

United States Patent

Ries

[15] 3,635,002

[45] Jan. 18, 1972

[54] GARBAGE DISPOSAL UNIT

[72] Inventor: **Adolf Ries**, Schnabel-Henning-Str. 30,
Bruchsal/Baden, Germany

[22] Filed: **Dec. 17, 1969**

[21] Appl. No.: **885,924**

2,830,674	4/1958	Dolf et al.	55/218
3,161,124	12/1964	Stromberg	100/229 R
3,421,666	1/1969	Lawson	55/432
3,479,800	11/1969	Brion et al.	55/315
3,481,268	12/1969	Price et al.	100/229 A
3,513,771	5/1970	Felts	100/229 R

[30] Foreign Application Priority Data

Dec. 20, 1968 Germany.....G 68 12 485.6

[52] U.S. Cl.....55/315, 55/429, 55/430,
55/473, 100/49, 100/215, 100/229 A

[51] Int. Cl.....B01d 50/00

[58] Field of Search.....55/218, 315, 342, 345, 349,
55/432, 385, 429, 430, 473; 214/302, 303; 302/59;
100/229 A, 49, 215

Primary Examiner—Frank W. Lutter
Assistant Examiner—Bernard Nozick
Attorney—Kurt Kelman

[57]

ABSTRACT

A garbage main delivers garbage to a hopper from which dust and fines are evacuated to a cyclone by compressors which deliver the air from the cyclone to a filtered flue. The garbage is intermittently rammed from the hopper into an adjacent receptacle where the garbage is compressed.

2 Claims, 2 Drawing Figures

[56] References Cited

UNITED STATES PATENTS

2,477,935 8/1949 Miller.....55/315

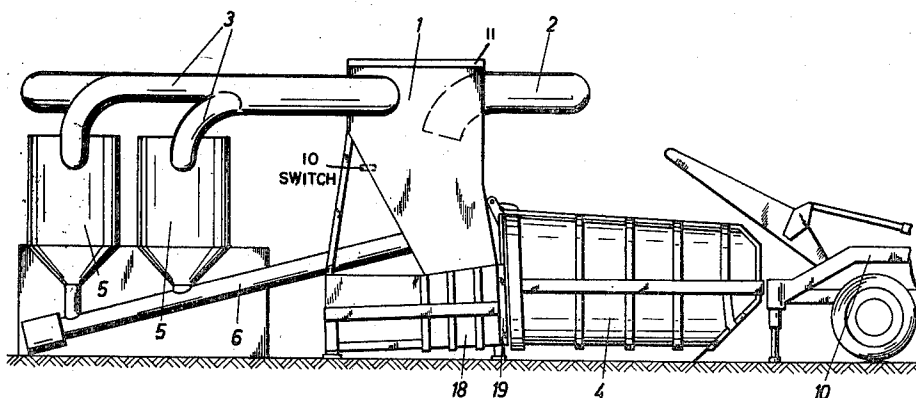
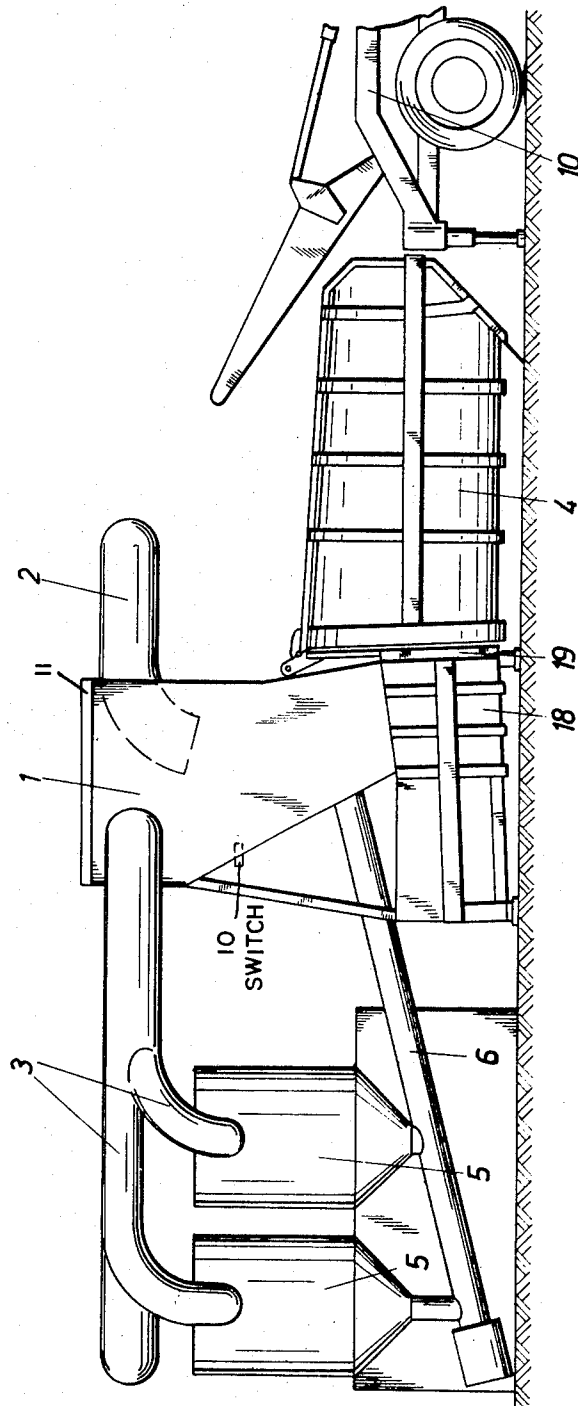
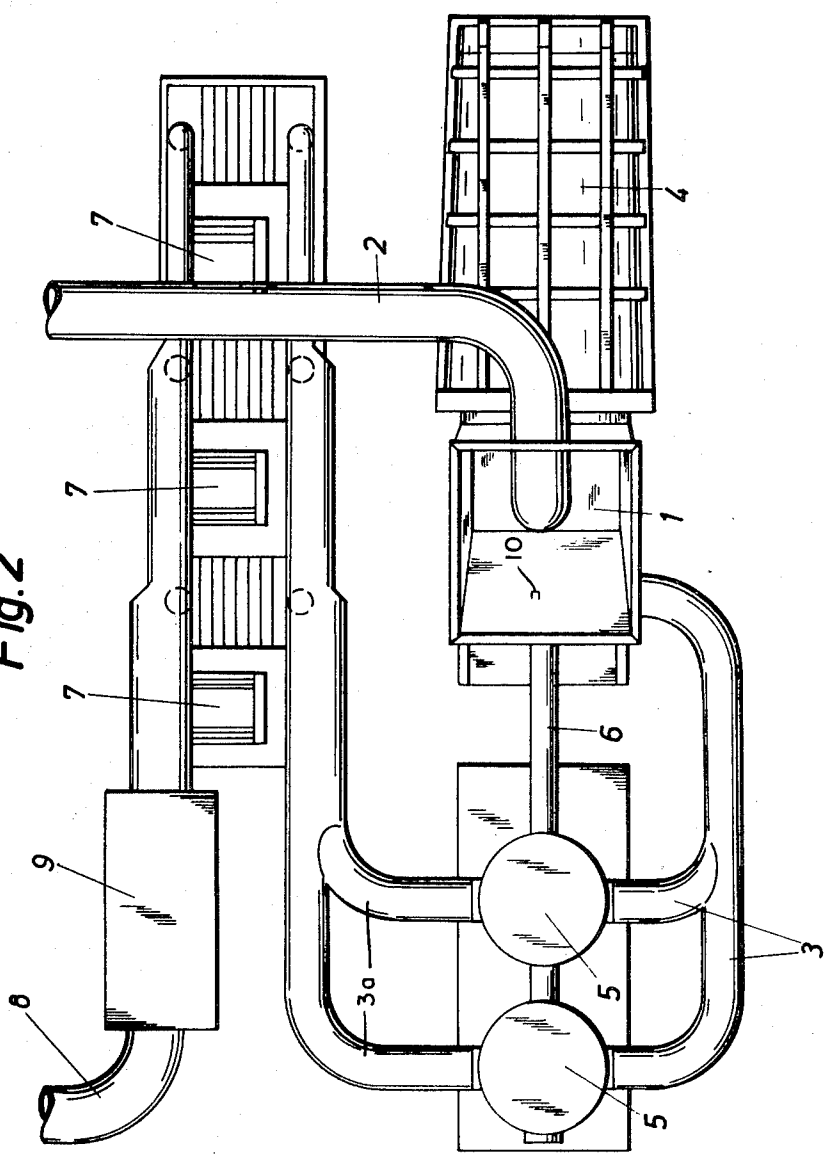


Fig.1



INVENTOR:
ADOLF RIES
BY: *Kurzman*
AGENT

Fig. 2



INVENTOR:
ADOLF RIES
BY: *[Signature]*
AGENT

GARBAGE DISPOSAL UNIT

The present invention relates to improvements in a building garbage or refuse disposal unit.

Conventional units of this type installed in modern buildings include a plurality of garbage or refuse shafts leading from floors or individual apartments to the basement where the shafts open into hoppers. The hoppers are connected to a large receptacle for holding compacted garbage, feed conduits connecting the hoppers to the receptacle and a hydraulically operated ram in the feed conduits conveying the garbage or refuse into the receptacle and compacting it therein. It has been relatively expensive to provide such garbage compacting means at each garbage disposal shaft.

It is the primary object of this invention to provide a more economical installation to service a plurality of shafts with a single-compacting apparatus.

This and other objects are accomplished in accordance with the invention by providing a garbage delivery main receiving garbage or refuse from a plurality of shafts and connected to the hopper for delivering garbage thereto. The hopper may be closed vacuumtight. Cyclone and compressor means are connected to the hopper so as to produce an airflow therein in the direction of the cyclone means whereby dust or fines are moved from the hopper to the cyclone means and are separated therein. A flue is connected to the cyclone means and a dust filter is mounted in the flue for filtering the air before it enters the surrounding atmosphere.

The intake of the compressor means may be connected to the cyclone means to produce a vacuum in the hopper. It is also possible to connect the output of the compressor means to the main to produce pressure in the main in the direction of the hopper.

According to one feature of the invention, the dust or fines separated in the cyclone means is intermittently conveyed back to the hopper by a suitable conveying means, such as a screw conveyor.

The above and other objects, advantages and features of the present invention will become more apparent from the following detailed description of a now preferred embodiment thereof, taken in conjunction with the accompanying drawing wherein

FIG. 1 schematically shows a side elevation of a garbage or refuse compacting apparatus according to this invention; and FIG. 2 is a top view of the apparatus.

Referring now to the drawing, there is shown a large receptacle 4 for holding compacted garbage or refuse. A hopper 1 delivers garbage or refuse to a feed conduit 18 which is connected to the receptacle 4 and which houses a ram 19 which is hydraulically operated to move the garbage or refuse into the receptacle under pressure.

A garbage or refuse delivery main 2 receives garbage or refuse from a plurality of garbage disposal shafts in the building and delivers the collected garbage or refuse to the hopper 1 into which the main opens. The hopper has baffles and is closed vacuumtight by cover 11 (removed in FIG. 2 to show the interior of the hopper). Cyclones 5 or like separators are connected to the hopper 1 by pipes 3, and a screw conveyor 6 is mounted below the cyclones to receive separated material from the bottom outlets of the cyclones and feed this material back to the hopper. A plurality of compressors 7 have their intakes connected to the cyclones 5 by pipes 3a to produce a vacuum in hopper 1 while the output of the compressors are connected to flue 8. A filter 9 is mounted in the flue to clean the air coming from the compressors before it enters the atmosphere.

The cyclones separate the dust and fines received in hopper 1 through the main 2 so that the dust is not sucked in by compressors 7 and disgorged into the surrounding atmosphere.

When the garbage or refuse in hopper 1 has reached a predetermined level, the compressors are disconnected and the vacuum is broken by admitting air into the hopper. At this point, the screw conveyor 6 is operated to move the dust and fines collected in cyclones 5 into hopper 1. Obviously, the screw conveyor may be replaced by other suitable dust conveying means, such as a pneumatic line reading from the outlets of the cyclones to the hopper or a pressure fluid operated ram.

The level of the garbage or refuse in the hopper is sensed by a suitable switch 10 which is tripped when the refuse has reached a predetermined level so as to discontinue operation of the compressors and simultaneously to actuate the hydraulic ram 19 so as to move the accumulated garbage or refuse into the receptacle 4. A suitably programmed switch mechanism subsequently closes the hopper 1 to make it vacuumtight again, actuates the compressors to produce a vacuum in the hopper and stops the operation of conveying means 6 until the level of refuse or garbage in the hopper has reached the predetermined level, at which time the emptying cycle is again initiated. These alternating filling and emptying cycles are repeated until receptacle 4 is full, whereupon the receptacle is disconnected from feed conduit 18, lifted onto a vehicle 10 and moved away, with an empty receptacle being reconnected to the conduit for continued operation of the garbage disposal unit.

Alternatively, the hopper may be subjected to air under high pressure, instead of a vacuum, in which case the output of the compressors 7 would be connected to main 2 so that the pressure of the air in the main carries the garbage or refuse therein to hopper 1. In this embodiment, the air from cyclones 5 would be passed directly to and through filter 9 into flue 8.

I claim:

1. A garbage disposal unit comprising
 1. a garbage receptacle;
 2. a hopper;
 3. means for closing the hopper vacuumtight;
 4. a garbage feed conduit connecting the hopper to the receptacle;
 5. a ram housed in the conduit for intermittently feeding garbage from the hopper to the receptacle;
 6. a garbage delivery main connected to the hopper for delivering garbage thereto;
 7. cyclone means having an input and an outlet for gas and an outlet for dust and fines;
 8. compressor means having an intake and an output;
 9. conduit means connecting the intake of the compressor means with the cyclone means and the hopper, the conduit means including
 - a. a first pipe connecting the hopper to the input of the cyclone means and
 - b. a second pipe connecting the cyclone outlet for gas to the compressor means intake whereby the compressor means produces a vacuum in the hopper and air flows from the hopper to the cyclone means to move dust and fines from the hopper to the cyclone means, the cyclone means separating the dust and fines, and the vacuum in the hopper sucking the garbage from the delivery main into the hopper;
 10. conveying means for the dust and fines connected between the outlet for dust and fines of the cyclone means and the hopper for intermittently transporting separated dust and fines back to the hopper;
 11. a flue connected to the output of the compressor means; and
 12. a dust filter in the flue.
2. The garbage disposal unit of claim 1, wherein the conveying means is a screw conveyor.

* * * * *