Aug. 31, 1965 J. BOWE ET AL 3,203,365

COTTON CANDY SPINNING MACHINE

Filed June 21, 1962 3 Sheets-Sheet 1

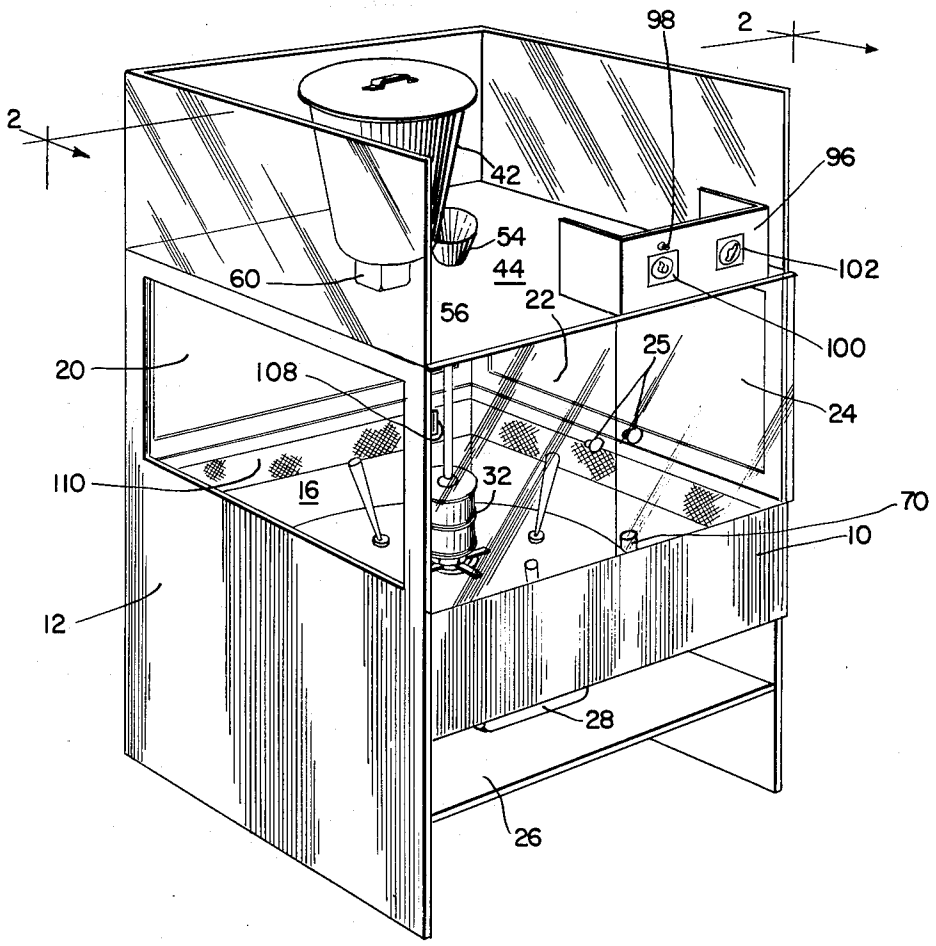



FIG. 1

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COTTON CANDY SPINNING MACHINE

Filed June 21, 1962 3 Sheets-Sheet 2

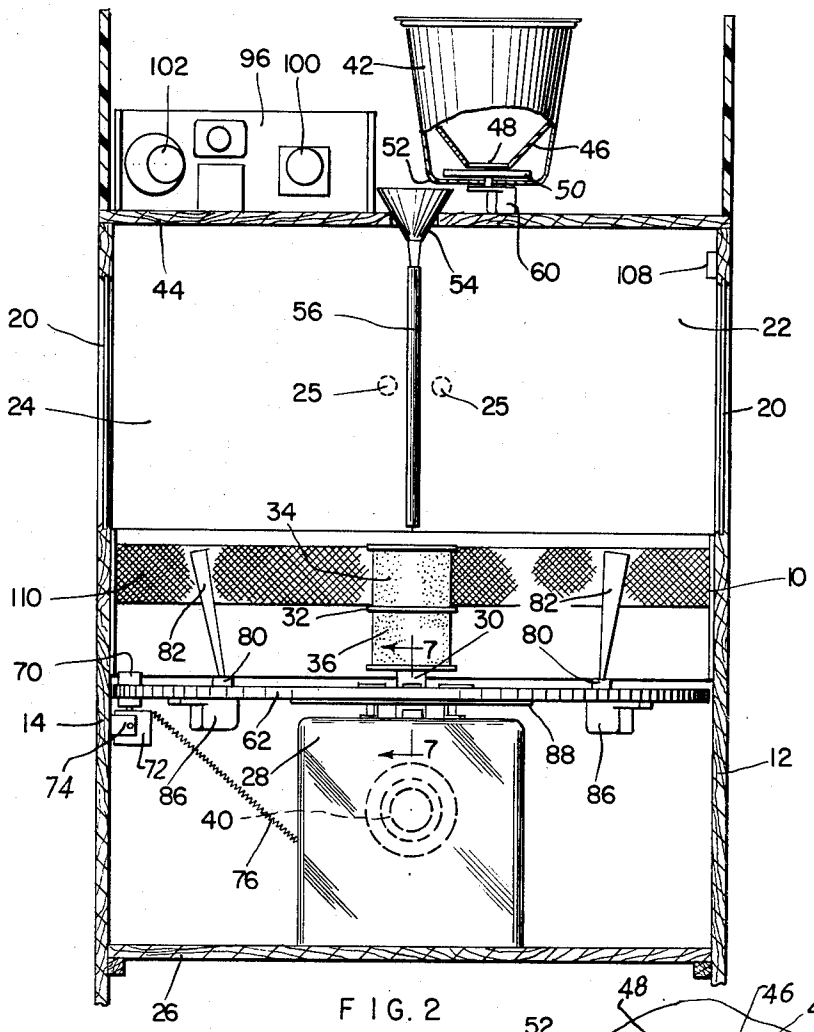



FIG. 2

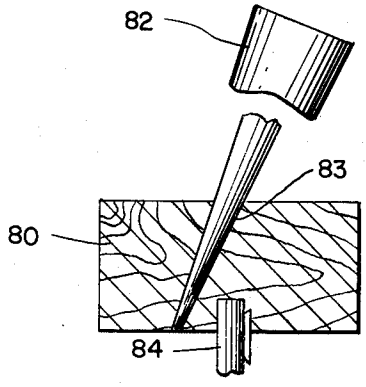



FIG. 3

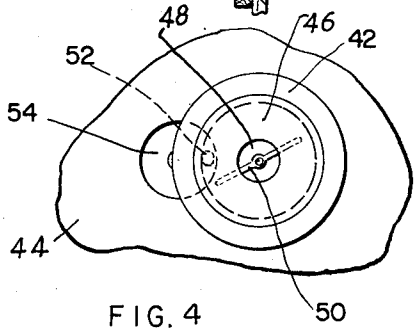



FIG. 4

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Aug. 31, 1965 J. BOWE ET AL 3,203,365

COTTON CANDY SPINNING MACHINE

Filed June 21, 1962 3 Sheets-Sheet 3

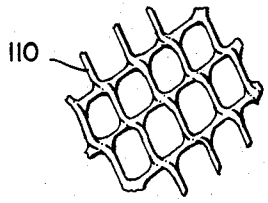



FIG. 5

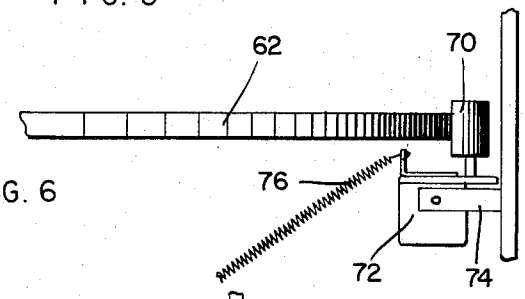



FIG. 6

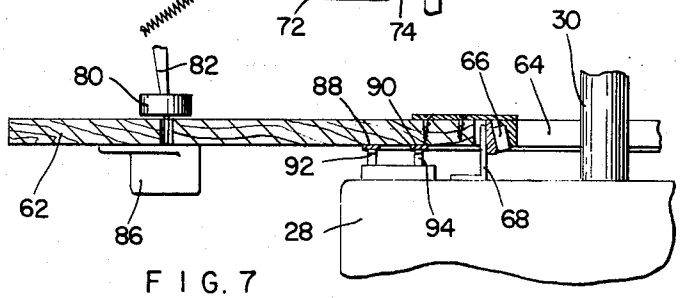



FIG. 7

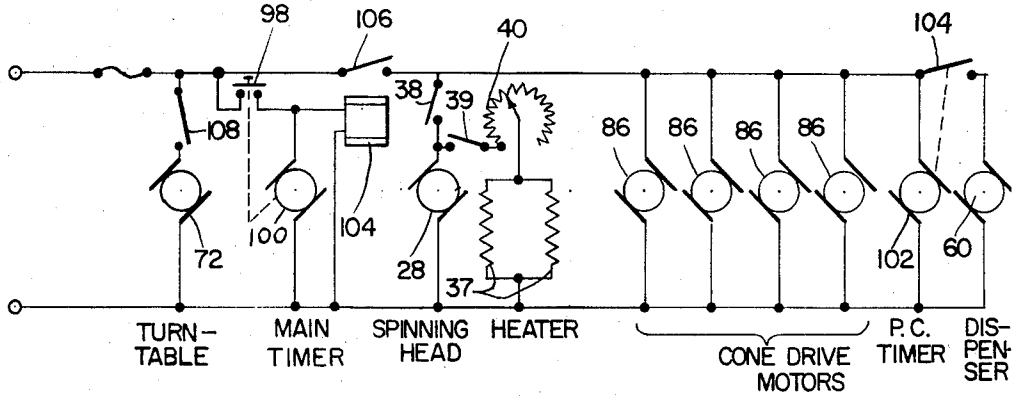



FIG. 8

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United States Patent Office 3,203,365 Patented Aug. 31, 1965



3,203,365

# COTTON CANDY SPINNING MACHINE

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Filed June 21, 1962, Ser. No. 204,129
4 Claims. (Cl. 107—1)

This invention relates to a machine which spins molten sugar into fine filaments to be gathered on paper cones which serve as handles for fluffy masses of such sugar fibers. The machine is also provided with means for automatically collecting sugar filaments on a paper cone or simultaneously on a number of paper cones.

Heretofore cotton candy spinning machines have been operated by locating the rotatable spinning head in a large cylindrical pan to limit the outward drift of filaments emitted from the spinning head. The operator has had to wave a paper cone around within the pan to collect filaments from the spinning head. The improved machine hereinafter described supports one or more cones in position to catch the filaments from the spinning head so as to build up fluffy masses of the cotton candy on the cones. For this purpose the spinning head is mounted for rotation about a vertical axis in a cabinet of suitable size and shape. One or more paper cones are slowly rotated in an upright but slightly inclined position between the spinning head and the walls of the cabinet, the upper portions of the cones being on a level with the spinning head to catch the sugar filaments that fly outward from the head. The cones are rotated about individual vertical axes but are also carried in a circular orbit around the spinning head. Other advantageous features of construction and operation will be apparent from the following description of the invention and from the drawing, of which

FIGURE 1 is a perspective view of apparatus embodying the invention;

FIGURE 2 is a sectional view of the same on the line 2—2 of FIGURE 1;

FIGURE 3 is a sectional view, on a larger scale, of a cone holder with a paper cone mounted therein;

FIGURE 4 is a fragmentary plan view of the sugar container shown in FIGURE 2;

FIGURE 5 is a fragmentary elevational view, on a larger scale, of a reticulated fabric lining part of the chamber in which the spinning head is mounted;

FIGURE 6 is a fragmentary elevational view of the rotating turntable and driving means therefor;

FIGURE 7 is a fragmentary sectional view of the turntable and its supporting bearings; and

FIGURE 8 is a wiring diagram of the apparatus.

The machine illustrated on the drawings comprises a housing having a front wall **10**, side walls **12**, **14** and a rear wall **16**. Preferably but not necessarily, the side and rear walls are provided with transparent windows **20** of large size so that the spinning of the cotton candy within the housing can be readily seen. For access to the interior of the housing, doors **22**, **24** are provided in the front wall, these doors being preferably transparent. Suitable knobs **25** are on the doors. The housing has a floor **26** at a suitable level, a motor **28** in a casing being mounted on the floor **26** at the midpoint thereof. The motor has a vertical shaft **30** which extends upward, a spinner head **32** being mounted on the upper end thereof. The spinner head **32** as shown has two perforated cylindrical walls **34**, **36**, one above the other, each wall having an electrical heating element **37** (FIGURE 8) pressing against its inner surface as shown and described in a copending application Serial No. 105,179, filed April 24, 1961, pursuant to which Patent No. 3,070,045 was granted on December 25, 1962. A manually operable control switch



**38** (FIGURE 8) is provided for stopping the motor **28** when desired. This switch also controls the heating elements **37** so that if the current is turned off from the motor **28** which drives the spinner head **32**, it is also cut off from the heating coils **37**. Thus the heaters cannot be on when the spinner head is not rotating. A second manually operable switch **39** is provided so that the heaters can be turned off, if desired, when the head **32** is rotating. The control knob **40** of a rheostat regulates the current through the heating elements **37**. The head **32** may have a single wall with a single heater unit inside.

Sugar is fed to the spinner head **32** from a container **42** mounted on a floor **44** at the top of the housing, which floor is a ceiling for the interior of the housing. The container has a conical guide member **46** therein to support the bulk of the sugar in the container clear of the bottom thereof. The member **46** has a central aperture **48** to direct the sugar to the middle of the bottom of the container. Under the aperture **48** a rotor **50** with a pair of arms revolves slowly to sweep sugar to a hole **52** at the periphery of the bottom of the container. The sugar which passes through the hole **52** falls into a funnel **54** and down through a vertical tube **56** into the spinning head **32**. The rotor **50** is driven by a small electric motor **60** having a built-in reduction gear.

At a level slightly below the bottom of the spinner head **32** a circular disk or turntable **62** is rotatively mounted, this turntable having a central aperture **64** through which the vertical shaft **30** extends. The turntable rotates on anti-friction bearings **66** supported by brackets **68** mounted on the casing of the motor **28**. The turntable is rotated slowly by any suitable means such as a roller **70** which rotates on a vertical axis and is pressed against the periphery of the turntable. The roller **70** is driven by a small motor **72** with a built-in reduction gear. The motor unit is rockably supported by a bracket **74**. A tension spring **76** is attached to the unit to press the roller **70** against the edge of the turntable, the other end of the spring being attached to the interior of the housing at any convenient point.

On the turntable **62** are rotatably mounted supports **80** for paper cones **82**, four such supports being shown. Each said support comprises a small cylindrical block having a tapering hole **83** therethrough to receive the lower end of a paper cone so as to support it in a slightly inclined upright position. Each block is keyed to the upper end of the vertical shaft **84** of a small motor **86** secured to the under side of the turntable, the shafts **84** extending up through the turntable. To supply current to the motors **86** two slip rings **88**, **90** are mounted on the bottom face of the turntable, these rings being engaged by brushes **92**, **94** on the casing of the motor **28** (FIGURE 7). The slip ring **88** is connected to one terminal of each of the motors **86**, the slip ring **90** being connected to the other terminal of these motors. The brushes **92**, **94** are connected to power lines illustrated in FIGURE 8.

A control panel **96** is mounted in any convenient location as shown in FIGURE 1 and supports a starting switch **98**, a main timer device **100** and an on-and-off timer device **102**. The latter operates a switch in the circuit of the motor **60** which drives the sugar feeding rotor **50**. The wiring connections of these devices and of the several motors in the apparauts are shown in FIGURE 8. When the starting switch **98** is closed by pressing the finger button on the panel **96**, a circuit is closed through the timer device **100** which includes a motor and means (not shown) for electromagnetically holding the switch **98** closed until the motor has run a predetermined interval of time at the end of which the switch **98** opens

and the timer resets itself. Devices of this kind are well known, one such being described in Patent No. 2,885,001.

The closing of the switch **98** also energizes a relay magnet **104** to close a switch **106**, supplying current to the motors which drive the spinner head, the cone supports, the on-and-off timer and the sugar dispenser.

The motor **60** which drives the rotor **50** to meter sugar from the container **42** to the spinner head is a constant speed motor which is automatically started and stopped by the on-and-off timer switch mechanism **102**. This timer mechanism has an operational cycle of definite duration, fifteen seconds being the cycle interval of the timer used in the apparatus illustrated on the drawings. The dial on the panel **96** is manually adjustable to regulate the percentage of the cycle interval during which the switch **102** will be on. For example, if the dial is set at 60%, the switch will be open 9 seconds and closed 6 seconds during each cycle of 15 seconds. Thus the average rate of feed of sugar from the container **42** can be manually regulated.

The motor **72** which drives the turntable **62** is separately controlled by a microswitch **108** which is mounted within the housing in a position to be closed by one of the doors of the housing, e.g., the door **22**, when this door is closed. When the doors **22** and **24** are opened for the removal or insertion of paper cones **82**, the switch **108** opens and the rotation of the turntable stops. The cones then adjacent to the doors can readily be removed and replaced. A brief closing of the door **22** brings the other cones around to the front.

When the machine is in operation, fine filaments of sugar are formed from the molten sugar which is discharged from the rapidly spinning head **32**. Most of these filaments are caught at once by the paper cones **82** which not only revolve slowly about the vertical axes of the supports **80** but also progress slowly around the axis of the turntable **62** which carries them. Some of the filaments are carried radially outward by the current of air created by the rapidly rotating spinner head past the cones to the walls of the housing. To keep these from drifting upward and downward along the walls, the portion of the walls on a level with the spinner head **32** is lined with a coarse netting **110** which is preferably composed of a synthetic resin reticulated as indicated in FIGURE 5. This supports the filaments which drift against it. The fine filaments of sugar which are spun from the head which rotates at high speed and are not caught by the paper cones, drift to the netting **110** to which they lightly adhere in a cloudlike accumulation which is readily collected from the netting by passing a paper cone along the netting. One of the filled cones on the turntable may be picked up and used for this purpose.



We claim:

1. In combination with a cotton candy spinning machine comprising a base, a vertical shaft rotatably mounted on said base, a spinning head mounted on the upper end of said shaft, and a motor operatively connected to said shaft; a horizontal disk mounted coaxial with said shaft and at a lower level than said head, means for rotating said disk, a circular series of holders for individual paper cones mounted on said disk equally distant from said shaft, means for rotating said holders about their own axes, and walls extending upward from said base to surround said disk and spinning head.

2. Apparatus as described in claim 1, each said holder including means to support a paper cone in a position slightly inclined from the vertical.

3. A cotton candy spinning machine comprising a housing with a door on one side thereof, a spinner head and means for driving the same in said housing, a horizontal turntable in said housing below the level of said spinner head, an electric motor for rotating said turntable, a control switch in series with said motor, said switch being mounted within said housing in position to be engaged by said door to close the switch when the door is shut, and to be released to open position when said door is opened, and means on said turntable for supporting paper cones to receive sugar filaments from said spinner head.

4. A cotton candy spinning machine comprising a housing having walls, a spinner head mounted for rotation about a vertical axis within said housing, means for driving said spinner head, a plurality of cone holders arranged around said spinner head below the level thereof, means for rotating said cone holders, and a screen of netting lining the portion of said walls opposite and on a level with said spinner head.


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