Aug. 28, 1962 W. M. HENNESSEY 3,051,291

ARTICLE-FEEDING APPARATUS

Filed Feb. 23, 1960 2 Sheets-Sheet 1

FIG. 1

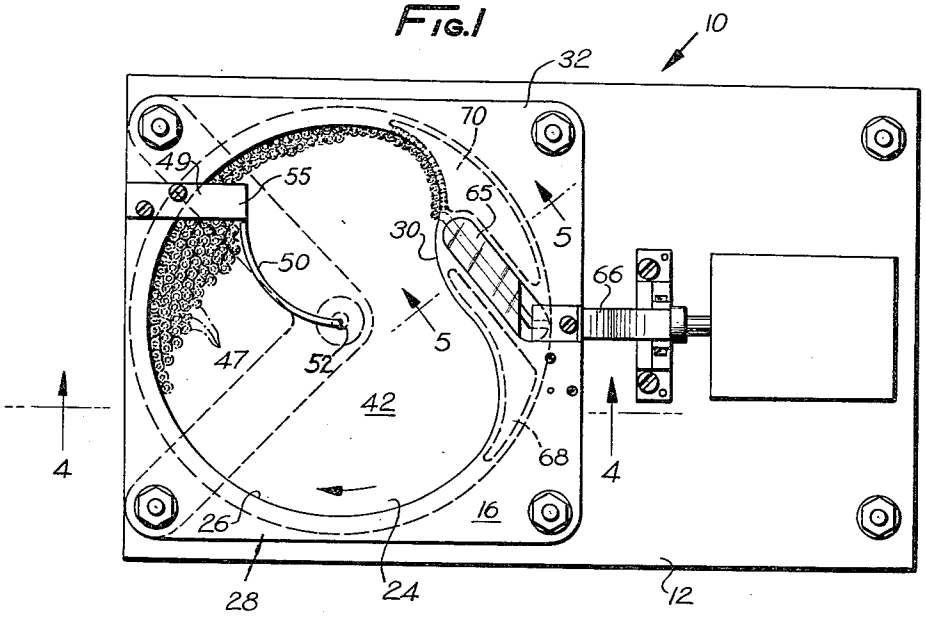
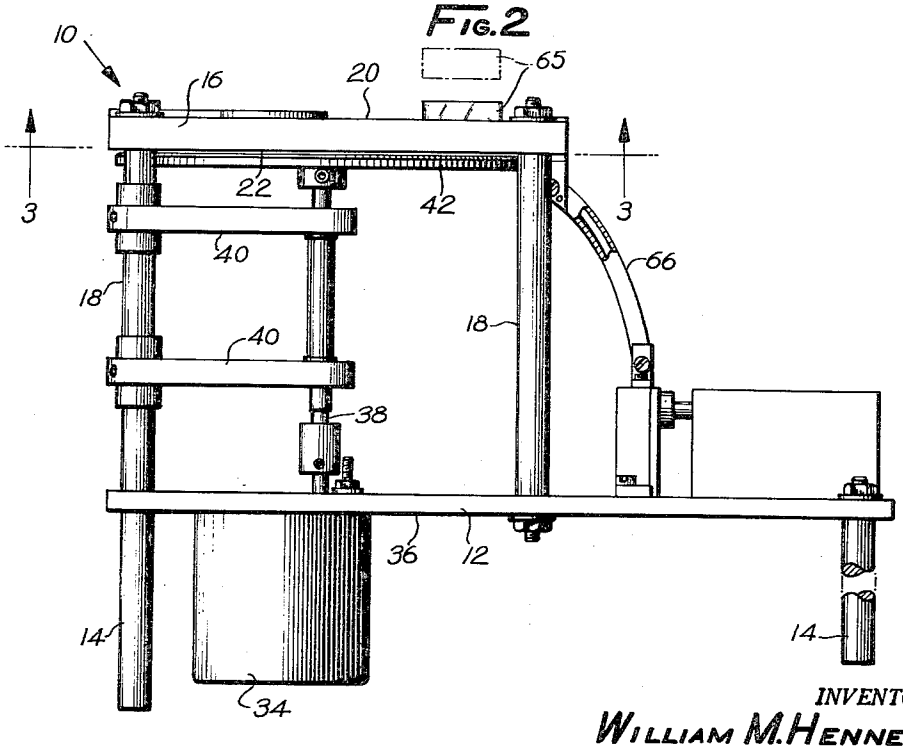


FIG. 2



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Filed Feb. 23, 1960 2 Sheets-Sheet 2

FIG. 3

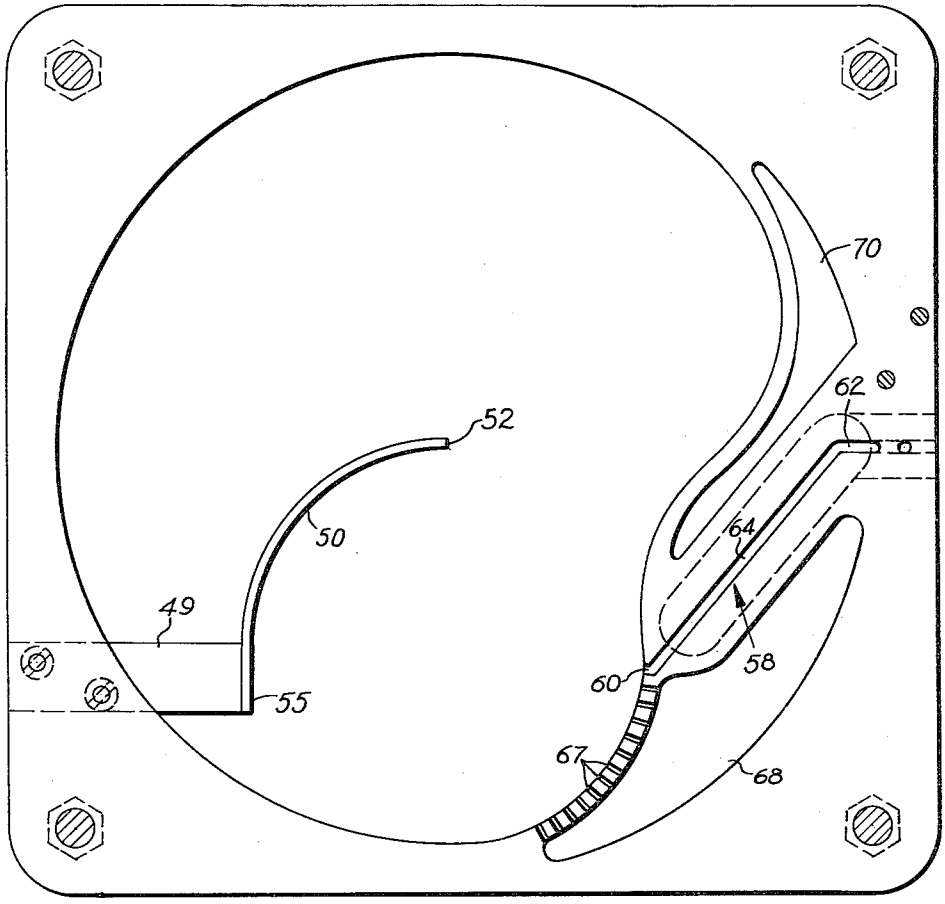


FIG. 4

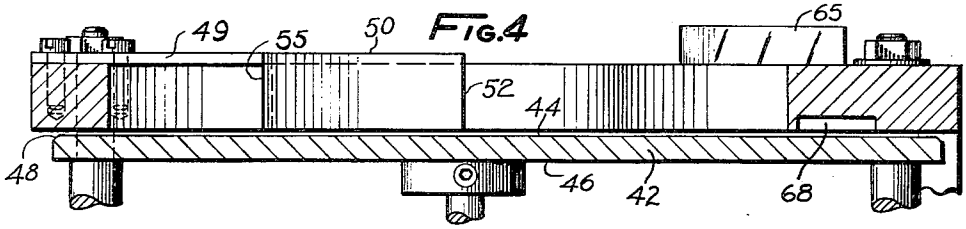
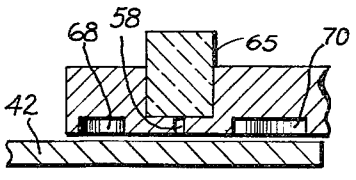


FIG. 5



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United States Patent Office 3,051,291 Patented Aug. 28, 1962

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ARTICLE-FEEDING APPARATUS

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Filed Feb. 23, 1960, Ser. No. 10,133
2 Claims. (Cl. 198—30)

This invention relates to article-feeding apparatus and particularly to such apparatus for use in mass feeding of small, round, lightweight articles.

Present day electronic systems, particularly computers, use large numbers of devices which include magnetic cores. Magnetic cores are generally very small and very light toroidal bodies of magnetic material which present special problems in mass handling due to their small size and effective weightlessness. Many types of apparatus are known for feeding or transporting articles in mass production operations; however, none of these is completely suitable for handling magnetic cores.

Accordingly, the principles and objects of the present invention are directed toward the provision of comparatively simple and efficient apparatus for handling large numbers of small magnetic cores or other small, round, lightweight articles and feeding or moving them one at a time from one position to another for the purpose of performing some operation thereon.

Briefly, the apparatus of the invention includes a stationary frame and a horizontally disposed rotatable table which is mounted in operative relation to the frame. The frame is provided with a channel which communicates with the table and through which articles are fed one at a time from a large supply held on the table. The channel includes an entrance portion which the articles enter as they leave the table and which is oriented substantially at right angles to the direction of motion of the table as it passes in front of the entrance portion of the channel. The width of the entrance portion is substantially the same as the width of the article being fed allowing the article to be fed from the table only at substantially right angles to the movement of the article on the feed table. With this relationship between the entrance portion of the channel and the table and the articles being fed, the articles are fed reliably from the rotating table through the channel to an operating position without blocking the entrance portion of the channel.

The invention is described in greater detail by reference to the drawings wherein:

FIG. 1 is a plan view of the article-feeding apparatus of the invention;

FIG. 2 is an elevational view of the apparatus of the invention;

FIG. 3 is an enlarged sectional view along the lines 3—3 in FIG. 2;

FIG. 4 is a sectional view along the lines 4—4 in FIG. 1; and

FIG. 5 is a sectional view along the lines 5—5 in FIG. 1.

Referring to the drawings, the article-feeding apparatus **10** of the invention is particularly suited for feeding small diameter toroidal magnetic cores and includes a frame comprising a first horizontal support table **12** which is carried on suitable legs **14** secured thereto in any suitable fashion. A frame member **16**, which is generally rectangular in form, is supported horizontally, spaced from the table **12** by support posts **18** at its four corners. The frame includes upper and lower surfaces **20** and **22**, respectively. The frame member **16** includes a comparatively large-area central cutout portion **24** which provides a reservoir area for the cores as they are fed by the apparatus **10**. The major portion of the cutout area is defined by

the circularly curved concave wall **26** of a comparatively narrow border portion **28** of the frame **24**, and the remainder is defined by a convexly curved wall **30** of a somewhat wider frame portion **32**.

A motor **34** is secured to the lower surface **36** of the table **12** and includes a drive shaft **38** which extends vertically toward the frame member **16** and is aligned with the center thereof. The shaft **38** is supported by suitable brackets **40** secured to the support posts **18**. A circular rotatable table **42**, horizontally oriented, is secured to the upper end of the drive shaft **38** and is mounted closely adjacent to the lower surface **22** of the frame **16** and oriented horizontally and parallel thereto. The rotatable table **42** includes upper and lower surfaces **44** and **46**, respectively. The space between the bottom surface of the frame and the top surface of the table is sufficiently small so that cores **47** held on the table cannot pass therethrough and be lost. In the arrangement of parts shown in FIG. 1, the table is adapted to be rotated in a clockwise direction. Preferably, the rim of the table is chamfered as shown at **48** in FIG. 4 to assist the passage of cores from the table to a suitable passageway to be described.

An auxiliary core guide member is provided for assisting the core-feeding operation of the apparatus and includes a support plate **49** secured to the top surface **20** of the narrow portion **28** of the frame **16** and carrying a curved guide plate **50** which extends radially therefrom over the cutout portion **24** of the frame **16** and lies closely adjacent to the top surface **44** of the table **42**. The leading free end **52** of the curved plate **50** terminates beyond or at the center of the table, and it is oriented so that its convex surface **54** faces the curved wall **26** of the frame **16**. Thus, the guide plate **50** is oriented so that, as the table rotates, cores bear against the convex surface thereof and are moved to the peripheral wall **26** of the cutout portion. The space between the wall **26** of the frame **16** and the inner end **55** of the guide plate **50** defines the passageway through which cores pass as they are moved outwardly toward the wall **26**.

The wider portion **32** of the frame **16** is provided with core-feeding means comprising a channel **58** through which cores **47** are fed from the table to an adjacent operating position. The channel **58** includes an entrance portion **60** which faces and is in operative relation with the table, an exit portion **62**, and an intermediate connecting portion **64**. The channel **58** is no wider than necessary to allow cores to flow freely through it one after the other. The entrance portion **60** is of substantially the same width as the channel **58** and preferably is of exactly the same width as the channel. The space above the channel **58** may be open, or it may be covered completely or in part by a removable cover member **65**. According to the invention, the longitudinal axis of the entrance portion **60** which opens to the rotating table **42** is oriented substantially at right angle to the direction of flow of cores past the entrance portion due to rotation of the table. In other words, the longitudinal axis of the entrance portion is substantially orthagonal to the direction of movement of the portion of the table which passes in front of the entrance portion. For convenience in utilizing space, the connecting portion **64** is oriented at an angle to the entrance portion, and the exit portion **62**, similarly, is oriented at an angle to the connecting portion. The exit portion is connected in any suitable fashion, for example by means of a conduit **66**, to the next operating position.

Referring again to the auxiliary guide plate **50**, preferably, the inner end **55** thereof is located at a greater radial distance from the center of the table **42** than the entrance portion **60** of the channel **58**. This arrangement insures that all cores are driven outwardly beyond the entrance

to the channel **58**, and each is thus caused to approach the channel **58** at an angle suitable to permit entry.

The wider portion **32** of the frame **16** is also provided with a plurality of channels **67** (FIG. 3) which provide communication between the table **42** and a cutout area **68** in the frame **12**. The slots are oriented transversely to the wall **30** of the frame **12** from which they originate and are too small to receive cores, but are large enough to receive broken core pieces, dirt, or other undesired refuse. With respect to the direction of rotation of the table **42** and the direction of movement of the cores, the channels **67** are located ahead of the channel **58** for feeding the cores themselves from the table. A similar cutout portion **70** is provided on the opposite side of the channel **58** for the purpose of receiving particles of dirt and the like.

In operation of the apparatus of the invention, a large quantity of cores **47** is fed haphazardly onto the rotating table **42**. As the table rotates, the guide plate **50** tends to push the cores outwardly against the curved wall **26** of the cutout portion **24** of the frame **16**. As the cores are moved along by the rotating table, broken core pieces and the like enter the channels **67** and are removed. The cores which are in contact with the wall and reach the entrance portion **60** of the channel **58** are driven accurately and rapidly into the entrance portion and along the channel to the conduit **66**. The chamfered rim of the table promotes the downward passage of the cores into the conduit **66**.

It has been found that the orientation of the entrance portion **60** of the channel **58** at a right angle to the direction of movement of the cores **47** provides accurate feeding of the cores from the feed table through the channel to the next operating position. This feeding is accomplished substantially without blockage of the entrance to the channel by the cores. In addition, it has been found

that the novel arrangement of the entrance to the feed channel speeds up the movement of the cores as they leave the feed table and enter the channel. Thus, an overall increase in the speed of core processing is achieved.

It is apparent that applicant's article-feeding apparatus will handle disks, spheres, oblate spheroids and similar round, lightweight articles with the same speed and avoidance of jamming as toroidal magnetic cores.

What is claimed is:

1. Apparatus for feeding small, lightweight, substantially round articles comprising a frame member having a central cutout area, a rotatable table positioned beneath said frame and accessible through said cutout area, and a channel in said frame providing a path for feeding said articles from the table to another location, said channel being of a width substantially the same as the diameter of said articles and having an entrance portion of like width communicating with said table, said cutout area forming a predetermined and unobstructed path across said entrance portion, and said entrance portion being oriented at substantially right angles to said predetermined path.

2. The apparatus defined in claim 1 and further including a plurality of channels in said frame of smaller size than said first-mentioned channel and adapted to remove refuse from said table.

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