J. O'CONNOR.

LABELING MACHINE.

APPLICATION FILED FEB. 11, 1920.

1,394,339. Patented Oct. 18, 1921.

5 SHEETS—SHEET 1.

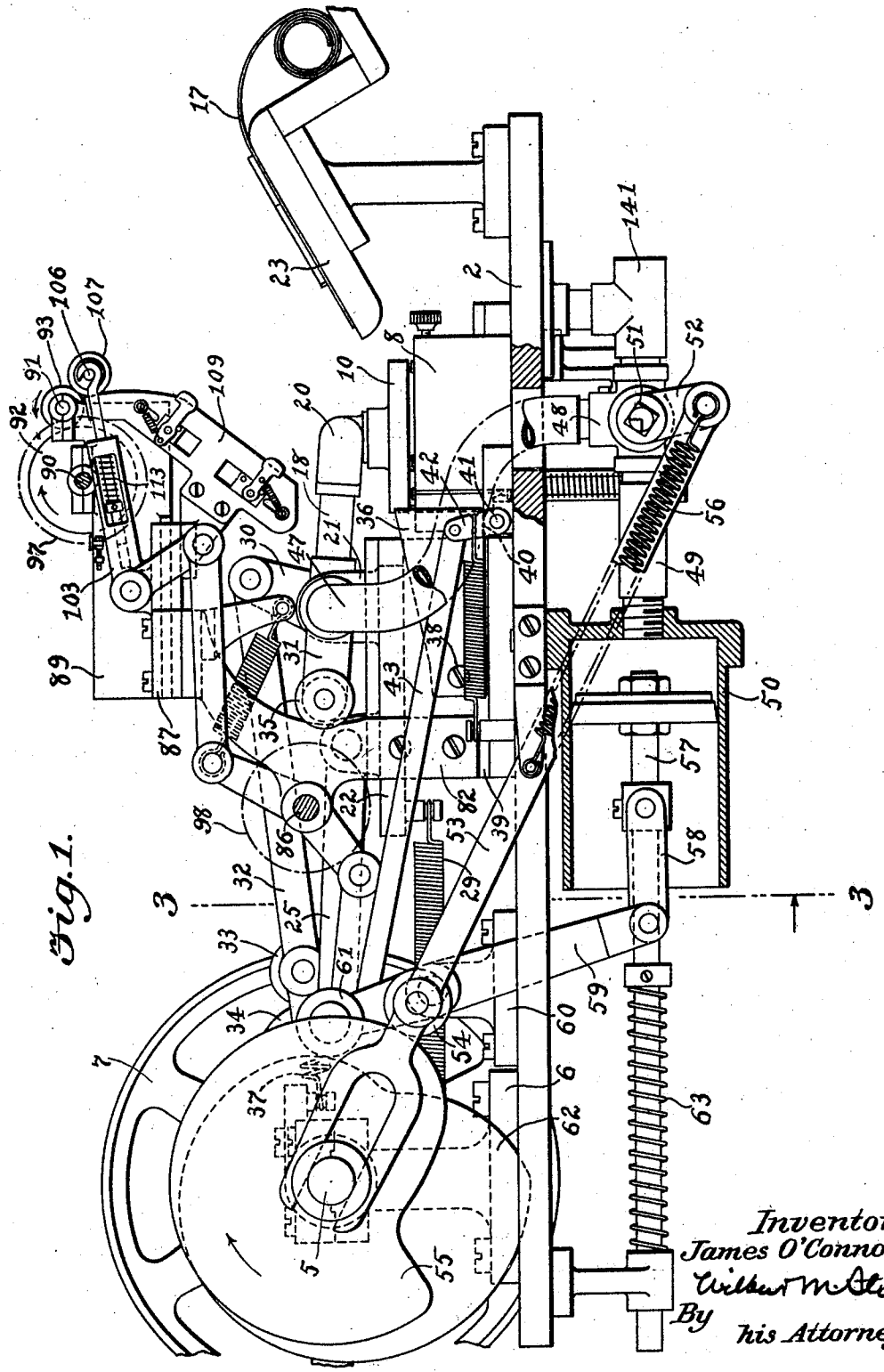


Fig. 1.

Inventor;
James O'Connor;
Wilbur M. Stone
By his Attorney.

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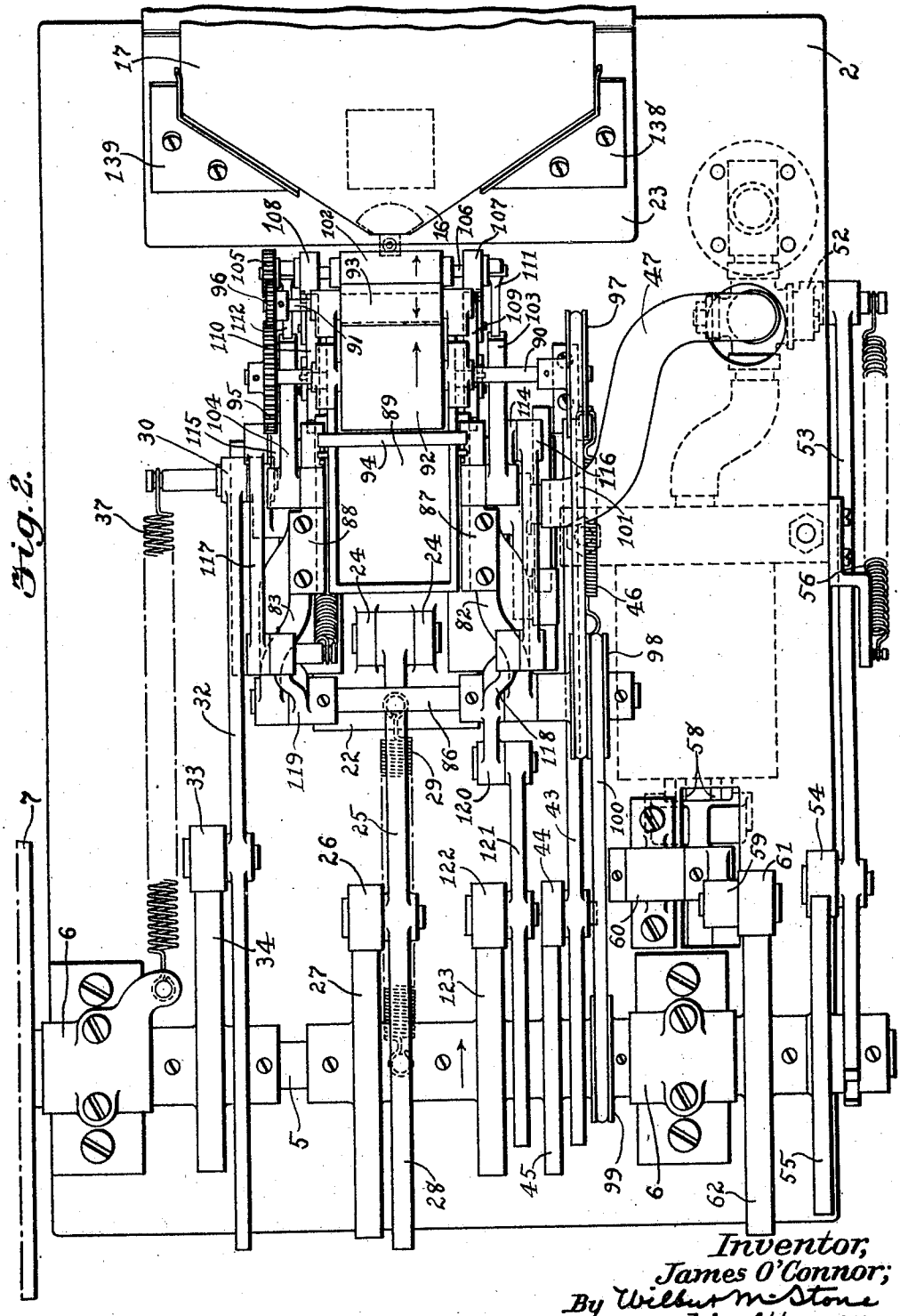
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5 SHEETS—SHEET 2.

Fig. 2.



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5 SHEETS—SHEET 3.

Fig. 4.

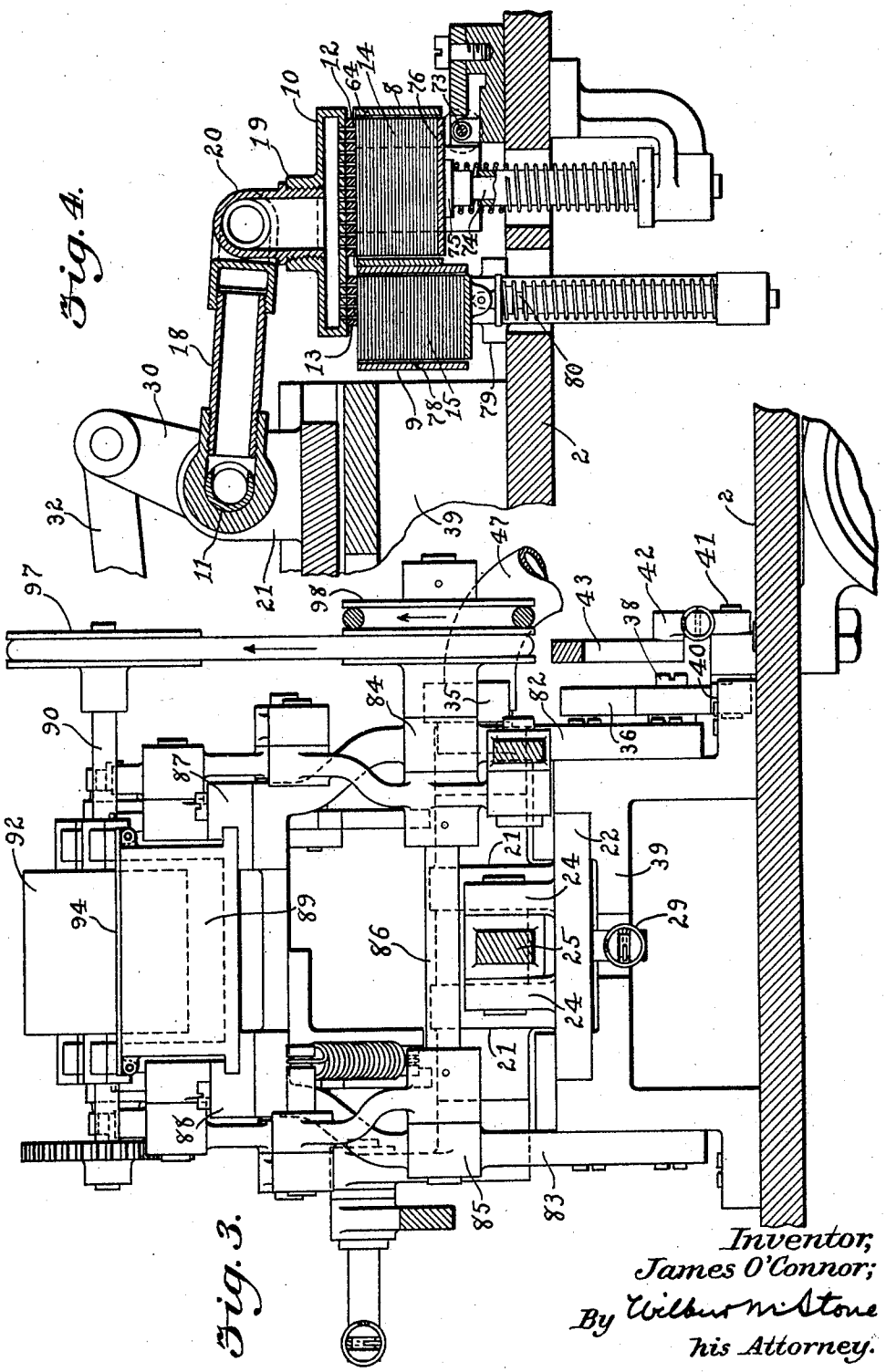


Fig. 3.

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5 SHEETS—SHEET 4.

Fig. 6.

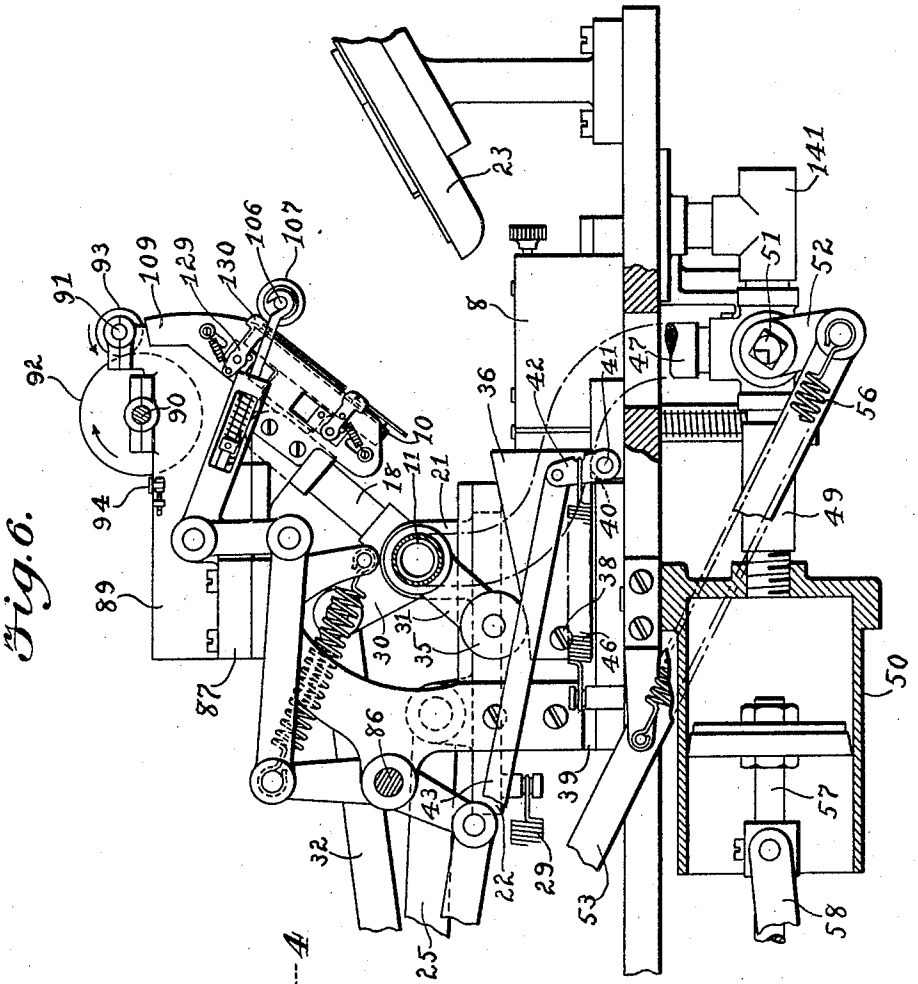
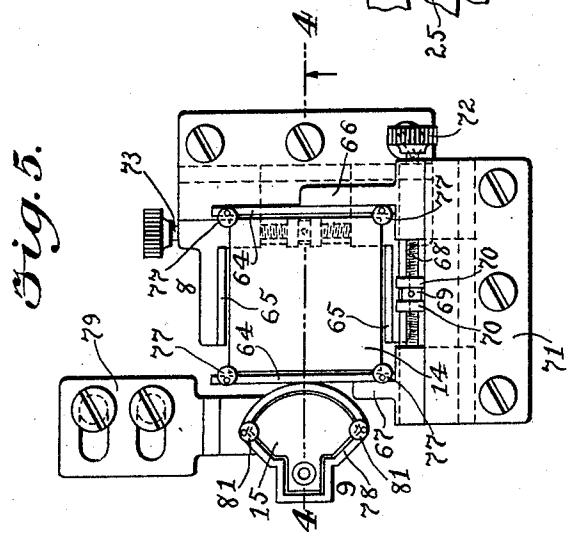


Fig. 5.



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5 SHEETS—SHEET 5.

Fig. 8.

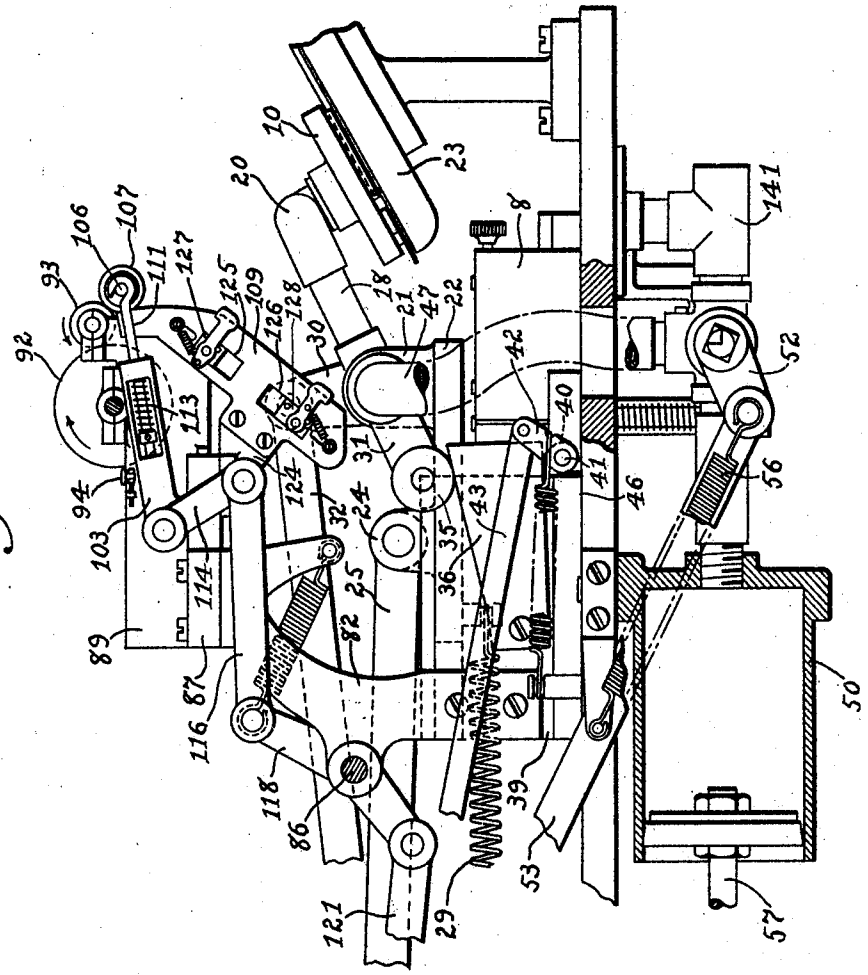
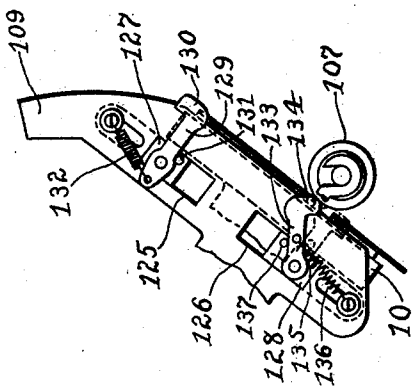


Fig. 7.



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UNITED STATES PATENT OFFICE.

JAMES O'CONNOR, OF NEW YORK, N. Y.

LABELING-MACHINE.

1,394,339. Specification of Letters Patent. Patented Oct. 18, 1921.

Application filed February 11, 1920. Serial No. 357,858.

To all whom it may concern:

Be it known that I, JAMES O'CONNOR, a citizen of the United States, and a resident of New York, borough of Manhattan, in the county of New York and State of New York, have invented certain new and useful Improvements in Labeling-Machines, of which the following is a specification.

This invention relates to labeling machines and has for its object to provide a machine of the class specified, simple in construction, efficient and rapid in operation and adapted to be adjusted for handling a variety of sizes of labels. Other features of usefulness and adaptability will appear later herein.

With these ends in view my improvements comprise features illustrated in their preferred embodiment in the drawings accompanying this specification, wherein:—

Figure 1 is a side elevation, partly in section, of a labeling machine in which are incorporated my improvements. Fig. 2 is a plan view corresponding with the elevation of Fig. 1. Fig. 3 is a sectional end elevation, the section being taken on line 3—3 of Fig. 1. Fig. 4 is a sectional elevation of a portion of what is shown near the right hand end of Figs. 1 and 2, the section being taken on line 4—4 of Fig. 5. Fig. 5 is a plan view of a portion of what is shown in the elevation of Fig. 4. Fig. 6 is a fragmentary side elevation similar to a portion of that of Fig. 1, showing some of the parts in different relative positions. Fig. 7 is a fragmentary side elevation, similar to a portion of Figs. 1 and 6, showing some of the parts at another step in their relative movements. Fig. 8 is a fragmentary side elevation, similar to that of Fig. 6, showing some of the parts in different relative positions. The scale of Figs. 1, 2, 6 and 8 is the same; the scale of Figs. 3, 4, 5, and 7 is the same and slightly larger than that of the earlier recited figures.

While my improvements are, in their general application, adapted to a wide variety of results within their particular field, they have been illustrated as one example of their applicability, embodied in a machine for applying labels and leading tabs to music sheets for player-pianos.

The various parts of my improved machine may be conveniently supported on bed 2 which may in turn be supported on suitable legs, not shown. Motion is transmitted to the several operative mechanisms from cams on main shaft 5, supported in bearings 6, 6 upstanding from said bed 2, and power may be applied for rotating said shaft through pulley 7, fixed thereto.

Suitable receptacles, 8 for the labels and 9 for the tabs, best shown in Figs. 4 and 5, are provided near the right hand end of the machine, Fig. 1. These receptacles are adapted for receiving supplies of their respective labels and tabs and are underfed by means of spring-urged plungers. For picking off, one at a time, an example of each label and tab, a duplex pneumatic picker 10, mounted for oscillation about the axis of rock-shaft 11, is provided. Said picker 10 is of hollow construction and is provided with perforated lower shoes 12 and 13, preferably of yieldable material such as rubber. Said shoe 12 is of sufficient extent to overlay the top of the pile 14 of labels, and shoe 13 is of sufficient extent to overlay such portion of the topmost tab in stack 15 as is to be impressed on the end 16 of the music sheet 17. Picker 10 is preferably pivoted in the outer end of arm 18 so as to be adjustable for seating on the labels and tabs. Also said picker 10 is removably connected at 19 to its head 20, so that said picker may be replaced as required by other pickers adapted in size to other labels and tabs. Picker rock-shaft 11 is trunnioned between ears 21, 21 upstanding from slide 22 mounted in frame 39 for reciprocation toward and from table 23, which supports the music sheet to be labeled. For causing said slide 22 to reciprocate, ears 24, 24 thereof have pivoted therebetween the forward end of link 25 and which link bears near its other end roll 26 for engagement with cam 27 fixed to shaft 5. Said link 25 is bifurcated at its rearward end 28 to straddle shaft 5 for guidance, and roll 26 is urged to engagement with cam 27 by pull-spring 29. In addition to the movement imparted to picker 10 through the movement of slide 22, other means for moving said picker are as follows: Fixed to rock-shaft 11 are arms 30 and 31, the former operatively connected by link 32 and roll 33 thereon with cam 34 on shaft 5, and the latter operatively connected through roll 35 thereon with cam 36. Said rolls are urged to engagement with their respective cams by spring 37. Cam 36 is pivotally mounted at 38 near its left hand end, Fig. 1, on one side of frame 39. At one step in the operation of the machine the right hand end of cam 36 is lifted by means of toe 40 fixed to rock-shaft 41. Also fixed to said rock-shaft is arm 42 operatively connected by link 43 and roll 44 thereon with cam 45 fixed to shaft 5. Said

roll is urged to engagement with cam 45 by spring 46.

For exhausting the air, when required, from the interior of picker 10, the following means are provided: From the chamber within picker 10 an air passage is provided through head 20, arm 18 and shaft 11, from said picker to pipe 47, which connects the hollow end of said shaft with valve 48, which is in turn connected by pipe 49 with exhaust pump 50. Valve 48 is of well known three-way type, having a right angled passage through its plug 51, the direction of which is indicated by the marking on the head of the plug. For operating plug 51 of said valve 48, arm 52 is operatively connected by link 53 bearing roll 54 with cam 55 fixed to shaft 5. Said roll is urged to engagement with cam 55 by spring 56. For operating pump 50 its piston-rod 57 is connected by links 58, 58 to the lower end of oscillating arm 59, and which arm is pivoted in bearing 60 upstanding from bed 2. The upper end of said arm 59 carries roll 61 for engagement with cam 62 fixed to shaft 5. Spring 63 is provided for urging roll 61 to engagement with cam 62.

Reverting now to receptacles 8 and 9, particularly as shown in Figs. 4 and 5, receptacles 8 for the labels comprises two pairs of opposite side plates 64, 64 and 65, 65, respectively. These plates are mounted on carriers, as 66 to one of plates 64 and as 67 to the other of plates 64. These carriers are slidably mounted in guide-block 71 and with their respective plates are adjustable in unison toward each other from the positions of Fig. 5, by means of screw 68 having opposite right and left hand threaded portions in engagement with suitable hubs on said carriers, respectively. Said screw is restrained against endwise movement by collar 69 pinned thereto and which collar engages opposite ears 70, 70 upstanding from guide block 71. Said screw may be rotated by means of knurled button 72. Plates 65, 65 are similarly adjustable in unison toward each other by means of screw 73. For sustaining and urging upwardly the pile of labels 14, spring urged plunger 74 is provided. Said plunger 74 is provided with head 75 which supports a removable base 76 on which rests said pile. When plates 64 and 65 are adjusted inwardly to accommodate smaller labels a correspondingly smaller base is substituted for base 76. For preventing the pile of labels from being pushed upwardly out of receptacle 8, clips 77, 77 inreaching over the edges of the top of the pile and fixed to the upper edges of the side plates are provided.

Receptacle 9 for the stack of tabs 15 comprises a vertical wall 78 preferably surrounding the stack and conforming in general contour to the profile of a tab. Said wall is carried by bracket 79 adjustably mounted on bed 2, so that said stack 15 may be moved toward stack 14 when smaller labels are used. Said stack of tabs 15 is urged upwardly by spring-pressed plunger 80, and clips 81 prevent said tabs from being pushed upwardly out of receptacle 9.

For supplying gum to the tabs and labels after they have been picked from their respective piles one of each at a time by picker 10, a gumming station comprising the following is provided: Upstanding from frame 39 are opposite brackets 82, 83 which, midway their height, carry bearings 84, 85, respectively, for rock-shaft 86. Said brackets terminate upwardly in supports for guideways 87, 88 for gumbox 89. Said gumbox has fixed to the upper portions of its side walls bearings for shafts 90, 91 for gum rolls 92, 93, respectively. Gum roll 92 is provided with scraper 94 adjustably fixed to said gumbox. Said gum roll shafts 90, 91 have fixed to their rear ends, Fig. 2, intermeshing gears 95, 96, respectively, and shaft 90 has fixed to its forward end grooved pulley 97. Turning freely on oscillating shaft 86 is pulley 98 having two grooves therein, and fixed to shaft 5 is grooved pulley 99. Power is transmitted from pulley 99 to pulley 98 by belt 100 and from pulley 98 to pulley 97 by belt 101.

For transferring the gum from roll 93 to the faces of the tab and label, respectively, on the face of picker 10, roll 102, carried by swinging arms 103, 104, is provided. Said roll 102 is provided with gear 105 fixed to the rear end of its shaft 106 for engagement intermittently with gear 96. Also fixed to shaft 106 are opposite rolls 107, 108 for engagement with tracks 109, 110 and cams carried thereby, respectively. Roll shaft 106 is yieldably supported in arms 103, 104 by means of slidable rods 111, 112 having hooks at their outward ends, respectively, for engaging said shaft and having springs, as 113, for retracting said rods. Said arms 103, 104 have depending members 114, 115, connected by links 116, 117, to arms 118, 119, respectively, fixed to rock-shaft 86. Said arms 103, 104 are thereby constrained to act in unison. Depending from arm 118 is member 120 operatively connected by link 121 and roll 122 thereon with cam 123 fixed to shaft 5.

Tracks 109, 110 over the right hand edges of which rolls 107, 108 traverse, respectively, are supported by brackets depending from guideways 87, 88, as bracket 124 of guideway 87. Said tracks are each provided with a pair of adjustable cams for lifting gum-roll 102 from contact, when desired, with the label and tab carried by picker 10, to prevent the rolling up of the end of the label and tab by adhesion to said roll. As these pairs of cams are right and left du-

plicates a description of one pair will suffice for both, see Fig. 7. Track 109 is provided with slots 125, 126 in which are adjustably mounted blocks 127, 128, respectively. Block 127 has pivotally mounted thereon cam 129, lying against the side face of track 109, and adapted to swing in parallelism with said face. The operative end 130 of said cam projects slightly beyond the operative edge of said track and said cam is urged to operative position against pin 131 of block 127 by spring 132. Cam 133 is pivotally mounted on block 128 and has its operative edge 134 projecting slightly beyond the edge of track 109. Said cam is urged to one of its operative positions against pin 135 of block 128 by spring 136, and pin 137 in said block holds said cam in its other operative position when forced thereagainst the tension of spring 136. The provided adjustment for blocks 127, 128, carrying cams 129, 133, respectively, is to permit those cams to be shifted to accommodate various sizes of labels and consequent shifting of the position of the corresponding tab on picker 10. It will be obvious that either labels or tabs or two varieties of either may be used in my improved machine in place of the labels and tabs illustrated.

The operation of my improved machine is as follows: Receptacles 8 and 9 being supplied with labels and tabs, respectively, and a music sheet 17 or other article to be labeled and tabbed being placed on table 23 where its leading end may be located by suitable guides 138, 139, shaft 5 is started in clockwise direction, Fig. 1. Slide 22 is then in its rearward position and cam 34, through roll 33, link 32 and arm 30, rotates hollow shaft 11 in clockwise direction, thereby causing picker 10 to engage the uppermost label and tab in said receptacles, respectively, Figs. 1, 2 and 4. Coincident with the engagement of picker 10 with said label and tab, cam 62 starts to operate the piston of pump 50 to the left, Fig. 1, and valve 48, having its passage open from said pump to pipe 47, exhausts the air from picker 10, thereby causing said label and tab to adhere to picker shoes 12 and 13, respectively, Fig. 4.

At this time, gum having been supplied to gum box 89, gum rolls 92 and 93 are being rotated in the direction of their respective arrows, Fig. 2, and roll 102 is in contact with roll 93 and taking gum therefrom.

The continued rotation of cam 34 presently brings a lower portion of its face into engagement with roll 33 whereby, under the influence of spring 37, shaft 11 is rotated in anti-clockwise direction, thereby raising picker 10 with a label and tab on the face thereof to the position of Fig. 6. During the latter portion of the upward movement of picker 10, roll 102 starts downwardly with its rolls 107, 108 in contact with tracks 109, 110, respectively. Just before reaching the upper edge of picker 10 and the label thereon, said rolls 107, 108 encounter the operative ends of opposite cams, as end 130 of cam 129, whereby gum roll 102 is moved away from the end of the label on picker 10, and as rolls 107, 108 ride off the lower ends of said cams, roll 102 engages said label a short distance from its end and then rolls onwardly thereover, delivering gum to the face thereof, except for that portion near its upper end. It will be observed in Figs. 6 and 7 that the label on picker 10 protrudes slightly beyond the faces of tracks 109, 110, so that gum roll 102 may freely engage said label as it passes thereover.

Opposite cams, as 133, serve the same function for the upper end of the tab on said picker, toward gum roll 102 therefrom, as just described in connection with the upper end of the label. After roll 102 has traveled its full downward stroke, gumming the body portion of the tab but stopping short of the eyeleted portion thereof, said roll reverses its direction of travel and starts on its return movement. In so doing rolls 107, 108 encounter the operative ends of the lower cams as end 134 of cam 133, Fig. 7, and swing those cams upwardly until they encounter their respective stop pins as pin 137 to cam 133. This permits gum roll 102 to gum the upper end portion of the face of the tab, which portion failed to be gummed during the downward stroke of roll 102. When cams, as 133, encounter their stop pins as 137, the operative ends of these cams, as end 134 of cam 133, still project above the faces of their respective tracks, whereby rolls 107, 108 ride over those projecting ends, thereby fending roll 102 off from the bottom end of the label and permitting it to fall onto the face of the label near its bottom end, Fig. 7. Said roll 102 continuing its upward movement over the face of the label, its rolls 107, 108 presently encounter the upper cams, as 129, and swing those cams upwardly, thereby permitting roll 102 to gum the upper portion of the face of the label, which portion failed to be gummed during the downward stroke of roll 102. Said roll then continues its upward movement until it encounters roll 93 for a new supply of gum.

Picker 10 is then at liberty to descend, which it thereupon starts to do, caused by the movement of roll 35 up cam 36 under the influence of the forward movement to the right, Fig. 8, of slide 22. In the meantime roll 33 runs away from its cam 34, as slide 22 advances. The combined forward movement of slide 22 and the downward oscillation of picker 10 presently brings said picker into delivery position over the sheet on table

23. Just before said picker reaches the point of delivery of its label and tab onto said sheet, said slide and picker reach the limit of their movement to the right, with the picker poised just above the sheet on table 23. Thereupon toe 40, under cam 36, is lifted, thereby lifting the free end of cam 36 and therefore roll 35 thereon, thus causing picker 10 to descend and deliver its label and tab directly onto the sheet. During these described movements the piston of pump 50 has been moving to the left, whereby said pump continued to exhaust the air from the picker, thereby retaining the label and tab thereon, but just as the picker deposits the label and tab on the sheet, said piston has reached the end of its stroke and valve plug 51 is moved from the position of Figs. 1 and 6 to that of Fig. 8 thereby closing the connection to the pump and opening a passage to the outer air through connection 141, whereby the picker releases its hold on said label and tab.

The picker is then lifted and withdrawn from the position of Fig. 8 to that of Fig. 1 and the operation repeated.

In some cases it has been found efficient to make cam 34 of sufficient size and of suitable contour to supply therefrom all the movements of shaft 11, carrying picker 10, thereby dispensing with cam 36, roll 35 and arm 31, but I have found that the use of cam 36 and its appurtenances permits of more convenient adjustment in operation.

I claim:

1. In a labeling machine the combination of a label receptacle, a gumming station for the label, a support for the article to be labeled, an oscillatable shaft, a picker fixed to said shaft, said shaft being mounted for reciprocation in a path normal to the direction of its length, means for oscillating said shaft on a temporarily fixed axis to move the picker from the label receptacle to the gumming station and from the gumming station toward the article support, and means coacting with the oscillating means for reciprocating thereafter said shaft toward the article support to cause the picker to engage an article on said support.

2. In a labeling machine the combination of a label receptacle, a gumming station for the label, a support for the article to be labeled, an oscillatable shaft, a picker fixed to said shaft, said shaft being mounted for reciprocation in a path normal to the direction of its length, means for oscillating said shaft on a temporarily fixed axis to move the picker from the label receptacle to the gumming station and from the gumming station toward the article support, means for reciprocating thereafter said shaft toward the article support, and means for depressing the picker to cause it to engage an article on the article support after said shaft has completed its movement toward said article support.

3. In a labeling machine the combination of a label receptacle, a gumming station for the label, a support for the article to be labeled, an oscillatable shaft, a picker fixed to said shaft, said shaft being mounted for reciprocation in a path normal to the direction of its length, means for oscillating said shaft on a temporarily fixed axis to move the picker from the label receptacle to the gumming station and from the gumming station toward the article support, and means acting coincidently with the movement of the picker toward the article support for reciprocating said shaft toward said article support for causing the picker to engage an article on said support.

4. In a labeling machine the combination of a label receptacle, a gumming station for the label, a support for the article to be labeled, an oscillatable shaft, a pneumatic picker fixed to said shaft, means for exhausting the air from said picker for causing the picker to engage a label in said label receptacle, means for oscillating said shaft on a temporarily fixed axis to move the picker from the label receptacle for delivering a label to the gumming station and then away from said gumming station toward the article support, means for reciprocating said shaft toward the article support to cause the picker to deliver the label upon an article on the article support, means for gumming said label at the gumming station, and means for admitting air to said picker after it has delivered the label to the article.

5. In a labeling machine the combination of a slide, a picker pivotally mounted on said slide, a label receptacle, a gumming station for the label, a support for the article to be labeled, cam actuated means for oscillating the picker from the label receptacle to the gumming station while the slide is at rest, means for moving the slide, and means for simultaneously oscillating the picker for moving the picker from the gumming station to the article support.

6. In a labeling machine the combination of a slide, a picker pivotally mounted on said slide, a label receptacle, a gumming station for the label, a support for the article to be labeled, cam actuated means for oscillating the picker from the label receptacle to the gumming station while the slide is at rest, means for moving the slide and means for simultaneously oscillating the picker for moving the picker from the gumming station to the article support, and means for depressing the picker directly onto an article on the article support.

In witness whereof, I hereby affix my signature this 20″ day of January, 1920.

JAMES O'CONNOR.