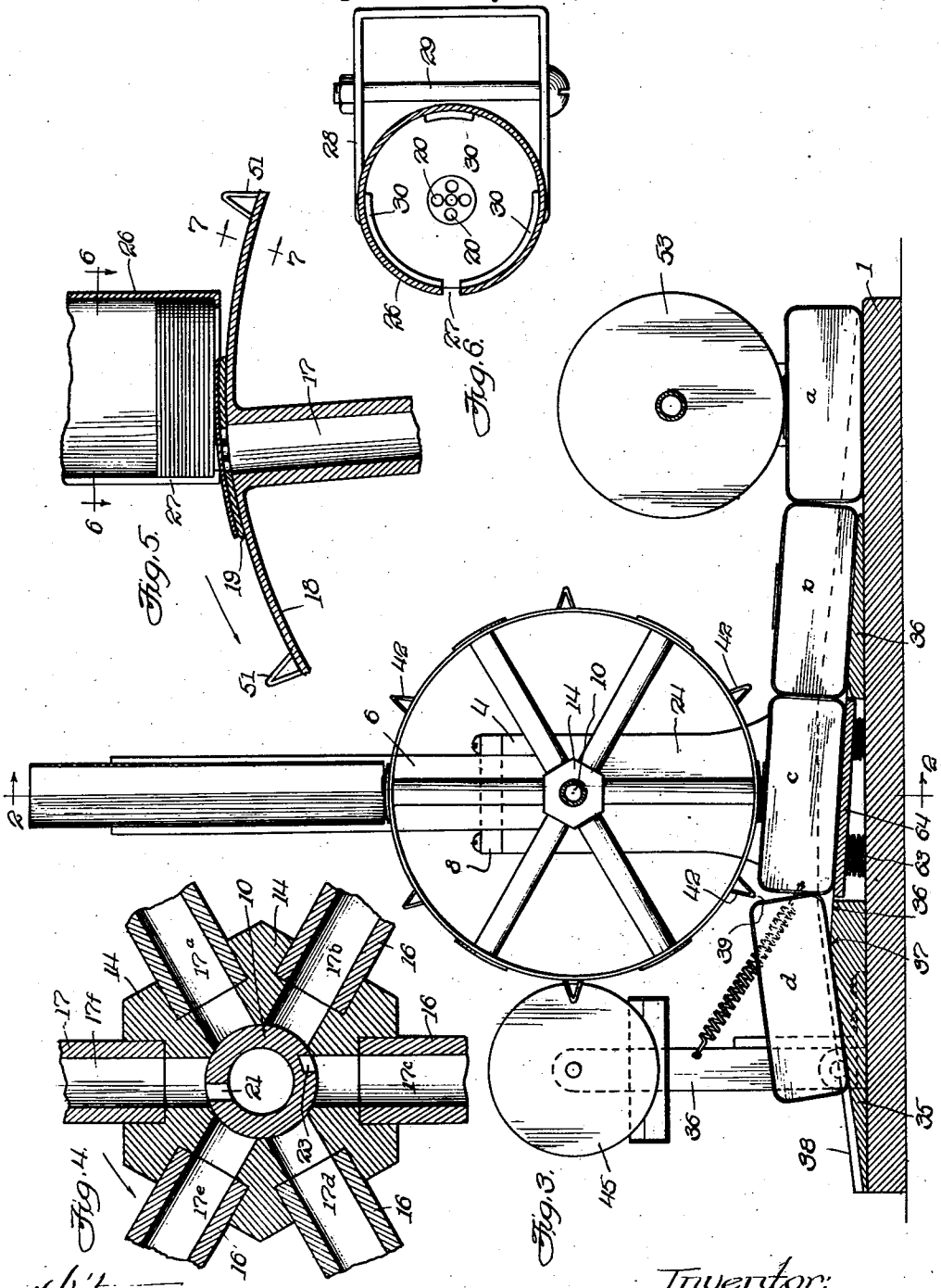
Inventor:
Edward F. Foster
By Hauseck Chamberlain Atty.

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Witness:
V. K. Olson

Inventor:
Edward F. Foster
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UNITED STATES PATENT OFFICE.

EDWARD F. FOSTER, OF MILWAUKEE, WISCONSIN.

LABELING MACHINE.

Substitute for abandoned application Serial No. 465,387, filed April 29, 1921. This application filed August 25, 1924. Serial No. 733,999½.

To all whom it may concern:

Be it known that I, EDWARD F. FOSTER, a citizen of the United States, and resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Labeling Machines; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to the preparation of individual articles or packages preparatory to offering them for sale and particularly to labeling and selling of such articles or packages in such a manner that they may be identified as a product of the original manufacturer and so sealing the same that the genuine character thereof is established and is impressed on the mind of the customer.

It is one of the objects of my invention to provide a simple, effective and durable machine by which small, flat labels or seals may be affixed to wrapped articles of uniform size such as cakes or tablets of soap, when passed through the mechanism provided by my invention will accurately engage and control moving parts of the machine so that the labels or seals will be accurately placed in position on each package; also to provide storage devices by which a quantity of the labels may be held in proper relation on each package; also to provide storage devices by which a quantity of the labels may be held in proper relation to the label affixing part of the machine and also to provide means by which the labels are accurately removed one by one from the storage devices moistened and transferred to the point at which they are to be affixed and securely placed on the article to be labeled.

My invention further includes details of construction by which the different movements of the machine are adjusted and by which they are made to work in harmony with each other.

The principles of my invention are illustrated in the drawings, in which:—

Figure 1 is a side elevation of my improved machine.

Figure 2 is an enlarged vertical section thereof on the line 2—2 of Figure 1.

Figure 3 is a vertical section on the line 3—3 of Figure 2.

Figures 4 and 5 are further enlarged sections on the line 4—4 and 5—5 of Figure 2.

Figure 6 is a section on the line 6—6 of Figure 5.

Figure 7 is a section on the line 7—7 of Figure 5.

Figure 8 is an enlarged view of an air regulating device.

Further describing my invention with reference to the drawings in which like characters of reference denote like parts throughout, 1 is a substantial base or foundation upon which are mounted the side supports 2. A plurality of boxes 3 is slidably mounted in the slots between the guideways in said supports formed by the upwardly extended members 4. Upon the inwardly projecting ends 5 of boxes 3 are mounted upward extensions 6 which should be secured in place by means of straps 7 extending around said boxes or by other suitable means. Cross pieces 8 are secured to the tops of extensions 4 and between said cross bars and boxes are included springs 9 to hold the latter resiliently in their normal positions. A shaft 10 having interrupted axial openings is extended through the bearings 3 and, except for slight rotation as hereinafter described, it is non-revolubly mounted therein. The central portion 13 of said shaft should be tapered to receive a correspondingly internally tapered hub 14 of a wheel constructed as hereinafter described. In order that the said hub may be given proper adjustability against air leakage and yet be permitted to revolve freely on said shaft the latter is threaded and provided with the nut 15 and lock nut 16. The said hub 14 is provided with radial arms or spokes having the walls 17 and the tubular openings 17^a, 17^b, etc. Said tubular openings are continued through the hub 14 and extended outwardly through the rim 18 upon which they are spaced at equal radial distances from each other. The external openings should be continued above the periphery of the wheel by small distances as indicated by the plate 19 and the latter is preferably provided with a multiplicity of holes 20. An opening 21 is placed in the wall of the tubular shaft 10 in such a position that the openings in the spokes as they revolve about it will be successively presented thereto. At a point approximately opposite to the openings 21 there is a

groove 23 in the shaft which extends transversely of the wheel and longitudinally of the shaft and is connected with the axial opening 12 in the shaft by which communication is made with the outer air. At the upper part of the machine upon the extensions 6 is mounted a transverse yoke 25 supporting the tubular structure 26 within which are placed the labels which are to be affixed by operation of the machine. The said tubular structure has a longitudinal opening 27 as illustrated in Figure 6 and it is enclosed by the adjustable clamp 28 and bolt 29 whereby the diameter may be slightly varied as desired. At the lower end of said tube are provided flanges 30 upon which the circular labels may be and normally are supported. The said yoke is adjustably mounted on the supports by clamping bolts 32 whereby the lower end of the label tube 26 is held in definitely spaced but elastic relation to the periphery of the wheel hereinbefore described and particularly with reference to the extended portions 19 thereof. A runway on the base 1 consists of an ascending portion 35 and the descending portion 36 whereby a hump 37 is formed at their point of junction. Guiding walls 38 are provided on either side of said runway or chute, so that as a series of articles, such as wrapped pieces of soap as represented by *a*, *b*, *c*, and *d*, are passed upwardly upon said chute and past the hump 37 an opening or space 39 is formed within which peripheral teeth 42 on the main wheel will be engaged. A moistening wheel 45 is mounted on uprights 36, the latter being pivoted at 47 on the base 1. The said wheel is positioned with reference to the main wheel by means of a bracket 48 against which the upright 46 is normally held by spring 49, adjustment further being given by means of the adjusting screw 50. At the other end of the runway upon the uprights 54 is mounted a wheel 55 which is journaled in the boxes 56 and held in normal position by springs 57.

When the machine is to be operated, connection of the hollow shaft 10 is made by a tube 58 with an exhaust fan or pump (not shown) by which the air can be exhausted from the said shaft and its connections. A series of wrapped articles such as shown is fed in succession through the chute described beginning at the left as shown in Figure 3. As the first article passes the hump 37 it will engage a tooth 42 causing the wheel to revolve. The successive openings of the spokes will register with the shaft opening 21 thereby causing a suction through the spokes, to the holes 20 at the periphery of the wheel. For instance at the first impulse the tubular portion 17ª of spoke 17 will register with the opening 21. An instant suction will be produced at the end of spoke 17ª creating a vacuum at the lower part of the label tube and causing the lowest label therein to be engaged and escape from the flanges 30. As the wheel revolves the suction on the label will cause the vacuum in the hollow of the spoke to be maintained while the spoke passes to the lower part of the wheel as shown in Figure 3. Meanwhile, on the half revolution the outer face of the label which is gummed is brought into contact with the periphery of wheel 45 by which the gummed face is brought into contact with the upper portion of the article there positioned as *c* and affixed thereto. As the various articles progress they are carried beneath the wheel 53 which under the stress of springs 57 is brought into pressure contact with the label, thereby positively pressing it into position. As the main wheel carries the label into its final attachment position at the lower part, the tubular portion is brought into registration with the longitudinal notch 23 whereby atmospheric air rushes in to destroy the vacuum in the tube and free the label.

Registration of the tubular structure with each other whereby the timing may be effected is shown in Figure 8 in which a lever 60 is attached to the tubular shaft 10, and a graduated index 61 is attached in the rear thereof so that rotation of the shaft may be given to determine the time at which the desired vacuum may be produced through the hollow spokes when adjacent to the lowermost label in the label holder.

As a further means for providing for variation in the size of the articles passing through the labeling machine, I prefer to provide an elastic section 64 in the runway at the point of label application. This is mounted independently of the other sections upon supporting springs 63 which normally hold the section in line with the adjacent sections, but will yield sufficiently to prevent clogging of the machine when an article of greater than normal thickness passes under the labeling wheel.

I have illustrated my invention by reference to a practical form and embodiment thereof, but many changes such as the number of the spokes or arms, the number and construction of the several parts and the relative positions thereof to each other may be made without departing from the spirit of my invention.

I claim:

1. In a labeling machine; a frame, a substantially non-rotatable axle mounted on the frame, one end of said axle having a longitudinal bore and a suction bore between its ends, and the other end of said axle having a longitudinal bore and a relief bore placed substantially on the opposite side of the shaft from the suction bore, a wheel rotatable on said shaft, a hollow spoke on said

wheel adapted when rotated to register successively with said suction and outlet ports, and a label tube operatively positioned relatively to the outer end of said spoke when the inner end thereof is in register with said exhaust port.

2. In a labeling machine, a frame, a substantially non-rotatable axle mounted on the frame, one end of said axle having a longitudinal bore and a suction bore between its ends, and the other end of said axle having a longitudinal bore and a relief bore placed substantially on the opposite side of the shaft from the suction bore, a wheel rotatable on said shaft, a hollow spoke on said wheel adapted when rotated to register successively with said suction and outlet ports, timing means attached to the shaft to vary the registration of the spoke relatively to the suction inlet of said shaft, and a label tube operatively positioned relatively to the outer end of said spoke when the inner end thereof is in register with said exhaust port.

3. In a labeling machine, a frame, a substantially non-rotatable axle mounted on the frame, one end of said axle having a longitudinal bore and a suction bore between its ends, and the other end of said axle having a longitudinal bore and a relief bore placed substantially on the opposite side of the shaft from the suction bore, a wheel rotatable on said shaft, a hollow spoke on said wheel, means for creating a vacuum in said spoke when at the point of label reception and maintaining such vacuum during the revolution of said wheel to the point of label attachment, a runway to divert articles to be labeled to the said point of attachment, and means for moistening the label during said period of revolution.

4. In a labeling machine, a frame, a substantially non-rotatable axle mounted on the frame, one end of said axle having a longitudinal bore and a suction bore between its ends, and the other end of said axle having a longitudinal bore and a relief bore placed substantially on the opposite side of the shaft from the suction bore, a wheel rotatable on said shaft, a hollow spoke or arm on said wheel adapted when rotated to register successively with said suction and outlet ports, and a label tube resiliently mounted relatively to the outer end of said spoke and adapted to release a label when the inner end of said spoke is in register with said exhaust port.

5. In a labeling machine, a frame, an axle mounted on the frame, a label carrying wheel on the axle, teeth on the periphery of the wheel spaced from each other so as to receive between them articles to be labeled, and a runway having a raised portion adjacent to the point of tooth engagement to present such article to the successive teeth on said wheel.

6. In a labeling machine, a frame, an axle mounted on the frame, a label carrying wheel on the axle, teeth on the periphery of the wheel spaced from each other so as to receive between them an article to be labeled, and a runway having a resilient section to present such articles to the said wheel at the point of label attachment.

7. In a labeling machine, a frame, an axle mounted on the frame, a label carrying wheel on the axle, teeth on the periphery of the wheel spaced from each other so as to receive between them an article to be labeled, and a runway having a raised portion adjacent to the point of tooth engagement to separate such articles from each other and present them successively to the teeth on said wheel.

8. A containing tube for labeling machines having a longitudinal slot, a holding clamp for said tube, means for tightening said clamp for varying the width of said slot to adjust the diameter of the containing tube, and a flange at the lower end of said tube to support labels placed therein.

In testimony that I claim the foregoing I have hereunto set my hand at Milwaukee, in the county of Milwaukee and State of Wisconsin.

EDWARD F. FOSTER.