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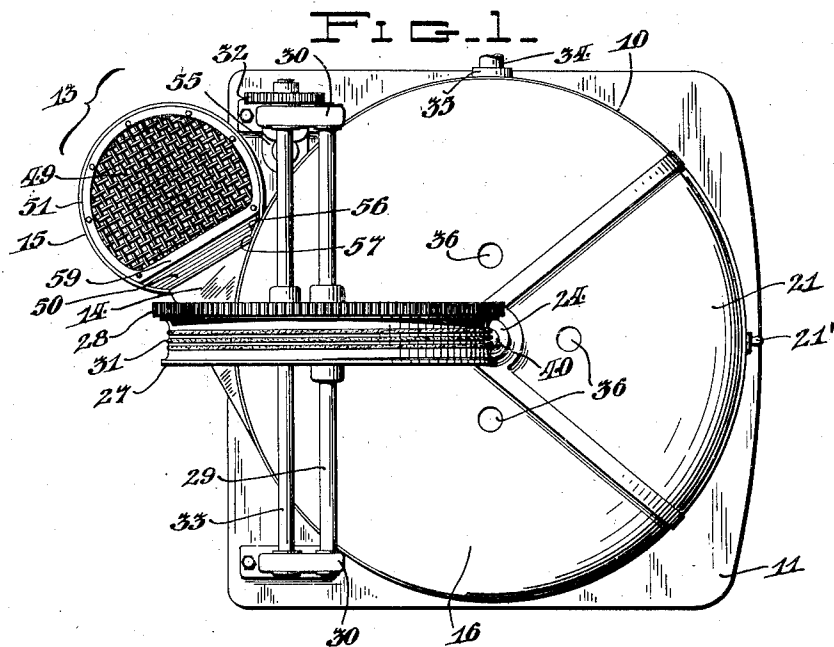
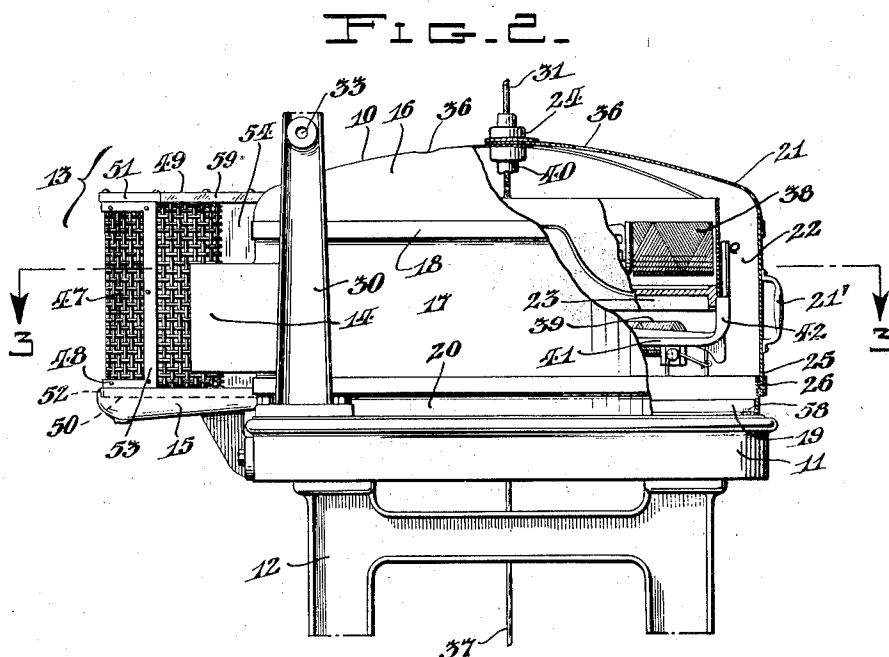
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1,978,086

BRAIDING MACHINE

Filed Sept. 14, 1933

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

FIG. 3.

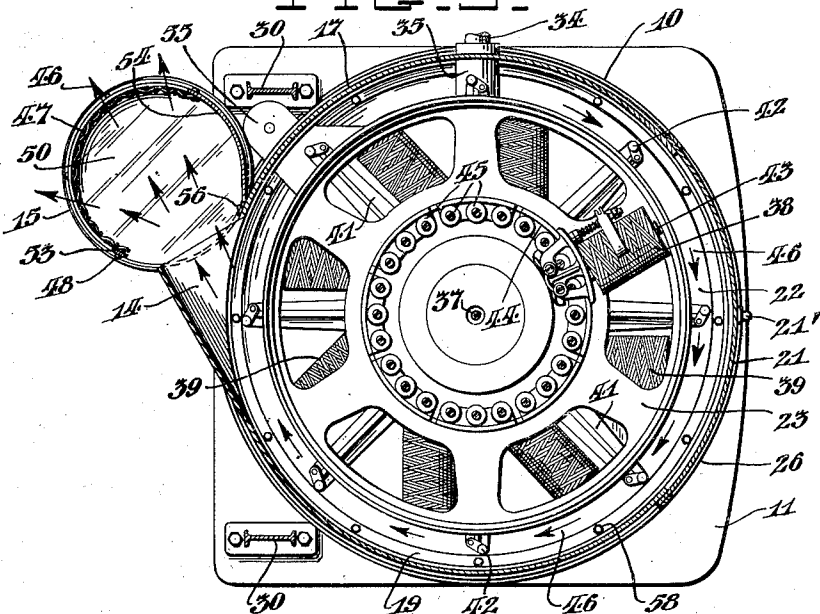
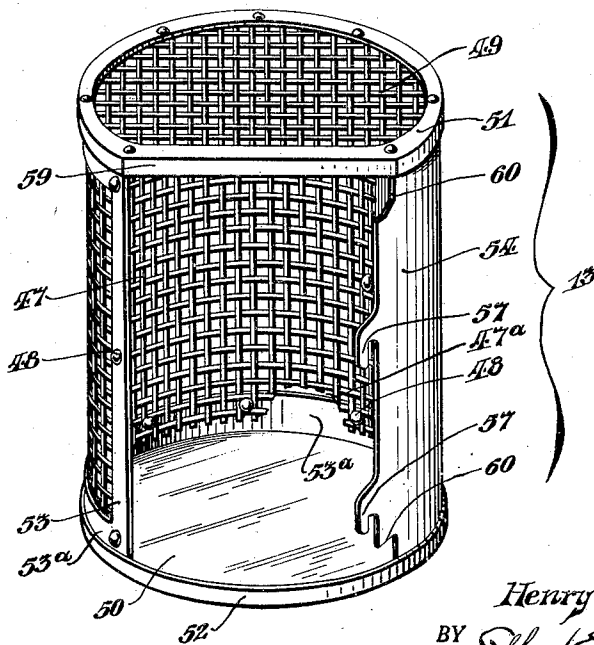


FIG. 4.



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UNITED STATES PATENT OFFICE

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BRAIDING MACHINE

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20 Claims. (Cl. 96—2)

This invention relates generally to braiding machines and more particularly to a novel combination housing and collector construction including a receptacle arranged to collect and retain centrifugally discharged deposits of yarn lint, dust, loose grease and other substances.

Braiding machines of the slow speed type have generally been operated without guards or protective screens, due to the relatively low speed of the yarn packages and the associated machine parts. With high speed braiding machines of more modern type, it is necessary to supply screens or guards to safeguard the body of the operator in case of machine breakage, as well as to prevent accidental disturbance of the yarn packages and rotating machine parts. The use of the machine guards in this connection created new problems which disadvantageously affected the operation of the machine. For instance, the accumulation of dust particles, grease and loose yarn lint within the machine often injuriously affected the operation of the machine; and disturbance of the loose lint, and other particles within the machine by the swirling blast of air caused by the swiftly rotating machine members, caused the particles to rotationally swirl also, and become more or less firmly lodged in the machine parts, thereby necessitating frequent stopping of the machine. These lodged particles then had to be blown out of the machine by a blast of compressed air from a separate source.

It is an object of this invention to provide a novel housing arranged to utilize the air blast created by the moving machine parts internally of the housing for the centrifugal discharge of loose particles of dust, lint and other substances through a discharge port or outlet provided in the housing, so that such particles may become separately accumulated outside the machine and lodged within a removable receptacle positioned adjacent to the exhaust port or outlet.

Another object is to effectively utilize, within the housing of a braiding machine, means constituting part of the machine to produce currents causing the air to swirl in a circular path to centrifugally discharge extraneous material through suitable openings provided in the housing.

Another object is to provide a braiding machine with a detachable receptacle arranged to receive discharged lint and other particles from the braiding machine housing and to permit convenient removal and cleaning of such receptacle.

With these and other objects in view, which will become apparent from the following detailed description of the illustrative embodiment of the

invention shown in the accompanying drawings, my invention resides in the novel elements of construction, mechanisms and combination of parts in cooperative relationship, as hereinafter more particularly pointed out in the claims.

In the accompanying drawings:

Fig. 1 is a top plan view of a braiding machine equipped with the present novel enclosing housing.

Fig. 2 is a side elevation of the same partly broken away.

Fig. 3 is a view in transverse section through the braiding machine and housing, taken substantially along the line 3—3 of Fig. 2.

Fig. 4 is a perspective view of the detachable receptacle or container.

With reference to the drawings, Fig. 1 illustrates a braiding machine housing 10 suitably secured to a table or base 11 which is mounted on a suitable frame 12. A receptacle 13 is removably secured to the housing, adjacent to a discharge outlet conduit 14 projecting from the housing in a direction facilitating the flow of an air draft from the housing, a bracket 15, fixed to the table or base 11 being provided for this purpose. The housing 10 preferably comprises a dome shaped top member or shell 16 suitably secured to a cylindrical body portion 17 by means of an upper ring member 18 as disclosed in Fig. 2. A circular angle bar 19 is fixed to the lower portion 20 of the housing body 17 for securing the housing 10 to the table 11.

At one portion of the housing, there is provided a pivoted and slidable door member 21 for covering an access opening 22 to the braiding mechanism 23. The door 21 is pivotally connected to a vertical bearing 24 at the dome center, and has its lower end 25 slidable in a track 26 formed on the lower portion 20 of the braiding machine housing. A handle 21' is provided for sliding the door 21 relative to the housing in effective opening and closing of the door. Also, the door may be arranged to cooperate with a suitable safety switch to normally prevent operation of the braiding machine when the door is open.

A braid take-off winding reel 27 is fixed to a gear 28 on a shaft 29 which is journaled in a pair of upright standards 30 on the base 11. The reel 27 revolves simultaneously with the gear 28 to wind the finished braided product 31. A small end gear 32 is fixed upon a counter shaft 33 and drives another gear (not shown) which engages and drives the larger gear 28.

The braiding mechanism 23, a portion of which

is shown in Fig. 2, is caused to rotate by a main drive shaft 34 which enters the housing at one side through a bearing 35, as more clearly shown in Fig. 3.

- 5 Air inlet ports or openings 36 are provided in the housing shell for permitting a sufficient amount of air to be drawn into the housing by suction to aid in the discharge, through the discharge port or conduit 14 is disposed substantially tangentially to the cylindrical side-wall body portion of the housing, of extraneous material created or dislodged during braiding operations.

The braiding operation in this instance is to cover a core element, such as a wire or a group of strands 37, by the yarns from upper and lower oppositely revolving yarn packages 38 and 39. This element 37 approaches the braiding mechanism 23 from below the table or base 11, passes upwardly through the machine to an outlet 40 at the top of the housing, and is continuously wound from the outlet 40 onto the take-off reel 27, as shown in Fig. 1.

Air pressure is created within the housing by the swiftly revolving groups of yarn packages and machine parts, the velocity of the air being increased by the impeller like structure of radial arms 41.

The yarn packages 39 are mounted in a group on radially positioned spindles, which group revolves in a horizontal plane and in a clockwise direction, as viewed in Fig. 3. The yarn packages 38 are radially mounted in a group above the yarn packages 39, but rotate in a counter-clockwise direction, for interwinding the strands from that group of packages in a reverse direction on the element 37. Each of the radial arms 41 in this instance includes a portion 42 which impels the air within the housing to increase the velocity of the rotating air blast for expelling particles of dust, grease and lint from the housing.

Fig. 3 discloses a plan view of the braiding machine mechanism 23 enclosed by the housing shell 16. Only one yarn package of the upper group is here shown, in order to reveal the similar fan like position of the lower group of yarn packages 38, which are supported on spindles 43. The yarn packages 38 traverse an annular track 44, having rollers 45, during their revolution, a turret (not shown) being provided for the revolving packages 39. The yarn is fed from the packages 38 and 39 in a well known manner which provides that the yarns become interbraided while being wound upon the element 37.

The swirling action of the enclosed air is indicated by arrows 46. The cooperative relation of the oppositely rotating yarn packages is such that the air blast is directed toward the exhaust port 14 for exit therethrough and deposit within a wire mesh structure 47 of the receptacle 13 of any extraneous material entrained with the moving volume of air.

The body portion of the collector receptacle or container 13 is preferably constructed of wire mesh fabric as seen at 47, though any openwork or foraminated material may be used if desired. The mesh body 47 is secured to a skeleton framework 53, by means of bolts or rivets 48. Top and bottom covers 49 and 50, respectively, are provided for the receptacle 13. The upper cover 49 is also made of wire mesh but has a substantially annular frame 51 for encompassing the upper end of the wire-mesh side wall of the body. A portion of the cover is preferably straight, as seen at 59 across the top of the open front por-

tion of the receptacle. The bottom cover 50 is circular and flat and includes a flange 52 to receive the lower end 53a of the side-wall frame 53. In Fig. 4 the mesh 47 is shown broken away at 47a to more clearly show the construction of the lower end 53a of the receptacle frame 53.

A wall 54 is in the path of the air blast and functions as a shield to prevent the discharge of lint and dirt against the gears and other machine parts located in the vicinity indicated at 55. This wall 54 may be suitably cut away, as seen at 60 to conform to adjacent parts of the machine. The wire mesh body 47 is adapted to efficiently retain the lint and other particles while permitting the air to pass through the collector. A certain amount of grease and oil may be carried by the air to cover the mesh structure and assist in holding the lint and other particles within the collector.

The upper part of the bracket 15 is formed hollow to receive and support the collector 13 and the outer wall of the housing 17 is provided with headed studs 56 to receive the hooked portions 57 of the wall 54, provided at the outer end whereby the collector is properly secured in position at the discharge opening 41. When an excessive amount of lint, dirt and the like has accumulated in the collector 57, the latter is simply lifted off the studs. The top cover 49 may also be removed to facilitate emptying and cleaning the collector.

The housing 10 is readily attached to or detached from the base 11 by means of the bolts 58. Also, while here shown as circular in form, the housing may be of any suitable shape to accommodate the braiding mechanism 23.

The present invention is not limited, in its application, to braiding machines, but is useful in connection with any machine having rotating parts which produce detritus of any kind.

Of course, the improvements specifically shown and described, by which I obtain the above results, can be changed and modified in various ways without departing from the scope of the invention herein disclosed and hereinafter claimed.

What I claim is:

1. A yarn-fabricating machine comprising a source of yarn supply, mechanism for working a plurality of yarn lengths from said source into side-by-side relation to form a textile product during which working said yarn lengths give off particles thereof, air-impelling means permanently operatively related to the machine, and a housing structure for said yarn-working means having a passageway leading therefrom and serving as air-directing means facilitating the flow of air from said impelling means thereby to effect transport of said particles by the air toward and through said passageway.

2. A machine comprising means including a high-speed rotary element for changing a raw material into a finished product, a housing having a side wall structure normally surrounding said element and spaced from the radially-outer limits thereof to provide a passageway around the element, and means providing an outlet passageway substantially tangential to said passageway and communicating therewith, the rotation of said element causing said material to give off particles thereof and impel them from said annular passageway to said tangential passageway.

3. In combination, a braiding machine including a centrifugal braiding element, a housing for said braiding element, said housing operating to direct particles of lint toward a discharge opening therein, and a receptacle collecting said particles

of lint and other substances disturbed by said braiding element.

4. The combination with a braiding machine having centrifugal mechanism therein, of a housing element for said mechanism, said housing element having a discharge outlet, and constructed to direct air from the housing to the outlet and a receptacle element communicating with said outlet and arranged to receive lint and other particles discharged from said housing, one of said elements having a conduit exteriorly of the housing extending in a direction facilitating the flow of air from the housing to the receptacle.

5. In combination with a braiding machine having centrifugal mechanism arranged to develop a whirling air blast, of a housing for said mechanism, said housing having air intake and discharge ports, and constructed to direct said air blast toward a discharge port and a detachable collector receptacle having means for attachment to said machine in communication with said outlet, and arranged to receive lint and other particles centrifugally discharged from said housing.

6. In combination, a braiding machine or the like including a base support, a centrifugal member, a housing for said member, said housing having an air inlet and a discharge conduit projecting from the housing, and a collector positioned on said base support in communication with said conduit to receive lint and other particles centrifugally discharged through said opening.

7. In combination, a braiding machine or the like including centrifugal braiding members, a housing for said members, said housing having an air inlet and a discharge opening, and an openwork structure positioned adjacent to said opening to collect lint and other particles present during operation of said braiding members, said housing being shaped to direct said particles toward said opening.

8. In combination, a braiding machine or the like including a centrifugal member, a housing for said member, said housing having an outlet conduit projecting therefrom in a direction facilitating the flow of an air draft from the housing, and a collector communicating with said outlet conduit and arranged to receive lint and other particles expelled from said housing by said centrifugal member.

9. A high-speed rotary braiding machine comprising a centrifugal member, a substantially cylindrical housing therefor, a receptacle at the side of the housing and a conduit leading off the housing in a substantially tangential direction relative to the cylindrical wall thereof to the receptacle.

10. A high-speed braiding machine comprising a centrifugal member rotatable about a vertical axis, a substantially cylindrical housing therefor, a receptacle beside said housing, and a conduit disposed in substantially tangential relation to the housing providing communication between the housing and the receptacle.

11. A machine comprising means including an element rotatable about a vertical axis for changing a raw material into a finished product, a housing of hood-shape over said element having a side wall surrounding the element and spaced from the radially-outer extremity thereof to provide a passageway, said hood having a front door including a part of the top wall and a part of the upright side wall thereof, and means providing an

outlet passageway for said first passageway rearwardly of said door, the rotation of said element causing said material to give off particles thereof, for movement through said passageways.

12. A high-speed braiding machine comprising a base support, a centrifugal member thereon rotatable about a vertical axis, a substantially cylindrical housing on said support for said member, a seat on the support beside said housing, and a receptacle for resting on said seat and detachable securement to said housing in communication therewith.

13. In combination a braiding machine or the like including a base and a centrifugal member mounted on said base, a housing secured to said base above said centrifugal member, said housing having a discharge outlet and constructed to direct an air draft from the housing to said outlet, a collector receptacle seat positioned on said base adjacent to said outlet, and a collector receptacle supported on said seat for receiving lint and other substances discharged from said housing.

14. The combination with a braiding machine including a base and centrifugal mechanism mounted thereon and arranged to develop a whirling air blast, of a housing for said mechanism operating to direct said air blast, said housing having air intake and discharge ports, a seat on said base adjacent to said outlet, and a collector receptacle supported on said seat and arranged to receive lint and other foreign particles centrifugally discharged from said housing, said collector receptacle comprising an openwork body, having an open side and an imperforate wall adjoining the latter for protecting a predetermined portion of the machine.

15. The combination with a braiding machine including a base and centrifugal mechanism mounted thereon and arranged to develop a whirling air blast, of a housing for said mechanism, said housing having air intake and discharge ports, a bracket secured to said base adjacent to said outlet, and a collector receptacle supported on said bracket and arranged to receive lint and other foreign particles centrifugally discharged from said housing, said collector receptacle comprising an openwork body, having an open side and an imperforate wall adjoining said open side, and a removable, openwork top cover.

16. The combination with a braiding machine including a base and centrifugal mechanism mounted thereon and arranged to develop a whirling air blast, of a housing for said mechanism, said housing having air intake and discharge ports, a bracket secured to said base adjacent to said outlet, and a collector receptacle detachably supported on said bracket and arranged to receive lint and other foreign particles centrifugally discharged from said housing, said collector receptacle comprising an openwork body portion, said housing including a centrally disposed braiding product outlet; and a slidable door having a pivotal mounting in the axial plane of said product outlet.

17. The combination with a braiding machine including a base and centrifugal mechanism mounted thereon and arranged to develop a whirling air blast, of a housing for said mechanism, said housing having air intake and discharge ports, and a collector receptacle detachably supported on said base and arranged to receive lint and other foreign particles centrifugally discharged from said housing, said collector receptacle comprising an openwork body having an open side and an imperforate wall adjoining

- the latter and a removable top cover, said housing including a centrally disposed braiding product outlet, and an arcuately slidable door said door having a pivotal mounting in the axial plane of said product outlet.
18. The combination with a braiding machine including a base and centrifugal mechanism mounted thereon and arranged to develop a whirling air blast, of a housing for said mechanism, said housing having air intake and discharge ports, and a collector receptacle detachably supported on said base and arranged to receive lint and other foreign particles centrifugally discharged from said housing, said collector receptacle including an openwork body having an open side and an imperforate wall adjoining the latter, said housing including a braiding product outlet, and an arcuately slidable door having a pivotal mounting in the axial plane of said product outlet.
19. The combination with a braiding machine including a base and centrifugal mechanism mounted thereon and arranged to develop a whirling air blast, of a housing for said mechanism, said housing having air intake and discharge ports, a bracket secured to said base adjacent to said outlet, and a collector receptacle detachably supported on said bracket and arranged to receive lint and other foreign particles centrifugally discharged from said housing, said collector receptacle comprising an openwork body, substantially circular in cross section, having an open side and an imperforate wall portion adjoining the latter, and a removable, openwork top cover, said housing including a centrally disposed braiding product outlet, and an arcuately slidable door having a pivotal mounting in the axial plane of said product outlet.
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