June 23, 1942. G. W. VON HOFE 2,287,579

LABELING MACHINE

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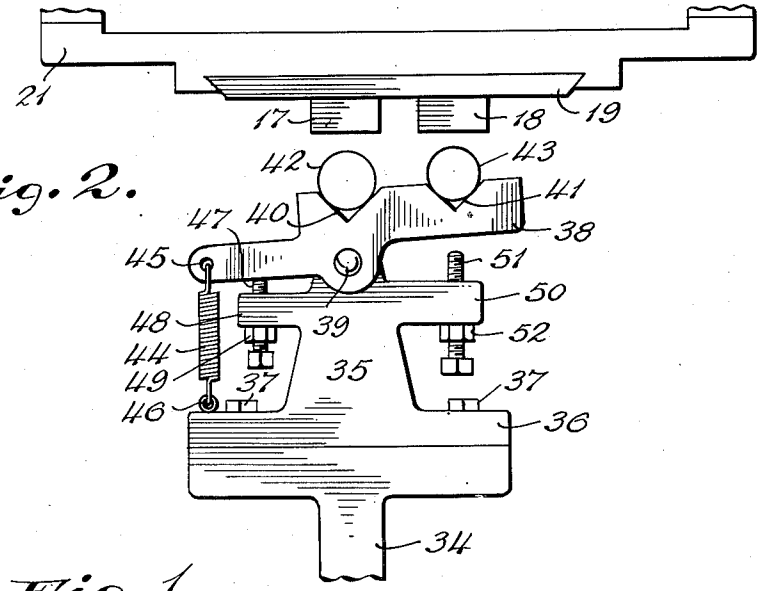


Fig. 2.

Fig. 1.

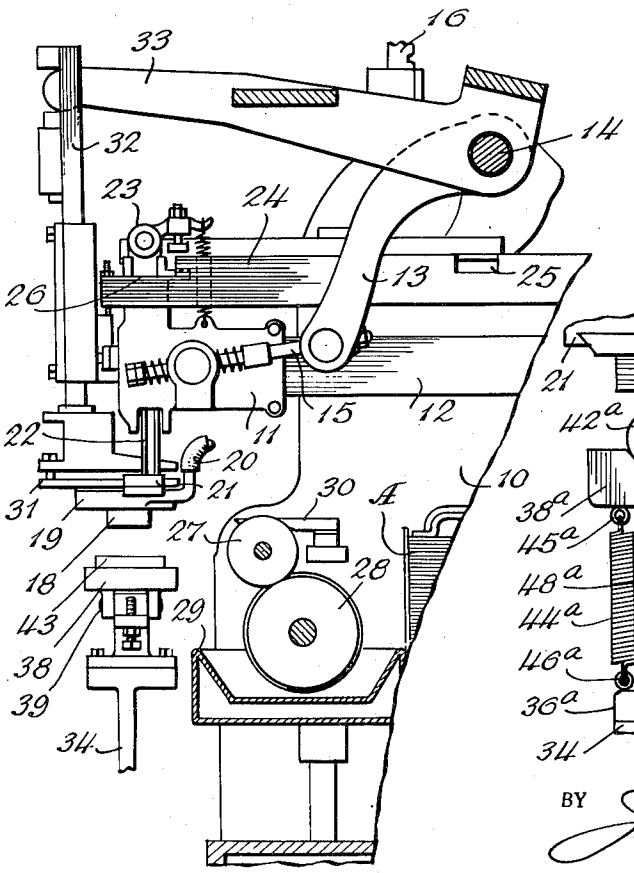
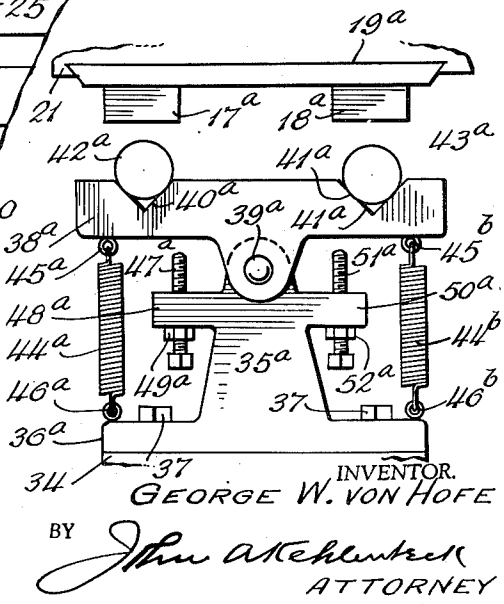


Fig. 3.



INVENTOR.
GEORGE W. VON HOFE

BY John A. Kehlenbeck

ATTORNEY

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LABELING MACHINE

George W. von Hofe, Bound Brook, N. J., assignor to New Jersey Machine Corporation, Hoboken, N. J., a corporation of New Jersey

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The invention relates to labeling machines and has for its object to provide a machine of simple construction whereby a plurality of labels may be concurrently applied in an efficient manner to a plurality of articles for which said labels are designed or in different positions upon a given article. The invention further contemplates the provision of a novel supporting means for supporting the articles at the label applying station of the machine in a manner to insure efficient application of the labels to said articles at all times. Other objects will appear from the description hereinafter and the features of novelty will be pointed out in the claims.

In the accompanying drawing, which illustrates examples of the invention without defining its limits, Fig. 1 is a fragmentary sectional elevation of a labeling machine embodying the novel features; Fig. 2 is a detail view on an enlarged scale of the article supporting means and associated elements, and Fig. 3 is a similar view of another form of said article supporting means.

As shown in the drawing the labeling machine comprises a suitable frame 10 on which the operating instrumentalities are conveniently mounted. The latter include means whereby a predetermined number or plurality of labels are concurrently transferred from suitable sources of supply at the label pick-up station of the machine to the label applying station thereof for concurrent application to the articles supported in label receiving positions at the latter station. For purpose of disclosure and description the illustrated machine is shown in a form arranged to concurrently transfer and apply two labels to two separate articles.

In its illustrated form the label transfer and applying means consists of a carriage 11 slidably mounted on a horizontal guide rail 12 suitably fixed in place on the frame 10. The carriage 11 is reciprocated on said rail 12 between the pick-up and label applying stations of the machine by suitable mechanism exemplified by the arm 13 on the rock shaft 14 which is journalled on the frame 10 in any conventional manner. The arm 13 is connected with the carriage 11 for instance by means of a yieldingly mounted rod 15, and the shaft 14 is rocked on its axis in proper timing by conventional means exemplified by the vertically movable rack 16. The transfer and applying means in the illustrated machine further comprises suction controlled means including a plurality of suction heads corresponding in number to the number of labels which are to be concurrently applied to the articles for which said labels are intended. The selected example of the novel machine shows two suction heads 17 and 18 carried in spaced relation by and depending from a suction plate 19 connected with a source of suction in any convenient manner as by means of a flexible tube 20. Provision is made in any well-known way for controlling the suction in the heads 17 and 18 and plate 19 in proper timing in an operative cycle of the machine.

The suction plate 19 as shown in Fig. 2 is mounted in a yoke or the like 21 preferably so as to be readily removable therefrom to permit replacement and substitution of plates 19 with varying arrangements of suction heads. The yoke or the like 21 forms part of or is carried by a member 22 slidably mounted on the carriage 11 for vertical reciprocation thereon as will appear more fully hereinafter. The member 22 is provided with a roller 23 arranged to traverse a second fixed rail 24 suitably mounted on the frame 10 and having recesses 25 and 26 spaced apart to enable said member 22 with the suction plate 19 and suction heads 17 and 18 to move downwardly relatively to the carriage 11 at the pick-up station and label applying station respectively for the purpose to be more fully described hereinafter.

In the travel of the carriage 11 from the pick-up station to the label applying station, that is from right to left in Fig. 1, the roller 23 in cooperation with the second rail 24 maintains the member 22 at an elevation on the carriage 11 in which the labels held by suction on the suction heads 17 and 18 pass in adhesive receiving relation to an adhesive applying means and each receive a surface coating of adhesive therefrom. In its illustrated form the adhesive applying means consists of an adhesive applying roller 27 in rolling engagement with an adhesive transferring roller 28, said rollers 27 and 28 being rotatably supported in the machine and operated in any convenient manner. The roller 28 dips into a supply of adhesive in a container 29 suitably supported on the frame 10 as shown in Fig. 1 and transfers adhesive therefrom to the applying roller 27 in the well-known way. Stripping fingers 30 may be mounted in proper co-operative relation to the applying roller 27 to prevent the labels from being carried around the circumferential surface thereof as the coating with adhesive proceeds. During the return movement of the carriage 11 and its associated elements from left to right in Fig. 1 or in other words back to the pick-up station, the member 22 occupies

an elevated position on said carriage 11 in which the suction heads 17 and 18 pass above the adhesive applying roller 27 without engaging the same, so as to prevent said suction heads 17 and 18 from becoming coated and soiled with adhesive. Any well-known means may be incorporated in the machine for effecting these results, and any conventional mechanism may be utilized for reciprocating the member 22 with the suction heads 17 and 18 at the pick-up and label applying stations.

To complete the application of the labels to the articles, the machine is provided with pressing means operated to press the labels into final adhesive contact with said articles subsequent to the initial application by the suction heads 17 and 18. As shown the pressing means includes a pressure device 31 carried by a plunger 32 vertically reciprocable on the frame 10 in properly timed operative sequence, for instance by means of a lever 33 fulcrummed on the shaft 14 and operated by any conventional mechanism.

In addition to the parts so far described, the machine includes supporting means for supporting the articles in label receiving position at the label applying station, said supporting means being constructed in a novel manner to co-operate with the suction heads 17 and 18 or their equivalent and the pressure device 31 respectively in automatically setting said articles in the most efficient label receiving and pressing positions.

The supporting means is suitably mounted upon the frame 10 for instance by means of a bracket 34 or the like preferably so as to be removable at will for purposes of replacement and substitution. In the form shown in Fig. 2 the supporting means comprises a standard or pivot member 35 projecting upwardly from a base 36 which rests upon the bracket 34 and is removably fastened thereto by screws or the like 37. A holding member or plate 38 is pivotally connected at 39 with said standard 35 and extends transversely thereto as illustrated in Fig. 2. The holding member or plate 38 is provided with a plurality of seats and in the illustrated example includes two seats 40 and 41 of predetermined dimensions and form designed to receive articles 42 and 43 respectively and to hold or support said articles in label receiving position. The articles 42 and 43 shown in the drawing are intended to exemplify bottles or other cylindrical articles, it being understood that articles of other types and shapes may be accommodated in said seats 40 and 41 and maintained thereby in proper label receiving positions with equal efficiency; in some instances the design of the seats 40 and 41 may be varied in shape and size in accordance with the type of articles 42 and 43 which are to be accommodated thereby. In any case the supporting means is mounted in the machine and the seats 40 and 41 are located thereon so as to properly co-operate with the suction heads 17 and 18 or their equivalent in the application by the latter, of the labels to the articles 42 and 43 in the respective seats. In the specific arrangement illustrated in Fig. 2 the seat 40 is arranged at an intermediate point of said holding member or plate 38 and in the assembled condition of the supporting means lies above and in registry with the pivot 39, while the seat 41 is located near one free end of said member 38 in off-set relation to said pivot 39. A relatively light spring 44 is connected at 45 with the opposite end of said member or plate 38 and with an eyelet 46 on the base 36 and normally maintains said member or plate 38 in contact with an adjustable stop shown in the form of a stop screw 47 mounted in threaded engagement with a lug 48 projecting outwardly from one side of said standard or pivot member 35 as shown in Fig. 2; a lock nut 49 may be provided for fixing the screw 47 in an adjusted position. A second lug 50 projects from the opposite side of said standard or pivot member 35 and carries a second adjustable stop in the form of a stop screw 51 in threaded engagement with said lug 50 and extending upwardly therefrom in registry with the holding member or plate 38 and preferably in substantial alignment with the seat 41 thereof; the second stop screw 51, the purpose of which will appear more fully from the description hereinafter, may also be fixed in an adjusted position by means of a lock nut 52.

In the form shown in Fig. 3 the supporting means likewise comprises a standard or pivot member 35^a projecting upwardly from a base 36^a which similarly rests upon the bracket 34 and is removably secured thereto by screws or the like 37. A holding member or plate 38^a is pivotally connected at 39^a with said standard 35^a and extends transversely thereto in an approximately horizontal direction and preferably in substantially symmetrical relation to said standard 35^a as illustrated in Fig. 3. The holding member 38^a also is provided with a plurality of seats and in the illustrated example, as in the first form, includes two seats 40^a and 41^a of predetermined dimensions and form to receive articles 42^a and 43^a respectively and to hold or support said articles in label receiving position. As in the form first described the articles 42^a, 43^a shown in Fig. 3 are intended to exemplify bottles and other cylindrical articles. It will be understood that in the form under discussion that articles of other types and shapes may be accommodated in said seats 40^a and 41^a and maintained thereby in proper label receiving position, and that the seats may be varied in shape and size in accordance with the type of articles 42^a and 43^a which are to be accommodated thereby. In this case the supporting means is also mounted in the machine and the seats 40^a and 41^a are also located thereon so as to properly co-operate with suction heads 17^a and 18^a of equivalent label carrying devices in the application of the labels to the articles 42^a and 43^a in the seats 40^a and 41^a. It will be noted that the latter are located on the holding member 38^a at points substantially equidistant from the pivot 39^a upon opposite sides thereof, and that the suction heads 17^a and 18^a are correspondingly spaced apart and located upon the suction plate 19^a. This plate 19^a corresponds to the suction plate 19 and likewise is mounted in the yoke 21 preferably so as to be removable therefrom at will. Relatively light springs 44^a and 44^b are connected at 45^a and 45^b respectively with opposite ends of the holding member or plate 38^a and at 46^a and 47^a respectively with the base 36^a; the springs 44^a and 44^b serve to normally maintain the holding member 38^a in a horizontal balanced position on the standard 35^a as illustrated in Fig. 3. The supporting means now being described includes two adjustable stops shown in the form of stop screws 47^a and 51^a in threaded engagement with lugs 48^a and 50^a respectively, said lugs projecting outwardly from the standard 35^a in opposite

directions upon opposite sides thereof. It will be understood that the stop screws 47ª and 51ª project upwardly from the respective lugs 48ª and 50ª in registry with predetermined parts of the holding member or plate 38ª and that said stop screws may be fixed in adjusted positions respectively by lock nuts 49ª and 52ª.

In practice during an operative of the illustrated machine the rock shaft 14 is rocked on its axis by suitable mechanism to correspondingly actuate the arm 13. The operation of the latter reciprocates the carriage 11 lengthwise of the stationary rail 12 to carry the label conveying and applying means as exemplified by the suction heads 17 and 18 and the suction plate 19 with their associated parts, between the label pick-up station and the label applying station of the machine. At the label pick-up station the roller 23 of the member 22 is in registry with the recess 25 of the second fixed rail 24 and the member 22 may accordingly be moved downwardly to bring the suction heads 17 and 18 into engagement with the label supply in which the labels are suitably arranged as for instance in the form of stacks and in such position is to be properly contacted by said suction heads 17 and 18 as the above operations take place. At the proper moment suction is developed in the suction heads 17 and 18 for instance through the tube 20 and draws the two terminal labels from said supply into surface contact with the lower faces of the suction heads 17 and 18 respectively; in other words, two terminal labels are simultaneously picked up by said suction heads 17 and 18. When this has occurred the member 22 is elevated on the carriage 11 and the latter is shifted on the rail 12 to the left in Fig. 1, the roller 23 meanwhile traversing the second rail 24 to maintain said member 22 at the aforesaid elevation. The latter is such that the suction heads 17 and 18 with the previously picked up labels held on the surfaces thereof are caused to pass in adhesive receiving relation to the adhesive applying roller 27 whereby the latter imparts a coating of adhesive to the exposed surfaces of each of said labels. The continuing travel of the carriage 11 on the roller 12 to the left in Fig. 1 carries the adhesive coated labels to the applying station on which the roller 23 of the member 22 is in registry with the recess 26 of the second rail 24. At this point the member 22 is moved downwardly on the carriage 11 to correspondingly move the suction heads 17 and 18 downwardly and cause the adhesive coated labels carried thereby to be deposited concurrently upon the articles carried in label receiving position by either of the article supporting means shown in the drawing. In proper synchronism with the operative cycle of the machine suction is discontinued in the suction heads 17 and 18 which are then raised by an upward movement of the member 22 whereby the labels previously carried by said suction heads 17 and 18 remain in adhesive connection with the articles on the supporting means. At this stage the elevation of the member 22 on the carriage 11 is such that the suction heads 17 and 18 during the return movement of the parts to the label pick-up station pass above and out of adhesive receiving relation to the adhesive applying roller 27. Subsequently to the initial application of the labels to the articles by the suction heads 17 and 18 and in proper timing with the return movement of the carriage 11 and its associated parts, the lever 33 is pivotally actuated to move the plunger 32 downwardly and thereby bring the pressure device 31 into action to concurrently press said labels upon said articles whereupon the labeled articles may be removed from the machine in any conventional manner.

Referring to the article supporting means of Fig. 2 it will be noted that normally the holding member or plate 38 occupies a slightly inclined position in which the article 43 is at a somewhat higher level than the article 42. With this arrangement as the suction heads 17 and 18 are moved downwardly in the manner previously described the suction head 18 with its label will come into contact with the article 43 first, and as the downward movement of the suction head continues will develop a downward pressure on said article 43 which will swing the holding member or plate 38 on its pivot 39 against the tension of the spring 44 and thereby permit the suction head 17 with its label to properly contact the article 42 on said holding member or plate 38. The same is true in the operation of the pressure device 31 which first contacts the previously applied label on the article 43 and subsequently contacts the label previously applied to the article 42. In each instance as the holding member or plate 38 is pivotally actuated in the manner described the stop screw 51 or its equivalent, in co-operation with the member or plate 38, will serve to resist the operative effect of the pressure device to enable the latter to efficiently complete the application of the label particularly to the article 43. As the suction heads 17 and 18 and the pressure device 31 are raised in the manner previously set forth the spring 44 will restore the holding member or plate 38 to its initial inclined position in contact with the stop screw 47, as illustrated in Fig. 2. With this arrangement of supporting means articles of different transverse dimensions may be concurrently and efficiently applied simply by placing the larger article in the seat 41 of the holding member or plate 38 as exemplified by the article 43 in Fig. 2. As this larger article 43 is engaged by the suction head 18 it will be depressed thereby to enable the suction head 17 with its label to contact the smaller article such as 42 in the operation of applying the label thereto.

In the case of the supporting means shown in Fig. 3 and assuming that the articles to be labeled are identical with each other in form and dimensions, the suction heads 17ª and 18ª will bring their labels concurrently into adhesive contact with said articles 42ª and 43ª, and the pressure device 31 likewise will concurrently engage both articles 42ª and 43ª to concurrently complete the application of the labels thereto. If either one of the articles 42ª or 43ª is of larger dimensions than the other, the larger one of the two articles will be first engaged by the co-operating suction head and the holding member or plate 38 will be pivotally actuated or rocked against the tension of one of the springs 44ª or 44ᵇ to enable the other suction head to contact the other article so that even in such case both labels will be concurrently applied to said articles. The subsequent operation of the pressure device 31 will correspondingly rock the holding member or plate 38ª to thereby concurrently complete the adhesive application of both labels to both articles 42ª and 43ª.

The machine is simple in construction, and operates to efficiently and concurrently apply a

plurality of labels to a plurality of articles. Instead of applying a plurality of articles concurrently to different articles the article supporting means may be arranged to support a given article in position to concurrently receive a plurality of labels at different predetermined points of its surface. If the different parts of such article to which the different labels are to be applied are not located in the same label receiving plane, the holding member or plate 38 or 38a will be rocked by the action of the suction heads or their equivalent to automatically position said different parts of said given article in proper label receiving position. The pressure device 31 will correspondingly adjust the article by the rocking of the holding member or plate 38 or 38a in a manner to compensate for their inequalities of the article being labeled or differences in the position of the label receiving parts thereof.

In all forms the article supporting means in cooperation with the label applying means automatically sets the plurality of articles or different parts of given articles in proper label receiving position. It will be understood that the article supporting means may be constructed in other ways than shown to secure the same results.

Although the present invention has been described in conjunction with preferred embodiments, it is to be understood that modifications and variations may be resorted to without departing from the spirit and scope of the invention, as those skilled in the art will readily understand. Such variations and modifications are considered to be within the purview and scope of the claims.

I claim:

1. In a labeling machine, the combination of movable supporting means for articles to be labelled, and applying means for effecting the simultaneous application of a plurality of labels to said articles and in co-operation with the latter for adjusting said movable supporting means to automatically set said articles in the most efficient label receiving position.

2. In a labeling machine, the combination of movable supporting means for simultaneously supporting a plurality of articles in label receiving positions, and applying means for simultaneously applying labels to said plurality of articles, and in co-operation with the latter for adjusting said movable supporting means to automatically set said articles individually in the most efficient label receiving positions.

3. In a labeling machine, the combination of supporting means for simultaneously supporting a plurality of articles in label receiving positions, at least one of said articles being rigidly supported and another of said articles being yieldingly supported, and applying means for effecting the application of labels to said plurality of articles simultaneously and for acting on said yieldingly supported article to adjust said supporting means to automatically set said last named article in proper label receiving position relatively to said rigidly supported article.

4. In a labeling machine, the combination of a rocking member for simultaneously supporting a plurality of articles to be labeled, and a plurality of co-acting label applying devices each effective to apply a label to one of said articles, said co-acting applying devices in co-operation with said articles adjusting said rocking member to automatically set said articles individually in proper relative label receiving positions.

5. In a labeling machine, the combination of a rocking member provided with a plurality of relatively fixed seats each adapted to accommodate an article to be labeled, a spring effective on said rocking member to yieldingly maintain it in normal position, and a plurality of co-acting label applying devices each effective to apply a label to one of said articles, said rocking member and its spring in co-operation with said co-acting applying devices acting on said articles automatically setting the latter in proper relative label receiving positions.

6. In a labeling machine, the combination of a stationary standard, a holding member pivotally connected at an intermediate point with said standard and provided with a plurality of article receiving seats at least one of which is in registry with said pivot and another in off-set relation thereto, applying means co-operating with said holding member for effecting the application of labels simultaneously to articles in said seats, pressure means for completing the application of said labels by pressure, and an adjustable stop co-operating with said holding member in registry with said off-set seat to resist the pressure of said pressure means.

7. In a labeling machine, the combination of a stationary standard, a rocking member pivotally mounted on said standard and provided with a plurality of seats for accommodating articles to be labeled, a spring connected with said rocking member, a stop for arresting pivotal movement of said rocking member, and a plurality of coacting label applying devices for applying labels simultaneously to the articles in the respective seats.

8. In a labeling machine, the combination of a stationary standard, a rocking member pivotally mounted on said standard and provided with a plurality of seats for accommodating articles to be labeled, a spring connected with said rocking member, a stop for arresting pivotal movement of said rocking member under the influence of said spring, a plurality of co-acting label applying devices for applying labels simultaneously to the articles in the respective seats, pressure means for completing the application of said labels by pressure, and a second stop co-operating with said rocking member to resist the pressure of said pressure means.

9. In a labeling machine, the combination of a stationary standard, a rocking member pivotally connected at an intermediate point with said standard and provided with a pair of seats located upon opposite sides of said pivotal connection for receiving articles to be labeled, springs connected with opposite ends of said rocking member for normally maintaining the same in balance, and a plurality of co-acting label applying devices for applying labels simultaneously to the articles in the respective seats.

10. In a labeling machine, the combination of a stationary standard, a rocking member pivotally connected at an intermediate point with said standard and provided with a pair of seats located upon opposite sides of said pivotal connection in approximate symmetrical relation thereto for receiving articles to be labeled, springs connected with the opposite ends of said rocking member for normally maintaining the same in balance, a plurality of co-acting label applying devices for applying labels simultaneously to the articles in the respective seats, said rocking member and its springs in co-operation with said co-acting label applying devices auto-

matically setting said articles in proper relative label receiving positions, and stops for arresting the rocking movements of said rocking member.

11. In a labeling machine, the combination of a stationary standard, a holding member pivotally connected at an intermediate point with said standard and provided with a plurality of article receiving seats at least one of which is in registry with said pivot and another in offset relation thereto, a horizontally reciprocable carriage, a member vertically reciprocable on said carriage, a pair of co-acting suction heads carried by said member for carrying labels and applying the same simultaneously to articles in said seats, and pressure means for completing the application of said labels by pressure.

12. In a labeling machine, the combination of a stationary standard, a rocking member pivotally connected at an intermediate point with said standard and provided with a pair of seats located upon opposite sides of said pivotal connection for receiving articles to be labeled, a horizontally reciprocable carriage, a member vertically reciprocable on said carriage, a pair of co-acting suction heads for carrying labels and applying the same simultaneously to the articles in said seats, and pressure means for completing the application of said labels by pressure.

GEORGE W. VON HOFE.