

[54] ASPHALT STORAGE AND LOADING APPARATUS AND METHOD

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[56] References Cited

UNITED STATES PATENTS

2,729,209 1/1956 Miller 126/343.5 A
 2,764,973 10/1956 Miller 126/343.5 A

546,426 9/1895 McCoy 214/317
 3,301,441 1/1967 Werner et al. 222/146 R
 3,345,497 10/1967 Porteous 219/428 X
 2,728,473 12/1955 Pickard et al. 214/315

FOREIGN PATENTS OR APPLICATIONS

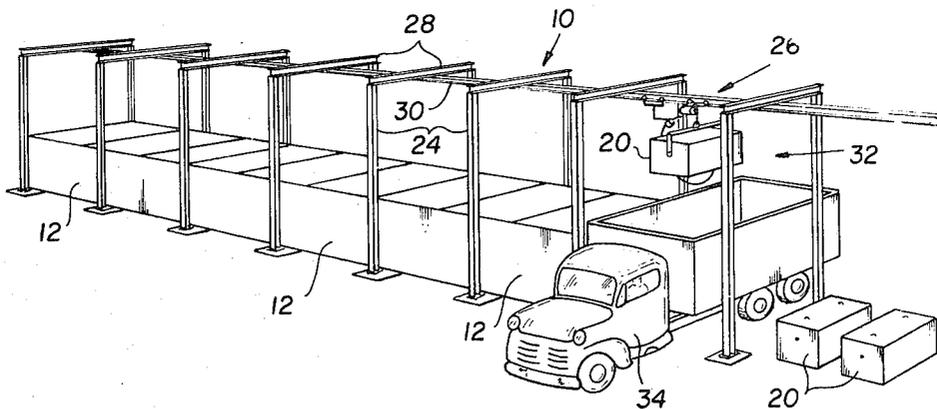
1,106,902 5/1961 Germany 126/343.5
 142,945 8/1961 U.S.S.R. 214/41

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[57] ABSTRACT

An asphalt storage and loading apparatus advantageously located adjacent to or distant from an asphalt plant and operated independently thereof, said apparatus including plural heated enclosures arranged in side-by-side relation to define an asphalt storage station, and an overhead conveyor arranged to extend along said storage station and also beyond one end thereof so as to define an asphalt loading station, whereby asphalt carriers can be loaded with asphalt by said overhead conveyor.

6 Claims, 5 Drawing Figures



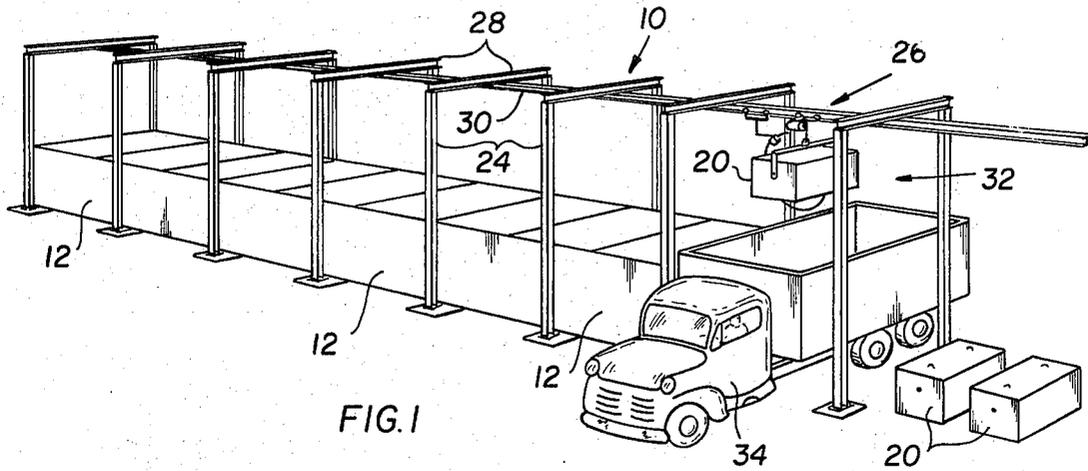


FIG. 1

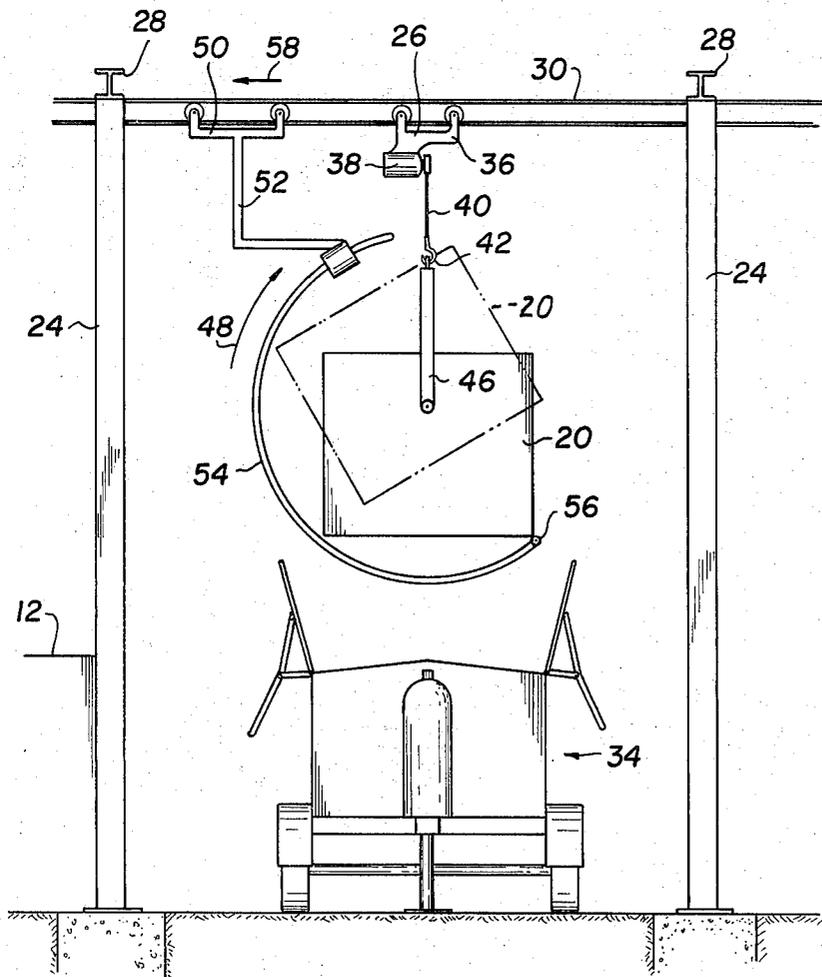
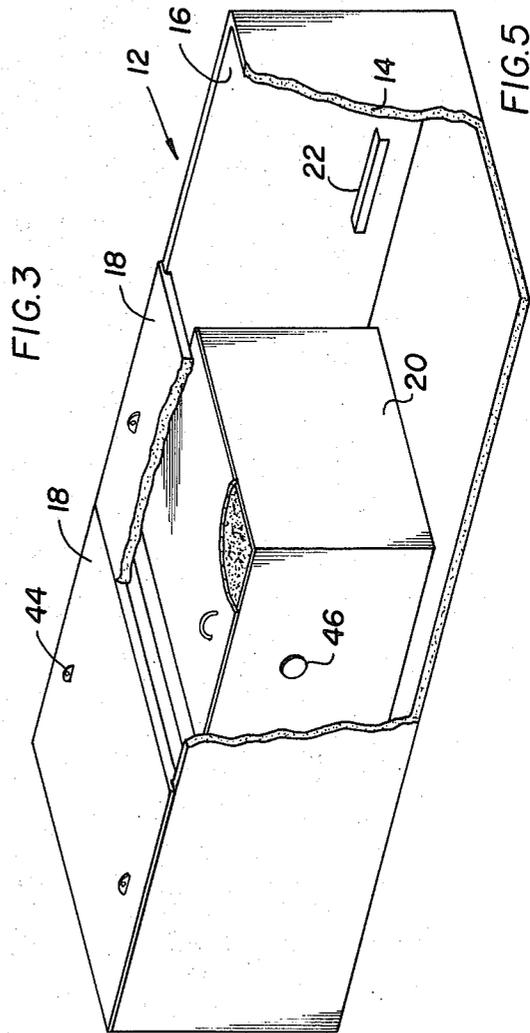
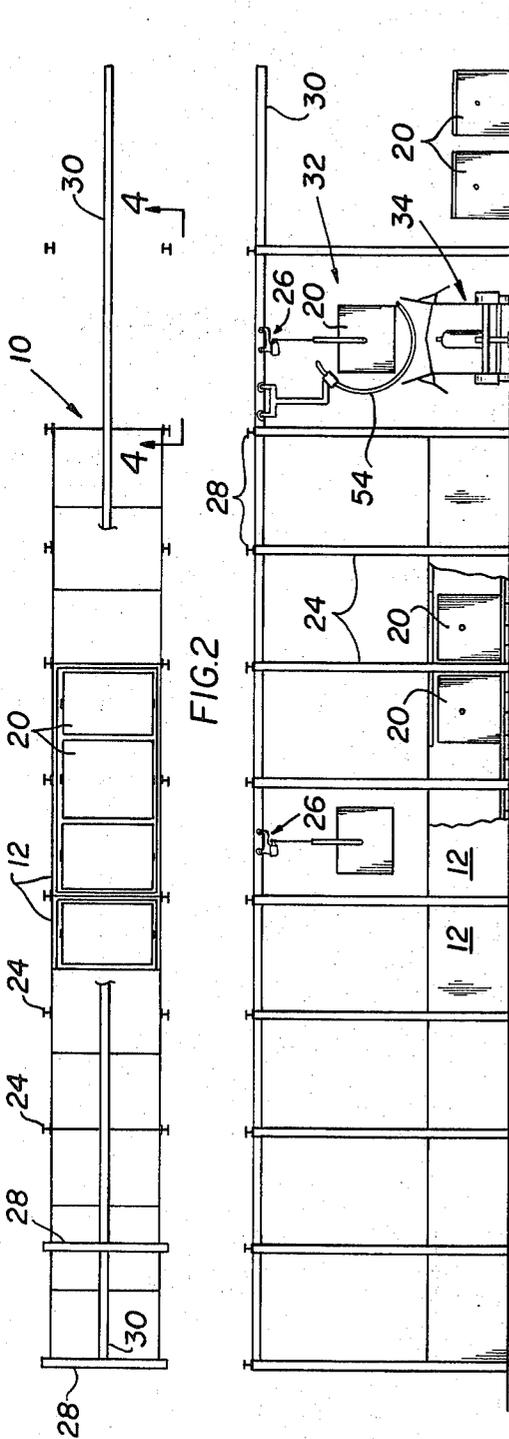


FIG. 4

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ASPHALT STORAGE AND LOADING APPARATUS AND METHOD

The present invention relates to the handling of asphalt preparatory to its use for road repair.

Current practice is to have a centrally located asphalt mixing plant at which the ingredients making up the asphalt are mixed on a daily basis and loaded onto trucks or other mobile units preparatory to being used for road repair. Further, to minimize separation of the aggregate from the asphalt which may result from a prolonged period of storage of the asphalt under improper conditions, the loading of the asphalt onto the trucks is usually accomplished at a specified time at the beginning of the day's operations. Accordingly, it is not uncommon for there to be a long line-up of trucks at the asphalt mixing plant at the beginning of each day's operations. Although this routine is obviously wasteful of time, it is nevertheless the prevalent practice because it has been found impractical to operate the asphalt mixing plant throughout the day in order to stagger the traffic of trucks coming to the plant to receive their requirement of this material.

According to one aspect of the present invention, there is provided a storage and a loading apparatus in which significant amounts of asphalt can be properly stored and subsequently loaded onto trucks preparatory to use for road repair. In this manner, material pick-up can be staggered throughout the day and furthermore is rendered independent of the operational requirements of the asphalt mixing plant.

Further features and advantages of the present invention will become apparent from the following description of an embodiment thereof, given by way of example only, with reference to the accompanying drawings, in which:

FIG. 1 is a perspective view of an asphalt storage and loading apparatus according to the present invention;

FIGS. 2 and 3 are respectively plan and elevational views showing further details of said apparatus;

FIG. 4 is a front elevational view, on an enlarged scale, of the loading area of said apparatus and illustrating still further structural details thereof; and

FIG. 5 is a perspective view of a bulk storage unit for said asphalt, with external portions broken away to better illustrate internal structural features thereof.

Reference is now made to the drawings, and in particular to FIG. 1, illustrating a storage and loading apparatus, generally designated 10, designed specifically for the handling of asphalt such as is used in road repair.

Apparatus 10 may be used in conjunction with, and at a location near, an asphalt mixing plant so that it can be readily supplied with asphalt or at locations distant or remote from an asphalt mixing plant. To this end, the apparatus 10 is provided with an asphalt storing station which includes a plurality of asphalt bulk storage bins, or ovens, individually and collectively designated 12. Specifically, and as best illustrated in FIG. 5, each bin 12 is a substantially rectangular unit having insulated walls 14 which cooperate to bound an internal storage space or compartment 16 having plural panels functioning as closures 18. It is contemplated that during use of the apparatus 10, a number of smaller storage container units, individually and collectively designated 20, each containing asphalt, will be stored at the

storage station within the compartment 16. The reason for this is that it is economical to provide each larger storage bin 12 or each container 20 with infrared heaters 22 which operate, in a well understood manner, to maintain the asphalt in a properly heated condition which minimizes the separation of the aggregate from the other ingredients of the asphalt.

Turning again to a consideration of FIG. 1, the bins 12, as illustrated in this figure, may be arranged conveniently in side-by-side relation within the confines of support members 24 of an overhead crane or lifting mechanism 26. That is, straddling the supports 24 are cross members 28 which, in turn, support a longitudinally oriented guide rail 30 along which the mechanism 26 appropriately moves from an operative position in which it can advantageously pick up a storage unit 20 from a storage bin 12 at the storing station, as illustrated in FIG. 3, to an operative position in which it can deliver the same to a loading station or area, generally designated 32 in FIGS. 1, 3, where the contents of the unit 20 can be conveniently loaded and thereafter unloaded into road-repair units or vehicles 34.

As may best be appreciated from consideration of FIGS. 3, 5, the lifting mechanism 26 includes a carriage 36 which rides along the rail 30 and has a motor 38 thereon operatively arranged to raise and lower a cable 40 terminating in a hook 42 which can be engaged to the bin covers 18, as at 44, to obtain access to the storage units 20 which then, in turn, can be lifted, when engaged as at 46, from the storage compartment 16. The engaged unit 20 is then moved from above the storage bin 12 to the loading area 32 by movement of the mechanism 26 longitudinally along the rail 30.

Mechanism 26 also includes a dumping means 48 having a carriage 50, an L-shaped depending arm 52, and a circumferential turning member 54 connected at its free end, as at 56, to a remote lower corner of the unit 20. Accordingly, in response to movement of carriage 50 in the direction 58 away from the then stationary lifting mechanism 26, the unit 20 is rotated, as illustrated in FIG. 4, from its solid line position into its dumping position, the latter position being illustrated in phantom perspective. As a consequence, the asphalt contents of the unit 20 is dumped into the vehicle 34 preparatory to its use for road repairs.

In the side-by-side or linear arrangement illustrated in the drawings, the empty storage containers 20 may be conveniently stored alongside the loading station or area 32 to be subsequently filled or loaded with asphalt at a convenient time and thereafter placed back into the storage station which includes the bins or vaults 12. However, it will be recognized that the linear arrangement disclosed should not constitute a limitation upon the scope of the invention nor should the illustration of individual storage bins 12 for each storage container 20 be deemed to be a limitation upon the invention.

It will be well recognized by those skilled in the art that the illustrated arrangement has been done for convenience of understanding and explanation. It should be apparent that in practice, the storage station may have vaults or bins 12 which may be sufficiently large to accommodate a plurality of the asphalt storage containers 20 and that each container 20 may have its own individual heating means 22 either in substitution of the heating means provided at the storage station or in supplement thereof.

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In practice, the empty containers 20 may be conveniently stored adjacent the loading station 32 in the manner described and illustrated in FIGS. 1 and 3, in which event they are adapted to be filled or loaded at the loading station 32 by the operation of the conveyor means preparatory to storing. If the asphalt mixing plant is at a distant location, the empty containers are taken to the same to be refilled and then returned to the apparatus 10. Thereafter, they are moved to the appropriate storing station where they are kept in the desired heated condition such that the ingredients or aggregate does not separate from the asphalt. Thus, a unique feature of the invention is the ability to provide a constant and continuous source of stored asphalt in a ready heated condition for use. When a load of asphalt is required, the conveyor means is operated to selectively remove and convey at least one or more of the storage containers 20 from the storage station to the loading station where it is then unloaded into the vehicle 34. Thereafter, it is stored empty out of the way or refilled and stored at the storing station for future unloading.

While there have been shown and described and pointed out the fundamental novel features of the invention as applied to a preferred embodiment thereof, it will be understood that various omissions and substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention. It is the intention, therefore, to be limited only as indicated by the scope of the claims appended hereto.

What is claimed is:

1. An asphalt storage and loading apparatus comprising a plurality of asphalt containers, an essentially closed asphalt storage station for storing said plurality of asphalt containers therein, means for heating said asphalt containers while the same are stored in said asphalt storage station, a combined loading-unloading station separate from said storage station to and from which said plurality of asphalt containers are adapted to be conveyed to be loaded with asphalt material preparatory to storing the same at said storage station and to be unloaded of asphalt material after having been stored and a reserve station to and from which empty asphalt containers are stored preparatory for loading, a plurality of covers on and removable from said storage station to open and close selected portions thereof to enable the insertion and removal of se-

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lected ones of the loaded asphalt containers into and from said storage station, and conveyor means operative between said storage and combined loading-unloading and reserve stations to convey said asphalt containers therebetween, said conveyor means including engaging means to releasably engage and move selected ones of said asphalt containers at selected times between said stations.

2. An asphalt storage and loading apparatus as defined in claim 1 wherein said overhead conveyor includes container-engaging means operatively arranged for movement in opposite directions above said plurality of storage enclosures and also arranged for descending and rising movements relative thereto.

3. An asphalt storage and loading apparatus as defined in claim 2 wherein said conveyor includes means for rotating said select container into a dumping position at said loading station.

4. An asphalt storage and loading apparatus as defined in claim 3 wherein said conveyor means defines an elevated path of movement and includes plural inverted U-shaped supports operatively arranged to straddle said stations and a guide rail suspended along a horizontal leg of each of said supports in a clearance position above said stations.

5. An asphalt storage and loading apparatus as defined in claim 4 wherein said conveyor means includes a carriage operatively arranged for movement along said guide rail.

6. In an apparatus having asphalt material containers movable between separate reserve, storage and a combined loading and unloading stations, all of such stations being connected by a conveyor, the method comprising

conveying containers loaded with asphalt material to the storage station and storing the containers thereat, heating the contents of the asphalt material in the containers to a predetermined temperature, conveying the containers loaded with the heated asphalt material to the combined loading and unloading station and emptying the heated asphalt material from the containers thereat, conveying the empty containers to the reserve station by way of the conveyor for future use, and thereafter conveying the empty containers from the reserve station to the combined loading and unloading station to load the same with a new load of asphalt material.

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