

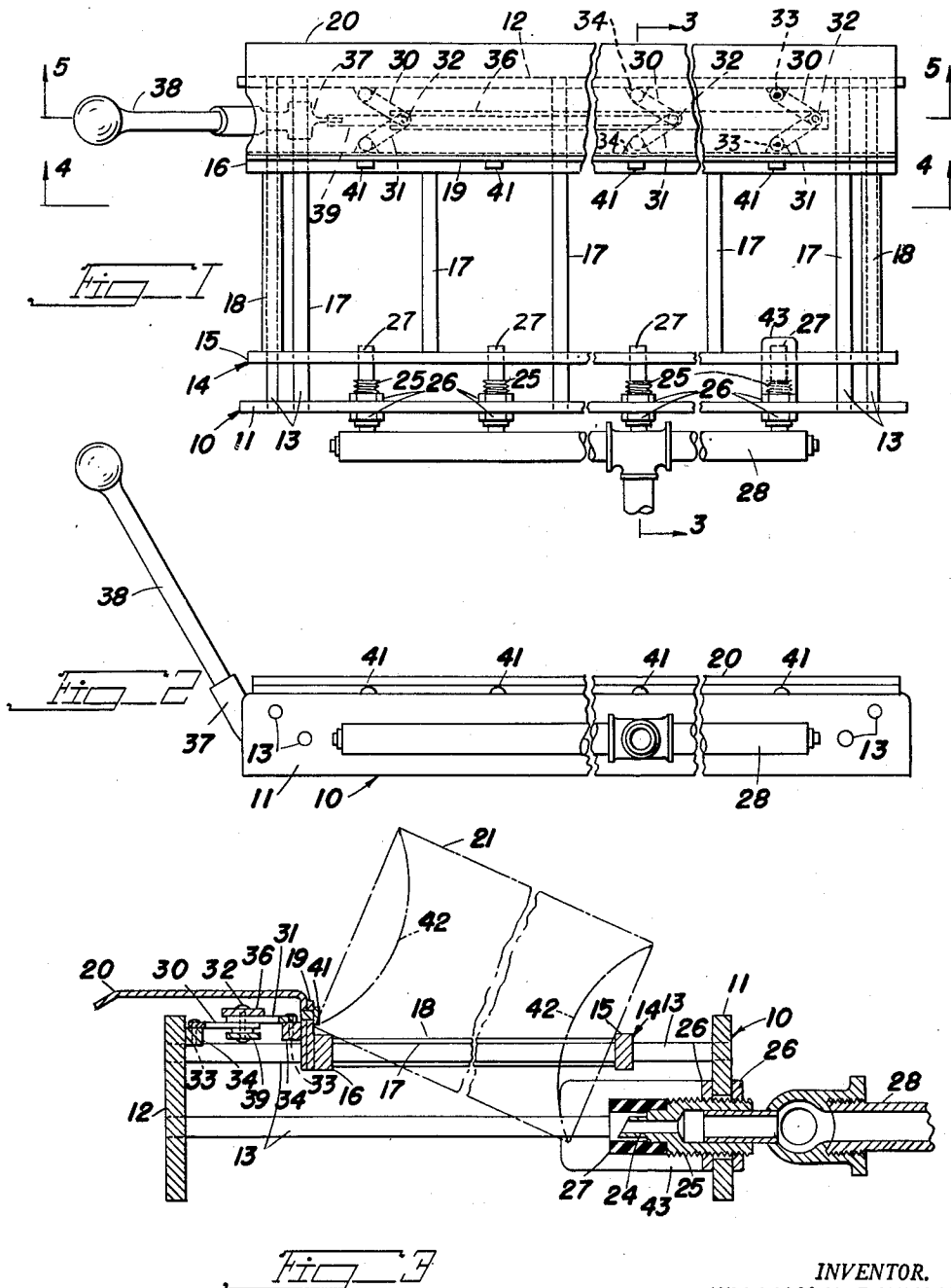
July 25, 1950

W. H. BAUMGARD
MULTIPLE FLUID DISPENSER

2,516,174

Filed Aug. 22, 1947

2 Sheets-Sheet 1



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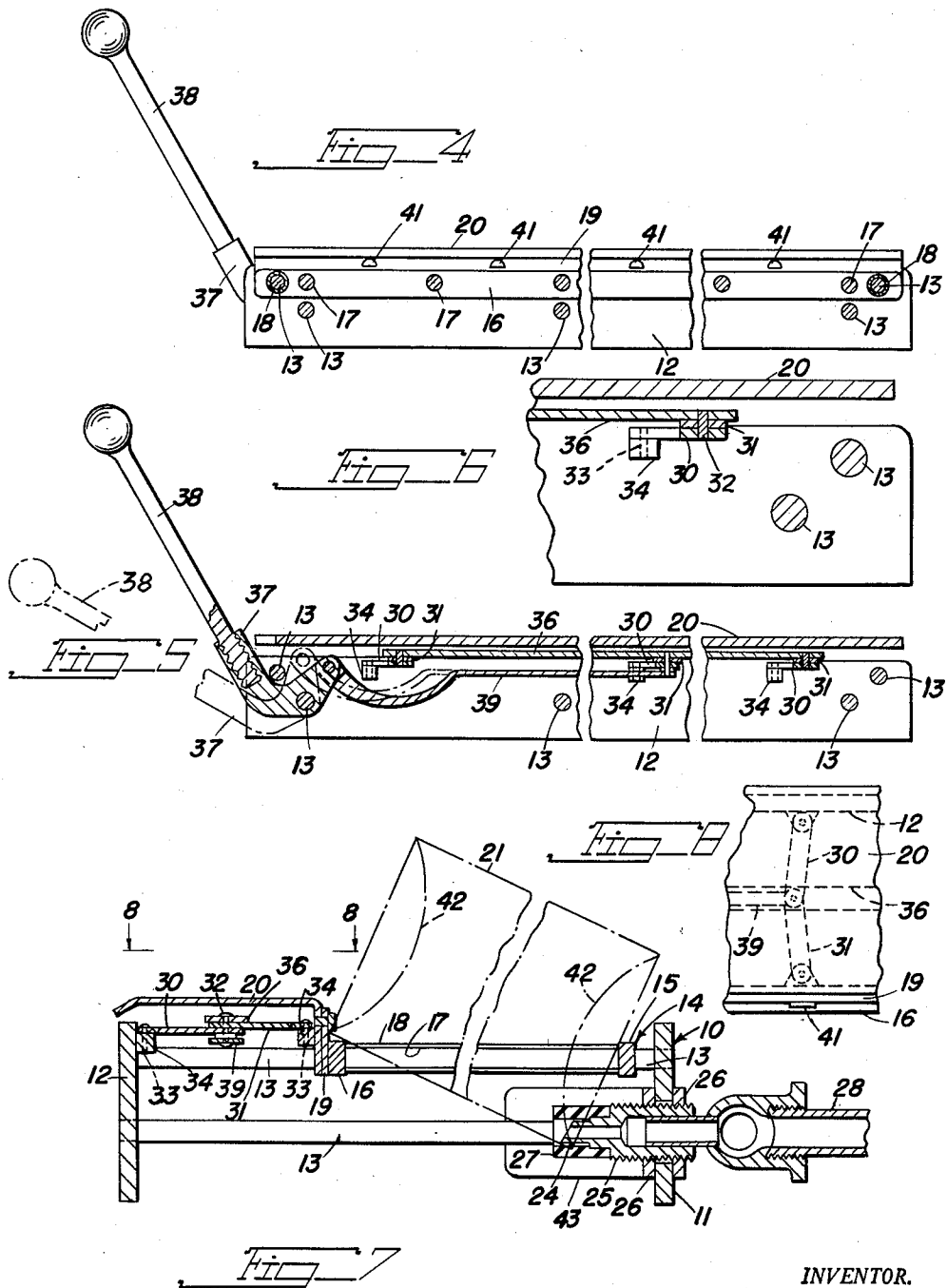
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MULTIPLE FLUID DISPENSER

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6 Claims. (Cl. 222-89)

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This invention relates to new and useful improvements in equipment for dispensing fumigating compounds and relates particularly to the dispensing of methyl bromide simultaneously from a plurality of cans.

Methyl bromide is customarily packed in 1 lb. cans and in steel containers of various sizes. A fumigating job on a railroad car or other place generally requires more than one can. This invention particularly proposes a multiple fluid dispenser into which a plurality of said cans may be placed, as needed, and said cans simultaneously dispensed to the space being fumigated. This system is far superior to the one now generally in use in which each can is individually used, requiring four or five operations, if four or five cans are to be used.

An important feature of the new dispenser resides in so constructing same that one can, two cans, or any number of cans up to the capacity of the dispenser, may be dispensed as required.

The new dispenser is characterized by a frame having a front wall, and a carriage slidably mounted on the frame for moving towards the front wall and having a plurality of openings the edges of which are adapted to support a plurality of cans in downwardly inclined positions with their front ends directed towards said front wall. It is proposed to provide a plurality of tubular can piercing members mounted on the front wall in positions aligning with the bottoms of the front ends of the cans. A fluid discharging pipe is connected with said tubular piercing members. Each tubular piercing member is provided with a compressible sealing bushing for sealing the connections between the tubular piercing members and the front ends of the cans. It is proposed to provide means for moving the carriage towards said front wall for simultaneously engaging said cans on said tubular piercing members.

An important feature of this invention resides in providing means for locking the carriage in its forward position so that it may not move rearwards accidentally while the contents of the cans are being dispensed.

Another object of the invention is to provide means for holding the back ends of the cans from moving upwards and thus preventing accidental displacement of the cans during the dispensing operation.

The invention also proposes the use of caps for engaging on each of the piercing members so that one or more of these members may be

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capped when a lesser number of cans is used than the capacity of the multiple fluid dispenser.

It is pointed out that methyl bromide for which the new multiple fluid dispenser is particularly adapted, is very volatile and at normal temperatures is a gas. However, methyl bromide remains a liquid when confined in containers and is under its own vapor pressure when above its boiling point of 40.1° F. Due to this low boiling point the containers of methyl bromide cannot be safely opened at atmospheric temperatures without some type of dispenser for conveying the gases to the fumigating compartments. It is customary to construct the tin cans containing the methyl bromide with concave ends to oppose the internal vapor pressure. It is an important object of this invention to support the cans of the methyl bromide in a downwardly inclined direction and to pierce the front low ends as close to the bottom as is practical so that the internal gas pressure empties the entire can during the dispensing operation.

Another important object of this invention is to so arrange the parts that the piercing members enter the ends of the can at substantially right angles to the area being pierced so as to substantially produce circular openings which are more easily sealed by the compressible sealing bushings than elongated openings formed when the piercing members enter the ends of the cans at angles other than right angles.

Another object of the invention is the construction of a device as described which is simple and durable and which may be manufactured and sold at a reasonable cost.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure—

Fig. 1 is a plan view of a multiple fluid dispenser constructed in accordance with this invention.

Fig. 2 is a front elevation of Fig. 1.

Fig. 3 is a transverse enlarged fragmentary sectional view taken on the line 3-3 of Fig. 1.

Fig. 4 is a longitudinal sectional view taken on the line 4-4 of Fig. 1.

Fig. 5 is a sectional view taken on the line 5-5 of Fig. 1.

Fig. 6 is an enlarged detailed view of a portion of Fig. 5.

Fig. 7 is a sectional view similar to Fig. 3 but illustrating the parts in a different position.

Fig. 8 is a fragmentary plan view looking in the direction of the line 8-8 of Fig. 7.

The multiple fluid dispenser, in accordance with this invention, includes a frame 10 having a front wall 11, a back wall 12, and a plurality of rods 13 rigidly connecting said front and back walls. A carriage 14 is slidably mounted on the frame 10 for moving towards said front wall 11. Said carriage 14 consists of a front bar 15, a back bar 16, and a plurality of rods 17 rigidly connecting said front bar 15 with the back bar 16. The carriage 14 is also provided with tubes 18 extended between the front bar 15 and back bar 16 and slidably engaging on certain of the rods 13 by which the carriage 14 is slidably mounted on the frame 10. The carriage 14 also has a plate 19 mounted against the rear face of the back bar 16 and supporting a cover plate 20 which extends over the back wall 12. The carriage 14 has a plurality of openings the edges of which are adapted to support a plurality of cans, one of which is schematically indicated by the dot and dash lines 21, in downwardly inclined positions with their front ends directed towards said front wall 11. More specifically, said plurality of openings are bounded at the front by the front bar 15, at the back by the back bar 16, and at the sides by the rods 17. The rods 17 are equally spaced from each other at positions so that one can is engageable between adjacent rods 17.

A plurality of tubular can piercing members 24 are mounted upon and through the front wall 11 in positions aligning with the bottoms of the front ends of cans 21 which are supported in the openings of said carriage 14. These piercing members 24 have threaded shanks 25 which pass through openings formed in the front wall 11. Nuts 26 are threadedly engaged on the threads of said shanks and engage against the front and back faces of the front wall 11 by which the piercing members 24 are rigidly held in position. A compressible sealing bushing 27 is mounted on each of the tubular piercing members 24 for sealing the connection between said tubular piercing members 24 and the front ends of the cans 21. A fluid discharge pipe 28 is connected with the front ends of the tubular piercing members 24 by which the fumigating substance may be connected with suitable hosing to discharge same into the space to be fumigated.

Means is associated with the carriage 14 for moving it towards the front wall 11 for simultaneously engaging all cans 21 which are mounted on the carriage 14 onto said tubular piercing members 24. This means includes a series of toggle links 30, 31. Each pair of links 30 and 31 are pivotally connected with each other at their inner ends by pintles 32, and at their outer ends are pivotally connected by pintles 33 with blocks 34 mounted on the adjacent faces of said carriage 14 and the rear wall 12.

A bar 36 extends along the centers of the toggles 30, 31 and is connected with all of the toggles by said pintles 32 which pass upwards through the bar 36. A bell crank 37 is pivotally mounted upon one of the rods 13. A handle 38 connects with one end of the bell crank 37 by which the bell crank may be pivoted. A connecting rod 39 pivotally connects with the bell crank 37 and with the center of one of the toggles 30, 31. The arrangement is such that when the handle 38 is in

an upward inclined position, as illustrated by the full lines on the drawing, the toggles 30, 31 have their arms at acute angles in relation with each other. The handle 38 may be moved downwards to the position, indicated by the dot and dash lines in Fig. 5, for pivoting the bell crank 37 and for moving the connecting rod 39 and thus indirectly moving the bar 36 which moves the links of the toggles 30 and 31 to positions as illustrated in Figs. 7 and 8 in which the carriage 14 will be moved to its forward position.

Means is provided for locking the carriage 14 in its forward position and this means comprises an arrangement whereby the bell crank 37 is limited in its pivoting so as to strike one of the rods 13, as indicated by the dot and dash lines in Fig. 5. In this position the toggles 30, 31 have been moved past their dead centers, as clearly illustrated in Fig. 8, in which the carriage 14 is locked against moving back to its starting position. It is necessary that the toggles 30, 31 be moved back past their dead centers to move the carriage 14 back to its starting position.

Means is provided for holding the back ends of the cans 21 from moving upwards so as to prevent the cans from accidentally kicking off while the dispenser is being used. This means comprises a plurality of studs 41, one for each can 21, mounted upon the strip 19 above the back bar 16 and adapted to engage over the bottom back edges of the cans 21 as illustrated in Fig. 3. The cans 21 have concave ends 42 so as to be stronger and better hold the internal vapor pressure of the contents of the cans. These curved bottom ends 42 form edge flanges which are capable of engaging beneath the studs 41 when the cans 21 are placed in inclined positions as illustrated in Fig. 3.

Each tubular can piercing member 24 is provided with a cap 43 adapted to be engaged over the compressible sealing bushing 27 and to threadedly engage the threads of said shanks 25. In Fig. 1 one cap 43 is illustrated in position. By the use of these caps 43 it is possible to block off one or more of the tubular piercing members 24 so that when a lesser number of cans is used on the dispenser the fluid and gases will not escape into the atmosphere. Moreover, the caps 43 are of such a size as to prevent the engagement of the cans 21 in inclined positions on the carriage 14. This may be seen from Fig. 3. In order to place the can 21 into its inclined position the front end must move downwards past the front bar 14 and the back end of the can must be engaged beneath the stud 41. However, the cap 43 prevents the can from taking this position as a safety measure to prevent the can from being broken open when the carriage 14 is moved forwards.

The operation and use of the multiple fluid dispenser may be understood from the following:

Initially, the dispenser is in the position as illustrated in Figs. 1-6 inclusive. In this position one or more of the cans 21 of fumigating material may be placed in inclined positions between the rods 17 and between the bars 15 and 16 as schematically indicated by the dot and dash lines in Fig. 3. Caps 43 are placed over the tubular piercing members 24 which are not being used. Of course the fluid discharge pipe 28 is connected with tubing connected with the space to be fumigated. Then the handle 38 is merely moved downwards into the position indicated by the dot and dash lines in Fig. 5. This pivots the bell crank 37, which in turn moves the connect-

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ing rod 39 indirectly moving the bar 36 and the toggles 30, 31 which move the carriage 14 into its front position.

When the carriage 14 moves to its front position the cans 21 will be moved onto the piercing members 24 which pierce holes into the cans 21 way at the bottom at the front ends of the cans. The compressible sealing bushings are compressed against the ends of the cans 21 around the piercing members 24 tightly sealing the piercing members so that no liquid or gases leak out. It should be noted that the piercing members 24 pierce the curved ends 42 of the cans 21 substantially at right angles to the areas being pierced so as to puncture round holes which are easily sealed by the compressible sealing bushings 27. The back ends of the cans 21 cannot kick up while the carriage 14 is moving forwards because they are held down by the studs 41. The gas pressure within the cans 21 will dispense the contents of the cans through the tubular piercing members 24 and the fluid discharge pipe 28.

It should be noted that when the carriage 14 is in its front position it is locked against moving backwards because of the position of the toggles 30, 31 (see particularly Fig. 8). This prevents accidental moving rearwards of the carriage 14 during the dispensing operation which would be dangerous because the fumigating chemical would be released into the atmosphere. Because the cans 21 are inclined downwards and are punctured at the bottom of their front ends, all of their contents will be dispensed except for a few drops which will remain below the piercing members 24.

While I have illustrated and described the preferred embodiment of my invention, it is to be understood that I do not limit myself to the precise construction herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new and desire to secure by United States Letters Patent is:

1. In a fluid dispenser, a frame having a wall, a carriage movably mounted on said frame for moving horizontally towards said wall, means on said carriage for supporting a can in a downwardly inclined position with its front end directed towards said wall, a can piercing member horizontally mounted on said wall in a position aligning with the bottom of the front end of said can, and means for moving said carriage towards said wall for engaging the bottom of the front end of said can on to said piercing member.

2. A multiple fluid dispenser, comprising a frame having a front wall, a carriage slidably mounted on said frame for moving horizontally towards said front wall, means on said carriage for supporting a plurality of cans in downwardly inclined positions with their front ends directed towards said front wall, a plurality of tubular can piercing members horizontally mounted on said front wall in positions aligning with the bottoms of the front ends of said cans, a fluid discharge pipe connected with said tubular piercing members, a compressible sealing bushing mounted on each of said tubular piercing members for sealing the connection between said tubular piercing members and the front ends of said cans, and means for moving said carriage towards said front wall for simultaneously engaging the bottoms of the front ends of said cans onto said tubular piercing members.

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3. A multiple fluid dispenser, comprising a frame having a front wall, a carriage slidably mounted on said frame for moving horizontally towards said front wall, means on said carriage for supporting a plurality of cans in downwardly inclined positions with their front ends directed towards said front wall, a plurality of tubular can piercing members horizontally mounted on said front wall in positions aligning with the bottoms of the front ends of said cans, a fluid discharge pipe connected with said tubular piercing members, a compressible sealing bushing mounted on each of said tubular piercing members for sealing the connection between said tubular piercing members and the front ends of said cans, means for moving said carriage towards said front wall for simultaneously engaging the bottoms of the front ends of said cans onto said tubular piercing members, and means for holding the back ends of said cans from moving upwards.

4. A multiple fluid dispenser, comprising a frame having a front wall, a carriage slidably mounted on said frame for moving horizontally towards said front wall, means on said carriage for supporting a plurality of cans in downwardly inclined positions with their front ends directed towards said front wall, a plurality of tubular can piercing members horizontally mounted on said front wall in positions aligning with the bottoms of the front ends of said cans, a fluid discharge pipe connected with said tubular piercing members, a compressible sealing bushing mounted on each of said tubular piercing members for sealing the connection between said tubular piercing members and the front ends of said cans, means for moving said carriage towards said front wall for simultaneously engaging the bottoms of the front ends of said cans onto said tubular piercing members, means for holding the back ends of said cans from moving upwards, and caps for encasing each of said can piercing members.

5. A multiple fluid dispenser, comprising a frame having a front wall, a carriage slidably mounted on said frame for moving horizontally towards said front wall, means on said carriage for supporting a plurality of cans in downwardly inclined positions with their front ends directed towards said front wall, a plurality of tubular can piercing members horizontally mounted on said front wall in positions aligning with the bottoms of the front ends of said cans, a fluid discharge pipe connected with said tubular piercing members, a compressible sealing bushing mounted on each of said tubular piercing members for sealing the connection between said tubular piercing members and the front ends of said cans, and means for moving said carriage towards said front wall for simultaneously engaging the bottoms of the front ends of said cans onto said tubular piercing members and locking said carriage in its forward position, said means including a plurality of toggles mounted between said carriage and said frame, a rod connecting all of said toggles together for unitary operation, a bell crank with an operating handle, and a connecting rod between said bell crank and one of said toggles.

6. A multiple fluid dispenser, comprising a frame having a front wall, a carriage slidably mounted on said frame for moving horizontally towards said front wall, means on said carriage for supporting a plurality of cans in downwardly inclined positions with their front ends directed towards said front wall, a plurality of tubular can

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piercing members horizontally mounted on said front wall in positions aligning with the bottoms of the front ends of said cans, a fluid discharge pipe connected with said tubular piercing members, a compressible sealing bushing mounted on each of said tubular piercing members for sealing the connection between said tubular piercing members and the front ends of said cans, and means for moving said carriage towards said front wall for simultaneously engaging the bottoms of the front ends of said cans onto said tubular piercing members and locking said carriage in its forward position, said means including a plurality of toggles mounted between said carriage and said frame, a rod connecting all of said toggles together for unitary operation, a bell

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crank with an operating handle, and a connecting rod between said bell crank and one of said toggles, and means for limiting moving of said toggles to positions slightly past their dead centers.

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