



RECYCLING METHOD USING REFUSE CHUTE(S) IN EXISTING BUILDING

Field of Invention

The present invention relates to the method of recycling, storage and discharge of
5 recyclables using existing refuse(s) chute in multi-story building(s).

Background

The advancement of construction technology has enabled the emergence of multi-story
buildings in the 1950s and 1960s. Today, multi-story buildings for residential,
10 commercial and industrial purposed can be found in many countries of the world largely
due to the increasingly acute shortage of land, especially in urban areas. With the
increasing influx of people into already over-populated cities, especially in developing
countries such as India and China, multi-story buildings are, and are likely to remain
popular in these cities.

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There are numerous concerns associated with multi-story buildings. One main concern is
the disposal of refuse. Refuse chutes are typically installed in a central locations in multi-
story buildings, and the use thereof is typically shared between building occupants.
Refuse are disposed off by the occupants into the refuse chute and are then conveyed
20 there through to collection point that is typically located at a base of the chute.
Generally, the amount of refuse conveyed through the refuse chute of a multi-story
building increases with the increasing number of stories of the building.

With the recent call for waste minimization in many countries, recycling has become an
25 important function in multi-story buildings. Newly-built multi-story buildings could
adopt a straightforward solution in providing additional chute(s) for occupants to dispose
recyclables separately from refuse. The problem lies in existing multi-story building with
only refuse chute(s). Present recycling solutions for such multi-story buildings with
provision of only refuse chute(s) include, but not limited to, the followings: dispose at
30 receptacle(s) at every level; dispose at receptacle(s) at intermediate level; dispose at



receptacle(s) at ground floor of every building; dispose at receptacle(s) at common areas shared by several buildings.

5 When such recycling practices are extended to existing multi-story buildings with only provision for refuse chute(s), there would always be inherent problems due to lack of proper built-in infrastructure from onset. Considerable resources are needed to collect recyclables deposited at receptacle(s) at multiple levels.

Summary

10 In accordance with a first aspect of the present invention, there is disclosed a recycling method for existing multi-story building fitted with refuse chute. The existing refuse chute shall be used for disposal of recyclables at specific pre-determined time period. The pre-determined time period shall be communicated to the residents and during the said period, there shall be a device such as a diverter gate to direct recyclables thrown
15 down the refuse chute into a separate compartment. The recyclables thrown down the refuse chute shall be stored in a separate compartment within the same chute chamber.

In accordance with a second aspect of the present invention, there is disclosed a method for storage and discharge of recyclables introduced into the system via means described
20 in the first aspect. The disclosed method for storage and discharge of recyclables could be implemented alongside existing method of storage and discharge of refuse in the refuse chute chamber. The means to collect the recyclables could also be implemented alongside refuse collection method provided therein the existing building infrastructure.

25 In accordance with a third aspect of the present invention, there is disclosed a storage and discharge control device comprising a diverter gate, a separate storage compartment, at least one barrier operable between a closed position and an open position for controlling discharge of recyclables to a wheel bin, which further transfers the unloaded recyclables to collection vehicle, or direct discharge into a vehicle. Entry of recyclables into the
30 storage compartment via the diverter gate is allowable when the diverter gate displaces towards the 'recycling mode' position thereof. The recyclables is accommodatable within

the storage compartment when the discharge gate(s) is at the closed position. Rate of discharge of the recyclables into wheel bin shall be controlled by manual means or motorized means.

5 **Brief Description of the Drawings**

FIG. 1 shows the schematic of present refuse storage and discharging system commonly found in high-rise residential building with common refuse chute.

10 FIG. 2 shows the front elevation of a system setup that illustrates the method of recycling with existing refuse chute via pre-determined recycling period and the disclosed recyclables storage and discharge system, according to an exemplary embodiment of the present invention.

15 FIG. 3 shows partial side elevations of various embodiments that illustrate the method of recycling with existing refuse chute via pre-determined recycling period and the recyclables storage and discharge system installed at intermediate level(s).

Detailed Description

20 Refuse and recyclables, collectively referred to as disposed items, are disposed into the system via refuse hopper 21 as shown in Fig 2. At the communicated recycling time period, the diverter gate 22 shall assume a position to divert disposed items thrown down the chute to a compartment 23 for storage of recyclables. The disposed items shall be stored in the compartment 23 until further collection.

25 Subsequent collection of disposed items in compartment 23 shall be effected by means, but not limited to, of placing a transfer receptacle 25 below the storage compartment 23 and opening discharge gate(s) 24. The discharge gate(s) 24 shall preferably be operable in a manner that could discharge the disposed items in a controlled fashion from the storage compartment 23 to the transfer receptacle 25. The discharge mechanism could
30 also take on a form that discharges directly to collection vehicle through the frontal discharge gate 29 in accordance to the process shown in Fig. 1.

During non-recycling time period, disposed items thrown down the chute shall be diverted to the refuse storage compartment 27 by means of the position of the diverter gate 26. Collection of disposed items from refuse compartment 27 is in accordance to the process shown in Fig. 1.

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In another embodiment of the disclosed invention shown in Fig. 3, the disposed items could be diverted at intermediate level to a separate compartment 32 and stored therein until subsequent discharge for collection. The disposed items could be discharged by means of releasing back into the chute via a bottom gate 33 as shown; or by means of
 10 retrieving from a front bottom door 34; or by means discharging into a movable receptacle 36 placed directly below horizontal discharge gate(s) 35 at the bottom of the storage compartment 32. The diversified means of discharging the disposed items in a controlled manner are either manually activated or partially and/or fully automated.

15 **Claims**

1. A method for recycling at existing high-rise building with only refuse chute(s) comprising:
 - utilizing the existing refuse chute for recycling purpose at specific time period; and
 - 20 channeling the recyclables disposed down the refuse chute into a separate compartment by means of a diverter gate at the refuse chute chamber during the same recycling time period; and
 - storing the recyclables in the separate compartment until the recyclables are further discharged from the storage compartment in a controlled manner for
 25 subsequent collection and/or removal.
2. The method as in claim 1, wherein a plurality of chutes could be utilized for similar recycling purpose.
- 30 3. The method as in claim 1, wherein the storage and discharge mechanism follows the same method from the refuse system.

4. The method as in claim 1, wherein the refuse chute(s) could have similar diversion for storage and discharge at intermediate level(s).

5 5. The discharge method as in claim 3, wherein the stored items could be discharged and collected at the same intermediate level(s) or lower level(s) or at the chute chamber.

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