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(54) **FOOD STORAGE CONTAINER LABELING SYSTEM**

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(57) **ABSTRACT**

A self aligning magnetic labeling system for food containers which will conform dimensionally and in reading orientation to have a base magnetic strip having multiple evenly spaced magnetic band polarities and an adhesive base for adhering to plastic, glass, and metal food containers and a second magnetic strip having the same number of multiple evenly spaced magnetic bands of opposite polarity and having a label indicating the day of the week the container is placed in the refrigerator be aligned with each other to fit over each other and be oriented with the weekday readable.

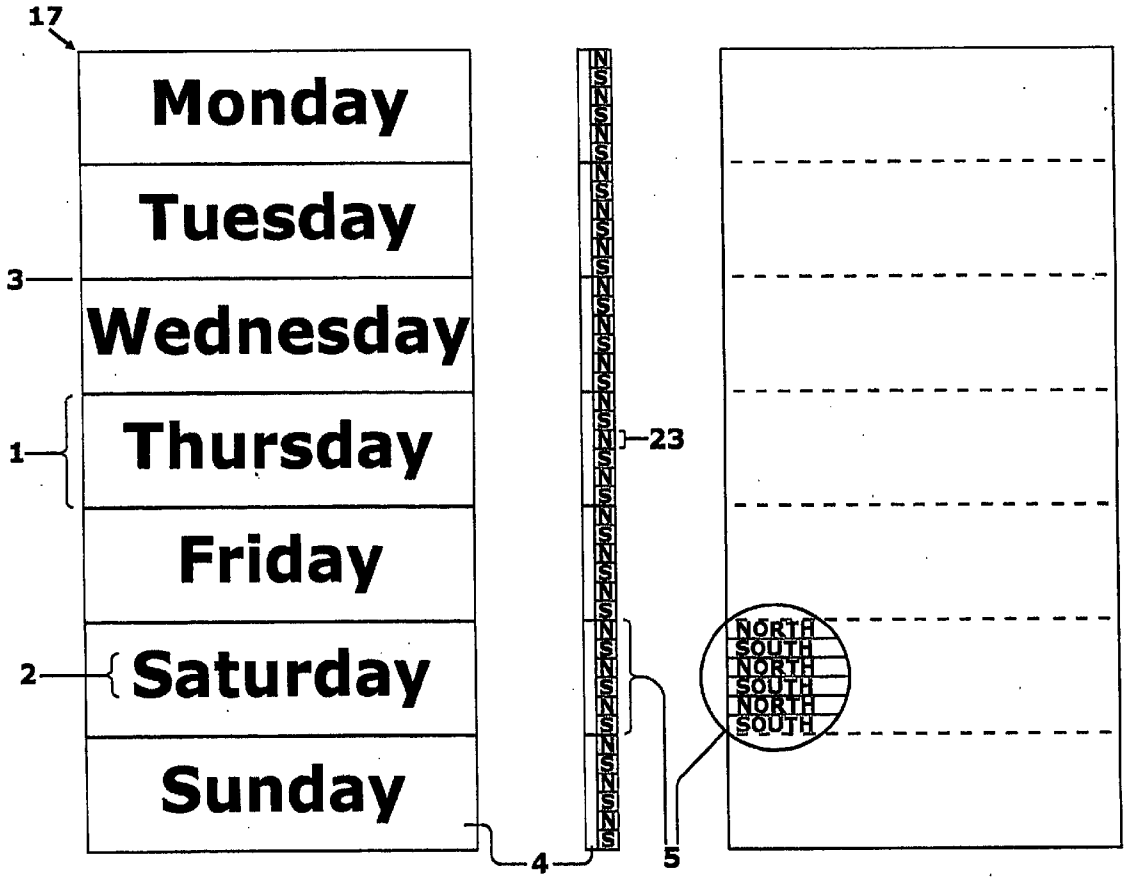

FIG. 1

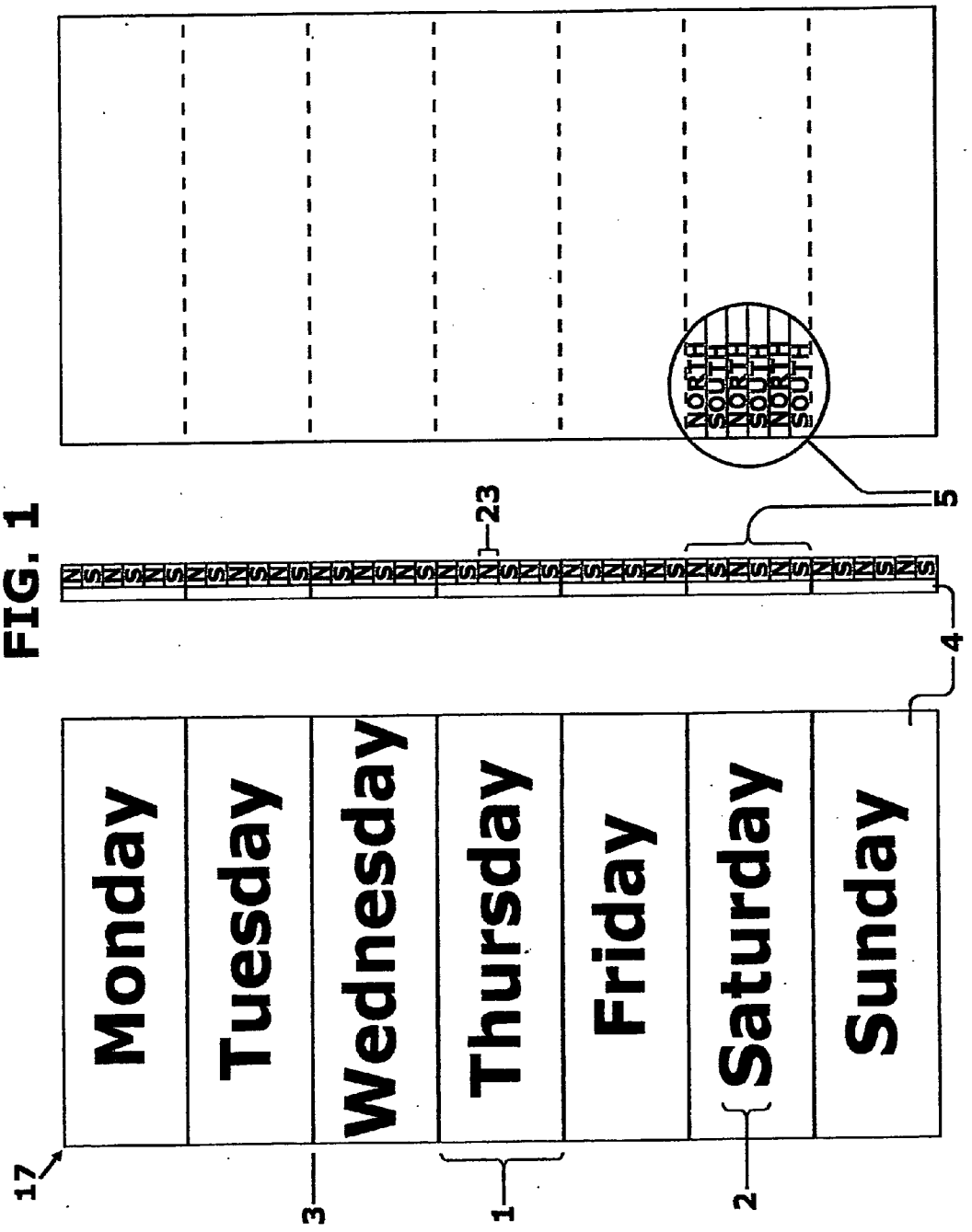
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FIG. 2

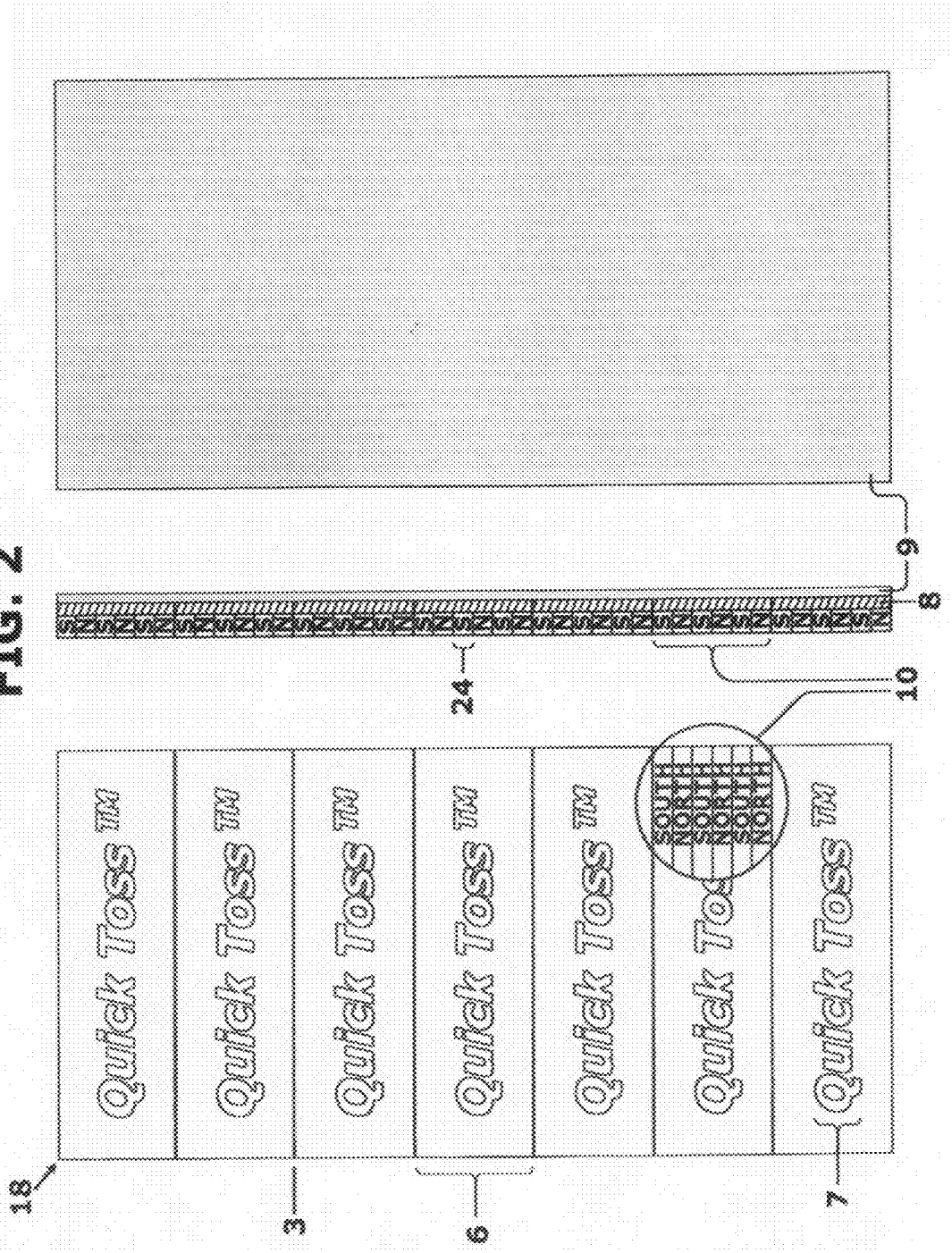
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FIG. 4

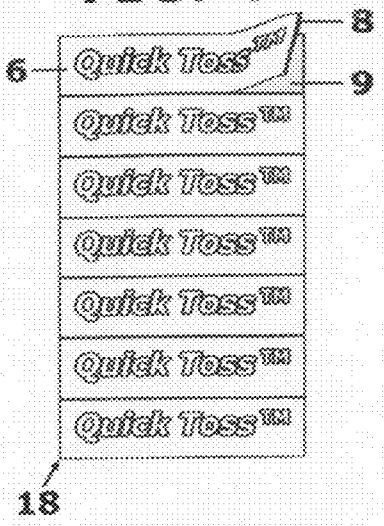

FIG. 5

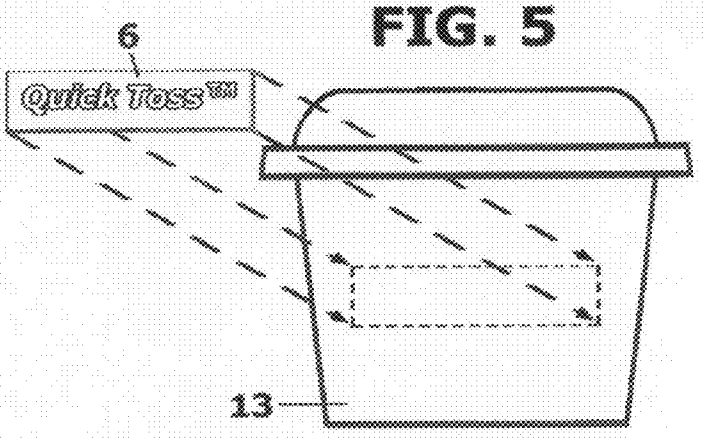

FIG. 6

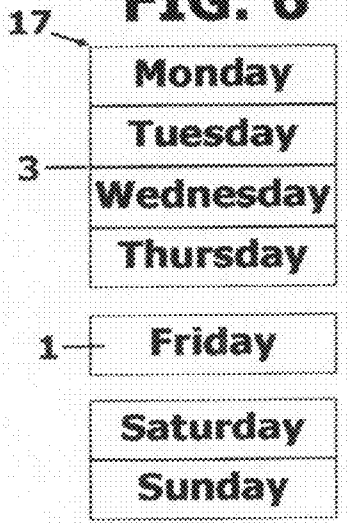

FIG. 7

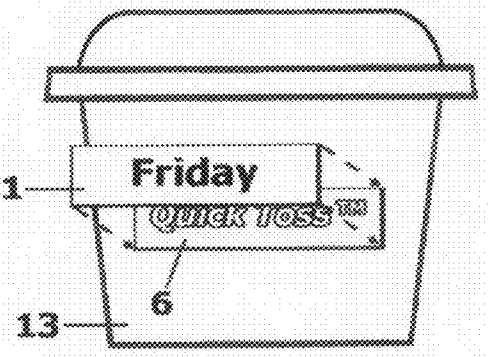

FIG. 8

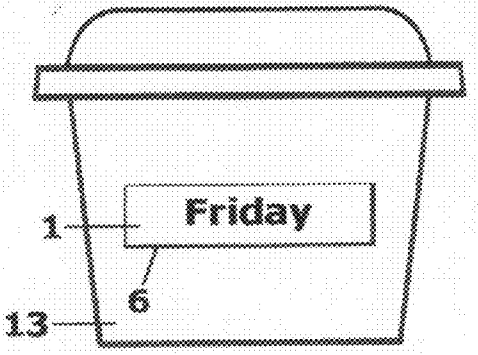

FIG. 9

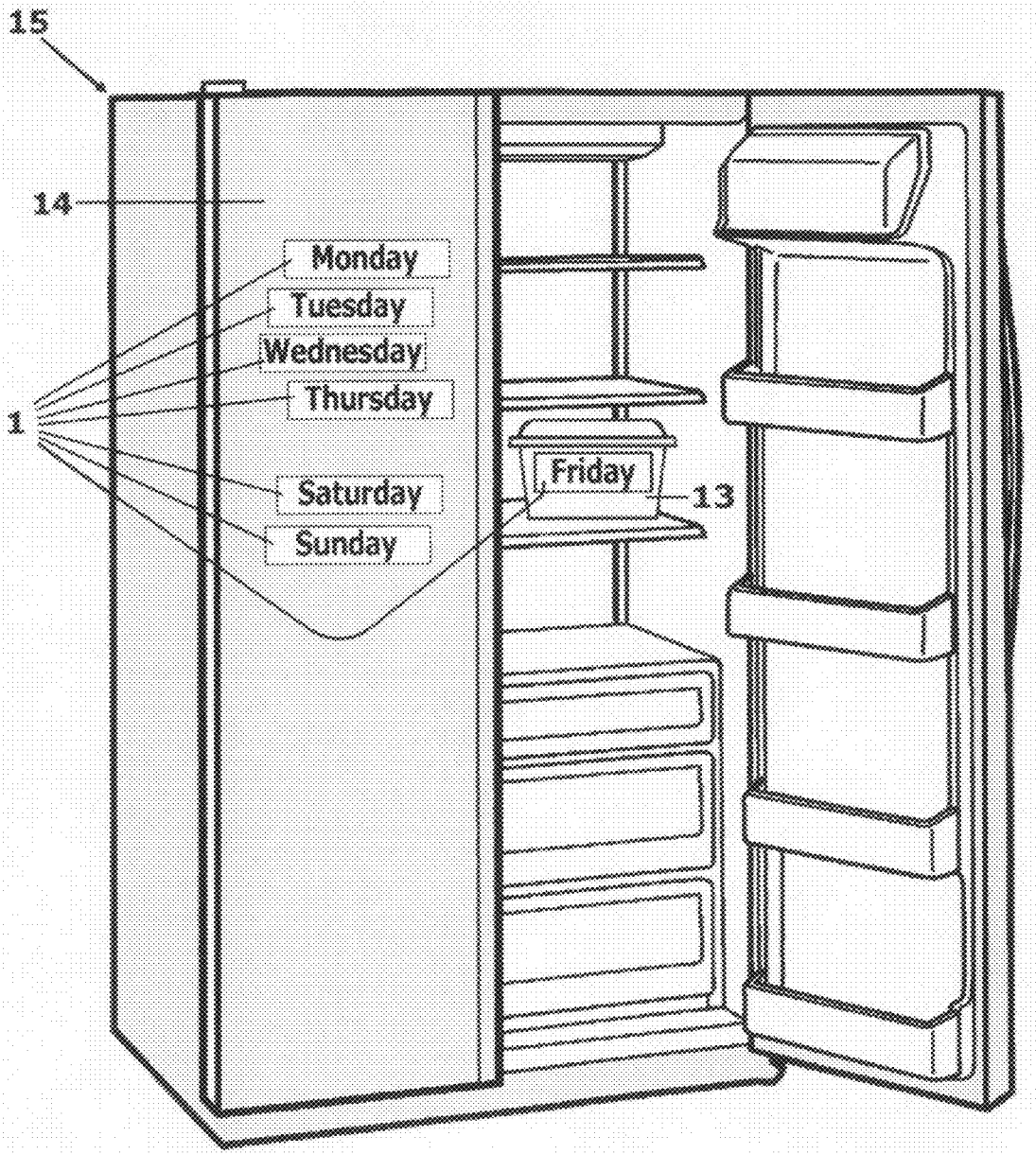
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FIG. 10

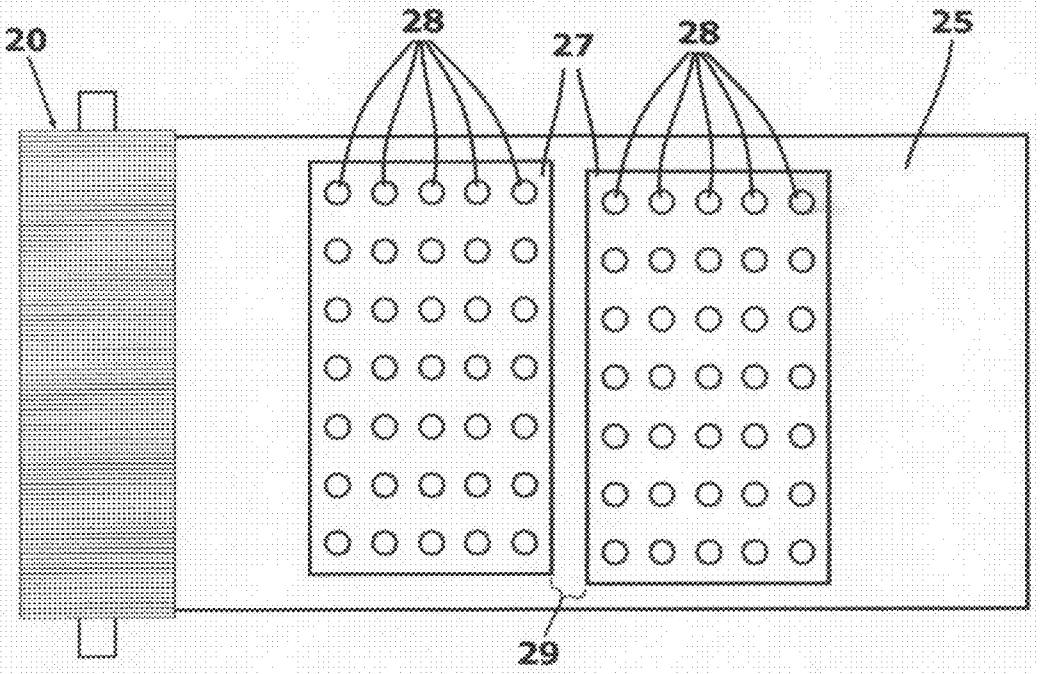
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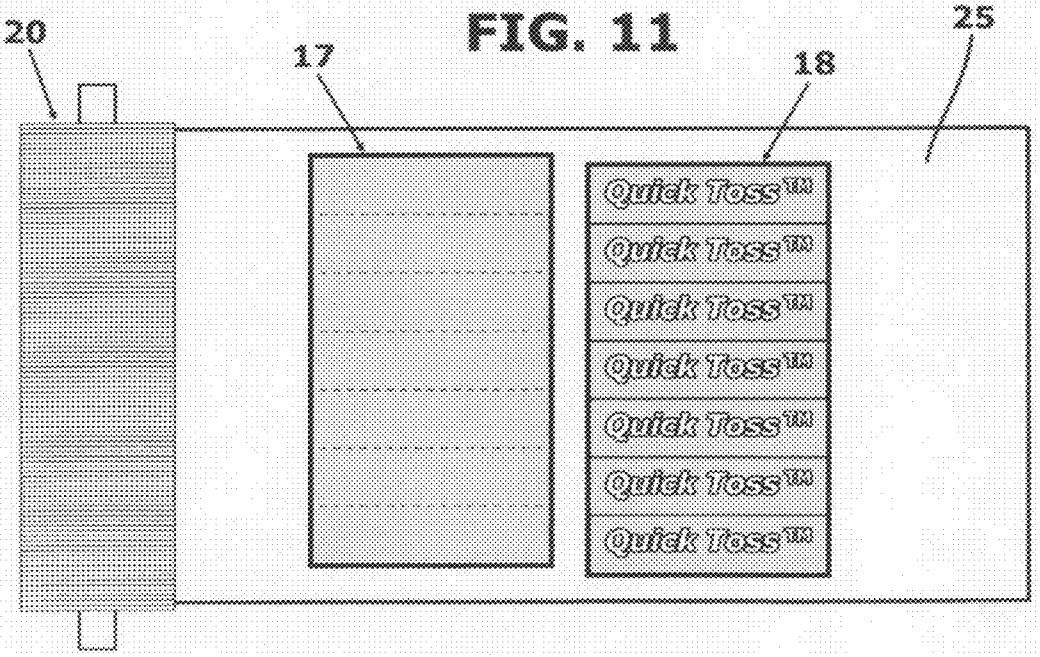
FIG. 11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FOOD STORAGE CONTAINER LABELING SYSTEM

BACKGROUND OF INVENTION

[0001] 1. Field of the Invention

[0002] This invention relates to methods and devices to ensure the useful storage of food to prevent spoilage and, specifically to a magnetic labeling system to display the storage date of food items in a refrigerator so as to warn when those food items are approaching or have reached the end of their useful storage life.

[0003] 2. Description of the Prior Art

[0004] Most people have discovered spoiled food in a refrigerator causing bad odors and mold. Sometimes old food is not discovered until the food is being prepared for consumption or is actually about to be eaten. If the spoilage is not readily visible, the tainted item may actually be eaten, with mild to severe medical consequences. Although the problem is most apparent with readily-perishable food in a refrigerator, the prior art solution to this pervasive problem has ranged from periodic disposal of all stored items to various lists attached to the front of the refrigerator or cupboard which is periodically referred to.

[0005] The problem with such lists is that it is difficult to unambiguously identify the stored items. If one stored a piece of cheese in a refrigerator and wrote "cheese" on a list on the refrigerator door, confusion would result if there were more than one piece of cheese in the refrigerator. An attempt could be made to track the age of the particular item by also writing the type of cheese and the date of storage on the list. Unfortunately it is very difficult to look at such a list and then immediately spot the item which is approaching the end of its useful life.

[0006] The uncertainty of food age is a major contributor to food waste. This occurs because food in the refrigerator is often avoided when people are uncertain of its age. For many households, wasting food week after week is an ongoing situation. Another aspect to consider is that this situation keeps occurring because people generally do not want to add another time consuming task to their day that is not enjoyable, such as date labeling their food. What was needed was a fast, easy, fun, and convenient method for allowing any food storage container to be quickly labeled.

[0007] Magnetic labels for devices such as on refrigerator doors are well known but they do not form a food container labeling system that is easily aligned on the food container to display storage time.

[0008] Magnetic labeling is generally disclosed in the below listed issued patents which teach aspects of magnetic devices. U.S. Pat. No. 6,718,673 issued to Ray III teaches a self-adhesive magnetic label which may be affixed to a product package or container. U.S. Pat. No. 5,711,160 issued to Namisniak teaches preprinted magnetic labels which may be mounted on a refrigerator door to be removable therefrom and may be placed on the food container. U.S. Pat. No. 3,818,858 issued to Kramer teaches that food containers may be labeled to designate the day of the week when it is placed into a refrigerator. U.S. Pat. No. 2,201,524 issued to Esty teaches a perishable container which may be made to indicate the day of the week when it is placed in use.

[0009] From the foregoing discussion of known prior art systems it will be seen that while the prior art teaches known adhesively mounted magnetic labels on food containers, there is no teachings of a system having engineered magnets having multiple opposite poles on magnetic labels allowing the system to be easily and automatically aligned by merely placing the two magnets near each other or by almost throwing them together.

SUMMARY OF INVENTION

[0010] The present invention comprises a magnetic labeling system for food containers having a first magnetic strip having multiple evenly spaced magnetic band polarities having an adhesive base for adhering to a plastic, glass, or metal food container and a second magnetic strip having the same number of multiple evenly spaced magnetic bands of opposite polarity for easy self alignment to said first strip.

[0011] The second strip has a label indicating the time the container is placed in the refrigerator. As an example, the second strips could indicate all week days since the vast majority of prepared food will not remain fresh for longer than one week in the refrigerator. These second strips are normally located on the outside of the refrigerator door which is metal and attracts the second magnetic strips. Thus when a food container is placed in the refrigerator a strip indicating the present day of the week is removed from the refrigerator door and placed on the food container which has the first magnetic strip located thereon.

[0012] The magnetic strips are auto-alignable due to their multiple alternative poles which are spaced on the two strips to be easily attached to each other in an auto-alignable position with respect to each other by merely placing them close together or by almost throwing them at each other.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] In the drawings wherein;

[0014] FIG. **1**: shows multiple views of the second or tossing magnet assembly having days of the week labeled thereon;

[0015] FIG. **2**: shows multiple views of the first or base magnet assembly having an adhesive layer for adhering onto food containers;

[0016] FIG. **3**: shows the orientation of the magnetic poles on the first and second magnet assemblies which produce auto-alignment, along with shown locations of precision die cutting and perforations;

[0017] FIG. **4**: shows the first magnet or base magnet with the paper backing being removed to expose the adhesive on the backside;

[0018] FIG. **5**: shows how to apply the adhesive side of the base magnet onto a food storage container;

[0019] FIG. **6**: shows strips of second or tossing magnets being manually separated along the perforations of the magnet assembly;

[0020] FIG. **7**: shows the magnetic attraction of a tossing magnet onto a base magnet;

[0021] FIG. **8**: shows the tossing magnet's position auto-aligned onto the base magnet after they are located near each other as seen in FIG. **7**;

[0022] FIG. **9**: shows unused tossing magnets conveniently stored on the outside door of the refrigerator and a utilized tossing magnet inside of the refrigerator with its day label on a food storage container;

[0023] FIG. **10**: shows a top view of the vacuum fixture of the custom built magnetizer assembly;

[0024] FIG. **11**: shows the vacuum fixture of FIG. **10** loaded with one tossing magnet assembly and one base magnet assembly with both assemblies having the magnet side facing upward;

[0025] FIG. **12**: shows a side view of the custom built magnetizer assembly of FIG. **10** with the magnetic roller assembly thereon; and

[0026] FIG. **13**: shows close-up top view of the magnetic roller assembly of FIGS. **10-12** and the magnetic fields in which the roller induces into the magnet assemblies.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0027] Referring now to the figures generally and FIGS. **1-9** in particular. It will be noted that refrigerator magnets are already a standard refrigerator accessory. The present invention developed a fun and easy way to utilize them in a food container labeling system. The system provides house-individuals with a very fast and convenient method for documenting the preparation day of food in the moment just prior to storing the food items into a refrigerator (**15**). Labeling is so fast that it can be done in 1 second through instant magnetic self aligning attraction while allowing magnet retrieval to be positioned in the most convenient location, which is on the outside of a refrigerator door (**14**).

[0028] This is a two part system consisting of a base magnet (**6**) and a tossing magnet (**1**). The adhesive (**8**) was specifically engineered to maintain a strong bond in moisture prone environments and withstand temperature ranges in which this products normal use would experience such as in the freezer, refrigerator (**15**), and water boiling temperature that may occur during food reheating. Before a user can enjoy the speed and convenience of this labeling system, the user must first set-up the ability for the tossing magnets (**1**) to attract themselves onto non-magnetic food storage containers (**13**); such as plastic or glass. This simple one-time setup of installing the base magnets (**6**) takes less than 2 minutes. The one-time setup involves mounting one base magnet (**6**) onto each food storage container (**13**) that has intention to be included within this labeling system. This is done by removing a paper backing (**9**) to expose the adhesive (**8**), and then pressing the adhesive (**8**) side firmly onto the food storage container (**13**). The tossing magnet assembly (**17**) is made up of 7 refrigerator magnets, each labeled with a day of the week (**2**); Monday thru Sunday. The labeled days (**2**) are black lettering printed on white vinyl (**4**) to produce enhanced high contrast visibility. The tossing magnets (**1**) are initially stored on the outside of the refrigerator door (**14**) until they are needed. When a new food storage container (**13**) is about to enter the refrigerator (**15**) you simply pull off the tossing magnet (**1**) that corresponds with the current day from the outside of the refrigerator door (**14**) and toss it onto the food storage container's (**13**) base magnet (**6**). All tossing magnets (**1**) are interchangeable with any food storage container (**13**) that has a base magnet (**6**) adhered upon it allowing freedom to swap days and reuse over and over.

[0029] The tossing magnets (**1**) are initially produced as a seven magnet strip assembly (**17**) with perforations (**3**) between allowing each one to separate. The tossing magnet strips (**1**) are each engineered with invisible magnetic bands (**5**) that span the entire back surface. This allows the tossing magnets (**1**) to be placed on the refrigerator door (**14**) as a whole un-separated assembly (**17**) or as separated individual magnets (**1**). The front surface of the tossing magnet strips (**1**) each display an assigned day of the week (**2**). The seven day labeling was used since it was determined that the vast majority of prepared food will not remain fresh for longer than one week in the refrigerator. All food elements have their own freshness longevity that is already understood by the average individual, thus as days pass a user can confidently reference the day of the week (**2**) labeled on the food container (**13**). By simply counting the days that have passed one can arrive at an accurate age of the food element in question. Once the age exceeds the edible understood timeframe, the food container (**13**) should be removed from the refrigerator (**15**) and the tossing magnet (**1**) placed back on the outside of the refrigerator door (**14**) for future re-use. The system can be applied to freezer storage by labeling the food containers with month and year labels such as 01/2012 indicating storage dates. These labels can be color coded for various types of food (red for meat, green for vegetables etc.). The base magnet strips (**6**) are each engineered with invisible magnetic bands (**10**) that span across the front surface thereof.

[0030] Thus it will be seen that this system offers at least the following benefits:

[0031] 1. No more standing in front of the open refrigerator wondering when an item was stored and if it is too old to eat.

[0032] 2. Instills confidence when removing an item from the refrigerator for use or discarding.

[0033] 3. Household food usage becomes more efficient which reduces food waste.

[0034] 4. A more efficient use of food will naturally lead to cost savings on groceries.

[0035] 5. Reduce chances of food illness by alleviating freshness uncertainties.

[0036] 6. Assists elderly who struggle with Alzheimer's to keep track of food freshness.

[0037] It will be noted that multiple magnetic pole engineering was necessary to support the self-alignment (**16**) and inter-changeability of the system. Product does not function properly without it. The magnetic system is intended for these magnets (**1**,**6**) to be used on the outside and inside of the refrigerator (**15**) and the composition is made to work in both environments.

[0038] Magnetic attraction engineering (refer to FIG. **3**). With the attraction between tossing magnets (**1**) and base magnets (**6**), magnetic engineering was necessary for the attraction to functionally operate; more specifically to perform auto-alignment (**16**) and inter-changeability. Auto-alignment (**16**) is a feature that allows the attraction of the tossing magnet (**1**) to automatically position itself onto a base magnet (**6**) completely and evenly. Inter-changeability is a feature that allows all tossing magnets (**1**) to have the freedom to be interchangeable onto any base magnet (**6**) while still sustaining the auto-alignment (**16**) behavior. Each magnet (**1**,**6**) must be engineered to ensure all have the same number north poles (**23**) and south poles (**24**). Every single magnetic pole band (**23**, **24**) must remain a constant width. The tossing magnet's magnetic pole pattern (**5**) must mirror the base magnet's magnetic pole pattern (**10**) to support an attraction that will induce auto-alignment (**16**):

[0039] a. Tossing magnet pole pattern (**5**): north (**23**), south (**24**), north (**23**), south (**24**) north (**23**), south (**24**)

[0040] b. Base magnet pole pattern (**10**), south (**24**), north (**23**), south (**24**), north (**23**), south (**24**), north (**23**) The width of each magnet (**1**,**6**) must be calculated to ensure that all magnetic pole bands (**23**,**24**) will lay

exactly even within the width of each magnet (**1**,**6**). To achieve this exact configuration the following manufacturing techniques must take place:

[0041] 1. Every magnet (**1**,**6**) must be die cut (**19**) precisely to a width that makes it divisible by an even number of magnetic pole band (**23**, **24**) widths; meaning for every number of north poles (**23**) on the surface there must be an equal number of south poles (**24**). The combined width of the intended number of magnetic pole bands is what determines the allowable width of the die cut.

[0042] a. Example: Utilizing 3 north and 3 south poles per magnet. Each magnetic pole band (**23**,**24**) is 0.0625 inches wide, multiplied by 6 total magnetic pole bands (**23**,**24**) equals **0.375** inch wide magnets (**1**,**6**).

[0043] 2. After die cutting (**19**), every magnet assembly (**17**,**18**) is sent through the custom built magnetizer assembly (**30**) that specializes in laying down magnetic poles patterns that start exactly adjacent to the top edge of each magnet (**1**,**6**) and end exactly adjacent to the bottom edge of each magnet (**1**,**6**).

[0044] Furthermore, the custom built magnetizer assembly (**30**) makes certain that the finished magnetic pole configuration of the tossing magnet assembly (**17**) mirrors the pole configuration of the base magnet assembly (**18**).

[0045] Application of the base magnet (**6**) must be in the upright position. The printed logo (**7**) on the base magnet (**6**) serves as a dual function; to identify the product, and to signify the correct upright position during the adhesive application. Basically a means to prevent applying the base magnet (**6**) upside-down.

[0046] Custom built magnetizer assembly (refer to FIG. **10**-**13**)

[0047] 1. The ability to lay down precision width magnetic pole bands (**23**,**24**) comes from using a precision magnetizer roller assembly (**20**).

[0048] 2. The magnetizer roller assembly (**20**) is comprised of a stacking of flat donut shaped neodymium magnets (**21**) with each neodymium magnet (**21**) separated by a flat donut shaped metal washer (**22**). The pattern of the stack as well as the thickness of each neodymium magnet (**21**) and metal washer (**22**) is what determine the width of the magnetic pole bands (**23**,**24**) that get induced into the tossing magnet assembly (**17**) and base magnet assembly (**18**).

[0049] 3. The size of every neodymium magnet (**21**) is 0.03125 inches thick, and the size of every metal washer (**22**) is also 0.03125 inches thick. Together they add up to 0.0625 inches thick which is equal to a one magnetic pole band (**23**,**24**) width.

[0050] 4. The stacking pattern of the neodymium magnet (**21**) are flip-flopped so that each adjacent magnet's polarity is facing the same polarity of its adjacent neodymium magnet (**21**) with one metal washer (**22**) inserted between each neodymium magnet (**21**). A pair of neodymium magnets (**21**) that have their north poles facing each other will induce a north magnetic pole band (**23**), while a pair of neodymium magnets (**21**) that have their south poles facing each other will induce a south magnetic pole band (**24**).

[0051] 5. High accuracy control is needed to position the magnetic pole bands (**23**,**24**) onto the tossing magnet assembly (**17**) and the base magnet assembly (**18**). Supporting this control is a vacuum fixture (**25**) mounted onto a single axis linear slide (**26**) that moves linear beneath the magnetizer roller assemble (**20**).

[0052] 6. The vacuum fixture (**25**) contains two precisely milled out pockets (**27**) that are sized to fit the width and length of a tossing magnet assembly (**17**) and a base magnet assembly (**18**).

[0053] 7. The two precisely milled out pockets (**27**) each have numerous small vacuum intake holes (**28**). Vacuum suction is needed on the vacuum fixture (**25**) to prevent the tossing magnet assembly (**17**) and the base magnet assembly (**18**) from being pulled up off of the fixture (**25**) caused from the strong attraction of the magnetizer roller assembly (**20**).

[0054] 8. The position of the two precisely milled out pockets (**27**) have a slight offset (**29**) to each other by exactly one magnet pole band (**23**,**24**) width so that when the loaded vacuum fixture (**25**) moves both the tossing magnet assembly (**17**) and the base magnet assembly (**18**) linear underneath the magnetizer roller assembly (**20**), each magnetic assembly (**17**,**18**) will receive a polarity pattern that will mirror the other. Meaning the tossing magnet assembly (**17**) top edge starts with a north magnetic pole band (**23**), and the base magnet assembly (**18**) top edge starts with a south magnetic pole band (**24**).

[0055] 9. As the loaded vacuum fixture (**25**) passes linear underneath the magnetizer roller assembly (**20**), the magnetizer roller assembly (**20**) rolls over the tossing magnet assembly (**17**) and the base magnet assembly (**18**) to induce its strong magnetic field that manipulates the tossing magnet assembly (**17**) and the base magnet assembly (**18**) toward taking on the magnetizer roller assembly's (**20**) magnetic field pattern.

[0056] It will be understood that certain details and modifications have been deleted herein for the sake of conciseness and readability but they are fully intended to be within the scope of the following claims as obvious to those of ordinary skill in this art area. As an example the base magnet (**6**) could be attached to the food container (**13**) by mechanical means such as rivets, snapping into an area provided on the container or molding into the container. Also the container material could be made magnetic to attract the labeled magnet or a metal strip located thereon to attract the label magnet. As another example the total number of magnetic pole bands (**5**,**10**) per magnet could be any even number to allow freedom in modifying the width of each magnet (**1**,**6**).

1. A magnetic labeling system comprising:

a base magnet array having a plurality of elongated, generally collinear base magnets, each base magnet having first and second complementary magnetic poles at distal ends thereof, wherein the base magnets are fixed relative to one another in an alternating polarity relationship;

a label magnet array having dimensions corresponding to said base magnet array, the label magnet array having a plurality of elongated, generally collinear label magnets, each label magnet having first and second complementary of poles corresponding to poles of said base magnet array; and

wherein said poles on said base magnet array and said label magnet array are generally equivalent in dimensions of and oriented so as to be in opposite polarity when placed in relative proximity to one another.

2. The system as set forth in claim **1** wherein said base magnet array is operable to be secured to an associated food container by chemical means.

3. The system as set forth in claim **1** wherein said base magnet array is operable to be secured to an associated food container by mechanical means.

4. The system as set forth in claim **2** wherein said base magnet array is operable to be secured to an associated food container by chemical adhesive means includes an adhesive spread on one side of said base magnet and covered with a peelable paper.

5. The system as set forth in claim **1** wherein said label magnet array has a storage date marked on one side thereof indicating the date container is placed in a refrigerator area

6. The system as set forth in claim **5** wherein said label magnet array has a preprinted label attached to one side thereof indicating a storage date indicating the date the container is placed in a refrigerator area.

7. The system as set forth in claim **6** wherein said label magnet array has a day of the week marked on one side thereof indicating the date container is placed in a refrigerator.

8. The system as set forth in claim **7** wherein a plurality of said label magnet arrays having numerous different days of the week marked on one side thereof are located on a refrigerator door.

9. The magnetic system as set forth in claim **6** wherein said preprinted label has a color indicating the type of food product in said food container.

10. The system as set forth in claim **6** wherein said preprinted label is white with black lettering to provide a high contrast label.

11. A magnetic labeling system comprising:

a generally planar base magnet array having physical dimension and including a plurality of base magnets, each of which includes first and second complementary magnetic poles;

a label magnet array having dimensions corresponding to said base magnet and including a plurality of array magnets, each of which includes first and second complementary poles corresponding to poles of said base magnets;

wherein said poles on said base magnets and said label magnets are generally equivalent in dimensions but are of opposite polarity; and

wherein said base magnets and said label magnets will dimensionally self align over each other when placed near each other.

12. The system as set forth in claim **11** wherein said label magnet array has a day of the week printed thereon and will self align with said base magnet array when placed near each other with the day of the week being right side up to be read on the container.

* * * * *