

United States Patent

[15] **3,704,777**

Linnebuhr, deceased

[45] **Dec. 5, 1972**

[54] **CONTAINER FOR MAGNETIZABLE ARTICLES**

2,544,114 3/1951 Steinberg221/212
 3,269,528 8/1966 Leedy206/1 R
 3,587,835 6/1971 Shore206/1 R

[72] Inventor: **Eckhard Linnebuhr, deceased**, late of Herne, Germany by Karin Linnebuhr, heir

Primary Examiner—Joseph R. Leclair
Assistant Examiner—Steven E. Lipman
Attorney—Ernest F. Marmorek

[73] Assignee: **Arlac-Werk Heiko Ippen KG**, Hamburg, Germany

[22] Filed: **Aug. 12, 1971**

[21] Appl. No.: **171,101**

[57] **ABSTRACT**

[30] **Foreign Application Priority Data**

Aug. 26, 1970 GermanyG 70 31 863.7

A container for storing and dispensing magnetizable articles such as paper clips, nails and the like, consisting substantially of a box shaped casing defining one or a plurality of chambers for receiving such articles. When more than one chamber is provided, adjacent chambers are separated by a dividing wall. Each chamber includes an opening, a curved guide surface extending from the opening towards the container interior and a bar magnet arranged below the guide surface.

[52] U.S. Cl.206/1 R, 206/DIG. 33, 221/212

[51] Int. Cl.A45c 11/00

[58] Field of Search206/1 R, 56 AC, DIG. 33; 221/212

[56] **References Cited**

UNITED STATES PATENTS

938,235 10/1909 Hermann221/212

10 Claims, 13 Drawing Figures

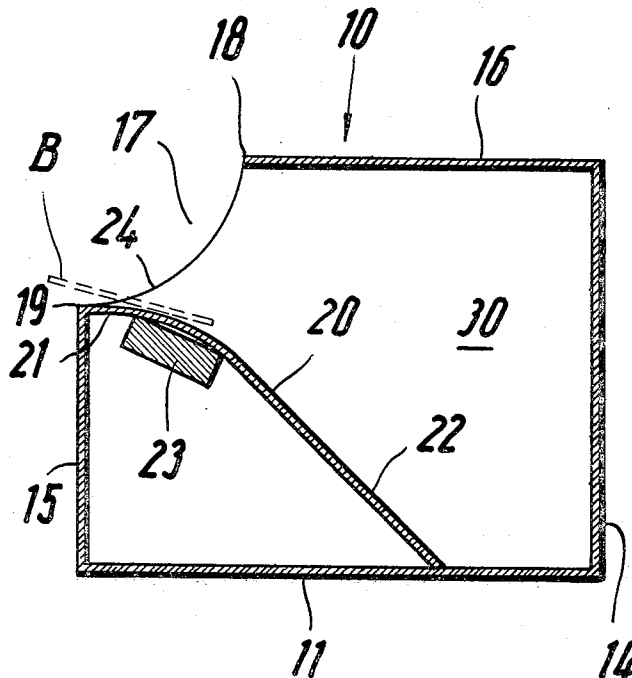


Fig. 1

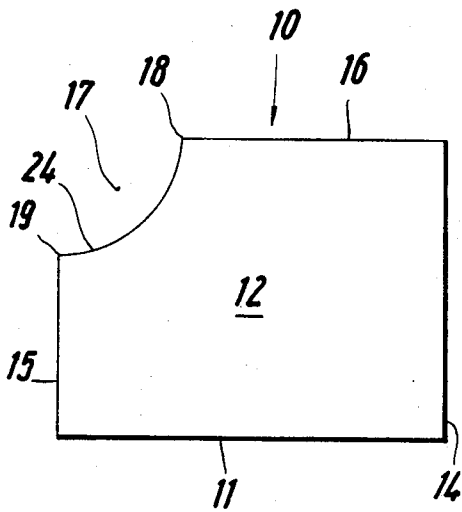


Fig. 2

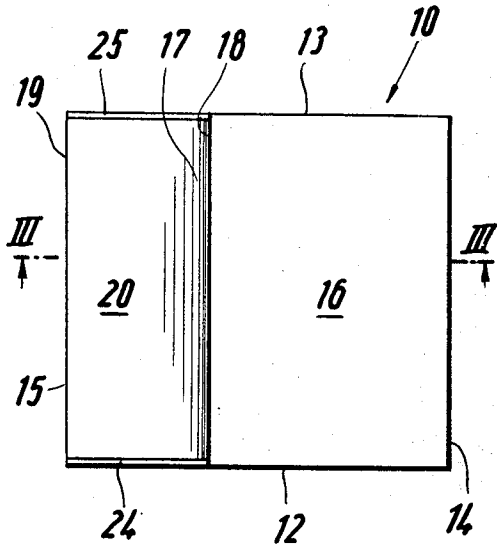


Fig. 3

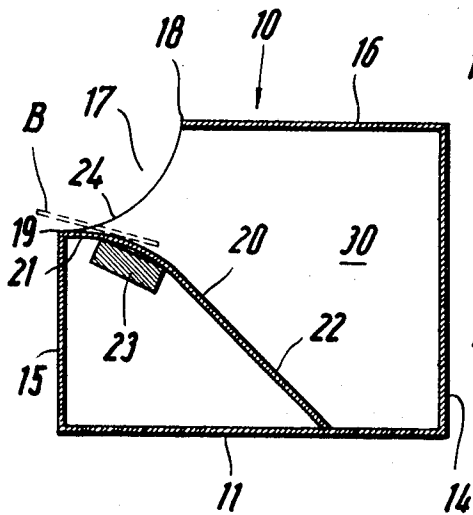
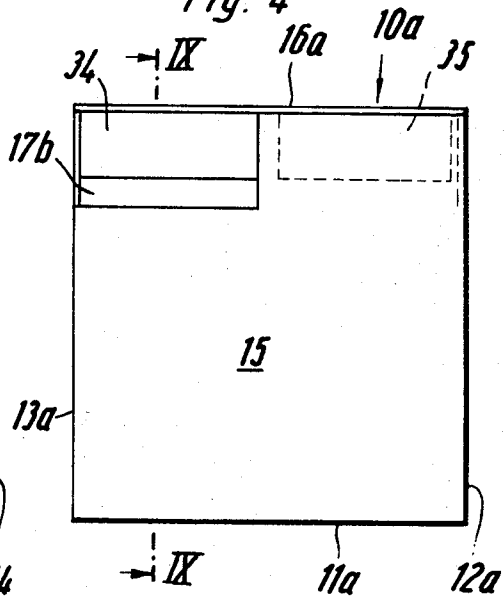
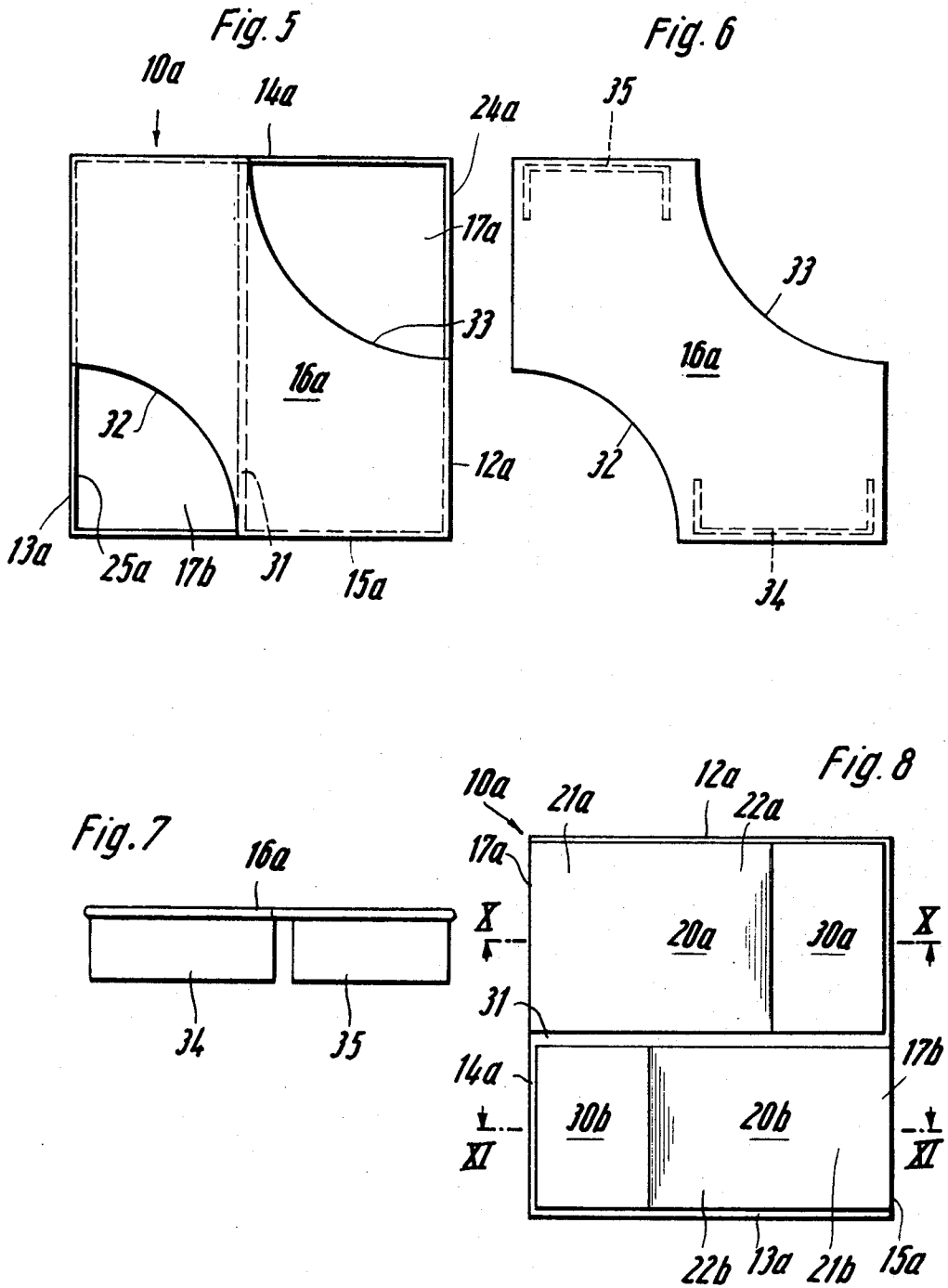


Fig. 4



Inventor:
ECKHARD LINNEBUHR

Eckhard Linnebuhr
HIS ATTORNEY



Inventor:
ECKHARD LINNEBUR

Eckhard Linnebur
HIS ATTORNEY

Fig. 9

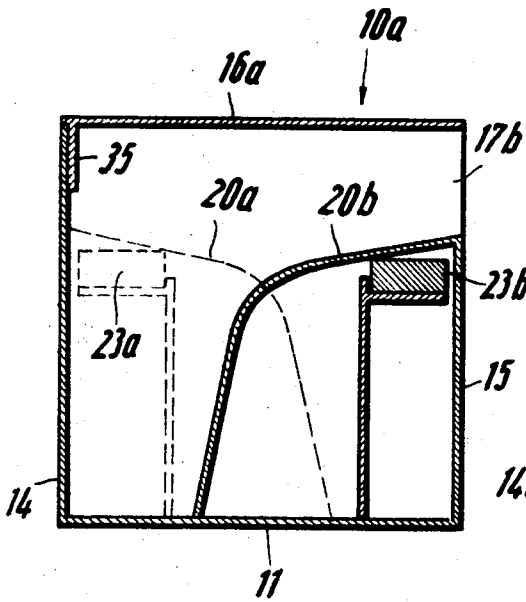


Fig. 10

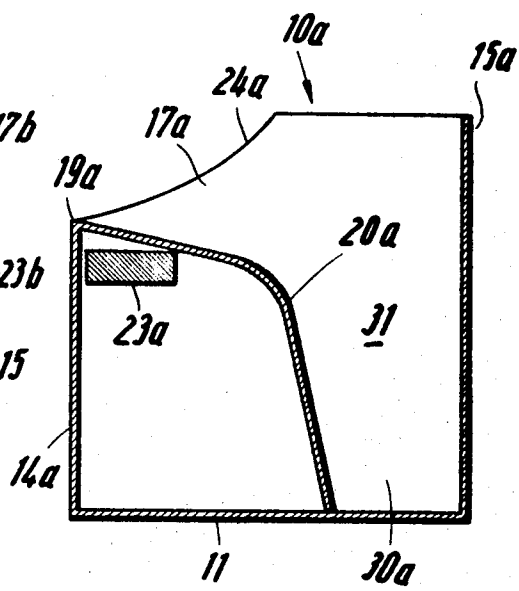


Fig. 11

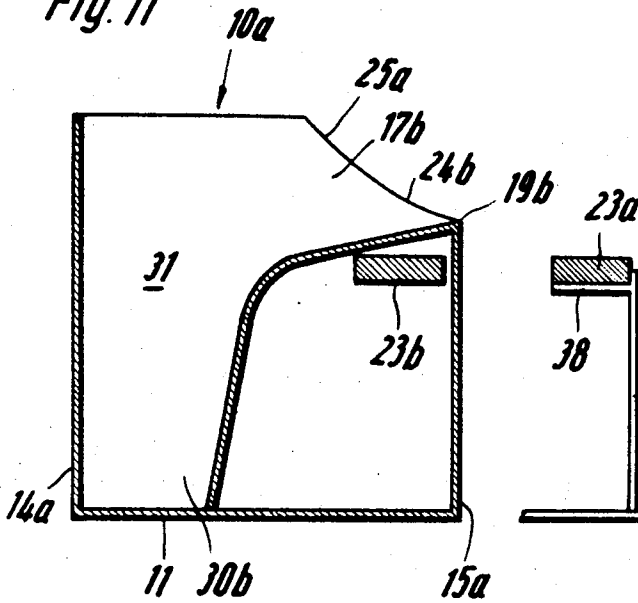
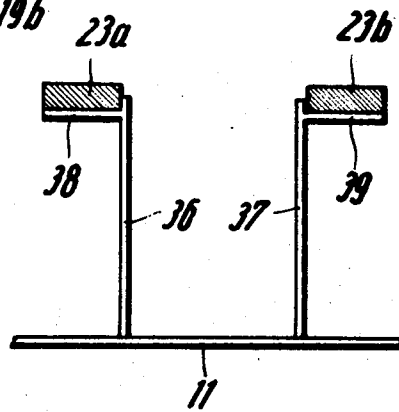


Fig. 12

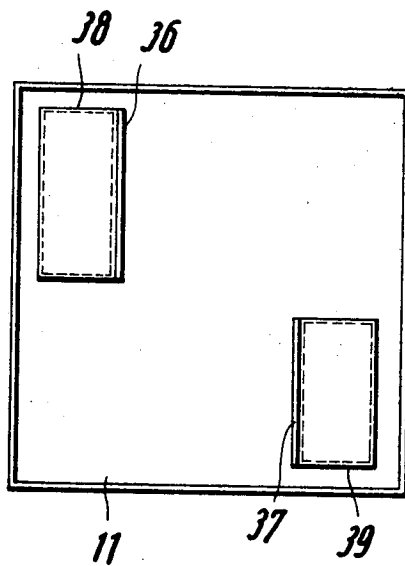


Inventor:

ECKHARD LINNEBUHR

Eckhard Linnebuhr
HIS ATTORNEY

Fig. 13



Inventor:

ECKHARD LINNEBUHR

Ernst A. Marwood

HIS ATTORNEY

CONTAINER FOR MAGNETIZABLE ARTICLES

DESCRIPTION OF THE INVENTION

The present invention relates to a container for magnetizable articles and more particularly to a supply and dispensing container wherein the container comprises a magnet.

Some forms of supply and dispensing containers for magnetizable articles such as paper clips and pins are already known. A container for cleaning steel pens which is also adapted for storing and dispensing magnetizable articles, particularly paper clips, has already been proposed in which the container is closed by a lid having a pick up opening surrounded by an annular magnet which only insignificantly restricts the opening clearance. The annular magnet serves to retain the cleaned steel pens within the container when decanting the cleaning fluid. Since, however, the lower annular surface of the annular magnet projects into the interior of the container a certain quantity of the steel pens will be retained at the lower surface of the annular magnet by the magnetic lines of force of the magnet. This renders it necessary to reach with the fingers below this lower magnet surface, in order to withdraw the magnetizable articles therefrom. Additionally, if the pick up opening which is bordered by the annular magnet is relatively small the pens cannot be dispensed in a correct manner because several pens will assume positions in which the pens extend across the pick up opening and thus obstruct the withdrawal of further pens.

There has also been proposed a supply and dispensing container for hair-pins wherein the pins are fed individually to a number of pick up or dispensing openings by means of magnetic lines of force and special guide surfaces. This known type of container consists of a casing with a lid adapted to be vertically depressed into the casing against the force of a spring. The lid is provided with several rows of rectangular openings serving as pick up openings and these openings are arranged at different radial distances from the lid center. A magnet is associated with every opening, and a second magnet is associated with every other pick up opening. These magnets are cylindrical and arranged in a circle circumscribing the center of the disk shaped lid. The guide surfaces for introducing the hair-pins into the pick up openings extend from the lower surface of the lid towards the opposing longitudinal walls of the rectangular pick up openings and have the form of gradually narrowing funnels. For picking up hair-pins the lid must be depressed against the force of a spring, and then rotated so that the hair-pins lying in the interior of the container may be attracted by the magnets which form parts of the guide surfaces. Next, the lid is moved back into its initial position, i.e., its upper position, so that the hair-pins attracted to the guide surfaces by the magnets assume vertical positions. Then the lid is depressed again so far until the hair-pins sliding along the guide surfaces protrude at their free upper ends from their associated pick up openings, and finally the lid is released whereupon it moves back into its initial position under the action of the spring, in dispensing the hair-pins held in the pick up openings.

The above described supply and dispensing container requires a considerable constructional expenditure and moreover comprises movable elements. Every

pick up opening can receive only a single hair-pin. If the magnet at a pick up opening attracts more than one hair-pin there is the tendency that these hair-pins obstruct the corresponding pick up openings when the lid is depressed, or lead to jamming of the lid, since each pick up opening is adapted to receive only a single hair-pin. When depressing the lid these hair-pins will act as obstacles between container bottom and lid and tend to block further downward movement of the lid. Moreover the hair-pins will be retained in the pick up openings not by the force of the magnet but by the resiliency of the hair-pin legs so that the container cannot be utilized for any other magnetizable articles such as nails, paper clips, pins and so forth since these articles do not have two legs as the hair-pins.

There has also been already proposed a supply and dispensing container for hair-pins in which the hair-pins are stacked on top of each other. The hair-pins are inserted into a correspondingly narrow casing which carries at its upper end a rigidly mounted magnet and a slide cooperating with the magnet and movable against the force of a spring in the longitudinal direction of the hair-pin. When advancing the slide which engages the uppermost hair-pin at its rear side this hair-pin, which engages the magnet with its front end will be moved partially outwardly through a container opening lying in the same plane whereby the hair-pin moves along the magnet. When the slide is released and returns into its initial position, due to the action of the spring, the hair-pin will be held by the magnet in this position in which the hair-pin partially protrudes from this opening. As soon as the user withdraws the hair-pin from the opening a following hair-pin will be lifted into the dispensing position by the magnetic force.

In another prior art supply and dispensing container an annular magnet circumscribes a circular dispensing opening. The dispensing opening extends from the annular magnet towards the interior of the container and flares outwardly in the form of a bottle neck whereby the lines of force of the magnetic field penetrate the bottle neck portion surface at acute angles. This assures the correct feeding of the magnetizable articles from the container interior towards the pick up opening whereby suitable positioning for picking up the articles is assured. Thereby the magnetizable articles are held in a vertical position in the pick up opening.

There have also been proposed supply and dispensing containers for magnetizable articles in which is provided a bar magnet. In a known embodiment of this type the lid of a box shaped casing for picking up the magnetizable articles is detachable. The lid carries a bar magnet at its wall surface facing the interior of the casing. When picking up magnetizable articles is desired, the casing with the lid engaged is at first turned upside down so that the magnetizable articles drop onto the inner surface of the lid. Thereby a number of articles will be attracted by the magnet on the lid. Then the container is moved back into its initial position. The lid with the articles adhering thereto is detached, turned by 180° and in this new position again placed on top of the casing, thus allowing to pick up articles. Withdrawing articles in this manner is rather cumbersome.

It is the object of the present invention to provide an improved container for magnetizable articles compris-

ing a closed box shaped casing having at least one chamber for the said articles, an opening extending over the whole length of one of the upper edges of the casing, the opening having an upper boundary edge defined by the top wall of the casing and a lower boundary edge defined by the adjacent side wall of the casing, and a guide surface extending from the lower boundary edge to said bottom wall, a bar magnet being arranged below the guide surface and the guide surface having an outwardly directed arcuate curvature whereby the magnetic field of the bar magnet is most powerful in the region of the opening.

Preferably, the curved guide surface extends from the lower boundary edge of the opening to a point approximately in the center of the bottom wall of the casing.

There may be provided a plurality of adjacent chambers arranged within the container casing and separated by a dividing wall or walls, each chamber including an opening, a curved guide surface extending from the respective opening towards the respective container interior, and a bar magnet arranged below each of the guide surfaces. In a preferred embodiment of the invention the container casing comprises two receiving chambers having different widths wherein the openings of the two chambers are disposed at opposite edges of the casing.

Two preferred embodiments of supply and dispensing containers according to the present invention are illustrated in the accompanying drawings wherein

FIG. 1 is a lateral elevational view of a first embodiment of a supply and dispensing container according to the present invention;

FIG. 2 is a top view of the container shown in FIG. 1;

FIG. 3 is a cross-sectional view of the container shown in FIG. 2, along the line III—III of FIG. 2;

FIG. 4 is a front elevational view of another embodiment of a supply and dispensing container according to the present invention having two chambers of different sizes;

FIG. 5 is a top view of the container shown in FIG. 4, with the lid attached;

FIG. 6 is a top view of the lid portion;

FIG. 7 is a lateral view of the lid portion;

FIG. 8 is a top view of the container with the lid portion removed;

FIG. 9 is a cross-sectional view of the container shown in FIG. 4, along the line IX—IX of FIG. 4;

FIG. 10 is a lateral sectional view of the container, along the line X—X of FIG. 8;

FIG. 11 is a vertical sectional view of the container, along the line XI—XI of FIG. 8;

FIG. 12 is a lateral view of the bottom plate of the container with the supports for the bar magnets, and

FIG. 13 is a top view of the bottom plate of the container shown in FIG. 12.

Referring to the preferred embodiment shown in FIGS. 1-3 the supply and dispensing container for magnetizable articles according to the present invention comprises a box shaped casing 10 which is closed on all sides. The bottom plate 11 of the casing is square or rectangular. The casing 10 together with the side walls 12, 13, 14 and 15 and a horizontal top wall 16 is preferably made of a plastic material, although any

other suitable material may likewise be used. A pick up or dispensing opening 17 is arranged in the region of one of the upper casing edges and extends over the whole length of this casing edge. The pick up opening is defined on one side by the edge 18 of the horizontal top wall 16 and on the other side by the lower edge 19 of the vertical casing side wall 15 (see FIG. 1).

The interior 30 of the casing 10 which serves as a receiving chamber for the magnetizable articles B contains a guide surface 20 which extends from the lower boundary edge 19 at the vertical casing side wall 15 to the bottom plate 11. The guide surface 20 is arcuately curved in an outward direction, and a bar magnet 23 is arranged below the guide surface (see FIG. 3). The bar magnet 23 runs parallel to the edge 19 of the vertical casing side wall 15 and may be held at the lower surface of the guide surface 20 by means of a bonding connection or a supporting bar (not shown) within the space defined by the guide surface. The shape, i.e., the curvature of the guide surface 20 and the location of the bar magnet 23 are selected so that the magnetic field of the bar magnet 23 is most powerful in the region of the pick up opening 17. The curved guide surface 20 includes a curved portion 21 in the region of the pick up opening 17. This curved portion 21 corresponds approximately to a circular segment the center of curvature of which is located at the lower casing edge below the pick up opening. This curved portion 21 merges into an inclined portion 22 which merges in turn into the bottom plate 11 (FIG. 3). Preferably the curved guide surface 20 extends from the lower boundary edge 19 of the pick up opening 17 to the center of the bottom plate 11 of the casing 10. For assuring that paper clips may be readily dispensed and picked up correctly the side walls 13, 14 of the casing 10 are each provided with an arcuate recess 24, 25 respectively in the region of the pick up opening 17 (FIG. 2).

According to another embodiment of the invention the casing 10 may comprise several adjacent receiving chambers for the magnetizable articles. These receiving chambers are separated from each other by means of dividing walls. Every receiving chamber is in communication with a pick up opening from which extends a curved guide surface carrying a bar magnet at its lower surface. The guide surface extends towards the interior of the container.

Referring to another preferred embodiment of the supply and dispensing container illustrated in FIGS. 4-13 the container comprises two receiving chambers 30a and 30b of different sizes. The pick up openings 17a, 17b of the receiving chambers are arranged on opposite sides of the casing whereby the pick up opening 17a of the chamber 30a is arranged in the region of one of the upper casing edges whereas the pick up opening 17b of the second chamber 30b is arranged in the region of the opposite edge of the casing 10a (FIG. 8).

The casing 10a comprising the two receiving chambers 30a and 30b corresponds to the casing 10 of the embodiment shown in FIGS. 1-3. The bottom plate of the casing 10a is designated, similar to the bottom plate 11 of the casing 10, with the reference numeral 11a, and the side walls are designated with the reference numerals 12a, 13a, 14a and 15a respectively (FIG. 4). The casing 10a is furthermore provided with a horizontal top wall 16a in the form of a detachable lid (FIG. 6).

The shape of the casing is cubic. All walls of the casing 10a are square.

The lid portion 16a is provided with arcuate or quadrant cutouts 32 and 33 which overlap the pick up openings 17a, 17b respectively when the lid 16a is fixed on the casing 10a. The cutouts 32, 33 clear the pick up openings 17a, 17b to such an extent that the paper clips may assume suitable positions for being picked up on the curved portions 21a, 21b of the guide surfaces 20a, 20b respectively in the two receiving chambers 30a, 30b. Since the lower edges 19a, 19b at the vertical side walls 14a, 15a of the casing 10a defining the pick up openings 17a, 17b are below the edges defining the upper limits of the casing a sufficient opening for picking up paper clips has been provided. The side walls 12a, 13a of the casing 10a defining the lateral boundaries of the pick up openings 17a, 17b are likewise provided with arcuate recesses 24a, 25a respectively (see FIGS. 10 and 11). For securing the lid portion 16a on the casing 10a the lid portion 16a is provided on its inner surface at the edges facing the rear walls of the chambers 30a, 30b with vertical contact plates 34, 35 which may be brought into engagement with the inner surfaces of the vertical casing walls 14a, 15a. Preferably the contact plates 34, 35 are resilient so that the lid portion 16a is retained by the contact plates 34, 35 in a press fit on the casing 10a (FIG. 7).

The curved guide surfaces 20a, 20b of the casing 10a having the two receiving chambers 30a, 30b are arranged in a manner similar to the one of the curved guide surface 20 of the casing 10 having the receiving chamber 30. Every guide surface 20a, 20b is provided with a curved portion 21a, 21b in the region of its respective pick up opening 17a, 17b, and a straight portion 20a, 20b joining the respective curved portion 21a, 21b. The straight portions 22a, 22b merge into the bottom plate 11a of the casing 10a. Of the two receiving chambers 30a, 30b the chamber 30a is wider than the chamber 30b. The widths of the pick up openings 17a, 17b correspond to the widths of the receiving chambers 30a, 30b respectively. The dividing wall separating the two chambers 30a, 30b is designated by the reference numeral 31 (FIG. 8).

Below each of these two curved guide surfaces 20a, 20b there is arranged a bar magnet 23a, 23b respectively in the region of the pick up opening 17a, 17b respectively (FIG. 9). For supporting the bar magnets 23a, 23b the bottom plate 11a of the casing 10a is detachable from the side walls 12a, 13a, 14a and 15a of the casing. The bottom plate 11a is provided with two mutually offset vertical supporting bars 36, 37 having at their upper free ends a laterally protruding platform 38, 39, and each of these platforms serves as a supporting and retaining surface for one of the bar magnets 23a, 23b (FIGS. 12 and 13). The two supporting bars 36, 37 are attached to the bottom plate 11a in such positions so that the bar magnets 23a, 23b will be supported below the curved guide surfaces 20a, 20b respectively in the region of their associated pick up openings 17a, 17b.

The bottom plate 11a is bonded or welded in any suitable manner to the side walls of the casing 10a.

The supply and dispensing container according to the present invention constitutes a device which, due to its unique design, assures that the paper clips will be

brought into suitable positions for being picked up at the pick up openings. By utilizing a bar magnet below a curved guide surface the attraction forces increase towards the pick up point so that the paper clips are arranged and presented to the user in the most convenient manner. Since the paper clips do not lie flat on the curved portions of the guide surfaces in the region of the pick up openings a correct withdrawal of paper clips is assured. A further advantage arises from the fact that in the supply and dispensing container according to the present invention the pick up opening cannot be blocked by a multitude of paper clips, and the paper clips may be readily pushed into their corresponding receiving chamber. Moreover the receiving chambers for the paper clips may be inspected at a glance thus enabling the user to find out any time he wishes what quantity of paper clips is still left in the receiving chamber.

In the further embodiment of a supply and dispensing container for magnetizable articles having two chambers which container is shown in FIGS. 4-13 the pick up openings of the two chambers are disposed on opposite sides. The container may be economically manufactured and assures an efficient utilization of the interior space of the container. It is especially advantageous that paper clips of various sizes may be separately stored. The supply and dispensing container may not only be used for paper clips but may likewise be employed for nails, screws or hair-pins. Any other type of magnetizable articles may likewise be stored within this container. The scope of the present invention is therefore not intended to be limited to the described embodiments which are illustrated in the drawings but also includes any further modifications or equivalents of the container casing and arrangements of the receiving chambers for the magnetizable articles, as well as supply and dispensing containers having a multitude of receiving chambers arranged side by side.

What is claimed is:

1. A container for magnetizable articles comprising a closed box shaped casing having a bottom wall, side walls and a top wall defining at least one chamber for the said articles, an opening extending over the whole length of one of the upper edges of the casing, the opening having an upper boundary edge defined by the top wall of the casing and a lower boundary edge defined by the adjacent side wall of the casing, and a guide surface extending from the lower boundary edge to said bottom wall, a bar magnet being arranged below the guide surface near the opening whereby the magnetic field of the bar magnet is most powerful in the region of the opening.

2. A container according to claim 1 wherein the guide surface extends from the lower boundary edge of the opening to a point approximately in the center of the bottom wall of the casing.

3. A container according to claim 1 wherein the guide surface includes a curved portion in the form of a circular segment the center of curvature of which is located at the lower edge of the casing below said opening, and an inclined portion merging at one end into the curved portion and at its other end into the bottom wall.

4. A container according to claim 1 wherein the side walls of either side of the opening are each provided with an arcuate recess in the region of the opening.

5. A container according to claim 1 a plurality of adjacent chambers are arranged within the container casing, said chambers being separated by at least one dividing wall, and each chamber including an opening, a curved guide surface extending from the respective opening towards the respective container interior, and a bar magnet arranged below each of said guide surfaces.

6. A container according to claim 5 wherein the container casing comprises two chambers.

7. A container according to claim 6 wherein the two chambers have different widths.

8. A container according to claim 6 wherein the openings of the two chambers are disposed at opposite upper edges of the casing.

9. A container according to claim 1 wherein the cas-

ing is cubic and the top wall thereof comprises a detachable lid of a size corresponding to the size of the bottom wall, the lid being provided with quadrant cutouts in the region of the openings and with vertically extending contact plates on the lower interior surface of the lid, said contact plates being adapted to engage the inner surfaces of those casing side walls that form the chamber rear walls, the casing side walls at the sides of the openings, and adjacent the quadrant cutouts, being provided with arcuate recesses.

10. A container according to claim 5 wherein the bottom wall of the casing is provided with at least two mutually offset supporting bars, each such bar holding one of the bar magnets below the respective curved guide surfaces.

* * * * *

20

25

30

35

40

45

50

55

60

65