To all whom it may concern:

Be it known that BENJAMIN T. HEADLEY, PARKE H. THOMPSON, deceased (whose executrix is RENA M. THOMPSON), and DAVID IRVIN DU Bois, all citizens of the United States, and residing at Millville, in the county of Cumberland and State of New Jersey, have invented a new and useful Improvement in Transfer Mechanisms for Vial-Working Machines, of which the following is a full, clear, and exact description.

The present invention relates broadly to a transfer mechanism, and more particularly to a mechanism of this type adapted to transfer vial blanks from a vial necking machine to a vial bottoming machine, although its use in this respect is not limited.

An important object of the present invention is to provide a transfer mechanism adapted to be operated in timed relation to a plurality of carriers for automatically transferring blanks from one carrier to the other.

Another object of the present invention is to provide a transfer mechanism of the character described adapted to raise blanks from suitable support on one carrier, transfer the same to supports on another carrier, and then lower the same into engagement therewith.

Still another object of the present invention is to provide a feed device for vial working machines adapted to feed vial blanks thereto in timed relation to the operation of the machine.

The foregoing and other objects, together with their attendant advantages, will be apparent as the invention becomes better understood by reference to the accompanying specification and drawings forming a part hereof, it being premised that changes may be made in the various details and the manner of operation within the scope of the appended claims without departing from the spirit of the invention.

In the drawings—

Figure 1 is a side elevation of the transfer mechanism;

Figure 2 is a sectional view on the line II—II of Figure 1;

Figure 3 is a side elevation of the transferring mechanism applied to a bottoming machine, and illustrating the blank supporting member in engagement with a blank to be transferred;

Figure 4 is a view corresponding to Figure 3, illustrating the blank transferred to a point above one of the supports on the endless carrier of the bottoming machine;

Figure 5 is a view similar to Figure 4 but in which the supporting member has been moved away from the blank and the blank deposited on the blank support on the endless carrier of the bottoming machine;

Figure 6 is a detail sectional view, on an enlarged scale, on the line VI—VI of Figure 1; and

Figure 7 is a diagrammatic plan view of the respective carriers.

In the art of vial making, it is customary to first prepare tubular blanks having substantially twice the length of a finished vial. These blanks are then necked by a suitable necking machine, and thereafter fed to a bottoming machine, by which the blanks are separated and bottomed, or fed directly to the bottoming machine without necking to form wide mouthed vials. In either case, it is desirable to provide means for delivering the blanks to the bottoming machine in timed relation to the operation thereof, and it is the purpose of the present invention to effect such delivery.

Referring more particularly to the drawings, there is illustrated a preferred embodiment of our invention for transferring vial blanks from the station A to the station B. As shown in the drawings, the blanks are successively brought to the station by an endless carrier 1, operating over a sprocket 2, carried by a shaft 3, journaled in the frame 4 of a necking machine of any desired construction constituting no part of the present invention. It will be apparent that the endless carrier may be of any desired construction capable of bringing the blanks to the station A, and may be provided with supports 5 for this purpose.

Adjacent the delivery end of the carrier 1, is mounted a bottoming machine supported on a suitable frame 6, and comprising an endless carrier 7, operating over a sprocket 8 and provided with a series of blank supports 9. The sprocket may be carried by a shaft 10, suitably journaled in the frame 6 and driven in any desired manner. The car-
riers 1 and 7 each preferably comprises two spaced flexible chains operating in pairs, with each pair in the same horizontal plane and adapted to support a vial blank V, between the respective supports thereon, as illustrated diagrammatically in Figure 7.

The mechanism for effecting the transfer of the blanks as described, may comprise a lever 11 pivoted at 12 to a bracket 13 suitably secured to one end of the frame 6 of the vial bottoming machine. The lever 11 is formed with an extension 14 which is connected to a lever 15 by means of a link 16.

The lever 15 is carried by a pin 17 mounted in suitable bearings in the frame 6 of the bottoming machine. Extending parallel to the shaft 10 is a second shaft 18 adapted to be driven in any desired manner and provided with a cam 19 having a groove 20 therein for the reception of a roller 21 on the lever 15. This mechanism is arranged to shift the lever 11 from the position shown in Figure 3 to the position shown in Figure 4, as will be more clearly described hereinafter.

Pivoted mounted on the pin 12 at one side of the lever 11 is a second lever 22 located between stop pins 23 on the lever 11. Slidably mounted in one end of the lever 22 is a stem 24 having connected to the upper end thereof a V-block 25. The stem 24 is held in position in the slotted end of the lever 22 by means of plates 26, which are connected to the lever 22. Extending through a slot 27 in one of the plates 26 is a roller 28. This roller also extends into a cam slot 29 in the lever 11.

The lower end of the lever 22 is provided with a segmented friction block 30, which is engaged on each side by leather faced friction strips 31 supported by the bracket 13. As clearly shown in Figure 2, the bracket is forked, and each fork is provided with a plurality of hollow bosses 32 and openings 33. Threaded into each of the strips 31 are three tap screws 34 extending through the openings 33, while short pins 35 connected to the strips 31 extend into the hollow bosses 32. Springs 36 are provided within the recesses in the bosses 32, and at one end engage the strips 31, while at the other end they engage followers 37 adjustable by means of set screws 38 mounted in screw plugs 39 in the ends of the bosses 32. By adjusting the screws 38, the friction between the strips 31 and the friction block 30 on the lever 22 can readily be varied.

Assuming the parts to be in the position illustrated in Figure 3, with the V-block 25 in engagement with one of the blanks V at the station A, the rotation of the cam 19 in the direction of the arrow will act through the roller 21 to depress the lever 15. This will move the entire transfer mechanism illustrated in Figure 1 about the pin 12 and bring the same to the position shown in Figure 4, with the vial blank V above one of the blank supports 9 at the station B. The roller 21 on the lever 15 is now at the high point of the groove 20 in the cam 19, and immediately thereafter will be raised by continued rotation of the cam to move the lever 11 relative to the lever 22, and thus cause the roller 28 to ride downwardly in the cam slot 29 in the lever 11 and thereby lower the stem 24 and V-block 25 out of engagement with the vial blank into the position illustrated in Figure 5. It will be apparent that this relative movement between the levers 11 and 22 is accomplished due to the friction between the block 30 and the strips 31, which tends to hold the lever 22 against movement until the travel of the roller 28 in the cam slot 29 is completed.

Continued operation of the cam 19 will raise the lever 15 and swing the transfer mechanism about the pin 12 to the position illustrated in Figure 3, but with the V-block 25 in its lowered position out of engagement with the vial blank at the station A. Thereafter, the V-block will be raised into engagement with the vial blank due to the relative movement between the levers 11 and 22, which causes the roller 28 to ride upwardly in the cam slot 29 into the position illustrated in Figure 3. A further movement of the parts will repeat the operation described, thereby effecting a periodic transfer of vial blanks to the bottoming machine in timed relation to the operation thereof.

While the various details of the necking machine and the bottoming machine referred to herein, and the driving means for operating the same in timed relation, constitute no essential feature of the present invention, the construction may be in accordance with the disclosure of our copending application Serial No. 338,179, filed November 15, 1919, of which this case is a division.

The advantages of the present invention arise from the provision of means operating in timed relation to the operation of the vial working machine for successively delivering vial blanks thereto as required.

Further advantages of the present invention arise from the use of a transfer mechanism adapted to raise vial blanks from supports on one carrier and gently lower the same into engagement with supports on another carrier.

We claim:

1. A blank charging device for a vial bottoming machine comprising a plurality of levers moveable with relation to each other, a reciprocating member on one of the levers for raising a blank from one support and transferring it to another support, and means for retarding the movement of one lever to cause it to move with relation to the other lever to cause the member thereon to
reciprocate to raise the blank from one support and lower it onto another support, substantially as described.

2. A vial blank charging device comprising a lever, means for rocking said lever, a second lever arranged to be moved relative to and with said lever, a reciprocating member on the second lever, and means on the first mentioned lever for reciprocating the member on the second lever when the first lever is moved relative to the second lever, substantially as described.

3. A charging device comprising two levers arranged to be rocked about the same axis and arranged to be moved relative to each other, a reciprocating member carried by one of said levers, means on the other lever for reciprocating said member when moved relative to the first mentioned lever, and means for retarding the movement of said first lever, substantially as described.

4. A charging device comprising a plurality of levers, a fulcrum thereon, means for shifting one of said levers, stops on said lever for engaging the other lever after the first lever has moved a predetermined distance, a reciprocating vial blank support mounted in the first mentioned lever, means on the lever for reciprocating said member when the two levers are moved relative to each other, and a friction device for retarding the movement of the lever having the reciprocating vial blank support mounted therein, substantially as described.

5. In a transfer device, a reciprocating member, a supporting lever thereon, a swinging lever movable relatively to and with said supporting lever, and means on said swinging lever for reciprocating said member during the relative movement between said levers, substantially as described.

6. A charging device for vial machines, comprising a reciprocating member, a supporting lever thereon, a swinging lever, frictional connections between said swinging lever and said supporting member for permitting a relative movement between said levers, and means on said swinging lever for reciprocating said member during said relative movement between the levers, substantially as described.

7. A transfer device, comprising a lever having relatively reciprocable parts, a second lever cooperating with said first mentioned lever, and means for initially moving said second lever relatively to said first mentioned lever and thereafter moving the levers in unison, substantially as described.

8. A transfer device, comprising a pivoted lever having relatively reciprocable parts, a second lever cooperating with said first mentioned lever and pivotally mounted on the same axis therewith, and means for initially moving said second lever relatively to said first mentioned lever and thereafter moving the levers in unison about said axis, substantially as described.

9. A transfer device comprising a lever having relatively reciprocable parts, a projection on one of said parts, a second lever cooperating with said first mentioned lever, said second lever having a cam slot therein for engaging said projection, and means for initially moving said second lever relatively to said first mentioned lever and thereafter moving the levers in unison, substantially as described.

10. A transfer mechanism, comprising a lever having relatively reciprocable parts, a second lever cooperating with said first mentioned lever, a bracket for supporting said levers, a friction strip carried by said bracket and engaging said first mentioned lever, and means connected to said second mentioned lever for operating said device, substantially as described.

11. A transfer device, comprising a bracket having forked arms projecting therefrom, a pin carried by said arms, a lever pivotally carried by said pin, a friction block on said lever, friction means carried by said bracket for engaging said block, a reciprocable blank support carried by said lever, and means for initially reciprocating said support and then moving said lever on said pin as an axis, substantially as described.

12. A transfer device, comprising a bracket, a pivot pin carried thereby, a lever mounted on said pin, means for frictionally retarding the movement of said lever, a relatively reciprocable blank support carried by said lever, and means for initially reciprocating said support and then moving said lever with relation to said bracket, substantially as described.

13. A transfer device, comprising a bracket, a lever pivotally mounted therein, means for frictionally retarding the movement of said lever, a relatively reciprocable blank support carried by said lever, and means cooperating with said lever for initially reciprocating said support and then moving said lever about its pivot, substantially as described.

14. A transfer device, comprising a bracket, a lever pivotally mounted therein, a blank support carried by said lever and reciprocable relatively thereto, a second lever cooperating with said support for reciprocating said support and then swinging said lever about its pivot, and means for operating said second lever, substantially as described.

15. In a transfer device a pivotally mounted lever having a friction surface, means engaging said surface for preventing unrestricted movement of said lever, a support reciprocably carried by said lever, means for reciprocating said support for
moving the same into and out of engagement with the article to be transferred, and means for moving said lever to transfer the device carried by said support, substantially as described.

16. In a transfer device, an article lifting, transferring and lowering lever, and a second lever cooperating therewith for automatically raising, moving and lowering said first mentioned lever, substantially as described.

17. In a transfer device, an article lifting, transferring and lowering lever, and a second lever cooperating therewith for automatically raising, moving and lowering said first mentioned lever, both of said levers being movable about the same axis, substantially as described.

In testimony whereof, we have hereunto set our hands.

BENJAMIN T. HEADLEY,
RENA M. THOMPSON,
Executrix of Parke H. Thompson, deceased.

DAVID IRVIN DU BOIS.