M. E. PETERS, G. H. FATH & A. F. MILLER.
PNEUMATIC BLANK TRANSFERRING MECHANISM,
APPLICATION FILED FEB. 8, 1916.

1,235,499. **Patented July 31, 1917.**

3 SHEETS—SHEET 1.

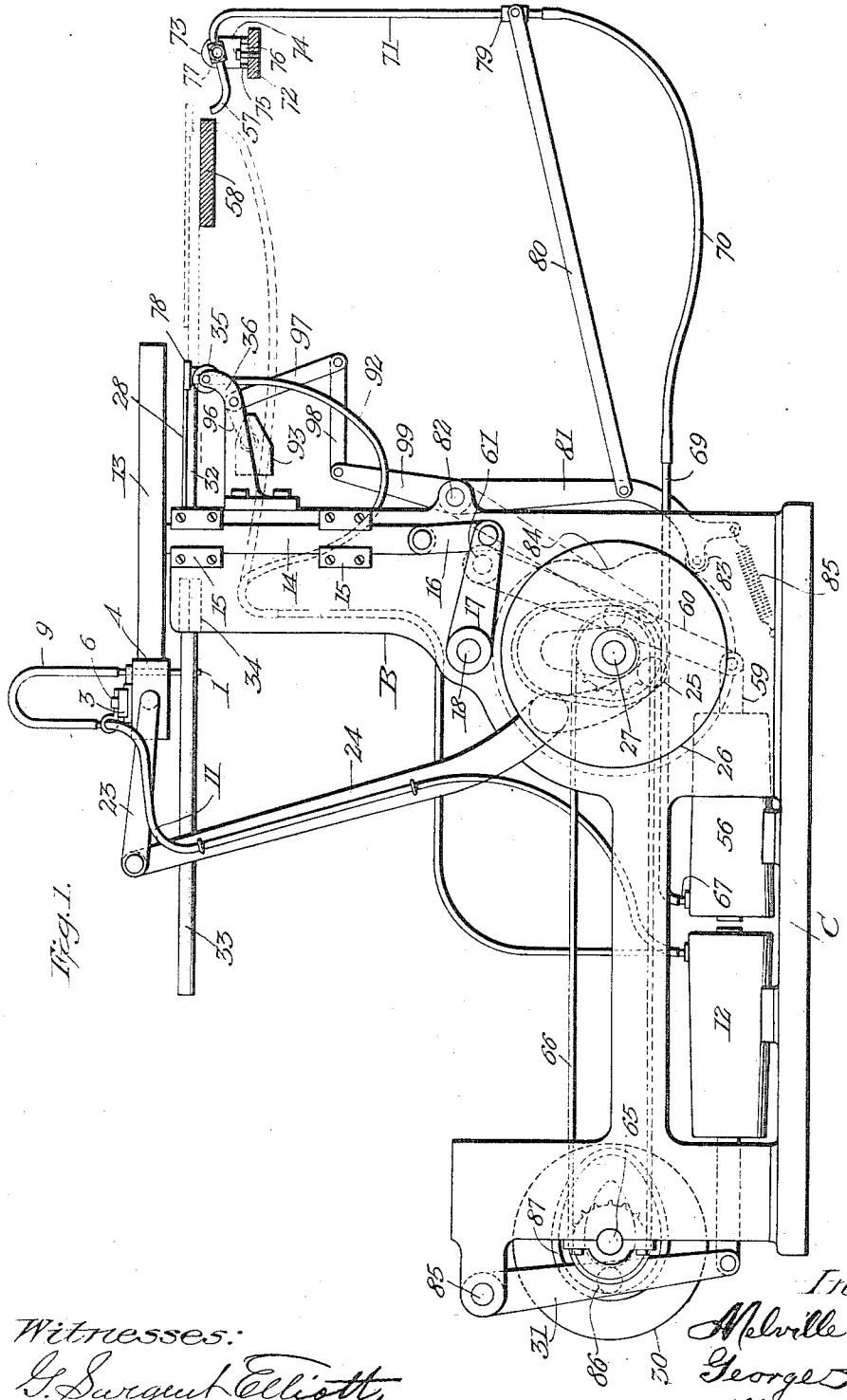


Fig. 1.

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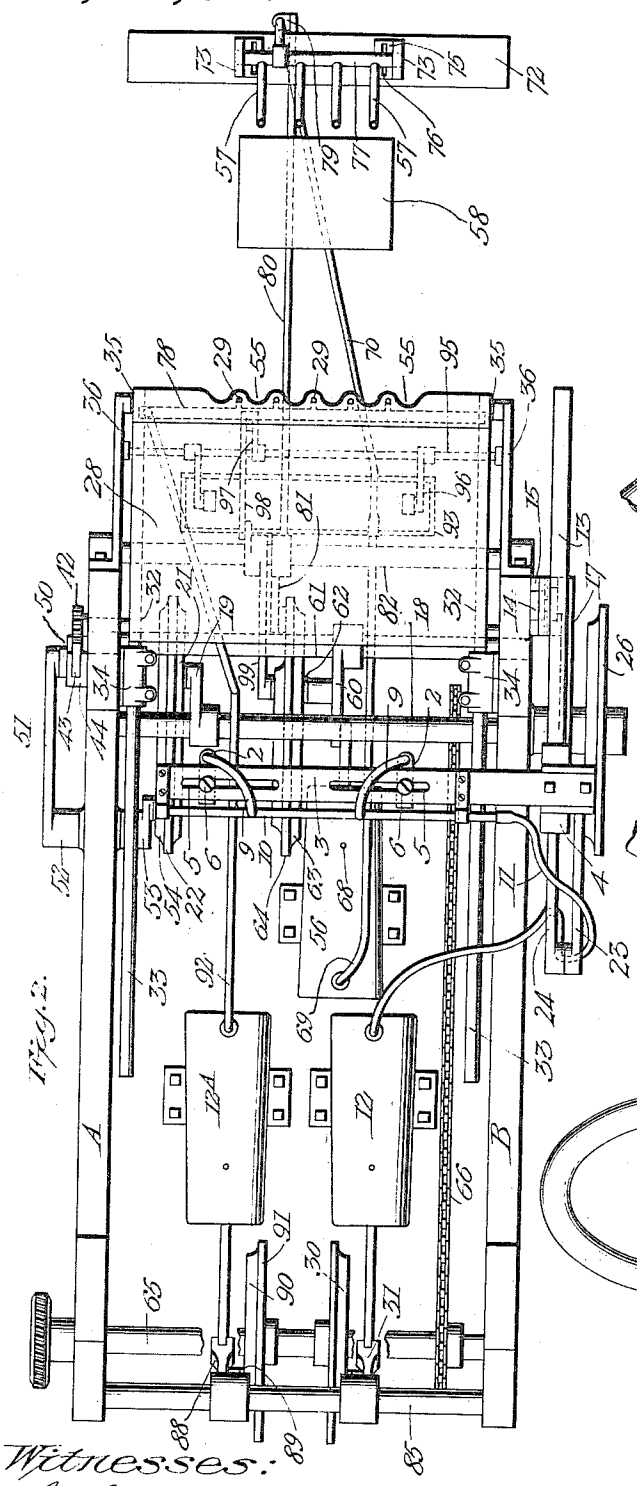


Fig. 2.

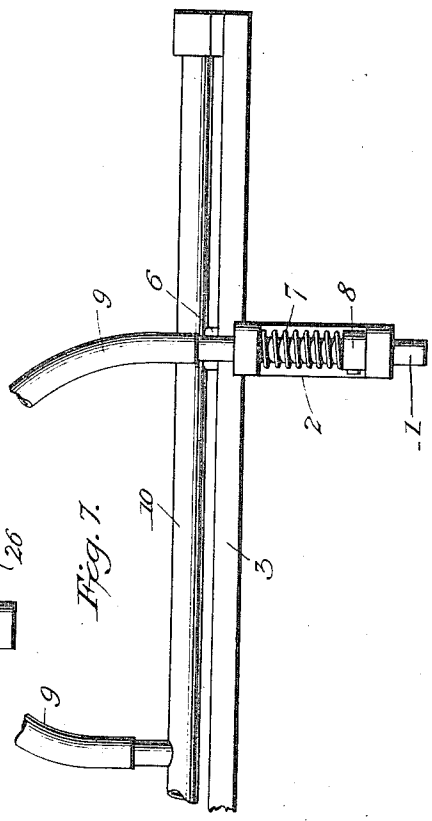


Fig. 7.

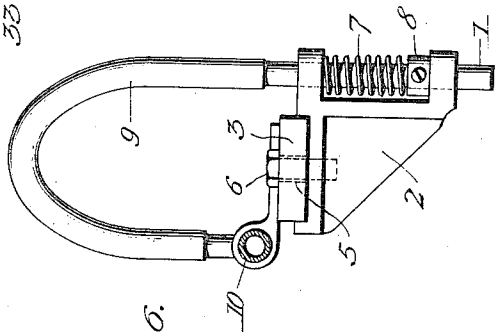


Fig. 6.

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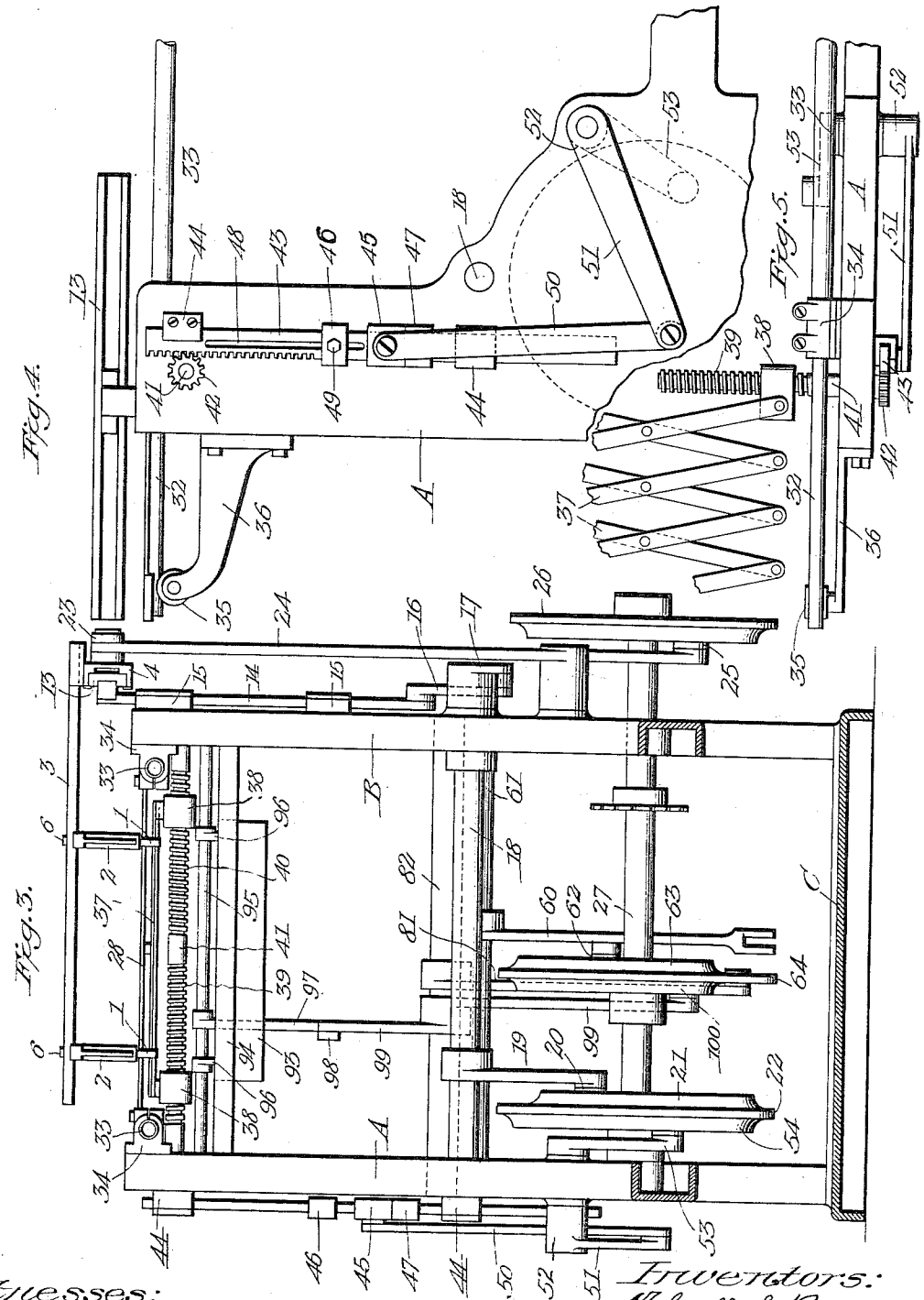
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

MELVILLE E. PETERS, GEORGE H. FATH, AND ALBERT F. MILLER, OF DENVER, COLORADO, ASSIGNORS TO THE PETERS PATENT RIGHTS COMPANY, OF DENVER, COLORADO, A CORPORATION OF COLORADO.

PNEUMATIC BLANK-TRANSFERRING MECHANISM.

1,235,499. Specification of Letters Patent. Patented July 31, 1917.

Application filed February 8, 1916. Serial No. 76,991.

To all whom it may concern:

Be it known that we, MELVILLE E. PETERS, GEORGE H. FATH, and ALBERT F. MILLER, citizens of the United States of America, residing at the city and county of Denver and State of Colorado, have invented a new and useful Pneumatic Blank-Transferring Mechanism, of which the following is a specification.

Our invention relates to a new pneumatic transfer mechanism for picking up and transferring either wet or dry gummed or ungummed printed or unprinted blanks or labels of paper, silk, leather, or other suitable material; and the objects of our invention are:

First, to provide means for transferring blanks from any blank feeding device to a table, from which they may be taken by the machine that is to use them.

Second, to provide a transfer mechanism that will transfer gummed blanks to box wrapping machines. And

Third, to provide a simple and reliable adjustable throw reciprocal stroke blank transferring mechanism.

We attain these objects by the mechanism illustrated in the accompanying drawings, in which:

Fig. 1, is a side elevation of our improved blank or label transferring machine.

Fig. 2, is a plan view of the same.

Fig. 3, is a front view, showing the cams and other mechanism for operating the transferring mechanism.

Fig. 4, is an elevation of a portion of the rear end of the machine taken from the opposite side to that shown in Fig. 1.

Fig. 5, is a plan view of one side of the rear portion of the machine, showing more clearly the connection between the lazy tongs and its operating screw rod.

Fig. 6, is a side elevation of one of the traction tubes and its supporting bracket. And

Fig. 7, is a front view of Fig. 6, a portion only of the bracket-supporting bar and the air supply tube being shown.

Similar letters of reference refer to similar parts throughout the several views.

Gummed blanks or dry blanks or labels are fed to our blank transferring mechanism by any blank feeding mechanism, but in case gummed and tempered blanks are fed to it they may be fed to it by an endless gripper apron conveyer, such as is illustrated in our pending application Serial No. 30471 filed May 25, 1915, for a pneumatically controlled and automatically operating blank gumming machine.

This particular blank conveyer is provided with aprons and blank grippers that hold the blanks out flat as they feed them along, and the grippers release the blanks one at a time in operative relation to the blank lifting pneumatic air suction blank gripping tubes of our present invention, which are constructed as follows:

The air suction tubes 1 that grab and lift the blank at the grippers' releasing station of the conveyer are supported in clips 2 that are adjustably mounted on a cross bar 3 that extends across the machine and is secured at one end to a reciprocating block 4. The cross bar is provided with slots 5 and the clips are secured in adjusted positions on this bar in these slots by cap screws 6 which are arranged to project through the slots and clamp the clips to the cross bar 3. The clips project forward from the bar and are provided with lug portions in which the air suction tubes 1 are secured to stand in vertical planes, and they are provided with springs 7 and collars 8 that enable them to bear with a yielding pressure against the blanks. We illustrate but two of these air suction tubes, but more may be used if desired.

The lower ends of these tubes are arranged to rest directly on the blanks, while their upper ends are connected to tubes 9, which connect with a pipe 10, which connects with a hose or pipe 11, that extend to the air pump 12 which is secured to the bed plate of the machine, on which our blank transferring mechanism is placed. The block 4 to which this air tube supporting cross bar 3 is secured is reciprocally mounted on a horizontally arranged guide bar 13, which is fixed to the upper end of a vertically arranged reciprocating bar 14 that is slidably mounted in cleats 15 that are secured to the adjacent side frame B of the machine, and this guide bar and the vertically arranged bar have a short vertical movement which is effected by a connecting rod 16 that is pivotally attached at one end to the lower end of the vertically reciprocating bar

14 and at its opposite end is secured to a lever 17 that is rigidly secured upon the adjacent end of a rock shaft 18 that is mounted in the side frames A and B of the machine. Rigidly mounted on this shaft 18 is a lever 19, the opposite end of which is provided with a roller 20 that is arranged to engage a cam 21 that is formed on the cam disk 22 which is secured on a shaft 27.

A connecting rod 23 is pivotally connected at one end to the reciprocating block 4 and at its opposite end it is pivotally secured to the upper end of a vertically disposed rock arm 24, which is pivotally secured adjacent to its lower end by a bolt to the adjacent side of the side frame B of the machine. The lower end of this rock arm is provided with a roller 25 which is arranged to engage a cam surface formed on a cam disk 26 which is mounted on the shaft 27. When a blank arrives at its releasing station, the guide bar, the cam 21 and the rock arm 17 instantly cause the vertically reciprocating bar 14 and the horizontal guide bar 13 to instantly drop, and in doing so the inlet apertures of the air suction tubes 1 drop down on top of and against the advance edge of the blank and by an air suction impulse, grip the blank to the tubes 1. The next instant the horizontal guide bar 13 is raised up to the top of the upward stroke of the vertical bar's vertical movement by the cam 21 and rock arm 17 and the connecting rod 16, which upward movement lifts the air suction tubes and the blank enough above the conveyer belt to allow the blank to clear the same.

The next instant the air tubes and the blank and the block are shot forward on the horizontal guide bar 13 by the rock arm 24 and cam 26 and the connecting rod 23 over onto the top of a flat thin table portion 28, which may be made of any suitable material or metal, but which preferably consists of a flat smooth sheet of aluminum. The instant the air suction tubes arrive at their blank dropping station on this table, the cam 21 and rock arm 19 cause the vertical reciprocating lever to drop and the horizontal guide bar 13 and the air suction tubes 1 to drop with the blank and deposit it on the front edge of the table 28 over a straight row of air suction apertures 29 that extend transversely across the table along and underneath the edge portion of the blank where it is deposited by the air suction tubes 1, the forward stroke of the reciprocal movement of which is so relatively arranged with the table and its row of air suction apertures that air suction tubes drop and press the advance edge of the blank directly on top of and against the air suction apertures when the air suction impulse of the air suction tubes is broken by the reverse movement of the piston of the air pump 12, which is operated by a cam 30 and lever mechanism 31, to operatively create a suction impulse in the tubes at the instant a blank is released by the grippers and to break this impulse at the instant the air tubes deposit the blank on top of the air suction apertures of the table.

Then instantly after the air tubes 1 have deposited the blank, they are again lifted by the cam 21 and rock arm 19 and are then instantly returned on their backward stroke, and when they arrive at their starting point they are ready to drop down onto another blank at the feeding station or at the blank apron gripper conveying releasing station.

The blank is now deposited on the table and is held there by the air suction force, but it still has one more forward movement to make to place it in position to be discharged entirely from the mechanism of blank transferring machine.

This last movement is necessary to move the gummed and tempered blanks quickly into a position in which they can be quickly gripped by air suction device onto the machine that is to make use of them. If, however, the blank is a gummed and tempered blank, it is shot directly onto the platen of a box covering machine. It is also necessary in order to provide means by which blanks of different sizes may be moved different distances in order to connect in proper order and time with the feed movements of the box covering machine with which our blank transfer mechanism is connected. This last forward movement is effected by bodily shooting the table upon which the blank has been deposited by the air suction tubes and with the blank upon it forward a predetermined distance. To accomplish this, the table is secured along its sides to the tubes 32 which are slidingly mounted within tubes 33 that are clamped to blocks 34 which are secured to the side frames A and B of the machine to which our blank transferring mechanism is attached. The forward ends of the tubes 32 rest on rollers 35 that are secured to the ends of bracket 36 that are attached to the rear edges of the side frames. The front edge portion of the table is secured at its center to the meeting ends of the folding and opening members 37 of lazy tongs device, the rear ends of which are connected to a pair of nut-blocks 38 that are threadedly mounted on right and left handed threaded portions 39 and 40 of a small shaft 41 which is journaled in bearings formed in the side frames of the machine. One end of this threaded shaft extends beyond the frame A and upon its end a gear 42 is secured, which meshes with a vertical rack bar 43 that is slidably mounted in cleats 44 that are secured to the adjacent side frame of the machine. A sliding block 45 is mounted on the

rack bar 43 which operates this rack bar by engaging two collars 46 and 47, the lower collar 47 being fixed and positioned so that the downward movement of the block strikes it and moves it to draw the table back to its normal position and close up the lazy tongs. The upper collar is adjustable in a slot 48 formed in the rack bar, by means of a screw 49, and is set to let the table and the lazy tongs move any part of their full reciprocal stroke desired by the operator. This is accomplished in this manner: As the block slides on the rack bar it does not start to raise the rack bar until it strikes the collar 46 and if the collar is down to the bottom of the slot the rack bar will be raised high enough to rotate the pinion to move the table and its lazy tongs to the full extent of the reciprocal throw movement of the lazy tongs, but if the collar 46 is set say at one-half of the length of the slot 48 the block would move up until it struck it without raising the rack bar, and the table would be moved only one-half of its reciprocal throw movement. This adjustment is made to allow the throw of the table to be set to bring the centers of the smaller blanks and also of the larger blanks at the same relative distance from the center of the position to which they are to be moved, and if a box wrapping machine, to the center of the platen of the box wrapping machine.

The sliding block is reciprocated by a connecting rod 50 which is pivotally connected to it at one end and at its opposite end is connected to one end of a lever 51 that is provided with a hub 52 that is pivotally connected to the side frame of the machine by a stud bolt. This stud bolt passes through the frame A and on the opposite end one end of a crank arm 53 is secured, the opposite end of which is engaged by a cam 54 formed on the cam disk 22 that is mounted on the shaft 27. Consequently this cam and the levers 51, 53 and 50 and the sliding block 45 and the rack bar 43 rotate the pinion 42 and the threaded shaft 41 that draws the nut-blocks 38 together on the shaft and expands the lazy tongs to move the table quickly outward or move them outward to draw the table back to its normal blank receiving position. The front edge of the table is notched with recesses 55 and the suction air device that takes the blank from the table is arranged with air suction tubes that are adapted to fit into them so that the air suction apertures of each will be in alinement with the other.

From the above it will be seen that our blank transferring mechanism can be applied to any machine and that it will transfer either dry or wet or gummed blanks, tempered or untempered, but assuming that it is to be used for transferring gummed and tempered blanks to a box wrapping machine, our present invention will make this transfer of the blank automatically and in time relation to the speed at which gummed and tempered blanks are fed to it. This is of vital importance, as up to the present time this work of transferring freshly gummed blanks in a gumming machine of any character to the platen of a box wrapping or covering machine, has been done by hand, and it requires two operators to do it, one operator to take the blanks from the gumming machine and place them in a position where the operator at the box wrapping machine can readily pick them up one by one and place them centrally on the platen of the box wrapping or covering machine and hold them there until boxes are moved against them. This manual method of transferring the gummed blanks to the platen is slow, and results in occasional misplacement of the blanks, with the consequent improperly covered or wrapped box, which has to either be patched by hand or thrown away.

There are a number of ways in which this gummed blank transfer feature of our invention may be constructed, arranged and applied to effect the desired result. We preferably however, carry out this feature of our invention in the following manner:

To the bed plate C, between the side frames A and B of the machine to which our invention is applied, we secure an air pump 56 which is arranged and adapted to furnish an air suction impulse force to blank receiving, gripping and releasing nozzles 57 that acts coöperatively with the air suction apertures of the suction box of the table 28 to receive, grip and hold to the blanks when the table has advanced them to the limit of its forward delivery movement, and has released them so that when the table moves backward on the rearward stroke of its reciprocal movement the blank is held by this blank receiving air suction gripping nozzle in its proper centralized position directly over and resting on the platen 58 of a box wrapping or covering machine, which being in operation feeds a box on top of it and manipulates it to cover the box. This box wrapping or covering machine may be of any style used in pasteboard box covering trade, and neither the machine nor its platen forms any part of our invention, but it is essential that this blank receiving nozzle or some other equally effective blank gripping and holding device be mounted on the box wrapping or covering machine to receive and hold the delivered and discharged gummed and tempered blanks as they are fed to it.

The blank discharging and delivering table makes an instantaneous interlocking blank delivering and receiving connection

with this blank receiving nozzle, which with the air pump 56 is constructed and arranged as follows:

This air pump like all of the other air suction producing pumps on the machine consists of a cylinder in which a piston is reciprocally and operatively mounted to produce an air suction impulse force having a piston rod 59, the outer end of which is secured to one end of a rock arm 60, the opposite end of which is secured on a shaft 61, that extends across between the frames A and B and is journaled in them. This rock arm is provided with a roller 62 that engages a cam 63 that is formed on a disk 64 that is secured on the auxiliary driving shaft 27 which as it is rotated from the main driving shaft 65 of the machine through the medium of a sprocket chain 66 and its supporting wheels actuates the rock arm to manipulate the piston of the air pump to produce the suction force necessary to successfully operate the blank receiving and gripping nozzle which we arrange to oscillate to and from the table.

The cylinder of the air pump is provided with an air inlet nipple 67 and also with an air escape aperture 68. One end of an air tube 69 is connected to the cylinder inlet nipple 67, which extends part way from the cylinder toward the oscillating nozzle in the form of a metal tube, which connects with a section of flexible tube 70 that connects to the lower end of the oscillating nozzle's air supplying tubular member 71, which is secured to the box wrapping machine in such relative position to its blank receiving platen 58 as to enable the nozzle to receive, grip by air suction, and hold each blank as it is delivered to it by the table until the wrapping machine takes control of it, which is instantly after the table moves backward from the receiving nozzle.

It is necessary in order to make proper blank delivering and receiving connection with the oscillating nozzle and the platen of the wrapping machine that our transfer mechanism be so positioned relative to it that the blank discharging and delivering table move directly and centrally over and close to the top of the platen 58 of the box wrapping machine, and we have so arranged and positioned our transfer mechanism that its blank delivering table reciprocates directly over and close to and with the center of its width in line with the center of the width of the platen of the box wrapping machine, and the delivering movement of the blanks at the end of the blank discharging and delivering table, is timed accurately with the blank receiving and box engaging movement of the box wrapping machine; consequently the delivery of our gummed blanks is automatic, successive and continuous, as long as the wrapping machine is in operation, and it only remains to so time the blank gripping air suction and releasing mechanism of the oscillating nozzle that the blanks will be instantly gripped when the table is at the limit of its forward stroke, where they will be held until the wrapping machine takes control of them, and then be instantly released in the following manner from the gumming machine.

A bar 72 is attached by any suitable means to the opposite side of the box wrapping machine, from the side our transfer mechanism is positioned on, and on this bar adjustable sliding journal blocks 73 are secured by cap screws 74. These blocks have base portions 75 that are provided with slots 76 through which the cap screws extend and are threaded into the bar 72. This bar is positioned close enough to the platen 58 of the box wrapping machine to enable the blocks 73 to be adjustably set in different positions to bring the largest and smallest sizes of blanks centrally of the platen.

These journal blocks support the opposite ends of the oscillating air suction nozzle, which comprises a tubular member or tube 77 that extends between and into the blocks and is rotatively mounted in them to partially rotate or oscillate. The opposite ends of this tube 77 are closed and it is connected with the upper end of the pipe 71, which extends downwardly from it. On its side facing the platen, the tube is provided with a plurality of outwardly extending air suction tubes 57 that are curved upwardly and are of a size at their end portions to fit loosely into the recesses 55 in the advance or forward edge of the table 28, and these air suction tubes are so positioned relative to the extreme forward position of the advance edge of the table as to bring their air suction inlet apertures in straight alinement with the air suction inlet apertures 29 in the suction box 78 of the advance edge of the table. The positioning of these tubes so they will swing up into the recesses 55 of the table in alinement with its air suction apertures is done by proper adjustment of the journal blocks on their supporting bar 72. The oscillating reciprocal swinging movement imparted to this air suction blank gripping nozzle is necessary in order to withdraw the ends of the air tubes out of the path of the advancing edges of the blanks as they lie on the table gripped to its suction apertures, and also so that the air suction inlet ends of these tubes have a direct upward movement against the under and ungummed side of the blanks, which upward contact movement gives the suction impulse force a firm tight grip on the blanks that enables the tubes to positively hold them against the backward or rearward stroke of the table's reciprocal movement.

There are a number of ways in which an

oscillating movement may be given to this oscillating air suction nozzle. We preferably, however, carry out this feature of our invention in the following manner:

To the lower end portion of the depending pipe 71 of the nozzle, a clip 79 is secured, to which one end of a connecting rod 80 is pivotally secured. The opposite end of this connecting rod is pivotally secured to a rock arm 81 intermediate of its ends. One end of this rock arm is pivotally connected to a shaft 82 that is secured to the side frames of the machine. The opposite end of this rock arm 81 is provided with a roller 83 that engages a recess 84 formed in the disk 64 which as it rotates imparts an oscillating movement to the nozzle, the roller 83 being held against the cam by a spring 85 attached to the rock arm 81 and to the bed plate. The table on its blank delivering and discharging movement is moved directly over the platen of the wrapping machine, and the cylinder piston's actuating cam 64 and the oscillating lever's oscillating cam 84 are so relatively timed as to tilt the nozzle up against the blanks at the end of the table's blank advancing movement, and grip and hold it until after the table has moved backward and left the blank resting on the platen of the blank wrapping machine, and the tubes still hold it until the wrapping machine's mechanism takes control of the blank by moving a box down against it, which occurs almost instantly after the blank is left in the grip of the oscillating nozzle's air suction blank receiving and gripping tubes.

The air pumps which connect with the tubes 1 and the table 28 consist of cylinders 12 and 12A and their pistons, the piston rod of each pump piston being connected to a crank arm, which in turn is engaged by a cam that is mounted on the driving shaft of the machine.

The piston rod of the pump 12 is connected to one end of a rock arm 31 that is secured at its opposite end to a shaft 85. This rock arm 31 is also provided with a roller 86 which engages a cam groove 87 that is formed on the disk 30 that is secured on the main driving shaft 65. The piston of the pump 12A is connected to one end of a rock arm 88 that is secured at its opposite end to the shaft 85. This rock arm is also provided with a roller 89 that engages a cam groove 90 that is formed on a disk 91 that is secured to the main driving shaft. This pump is connected to the air suction box of the blank discharging and delivery table 28 by a flexible tube 92, which is operatively connected to it, and to the air pump. The air pump 56 is driven by the rock arm 60 and the cam 63 which is secured on the auxiliary shaft 27, and this pump furnishes an air suction force for the blank receiving oscillating nozzle, as has been fully described in detail above.

When transferring gummed blanks, the blank engaging ends of the sucker tubes become sticky and gummed up from contact with the gummed surface of the blanks, and it is necessary that they be cleaned or wiped off by a wiper device after feeding each blank.

Our invention contemplates any means for effectually cleaning the blank engaging faces of the sucker tubes, and for this purpose we illustrate a mechanism which we preferably use, and which consists of a water holding pan or box 93 which is secured to a bar 94 that is extended between and is secured to the brackets 36. A shaft 95 is journaled in the brackets 36 and carries arms 96, having rollers on their free ends which normally extend down into the water in the box 93. A lever arm 97 is rigidly secured at one end to the shaft 95, and is pivotally connected to a link 98, the opposite end of which is pivotally connected to the upper end of a rock arm 99, which is loosely mounted intermediate of its ends on the shaft 82. The lower end of the rock arm 99 carries a roller which enters a cam groove 100 on the opposite side of the disk 64 from the cam groove 63. The groove 100 is timed to rock the arm 99, which through the medium of the arms 98 and 97, rocks the shaft 95, and thereby swings the roller carrying arms 96 up so that their rollers engage and wipe the ends of the sucker tubes as they start back after depositing a blank on the table 28, after which the roller arms are again submerged in the water of the box 93, by the action of the cam 100.

Our blank transferring mechanism provides a simple and reliable automatically feeding apparatus that can be applied to different machines and to different uses in the art of transferring blanks and labels of different sizes and kinds, and while we have illustrated and described the preferred construction and arrangement of our invention we do not wish to be limited to it, as many changes might be made without departing from the spirit of our invention.

Having described our invention, what we claim as new and desire to secure by Letters Patent, is:

1. In a blank transfer mechanism, the combination of the resiliently bearing air suction tubes, their supporting and sliding block, the fixed bar on which said sliding block reciprocates and its cam actuated mechanism that raises and lowers said tubes at the opposite ends of their reciprocal travel, and the cam actuated rock arm and lever mechanism that reciprocate said tubes on its supporting bar.

2. In a blank transfer mechanism, the combination of the reciprocal movement block

advancing air suction impulse tubes, with the reciprocating table arranged to receive said blocks from said air tubes, the slideways on which said table is reciprocally mounted, the threaded shaft and nut blocks thereon, and the lazy tongs attached to them and said table and the pinion on said shaft, the adjustable trunnion rock bar and the cam and rock arm mechanism for reciprocating said rock bar to rotate said pinion and threaded rod to expand and contract said lazy tongs to reciprocate said tube, and the row of air suction apertures in said table operatively connected to an air suction impulse producing mechanism including a cam and rock arm operated air pump connected to said apertures.

3. In a blank transfer mechanism, the combination with the air suction blank gripping and delivery table and the blank receiving nozzle arranged to receive the blanks from said table, the air suction operating and releasing mechanism for operating the blank gripping and releasing mechanism of said table and said nozzle, and means including a cam actuated lever mechanism for oscillating said nozzle to intermesh with said table and grip and hold the blanks as they are released by said table.

4. In a blank transfer mechanism, the combination of the blank feeding mechanism with the platen of a box wrapping machine, said conveying mechanism being arranged to dischargingly deliver its blanks to said box wrapping machine, and a blank receiving and gripping mechanism adjustably mounted on said box wrapping machine and arranged to receive blanks from said conveying mechanism and hold them in operative position to be controlled by said box wrapping machine.

5. In a blank transfer mechanism, the combination of a plurality of air suction air impulse tubes, said tubes being operatively connected to an air suction producing mechanism, said tubes being arranged to engage the blanks with a resilient bearing pressure, a slotted bar extending transversely across the machine to which said tubes are adjustably secured, a reciprocating bar arranged to support said air tubes and their supporting bar, means including a vertically reciprocating bar and a cam actuated mechanism for reciprocally raising and lowering said air tubes, and a cam controlled lever mechanism for reciprocating said air suction tubes, a table on which said tubes deposit said blanks, said table being provided with blank gripping suction apertures arranged to grip the blank when deposited thereon by said air tubes, and means for reciprocally moving said table to convey the blank to a position to be again gripped and conveyed to the platen of a box covering machine.

6. In a blank transfer mechanism, the combination with blank feeding mechanism, means for gripping blanks and advancing them to a position to be fed to the platen of a box covering machine, said means comprising air suction tubes arranged to move down against said blanks, means including slideways and a cam operated lever mechanism for moving said blanks while held gripped by said air tubes to a table member provided with air suction blank gripping apertures, and with air suction blank gripping mechanism, means connected with said air tube and its blank advancing mechanism for depositing each blank in the air suction apertures of said table, means for simultaneously releasing said blanks when deposited by the air tubes and for gripping them by the air suction mechanism of said table, and means for gripping said blanks when held on said table and for moving them to the platen of a box covering machine, said means comprising a right and left handed threaded shaft, nut blocks threaded to said shaft, a lazy tong device secured at one end to said table and at its opposite end to said nut blocks, and means including a pinion mounted on said shaft and a tooth rock bar in mesh with said pinion and including a cam operated mechanism connected with said rock bar, whereby said rock bar rotates said pinion with said threaded shaft and causes said nut blocks to travel toward and away from the center of said shaft and thereby expand and contract said lazy tongs, which reciprocatively moves said blank holding table to a position to be engaged by a device that will grip the blank on the table and move it to the platen of a box covering machine.

7. In a blank transfer mechanism, the combination with blank feeding means and the blank discharging and delivery mechanism, and the blank receiving platen of a box wrapping machine, said delivery mechanism comprising a reciprocating blank supporting and holding member arranged to move the blanks one at a time over said platen, and means connected to said wrapping machine but operating from said gumming machine for receiving and gripping the blanks when released from said table and for holding said blanks over said platen until said box wrapping machine takes control of it.

8. In a blank transfer mechanism, the combination with blank feeding means and discharging mechanism, said blank discharging mechanism being arranged to discharge the blanks in operative blank receiving relation to the blank receiving platen of a box wrapping machine, means for gripping the blanks to the discharging means, and means including an air suction blank receiving and gripping and releasing mechanism operably supported on said box

wrapping machine for receiving and gripping said blanks as they are releasingly delivered to it by said blank discharging mechanism, said blank receiving mechanism being arranged to hold said blanks until said wrapping machine takes control of them.

9. In a blank transfer mechanism, the combination with any suitable blank feeding, conveying and freeing mechanism, with a blank gripping, transferring, discharging and delivering mechanism, said gripping and transferring mechanism comprising the air suction blank gripping tubes and the reciprocating table provided with a blank gripping and releasing air actuated mechanism, and a blank receiving device arranged to receive and grip the blank delivered to it by said table, said blank receiving device comprising an oscillating blank gripping and releasing air operating nozzle arranged to intermesh with the blank gripping mechanism of said table and arranged and adapted to grip, hold and retain and then release said blanks at predetermined periods of time after they have been released by said table.

10. In a blank transfer mechanism, the combination with the frame, the driving shaft mounted therein, the cam and cam disk on said shaft, the rock arm supported by said frame and in engagement with said cam, the connecting rod connected to said rock arm, the sliding block connected to said connecting rod, and the fixed slideway bar, with the blank gripping air suction tubes and their support adjustably mounted on said sliding block, the air tube member secured to said tubes' support, the tubular connections between said tubular member and said air suction tubes, the flexible tube connected to said fixed tubular member, the air pump to which said tube is connected, and with the main frame of the gumming machine, the cam shaft mounted thereon, a cam thereon, a rock shaft supported by said frame and arranged to be actuated by said cam, a piston in said air pump connected to said rock shaft, means including a cam actuated rock arm and a reciprocating bar attached to said sliding bar for imparting a reciprocating movement to said air tubes that enables them to be moved against and to lift said blanks, and means for cleaning the ends of said tubes.

In testimony whereof we affix our signatures in presence of two witnesses.

MELVILLE E. PETERS.
GEORGE H. FATH.
ALBERT F. MILLER.

Witnesses:
G. SARGENT ELLIOTT,
ELIZABETH SMITH.