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TRAVELING CLEANER

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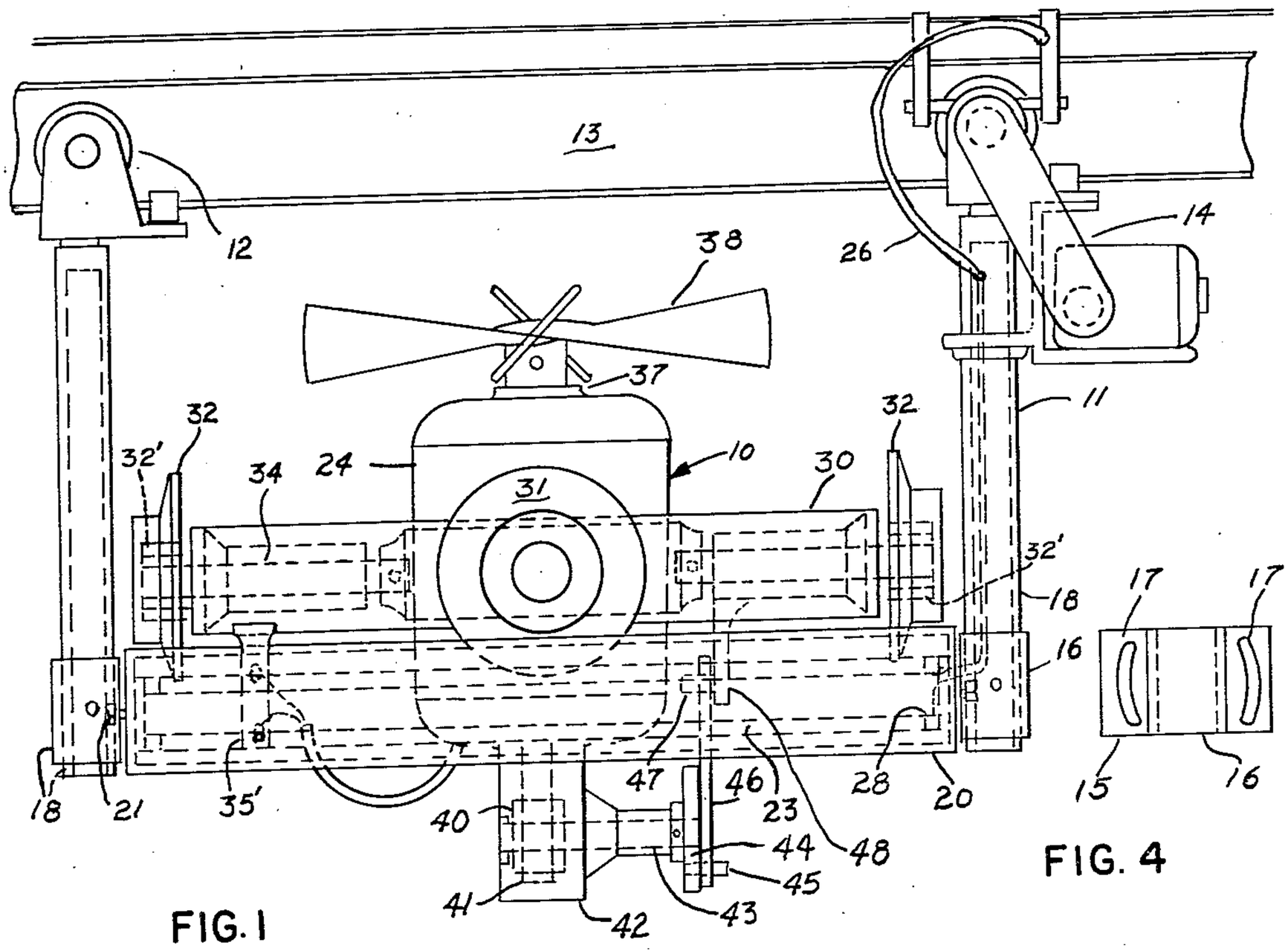

FIG. 1

FIG. 4

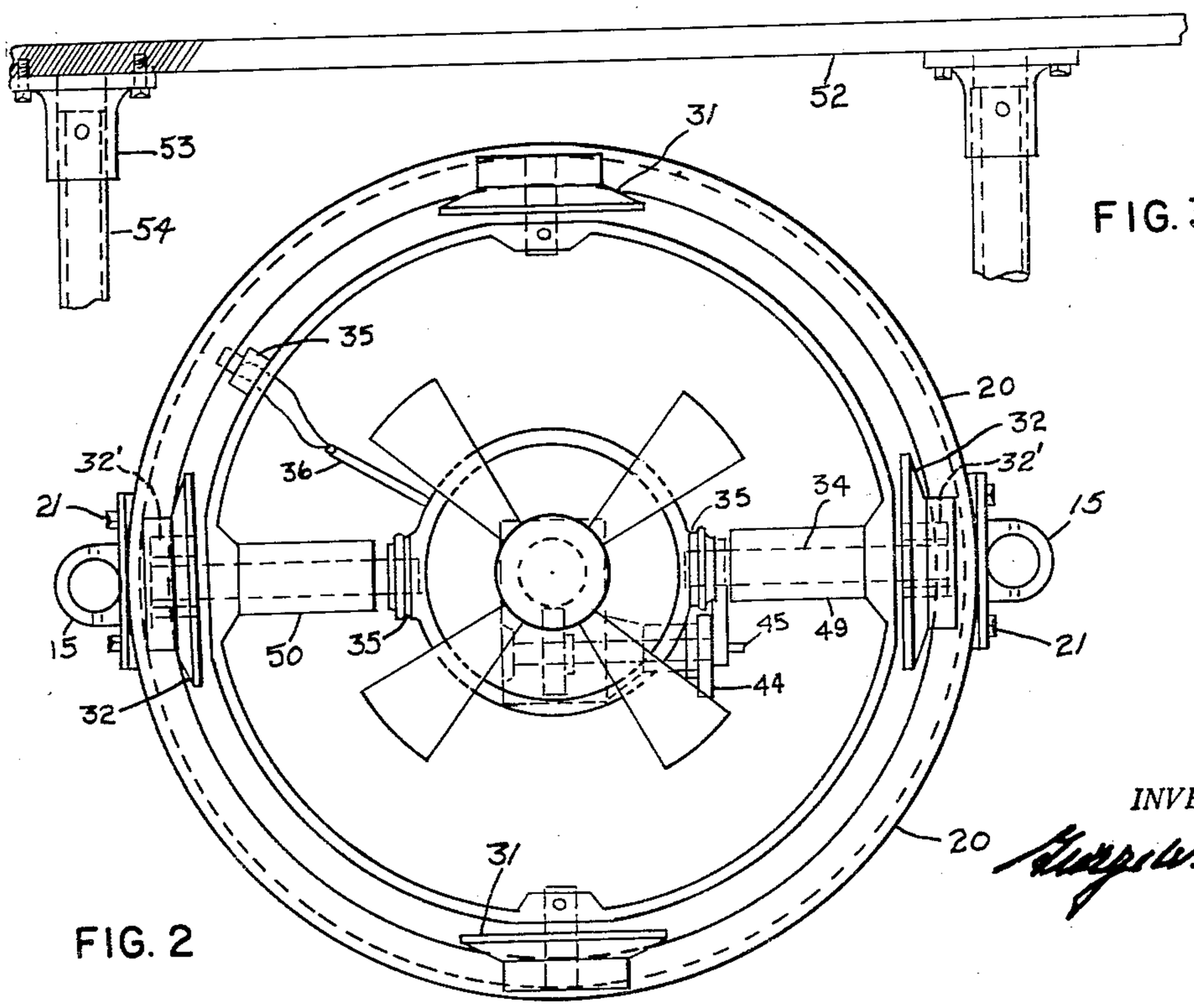

FIG. 2

FIG. 3

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TRAVELING CLEANER

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8 Claims. (Cl. 15—312)

The present invention relates to a traveling cleaner for cleaning lint and other deposits of fibrous matter from textile machinery and from the surrounding walls and ceiling within a spinning room or other processing area of a textile operation, and relates more particularly to a traveling cleaner blower unit capable of directing a stream of high velocity air through an extensive area in order to cover a spherical area sequentially.

Present traveling cleaners for blowing down textile machinery and the walls and ceilings of textile rooms are limited to clean the fibrous materials from an area transverse or parallel to the path of cleaner travel thereby omitting many areas in which lint or other fibrous matter accumulates. Periodically it is necessary to remove those areas which have accumulated fibrous material prior to the time the matter may precipitate onto the spinning frame or other operation which takes place within the plant.

Therefore, it is an objective of this invention to provide a traveling cleaner in which a stream of high velocity air may be made to sweep through an extensive area to cover a spherical path automatically during travel through a textile room to clean machinery and the walls within the room.

Another objective of this invention is to provide a blower unit that is mounted for revolution in a plane of a desired orientation with the blower unit being supported to oscillate in a plane transverse to the plane of orientation.

Still another object of this invention is the provision of a blower unit that is mounted for indexing rotation in a plane of desired orientation with the blower unit being capable of directing a stream of high velocity air through any desired angle transverse to the plane of orientation in order to sweep through at least a hemispherical path.

It is further contemplated to provide a traveling cleaner in which a blower unit may be revolved in indexing increments in a plane of desired orientation and simultaneously have the blower unit oscillate through a desired angular path to direct a stream of high velocity air over an extensive area.

Other objects and many of the attendant advantages of this invention for discharging high velocity streams of air for cleaning machinery through an extensive area will become better understood from the following detailed description taken in conjunction with the accompanying drawings in which like characters of reference designate corresponding parts throughout the several views, and wherein:

FIG. 1 is a side elevational view of a traveling cleaner blower apparatus embodying the novel features of the invention mounted for movement along an overhead trackway;

FIG. 2 is a plan view of a cleaner apparatus of FIG. 1 omitting the blower unit supporting carriage frame;

FIG. 3 is a fragmentary side elevational view of a means for stationarily supporting the blower apparatus; and

FIG. 4 is a side elevational view of a frame supporting bracket for adjusting the orientation of the blower unit to the desired blowing angular plane.

Referring to the drawing, there is shown in FIG. 1 a traveling cleaner **10** mounted for travel in a conventional supporting carriage frame **11** that is suspended through

suitable rollers **12** from the overhead guide trackway **13** that is supported normally from the ceiling of a textile room or building. Standard carriage frame driving means **14** is mounted on the carriage frame for moving the cleaner along a directed path of travel during the cleaning operation.

A pair of brackets **15**, each having a frame receiving socket **16** therein and a pair of arcuate slots **17**, is fastened to the downwardly extending frame legs **18**. A circular annular outer trackway or carriage **20** is fastened, by means of the brackets **15** and fastening bolts **21** which pass through the slots **17**, to the frame legs **18**. Periodically the plane of the trackway **20** may be readily oriented to another desired angle for blowing merely by tilting the trackway and tightening the fastening bolts **21** to secure the trackway in the new position.

A pair of spaced conductor or bus bars **23** is fastened in the inner periphery of the circular trackway to supply the electrical current for driving the motor **24** with current being supplied to the bus bars **23** through the conductor lead **26** which extends from the overhead transmission line **27** with which it makes contact to the bus bar contact elements **28** within the trackway **20**. Motor supporting cage **30** is supported for revolution or swivel rotation on the trackway **20** by means of pairs of casters or rollers **31** and **32** that are rotatably supported and spaced quadrantly on the cage **30**. In one preferred embodiment the rollers **32** are provided with the conventional roller cam one-way clutches **32'** for indexed rotation as will be described in greater detail hereinafter.

A pair of trunion motor supports or axles **34** extend radially inwardly from the rollers **32** to be fastened to the flanges **35** which are mounted on the housing of the motor **24**. A bus bar slide contact **35'** is secured to the cage **30** to engage the bus bars **23** and to transmit electrical current through the conductor lead **36** to the motor **24**. The motor **24** is provided with a double extending armature shaft with one end of the shaft **37** having mounted thereon a multi-blade impeller **38** and the other end of the shaft **40** drives a gear transmission **41** within the gear housing **42**. The transmission power take-off shaft **43** will drive the plate **44** to which an eccentric pin **45** is mounted. A connecting link **46** is fastened to the eccentric pin and reaches from the eccentric pin for connection to the stud **47** on the arm **48** of the sleeve **49** surrounding one of the axles **34**. The other axle is also provided with a sleeve member **50**.

For stationary mounting of the cleaner in place of the traveling carriage shown in FIG. 1, the cleaning apparatus frame **11** may be suspended as seen in FIG. 3 from a ceiling **52** by means of flanges **53** that are fastened thereto with the legs **54** extending to be received within the brackets **15** that are diametrically opposite each other and mounted to the sides of the circular annular trackway **20**. In operation, the trackway **20** may be oriented in the desired angular plane and fastened through the brackets **15** to be maintained in position. With electrical current supplied from the line **27** through conductor **26** to the bus bars **23**, the contact **35** will transmit current to drive the motor **24**. As the motor drives the impeller **38** to generate a flow of high velocity air, the motor will also drive the transmission assembly **41** which transmission will operate the plate **44** to move the eccentrically mounted pin **45**. The pin **45** will actuate the link **46** and the sleeve **49** will be oscillated through the desired angle. As sleeve **49** is fastened with the axle **34**, the motor **24** will be oscillated therewith. To provide for indexed movement or revolution of the cage **30** on the circular annular trackway **20**, as the motor **24** oscillates, the sleeve **49** being connected to the shaft **34** will rotate the roller cam one-way clutch **32'** on the wheel **32** directly but only

in one direction of the cycle of oscillation of the motor. In the opposite or other direction of the oscillation, the one-way clutch 32' will slip thereby permitting the roller to remain idle until the next oscillation. To provide for continuous revolution of the cage, a second roller cam one-way clutch 32' may be used in conjunction with the other wheel 32 so that on the normal idle stroke or movement of the cycle, the motor will cause the second roller cam to urge the cage to move. It will be readily apparent that the hand of the one-way clutches 32' will be the same so that continuous rotation of the cage may occur.

Obviously, many modifications and variations may be made in the construction and arrangement of the cages and the mechanism for oscillating the motor within the cage and it is also contemplated that a direct drive gear train may be utilized so as to revolve the motor 24 a complete revolution. Also it is contemplated that an orifice ring and duct may be utilized for increasing the air velocity. It is, therefore, to be understood that within the scope of the appended claims many modified forms of structure may be made without departing from the above teachings and from the real spirit and purpose of this invention, and the use of mechanical equivalents may be reasonably included and modifications are contemplated.

What is claimed is:

1. Apparatus for cleaning lint and other foreign particles from textile machinery and rooms comprising a supporting frame, a circular annular trackway suspended from said frame, a motor-supporting cage having rollers thereon for cooperatively engaging and supporting the cage on said trackway for revolution of said cage thereon, a blower unit having a motor and an impeller supported by said cage for blowing air, said blower unit being at least partially inscribed by the circular annular trackway, and means connected to said motor for orienting the motor to various angles for blowing.

2. Apparatus for cleaning lint and other foreign particles from a textile room comprising a carriage, a circular annular trackway suspended from said carriage, a motor-supporting cage within the perimeter of and revolvably supported on said trackway, a motor and a blower unit having a motor-driven impeller and being suspended in the cage, and means connected to said motor for oscillating said blower unit.

3. Apparatus for cleaning lint and other foreign particles from textile walls and ceilings comprising a carriage, a circular annular trackway suspended from said carriage, a motor-supporting cage revolvably supported on and within the perimeter of said trackway, a blower unit having a motor-driven impeller, means connected to said motor for oscillating said motor to direct a stream of air and for revolving said cage with the blower unit therein in the plane of said trackway.

4. Apparatus for cleaning lint and other foreign particles from the walls of a textile room comprising a traveling carriage for movement along an overhead trackway, a circular annular trackway suspended from said carriage, a motor-supporting cage revolvably supported on and within the perimeter of the circular trackway, a motor and a blower unit having a motor and a motor-driven impeller mounted in the cage for a pivotable movement therein, and means connected to said motor for pivoting said blower unit and revolving said cage.

5. Apparatus for cleaning lint of the character described comprising in combination an overhead trackway, a carriage movable along said trackway, a circular trackway suspended from said carriage, said circular trackway having means for retaining the circular trackway in an inclined position relative to said carriage, a motor-supporting cage roatably supported on said circular trackway, a blower unit including a motor and an impeller pivotally supported in the cage, and means driven by said motor for oscillating the blower unit and for indexing rotation of the cage.

6. In combination with a traveling carriage movable along an overhead trackway comprising an annular trackway suspended from said carriage, a motor-supporting cage supported within and mounted for revolution on said annular trackway, a blower unit including a motor and an impeller pivotally supported on the cage and located for the most part above said trackway, means for oscillating said blower unit, and means driven by said motor for revolving said cage on the annular trackway.

7. Apparatus for cleaning lint from the walls of a textile room comprising a carriage, means for supporting the carriage, a circular trackway mounted on the carriage and having means for supporting the trackway in an inclined position from a horizontal plane, a motor-supporting carriage revolvably mounted on the circular trackway, a blower unit including a motor and an impeller pivotally mounted to the cage, means driven by said motor for displacing said motor to direct an air stream through a selected angle, of displacement, and means driven by said motor for revolving said carriage on said circular trackway.

8. Apparatus for cleaning lint and other foreign particles from textile rooms comprising a trackway disposed overhead, a carriage suspended from said trackway, a circular annular trackway suspended from said carriage, a motor-supporting cage mounted to revolve on and within said circular trackway, a blower unit including a motor and an impeller mounted in the cage, means for intermittent rotation of said cage, and means for oscillating said blower unit.

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