

Oct. 13, 1959

S. FÜRST
WINDING MACHINE

2,908,029

Filed March 2, 1955

2 Sheets-Sheet 1

FIG. 1

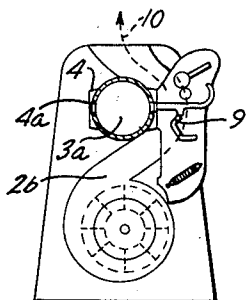


FIG. 2

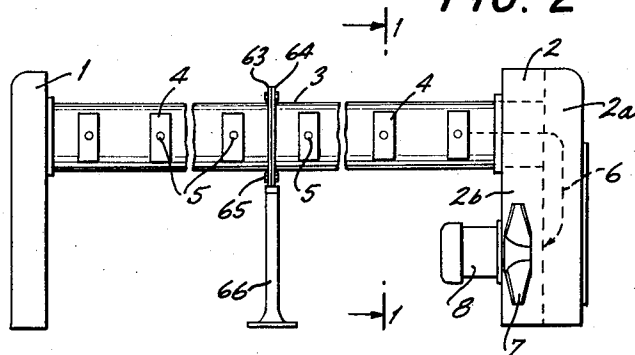


FIG. 3

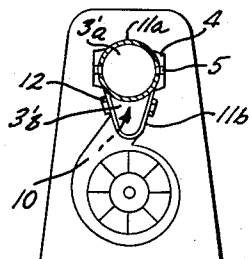


FIG. 4

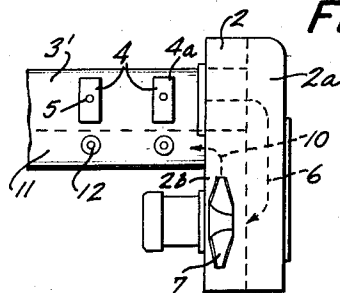


FIG. 5

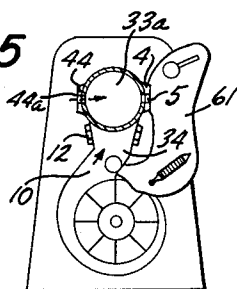
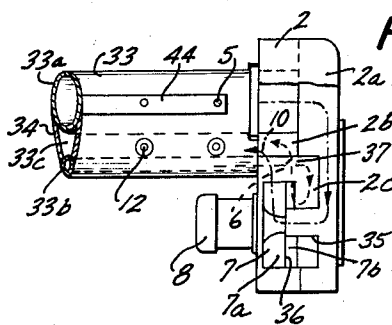


FIG. 6



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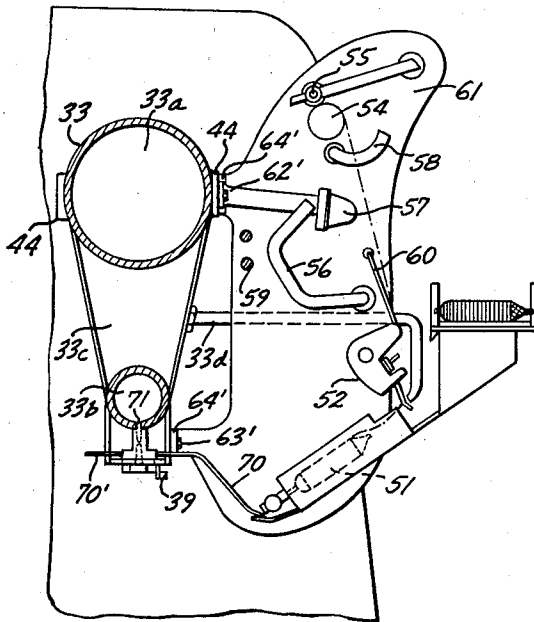


FIG. 7

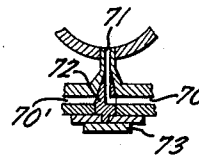


FIG. 9

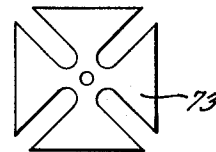


FIG. 10

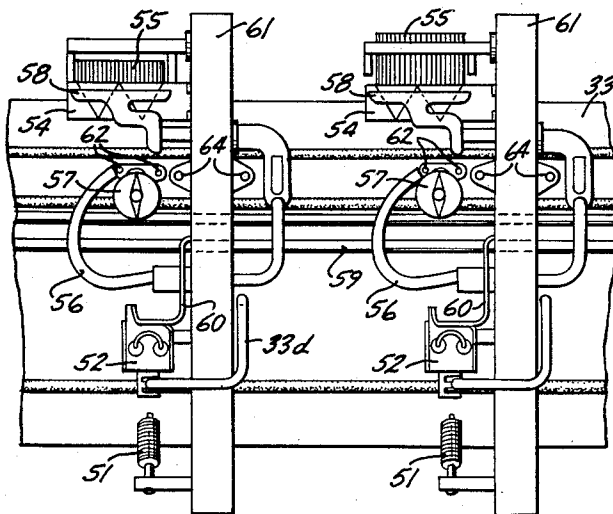


FIG. 8

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WINDING MACHINE

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Application March 2, 1955, Serial No. 491,605

Claims priority, application Germany July 2, 1951

8 Claims. (Cl. 15—301)

The present application is a continuation-in-part application of my copending application Serial No. 295,921, filed June 27, 1952, now abandoned.

The present invention relates to winding machines, and more particularly to the hollow frame structure of a winding machine.

Winding machines, and other textile machines, require negative and positive air pressure for the operation of pneumatic means. According to the known art air conduits are provided independently of the supporting frame of the machine. Frequently, so many air conduits in the form of pipes and ducts are necessary that access to the machine becomes difficult.

It is an object of the present invention to overcome the disadvantages of the known winding machines provided with air ducts, and to provide a winding machine in which all necessary air ducts are incorporated into the supporting structure.

It is a further object of the present invention to provide in a winding machine frame a hollow supporting beam for supporting a plurality of detachable and exchangeable winding devices including pneumatic operating means, and to operate the pneumatic operating means by means of air ducts extending in the interior of the supporting beam.

It is a still further object of the present invention to provide a supporting beam having a pressure duct, a suction duct for operating pneumatic suction operating means, and another suction duct for removing dusty air from winding devices supported on the supporting beam.

It is yet an object of the present invention to provide separated rotors in a single blower for removing dusty air and clean air from the winding devices.

It is yet an object of the present invention to provide on the supporting beam projections having planar mounting faces for the winding devices and to connect the ducts within the supporting beam to the winding devices by means of passages opening on the mounting faces.

With these objects in view, the present invention mainly consists in a winding machine comprising, in combination, at least one elongated supporting beam formed with a plurality of air ducts and with a plurality of longitudinally spaced passage means connecting the air ducts with the outer surface of the supporting beam, a plurality of winding devices detachably attached to the supporting beam and being supported by the same, each of the winding devices including pneumatic operating means, the pneumatic operating means of each of the winding devices communicating with the longitudinally spaced passage means, and air current creating means communicating with the air duct and adapted to produce a stream of air through the passage means for operating the pneumatic operating means of the winding devices.

According to one embodiment of the present invention, the supporting beam is provided with a pressure air duct in addition to a suction air duct. In this embodiment pressure passages communicating with the pressure duct

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are provided for supplying the winding devices with compressed air.

In accordance with another embodiment of the present invention, the supporting beam is provided with two suction ducts and with a pressure duct. One of the suction ducts communicates through suction passages with the pneumatic operating means of the winding devices, and the other suction duct communicates through other suction passages with the interior of the winding devices for removing dust and lint from the same.

Preferably, the last-mentioned other suction passages are provided with valves and which are operated by suitable means at timed intervals for removal of dusty air from the winding devices at timed intervals.

It is advantageous to provide on the supporting beam mounting faces which may either extend along the entire supporting beam, or be provided on longitudinally spaced projections. These mounting faces contain the suction passages so that, when the winding devices are mounted on the mounting faces, the pneumatic operating means of the winding devices are connected to the passages in the mounting faces.

The supporting beam is preferably constructed of several sections connected by flanges to each other. Consequently, it is possible to build the winding machine to such length as is required by the number of winding devices. Additional supporting legs may be provided at the points where sections of the supporting beam are connected to each other.

The arrangement of the present invention is particularly advantageous for winding machines in which different conditions may be present at each winding station constituted by a winding device. In automatic winding stations, suction air and compressed air is required at each station at different times and to different amounts. In machines of this type it is desirable to maintain the winding stations in operation even if one or the other winding device of a station is out of order and must be removed for repair.

In winding machines, suction air is required for operating the pneumatic means by which broken thread ends are sucked up automatically. Consequently, if one winding device would not properly operate, the respective pneumatic operating means would continuously use suction air. Since only a limited amount of negative pressure is available for economic reasons, another winding device may not have the negative air pressure required for operation of the respective pneumatic means. It will be understood that in the winding machines of the type of the present invention the operations of the pneumatic means of different winding devices do not take place simultaneously so that the suction and pressure creating blower means are dimensioned for providing only a limited number of winding stations with negative or positive air pressure. Consequently, it is important that a faulty winding device which uses up suction pressure without operating properly, is removed and quickly replaced by another winding device. In the arrangement of the present invention it is only necessary to loosen a few bolts, whereupon a faulty winding device can be detached from the supporting beam, and another winding device attached to the supporting beam permitting the operation to continue at this station. On the other hand, the faulty winding device may be removed and the suction passage closed by suitable means, while the faulty winding station is being repaired.

The hollow supporting beam according to the present invention has a wide suction duct which also serves as a reservoir for suction air at negative pressure. Consequently, the blower means reduce the air pressure in the suction air duct while the pneumatic operating means of the winding devices are not operated and require no

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suction. When negative pressure is required it is obtained from the reservoir whose pressure has been sufficiently reduced in the meantime.

The supporting frame of the present invention is formed by at least two supporting legs and by a horizontal supporting beam formed with at least one air duct and carrying winding devices. The supporting beam also supports drive means, shafts and other elements which are required for the operations of the winding stations.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings, in which:

Fig. 1 is a cross sectional view of a winding machine frame according to the present invention taken on line 1—1 in Fig. 2;

Fig. 2 is a front view of the winding machine frame shown in Fig. 1;

Fig. 3 is a cross sectional view of a modified embodiment of the winding machine frame of the present invention;

Fig. 4 is a fragmentary front view of the modified embodiment shown in Fig. 3;

Fig. 5 is a cross sectional view of a preferred embodiment of the present invention;

Fig. 6 is a fragmentary front view of the embodiment shown in Fig. 5;

Fig. 7 is a fragmentary cross sectional view of the embodiment of Fig. 6 shown on an enlarged scale;

Fig. 8 is a fragmentary front view of the embodiment shown in Fig. 7;

Fig. 9 is a fragmentary cross sectional view of a detail of Fig. 7; and

Fig. 10 is a plan view of a detail.

Referring now to the drawings, and more particularly to the embodiment illustrated in Figs. 1 and 2, the frame of the winding machine is constructed of two supporting legs 1 and 2 and of a horizontal hollow supporting beam 3 which is rigidly connected at the ends thereof to the supporting legs 1 and 2. At least the supporting leg 2 is hollow and communicates with an air duct 3a in the hollow supporting beam 3. An air current creating means, such as a blower rotor 7 is arranged in the hollow supporting leg 2 and driven by a motor 8. The supporting leg 2 has a suction conduit 2a communicating with the suction duct 3a in the supporting beam 3, and a pressure conduit 2b connected with the outside. When the rotor 7 is driven, air is sucked from the suction duct 3a and passes in direction of the arrow 6 into the pressure conduit 2b and is expelled in direction of the arrow 10.

A plurality of supporting projections 4 are provided on the outer surface of the supporting beam 3 and are spaced in longitudinal direction of the supporting beam. Each projection 4 is provided with a planar mounting face for supporting the flanges of a winding device as will be described in greater detail hereinafter. A set of suction passages 5 connects the suction duct 3a in the interior of the beam 3 with the outer surface of the beam. The suction passages 5 open on the mounting faces 4a. Consequently, the suction at the passages 5 can be used for operating pneumatic means of winding devices mounted on the mounting faces 4a. The supporting beam 3 may be an integral member, but in the embodiment of Fig. 2 the supporting beam 3 is subdivided, so that two beam sections are connected by flanges 63, 64 and bolts 65. Another supporting leg 66 is provided for supporting the supporting beam 3 intermediate the supporting legs 1 and 2.

In the embodiment illustrated in Figs. 3 and 4 the supporting beam 3' has a suction duct 3'a and a pressure duct 3'b. The pressure duct 3'b communicates with

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the pressure conduit 2b in the supporting leg 2, and the suction duct 3'a communicates with the suction conduit 2a in the supporting leg 2. In the embodiment of Figs. 3 and 4, the pressure conduit 2b is closed. Similar to the embodiment of Figs. 1 and 2, projections 4 are provided on the supporting beam which have planar mounting faces 4a for mounting winding devices requiring suction which is provided by the suction passages 5. Outlet pressure passages 12 connect the pressure duct 3'b with the outer surface of the supporting beam 3' so that compressed air can be supplied to the winding devices mounted on the projections 4. When the blower means 7 is operated air is pressed into the duct 3'b and sucked out of the duct 3'a so that a stream of air passes into the passages 5 and out of the passages 12.

In the embodiment illustrated in Figs. 3 and 4 the supporting beam 3' is constructed of a suction pipe 11a and of a channel-shaped member 11b which is welded to the suction pipe 11a. Consequently, the suction duct 3'a is formed by the suction pipe 11a, and the pressure duct 3'b is formed by the channel-shaped member 11b and the outer surface of the suction pipe 11a.

Referring now to the embodiment illustrated in Figs. 5 and 6, the supporting beam 33 connects two supporting legs as described with reference to Fig. 2 to form a rigid frame. Only the hollow supporting leg 2 is illustrated in Fig. 6. In the embodiment of Figs. 5 and 6, the supporting beam 33 has two suction ducts and a pressure duct. The supporting beam 33 is constructed of a larger suction pipe 33a, of a smaller suction pipe 33b, and of two sheets 34 which are welded to the suction pipes 33a and 33b so as to form the side walls of the supporting beam 33. An elongated projection 44 is provided on each side of the suction pipe 33a, preferably in the form of a flat bar 44 welded to the pipe 33a. Each projection 44 has a planar mounting face 44a for mounting winding devices 61 which are supplied with suction air through the longitudinally spaced suction passages 5, and with compressed air through the longitudinally spaced pressure passages 12. The pressure passages 12 communicate with the pressure duct 33c in the interior of the supporting beam 33 which is defined by the pipes 33a and 33b and by the side walls 34. Suitable suction passages are provided for connecting the suction pipe 33b with the winding devices as will be described hereinafter. The supporting leg 2 is hollow and formed with pressure and suction conduits communicating, respectively, with the pressure duct 33c and with the suction ducts within the suction pipes 33a and 33b. The blower means 7 has two rotors 7a and 7b which are coaxial and driven by the motor 8. The rotor 7a is separated by a partitioning means 36 from the rotor 7b, and is connected with the suction conduit 2a by means of a tubular member 35 which passes through the rotor 7b. The suction conduit 2a communicates with the suction duct 33a so that suction is produced at the passages 5 by the rotor 7a which presses the air through the pressure conduit 2b into the pressure duct 33c. The other rotor 7b communicates through a suction conduit 2c with the suction duct 33b and presses the air also into pressure conduit 2b. A filter means 37 is provided in the conduit 2c to filter the air before it passes into the rotor 7b.

The negative pressure in the suction duct 33a is used for operating pneumatic operating means of the winding devices which are supported by the supporting beam 33. Consequently, the air passing through the suction duct 33a and to the rotor 7a is clean and need not be filtered. The negative pressure in the suction duct 33b is used for removing dust and lint from the winding devices, and consequently the air has to be filtered by the filter means 37 before it enters the rotor 7b. The partitioning means 36, which is preferably secured to the blades of the rotors, prevents mixing of the two air streams. The partitioning wall 36 is preferably mounted for axial movement for adjusting the axial extension of each rotor with regard to the other rotor, whereby the suction action of

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the can be differently distributed over the ducts 33a and 33b.

Fig. 5 illustrates a winding device 61 attached to the mounting face 44a and it will be understood that a plurality of winding devices 61 can be detachably attached to both sides of beam 33 on mounting faces 44a to be connected to the suction and pressure passages, as required for the operation of pneumatic means included in the winding devices 61.

The arrangement is shown in greater detail in Figs. 7 and 8 which illustrate the embodiment of Figs. 5 and 6 on an enlarged scale. The suction passages which connect the suction pipe 33b with the outer surface of the supporting beam 33 are shown in detail in Figs. 7 and 9.

In the winding machine illustrated in Figs. 7 and 8, winding devices 61 are mounted spaced in longitudinal direction of the supporting beam 33. In Fig. 7, only the winding devices mounted on one elongated supporting projection 44 are illustrated, but it will be understood that on the corresponding projection or ledge 44 on the other side of the supporting beam 33 another set of winding devices may be mounted. In each winding device 61 a supply let-off spool 51 supplies a thread through a thread-tensioning and thread cleaning means 52 to the thread-guide drum 54 by which the thread is wound in a predetermined cross pattern on the take-up spool 55. In the event that the thread breaks during the winding operation, the thread end supplied from the let-off spool 51 remains in the thread-tensioning means 52, and a turnable suction nozzle means 56 is turned into a position in which the thread is sucked up between the thread-tensioning means 52 and the let-off spool 51, whereupon the turnable suction nozzle means 56 is returned and places the sucked-up thread end in the region of the tying device 57. At the same time another suction nozzle means 58 picks up the thread end on the take-up spool 55 after the same has been turned back by reversing of the thread-guide drum 54. The suction nozzle means 58 moves the sucked-up thread end into the region of the tying device 57 so that this device ties together the two thread ends picked up by the nozzle means 56, 58, respectively. The entire operation is automatic, and the motion of the elements is derived from the shaft 59 which extends in longitudinal direction of the supporting beam 33. The above-described operations are initiated by a thread break detector means 60 when the thread breaks. This arrangement, however, is not an object of the present invention.

It will be understood, however, that each of the winding devices 61, includes pneumatic operating means 56 and 58, which are operated by the negative suction pressure provided by the suction duct 33a. The pneumatic operating means 56 and 58 communicate through conduits in the winding devices 61 with the suction passages 5 which open on the ledge 44. These suction passages 5 are not shown in Figs. 7 and 8, but in Fig. 6 in which the winding devices are not illustrated for the sake of clarity. The pneumatic operating means 56 and 58 do not produce dust and lint so that no filter is required for protecting the rotor 7a of the blower means 7. The dust and lint is removed from the winding devices by means of suction tubes 70 which open opposite the let-off spools 51 and communicate with the suction duct 33b. Since it is not necessary to continually suck off the dust and lint from the winding devices, the suction passages 71 are provided with valve means 72 which are shown in greater detail in Fig. 9. Each valve means 72 is turnable between a position connecting the suction passage 71 with a suction conduit 70, another position connecting the suction passage 71 with a suction conduit 70', and a third position closing the suction passage 71. The suction conduit 70' is provided for another winding device which may be mounted on the other side of beam 33. The valve member 72 is turnable, and connected to a Geneva mechanism 73, shown in Fig. 10 in a plan view. A

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chain 39 is provided with pins cooperating with the Geneva cross 73, and as this chain 39 moves in longitudinal direction of the supporting beam 33, the valves 72 are turned between the above-described positions for sucking off dusty air from the winding devices 61. Such suction operations are carried out at timed intervals due to the action of the Geneva mechanism.

The pressure space 33c in the interior of the supporting beam 33 is connected by pressure pipes 33d to the respective winding devices to supply compressed air in the region of the let-off spools 51.

Each winding device 61 is provided with flanges 64' which are secured by bolts 62' and 63' to corresponding mounting faces on the supporting beam 33. It will be apparent that each winding device can be easily detached when its operation is faulty, and quickly replaced by another winding device. If necessary, the suction passages 5 and 71 can be closed by suitable means when the corresponding winding device is removed.

The supporting beams according to the present invention may be advantageously made of a thermoplastic material and formed by an extrusion operation.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of winding machines differing from the types described above.

While the invention has been illustrated and described as embodied in a supporting frame including a hollow supporting beam provided with air ducts and supporting a plurality of winding devices, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be secured by Letters Patent is:

1. In a winding machine, in combination, at least two spaced supporting legs, at least one elongated supporting beam extending between said supporting legs and being rigidly connected to the same so as to form with the same a rigid frame, said supporting beam being formed with at least one longitudinally extending pressure air duct, and with at least one longitudinally extending suction air duct, said supporting beam being formed with a plurality of longitudinally spaced pressure passage means connecting said pressure air duct, and with a plurality of longitudinally spaced suction passage means connecting said suction air duct, with the outer surface of said supporting beam, said supporting beam being adapted to detachably support a plurality of winding devices having pneumatic operating means adapted to communicate with said passage means; and air current creating means communicating with said pressure air conduit and with said suction air conduit and adapted to produce streams of air through said passage means for operating said pneumatic means.

2. In a winding machine, in combination, at least two spaced supporting legs; at least one elongated supporting beam extending between said supporting legs and being rigidly connected with the same so as to form with the same a rigid frame, said supporting beam being formed with at least one longitudinally extending air duct, said supporting beam being formed with a plurality of longitudinally spaced passage means connecting said air duct with the outer surface of said supporting beam; a plurality of longitudinally spaced projections on said supporting beam, each projection having a planar mounting

face forming a portion of said outer surface of said supporting beam, said passage means opening on said planar mounting faces, said supporting beam being adapted to detachably support a plurality of winding devices having pneumatic operating means adapted to communicate with said passage means; and air current creating means communicating with said air duct and adapted to produce a stream of air through said passage means for operating said pneumatic operating means.

3. In a winding machine, in combination, at least two spaced supporting legs, at least one of said supporting legs being hollow and formed with a pair of suction air conduits; at least one elongated supporting beam extending between said supporting legs and being rigidly connected to the same so as to form with the same a rigid frame, said supporting beam being formed with two longitudinally extending suction air ducts, each of said suction air ducts communicating with one of said suction air conduits in said one supporting leg, said supporting beam being formed with two sets of suction passage means, the suction passage means of each set being spaced from each other in longitudinal direction of said supporting beam, said sets of suction passage means respectively connecting said suction air ducts with the outer surface of said supporting beam, said supporting beam being adapted to detachably support a plurality of winding devices having pneumatic operating means adapted to communicate with one set of suction passage means, the other set of suction passage means being adapted to remove dust and lint from the winding devices; air current creating means located in said one supporting leg and communicating with said two suction air conduits; filter means located in the one of said suction conduit means associated with said other set of suction passage means; valve means located in said suction passage means of said other set of suction passage means; and operating means for operating said valve means at timed intervals so that suction is exerted through said other set of suction passage means only at timed intervals.

4. In a winding machine, in combination, at least two spaced supporting legs, at least one of said supporting legs being hollow and formed with a pair of suction air conduits, and with a pressure conduit; at least one elongated supporting beam extending between said supporting legs and being rigidly connected to the same so as to form with the same a rigid frame, said supporting beam being formed with two longitudinally extending suction air ducts, each of said suction air ducts communicating with one of said suction air conduits in said one supporting leg, said supporting beam being formed with two sets of suction passage means, the suction passage means of each set being spaced from each other in longitudinal direction of said supporting beam, said sets of suction passage means respectively connecting said suction air ducts with the outer surface of said supporting beam, said supporting beam being further formed with a pressure duct communicating with said pressure conduit in said one supporting leg and being also formed with a set of longitudinally spaced pressure passage means, said supporting beam being adapted to detachably support a plurality of winding devices having pneumatic operating means adapted to communicate with one set of suction passage means and said pressure passage means, the other set of suction passage means being adapted to remove dust and lint from said winding devices; air current creating means located in said one supporting leg and communicating with said two suction air conduits and with said pressure conduit.

5. In a winding machine, in combination, at least two spaced supporting legs, at least one said supporting legs being hollow and formed with a pair of suction air conduits, and with a pressure conduit; at least one elongated supporting beam extending between said supporting legs and being rigidly connected to the same so as to form with the same a rigid frame, said supporting beam

being formed with two longitudinally extending suction air ducts, each of said suction air ducts communicating with one of said suction air conduits in said one supporting leg, said supporting beam being formed with two sets of suction passage means, the suction passage means of each set being spaced from each other in longitudinal direction of said supporting beam, said sets of suction passage means respectively connecting said suction air ducts with the outer surface of said supporting beam, said supporting beam being further formed with a pressure duct communicating with said pressure conduit in said one supporting leg and being also formed with a set of longitudinally spaced pressure passage means; a plurality of supports for winding devices detachably attached to said supporting beam and being supported by the same, said supports having connecting ducts; a plurality of pneumatic operating means respectively supported on said supports, each of said pneumatic operating means communicating with one suction passage means of one set of said sets of suction passage means through said connecting ducts, the other set of suction passage means being adapted to be connected through said connecting ducts with said winding devices for removing dust and lint from the same, and said pressure passage means being adapted to communicate through said connecting ducts in said supports with the winding devices; blower means including a first rotor and a second rotor coaxial with said first rotor, each of said rotors communicating with one of said suction air conduits on one hand and with said pressure air conduit on the other hand, said blower means including a partitioning means located between said rotors for separating the same from each other; and filter means located in the one of said suction conduit means associated with said other set of suction passage means for filtering air sucked through said other set of suction passage means.

6. In a winding machine, in combination, at least two spaced supporting legs, and one of these supporting legs being hollow and formed with a pair of suction air conduits and with a pressure air conduit; at least one elongated supporting beam extending between said supporting legs and being rigidly connected to the same so as to form with the same a rigid frame, said supporting beam including two longitudinally extending suction pipe means, and a pair of plate members, each plate member being secured to said two suction pipe means and forming a wall of said supporting beam, the space defined within said supporting beam by said two suction pipe means and by said plate members constituting a pressure air duct, said pressure air duct communicating with said pressure air conduit, each of said suction pipe means communicating with one of said suction air conduits, each suction pipe means being formed with a set of longitudinally spaced suction passage means opening on the outer surface of said supporting beam, at least one of said plate members of said supporting beam being formed with a set of longitudinally spaced pressure passage means communicating with said pressure duct, said supporting beam being adapted to detachably support a plurality of winding devices having pneumatic operating means adapted to communicate with one set of suction passage means and said pressure passage means, the other set of suction passage means being adapted to remove dust and lint from said winding devices; air current creating means located in said one supporting leg and communicating with said two suction air conduits, said air current creating means communicating with said pressure conduit; and filter means located in the one of said suction conduit means associated with said other set of suction passage means for filtering air sucked through said other set of suction passage means.

7. In a winding machine, in combination, at least two spaced supporting legs, and one of these supporting legs being hollow and formed with a pair of suction air conduits and with a pressure air conduit; at least one elon-

gated supporting beam extending between said supporting legs and being rigidly connected to the same so as to form with the same a rigid frame, said supporting beam including two longitudinally extending suction pipe means, and a pair of plate members, each plate member being secured to said two suction pipe means and forming a wall of said supporting beam, the space defined within said supporting beam by said two suction pipe means and by said plate members constituting a pressure air duct, said pressure air duct communicating with said pressure air conduit, each of said suction pipe means communicating with one of said suction air conduits, each suction pipe means being formed with a set of longitudinally spaced suction passage means opening on the outer surface of said supporting beam, said supporting beam having at the outer surface thereof at least one longitudinally extending planar mounting face in which said suction passage means of one of said sets of suction passage means open, at least one of said plate members of said supporting beam being formed with a set of longitudinally spaced pressure passage means communicating with said pressure duct, said supporting beam being adapted to detachably support a plurality of winding devices having pneumatic operating means adapted to communicate with one set of suction passage means and said pressure passage means, the other set of suction passage means being adapted to remove dust and lint from said winding devices; air current creating means located in said one supporting leg and communicating with said two suction air conduits, said air current creating means communicating with said pressure conduit; and filter means located in the one of said suction conduit means associated with said other set of suction passage means for filtering air sucked through said other set of suction passage means.

8. In a winding machine, in combination, at least two spaced supporting legs, at least one of said supporting legs being hollow and formed with a pair of suction air conduits, and with a pressure conduit; at least one elongated supporting beam extending between said supporting legs and being rigidly connected to the same so as to form with the same a rigid frame, said supporting beam

being formed with two longitudinally extending suction air ducts, each of said suction air ducts communicating with one of said suction air conduits in said one supporting leg, said supporting beam being formed with two sets of suction passage means, the suction passage means of each set being spaced from each other in longitudinal direction of said supporting beam, said sets of suction passage means respectively connecting said suction air ducts with the outer surface of said supporting beam, said supporting beam being further formed with a pressure duct communicating with said pressure conduit in said one supporting leg and also formed with a set of longitudinally spaced pressure passage means, said pressure passage means and one set of said suction passage means being adapted to communicate with pneumatic operating means of winding devices supported on said beam and the other set of suction passages adapted to communicate with said winding devices; air current creating means located in said one supporting leg and communicating with said two suction air conduits, said air current creating means communicating with said pressure conduit; and filter means located in the one of said suction conduit means associated with said other set of suction passage means for filtering air sucked through said other set of suction passage means.

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