

[54] SHREDDER FOR DOCUMENTS AND THE LIKE

3,313,493 4/1967 Scott et al.241/36

[76] Inventor: Adolf Ehinger, Goethestrasse 10, D-7460 Balingen, Germany

Primary Examiner—Granville Y. Custer, Jr.
Attorney—Michael S. Striker

[22] Filed: Oct. 26, 1970

[57] ABSTRACT

[21] Appl. No.: 84,061

An upper cover portion is superimposed upon a lower housing portion of a shredder for documents and the like. The housing portion is adapted to receive shredded documents through an upper inlet therein and the upper cover portion is adapted to contain a shredding unit and has an outlet through which shredded materials can enter the inlet of the housing portion. Means mounts the cover portion on the housing portion in such a manner that is pivotably displaceable relative thereto between an operative position in which the outlet registers with the inlet and an inoperative position in which the outlet is upwardly displaced relative to and out of registry with the inlet so as to expose the same. Further means may be provided to assist such displacement, in form of springs or the like, and also to counterbalance the weight of the portions during displacement.

[30] Foreign Application Priority Data

Oct. 27, 1969 Germany.....P 19 54 009.1

[52] U.S. Cl.241/100

[51] Int. Cl.B02c 19/00

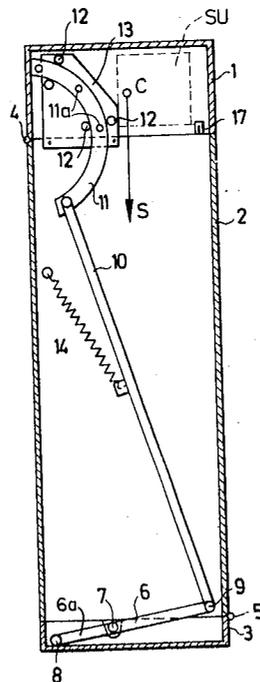
[58] Field of Search241/36, 100; 220/18, 36; 248/134

[56] References Cited

UNITED STATES PATENTS

929,960	8/1909	Low.....	241/100 X
1,011,513	12/1911	Spuhl.....	248/134 X
805,047	11/1905	Watson.....	248/134
2,658,646	11/1953	Hinriche.....	248/134 X
2,904,268	9/1959	Chappell et al.....	241/100 X

8 Claims, 3 Drawing Figures



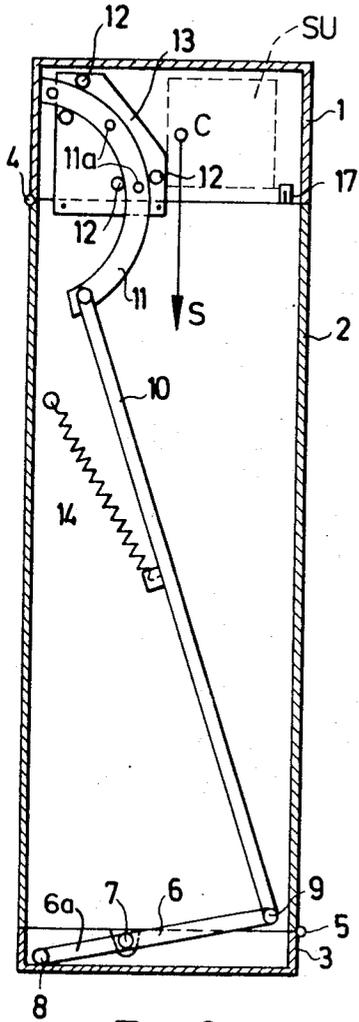
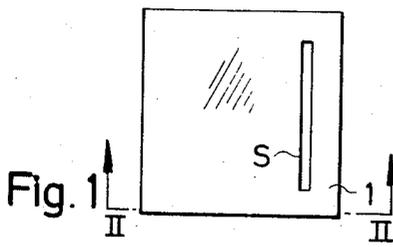


Fig. 2

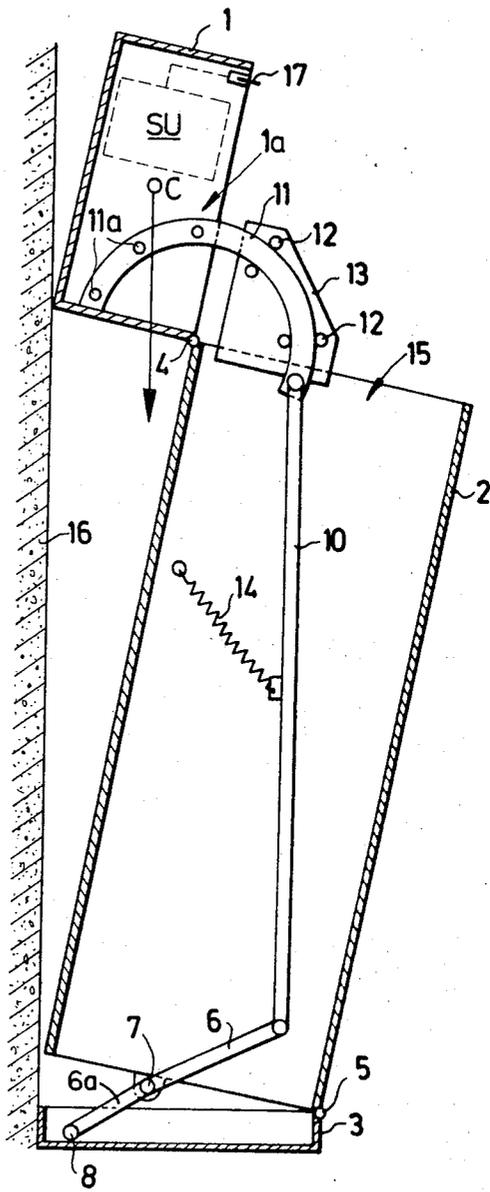


Fig. 3

INVENTOR:
 ADOLF EHINGER
 BY *Michael P. Hodler*
 Attorney

SHREDDER FOR DOCUMENTS AND THE LIKE**BACKGROUND OF THE INVENTION**

The present invention relates generally to a shredder, and more particularly to a shredder for documents and the like.

Document shredders are already well known, finding relatively wide use in industry, for diplomatic purposes and for military purposes where documents and similar materials are to be shredded, that is to be reduced to portions of such size as to make it impossible to piece them together and reassembly the original document whose contents are intended to be kept secret. Known shredding devices for this purpose have a housing provided with an upper cover portion which is either of one part with the main housing the latter of which accommodates the shredded materials, or which is releasably placed upon the main housing. The latter is provided with a door in one of its lateral sides through which the shredded materials can be removed. Frequently a receptacle is accommodated in the interior of the main housing into which receptacle the shredded materials will fall, and which receptacle can be removed and replaced through this door.

Insofar as the actual shredding operation of documents or like materials is concerned, the known shredding devices are satisfactory. However, they have a disadvantage in their size requirements because the lateral door for removal of the shredded materials makes it necessary to provide more space than the actual floor space required by the outline of the main housing itself. Space, however, is frequently at a premium in offices and other locations and it is therefore a disadvantage that such additional space is required to permit opening and closing of the door, and removal of the shredded materials therethrough. A further disadvantage of the known constructions is the fact that the known shredding devices must be relatively closely supervised because there is nothing to prevent the actual shredding unit from continuing operation even if the space provided for accommodating the shredded materials is filled to overflowing. The result of this can be that the back pressure of excess shredded materials may lift the cover portion with the actual shredding unit off the main housing if the cover portion is of the removable type, thereby more or less exposing the shredding unit and endangering personnel who might inadvertently move a limb into the reach of the shredding unit in attempting to replace the cover portion.

SUMMARY OF THE INVENTION

It is, accordingly, an object of the present invention to provide an improved shredder of the type under discussion which is not possessed of these disadvantages.

More particularly it is an object of the present invention to provide such an improved shredder which does not require a door for removal of shredded materials.

Again, it is an object of the invention to provide such an improved shredder in which the materials can be removed through an upper opening in the main housing, and in which the cover portion accommodating the shredding unit can be pivotally displaced with reference to the main housing portion to permit access to the interior thereof through this upper opening.

A concomitant object of the invention is to provide such a shredder which is provided with a safety arrangement for terminating operation of the shredding unit in the upper cover portion in automatic response to displacement of the latter pivotably with reference to the main housing portion.

In pursuance of the above objects, and others which will become apparent hereafter, one feature of the invention resides in a shredder for documents and the like which, briefly stated, comprises a lower housing portion adapted to receive shredded documents and being provided with an upper inlet, and an upper cover portion adapted to contain a shredding unit for shredding of documents and analogous materials, and having an outlet. Means is provided mounting the cover portion on the housing section portion pivotably displaceable relative thereto between an operative position in which the outlet registers with the inlet, and an inoperative position in which the outlet is upwardly displaced relative to and out of registry with the inlet so as to expose the same.

According to a further and currently preferred embodiment of the invention the housing section itself may be pivotably mounted on a stationary base section. The two sections, as well as the housing section and the cover portion, may be connected with one another through motion-transmitting means, such as a rod-linkage or a rope-linkage or the like, which enforces pivotal displacement of the housing section with reference to the base section in response to pivotal displacement of the cover portion with reference to the housing section through for instance at least 90°. In fact, it is preferred that the pivotal displacement be in mutually opposite directions, that is, that the upper cover portion be pivotally displaced in one direction with reference to the housing section, whereas the housing section is displaced pivotally with reference to the base section in an opposite direction. Furthermore, the upper cover portion should at all times remain located entirely within the outlines of the lower base section and then pivoted to the maximum extent so as not to require additional space.

Particularly the latter feature makes it possible to place a shredder according to the present invention directly or almost directly against a wall, a desk or the like with its back, because when the upper cover portion is pivotably displaced in the direction towards the wall, the desk or the like with reference to the upper section of the main housing, it is not necessary to move the shredder away from the wall, desk or the like at all. Instead, the upper section is pivotably displaced outwardly away from the wall, desk or the like in response to displacement of the cover portion towards the wall, desk or the like. Because the housing cover portion is carried by the upper section, the it moves forwardly away from the wall, etc. at the same time as it is pivotably displaced towards it, so that it will always remain out of actual abutment therewith. Furthermore, the forward tilting or pivotal displacement of the housing section provides for readier access to the interior thereof, because it offers the upper inlet opening of the upper section to an operator so that he or she can readily remove from the housing section a receptacle—such as a bag or the like—through this inlet.

In addition, the shredder according to the present invention makes it possible in a very simple manner to

provide for automatic deactivation of the shredding unit accommodated in the upper cover portion whenever the latter is pivotably displaced with reference to the housing section. In fact, automatic deactivation occurs when the receptacle in the main housing is filled to the maximum permissible extent, because at that time back pressure of the shredded material will act upon the upper cover portion in a sense raising the latter and slightly displacing it pivotably as indicated. According to the invention I provide a cut-off switch which is so arranged that even a slight raising will interrupt the electric circuit to the usually electrically operated shredding unit accommodated in the upper cover portion so that it becomes impossible to shred further documents until the shredded material already accommodated in the housing section is removed.

According to the present invention the relative displacement of the various components of the shredder according to the present invention is assisted by counterbalancing means, such as springs, so that such displacement can occur without the exercise of any substantial forces and without difficulty. This is particularly important as concerns the upper cover portion which is relatively heavy due to the presence of the relatively heavy shredding unit. By having the upper cover portion and the tiltable housing section pivot in mutually opposite directions, I guarantee that the center of gravity of the upper relatively heavy cover portion will always remain within the outlines of the lower base section whereby the danger of tilting or falling-over of the unit during such relative displacement is avoided.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a diagrammatic top-plan view of a shredder according to the present invention;

FIG. 2 is a vertical sectional elevation taken on line II—II of FIG. 1; and

FIG. 3 is a view similar to FIG. 2 but showing the shredder according to the present invention in opened condition.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Discussing the drawing in detail it will be seen that in FIG. 1 I have illustrated a top-plan view of my novel shredder in which only the upper cover portion 1 is visible. Of course, the outline of the unit need not be quadratic as shown, but could be rectangular, generally polygonal or otherwise configured if desired. The quadratic showing is simply for the purpose of illustration.

In any case, FIG. 2 shows that the shredder according to the present invention in addition to the upper cover portion 1 comprises a housing section 2 and a lower base section 3. The lower base section 3 may rest with its bottom surface on the ground, or it may be

placed on rollers, wheels or the like. The cross-sectional configuration of the components 1, 2 and 3 is identical and when the unit is closed as shown in FIG. 2, they together constitute a unitary closed housing.

Because the actual shredding unit which shreds the documents and similar material, is of no importance for the purposes of the present invention other than to point out that it will be present in a device of this character, it has been shown only in phantom lines and identified with reference characters SU. Any of the shredding units known for this purpose can be employed. However, it will be located in the upper cover portion 1 and documents will for instance be fed to it through the slot S shown in FIG. 1. Once shredded, the material will fall through the outlet opening 1 a (see FIG. 3) of the upper cover portion 1 into the inlet 15 of the housing section 2 which latter may accommodate a bag, a basket, or another receptacle into which the shredded materials can fall.

According to the present invention the upper cover portion 1 is pivotably mounted at the upper edge of the upper section 2 for turning movement about a substantially horizontal axis 4 located at one lateral side of the housing section 2. This side is the rear side, namely the side which will normally face a wall 16 or the like. Conversely, the housing section 2 is pivotably connected with the upper edge of the lower base section 3 for turning movement about another substantially horizontal axis 5 which, however, is located at the opposite lateral side from the axis 4, that is at the side of the unit which will normally be facing away from the wall 16.

The components 1, 2 and 3 are connected via suitable means, for instance linkage means, in a sense effecting their relative displacement when the upper cover portion 1 is displaced. Specifically, only one half of this means is shown in the drawing, it being understood that an identically configured half is located at each lateral side of the unit, of which only one is visible due to the location through which the section was taken in FIG. 1. Of course, it is conceivable to use a single such arrangement but two are preferred because they provide for greater stability of the unit and ease of its operation.

As FIGS. 2 and 3 show, a double-armed lever forming part of linkage means is provided having two arms 6 and 6 a of unequal length which are pivotably jointed at 7. At 7 they are also secured to the lower edge portion of the upper section 2 (compare FIG. 3) and one free end of the arm 6 a is identified with reference numeral 8 and normally abuts and bears upon the interior side of the bottom of the section 3, whereas the other free end 9 of the arm 6 is pivotably connected with a linkage rod 10 which forms another part of the linkage means. The upper end of the linkage rod 10 is pivotably connected with an arcuate guide member 11 which is fixed at 11 a to the upper cover portion 1 as illustrated and which is guided for movement between rollers 12 mounted in a plate member 13 which is rigidly connected to one lateral side of the upper section 2. Components 11 and 12 form further parts of the linkage means. The member 11 assures proper guidance of the upper cover portion 1 during pivoting thereof about the axis 4 from closed position to open position shown in FIG. 3, and vice versa.

A tension spring 14 is provided whose opposite ends are respectively connected to the section 2 and to the linkage rod 10 and which assists in displacement of the upper cover portion 1 with reference to the section 2, in effect constituting the counterbalancing means for the weights which are to be displaced.

It will be appreciated that displacement of the upper cover portion 1 about the axis 4 from the position of FIG. 2 to the position of FIG. 3, or vice versa, is transmitted via the member 11 and the linkage rod 10 to the lever 6, 6 a. Because the free end of lever 6 a abuts at 8 against the section 3, and because of the pivotal connection at 7 where the lever 6, 6 a is also secured to the upper section 2, this forces a simultaneous lifting and pivotal displacement of the upper section 2 about the axis 5 in direction opposite to the displacement of the upper cover portion 1 about the axis 4.

A consideration of FIG. 3 will clearly show that because of the inventive construction even full opening movement of the upper cover portion 1 will not cause the same to abut against the wall 16, due to the simultaneous tilting of the housing section 2 in the opposite direction about the axis 5. It should be pointed out, incidentally, that the tilting of the housing section 2 with reference to the section 3 is relatively minor and does not require much space, but is sufficient to clearly and advantageously present the inlet opening 15 to a person wishing to remove the receptacle containing the shredded materials. It is further pointed out that the center of gravity C of the upper cover portion 1 will always be located within the outline of the lower base section 3, even when the upper cover portion 1 is tilted to the maximum possible extent. This is indicated by the arrow which makes it clear that a vertical projection taken from the center C downwardly will be evidently located within the outline of the section 3, thus assuring that tipping-over is avoided under all circumstances.

As also shown in FIGS. 2 and 3, I further provide a cut-off switch 17 which in the illustrated embodiment is located at the edge of the upper cover portion 1 bounding the outlet 1a thereof and which is known per se from the art in many different suitable constructions. It is also known from the art how such a switch can be connected by way of an operative connection (suggested in phantom lines in FIG. 3) with the shredding unit SU so as to interrupt the supply of electrical energy to the latter when the upper cover portion 1 is displaced from the position shown in FIG. 2 although not necessarily to the extent shown in FIG. 3. Even a slight displacement of this type will suffice to interrupt the circuit via the switch 17. This not only makes it possible to safely clean the shredding unit SU. It further assures that when the receptacle accommodated in the housing section 2 is filled to overflowing, back pressure of the shredded materials in the receptacle acting upon the upper cover portion 1 and sufficient to lift the same even slightly, will cause the switch 17 to interrupt the supply of electrical energy to the shredding unit SU and will thus prevent further shredding of additional documents or similar materials until such time as the already shredded material has been removed.

Naturally the rigid coupling illustrated in FIGS. 2 and 3 for forcing relative displacement of the components can be modified and replaced with other possibilities,

for instance with a rope linkage, a chain linkage or the like. Also, the configurations and dimensions of the various components, including the various portions or sections of the housing, can be varied without departing in any way from the scope and concept of the present invention.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of constructions differing from the types described above.

While the invention has been illustrated and described as embodied in a shredder for documents and the like, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be protected by Letters Patent is set forth in the appended claims:

1. In a shredder for documents and the like, in combination a stationary base section having a circumferential outline; a housing section mounted on said base section and having an interior compartment adapted to store shredded matter and having an upper inlet constituting an entrance to said compartment; an upper cover portion positioned above and mounted on said housing section for tilting movement relative to said housing section, a shredding unit positioned in said cover portion above said inlet of said housing section, said cover portion being tiltable with respect to said housing section in a first direction from a closed position in which said cover portion overlies said inlet and in which the center of gravity of said cover portion is located above said base section but within said circumferential outline thereof to an open position in which said cover portion exposes said inlet, said housing section being tiltable with respect to said stationary base section in a second direction opposite to said first direction; and means for causing said housing section to tilt relative to said base section in said second direction during tilting of said cover portion in said first direction, and for defining a resultant path of movement of said cover portion at every point of which said center of gravity of said cover portion is located above said stationary base section and within said circumferential outline of said base section.

2. In a shredder as defined in claim 1, said means comprising rod-linkage means.

3. In a shredder as defined in claim 1, said means including at least one arcuate coupling member fast with said cover portion, and roller means on said housing section for guidingly engaging said coupling member during relative movement between said cover portion and said housing section.

4. In a shredder as defined in claim 3; further comprising at least one additional arcuate coupling member similar to the first-mentioned arcuate coupling member

7

8

and spaced from the same, and additional roller means guidingly engaging said additional arcuate coupling member.

5. In a shredder as defined in claim 3, said means comprising at least one tiltable lever having two articulately connected arms of unequal length, the free end of one of said arms bearing upon said base section, and a coupling rod having spaced terminal portions which are respectively articulately connected with said coupling member and with the free end of the other arm.

6. In a shredder as defined in claim 1; and further comprising at least one spring having opposite end portions respectively connected with said housing section and with said means, for at least partially counterbalancing the weight of said cover portion and said

housing section, respectively.

7. In a shredder as defined in claim 1, said housing section having two opposite lateral walls each defining a plane, said housing section being mounted on said base section for pivotable movement relative thereto about a first horizontal pivot axis located in the plane of one of said walls, and said cover portion being mounted on said housing section for pivotable movement relative thereto about a second horizontal pivot axis located in the plane of the other of said walls.

8. In a shredder as defined in claim 1; and further comprising electrical switch means for automatically terminating operation of said shredding unit within said cover portion in response to movement of said cover portion to said open position thereof.

* * * * *

20

25

30

35

40

45

50

55

60

65