April 14, 1953 H. J. McDERMOTT 2,634,491

STRAND-CATCHING DEVICE

Filed June 9, 1949 2 SHEETS—SHEET 1

FIG. 1

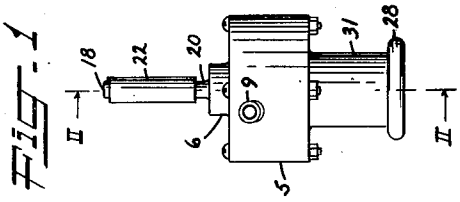


FIG. 2

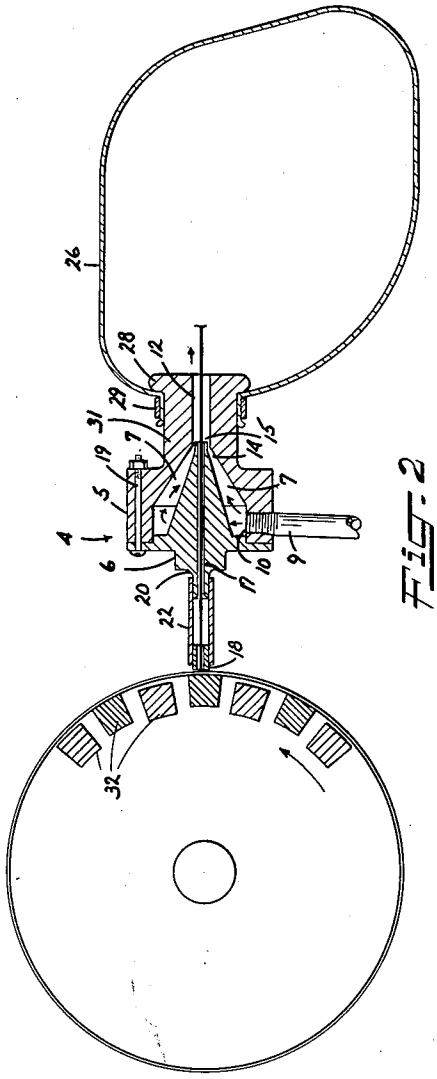


FIG. 3

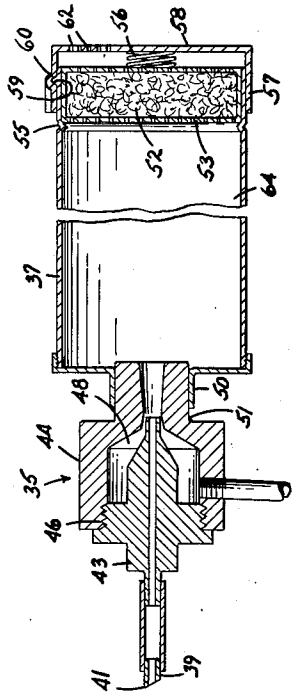
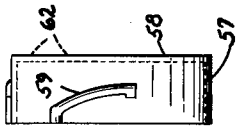


FIG. 4



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STRAND-CATCHING DEVICE

Filed June 9, 1949 2 SHEETS—SHEET 2

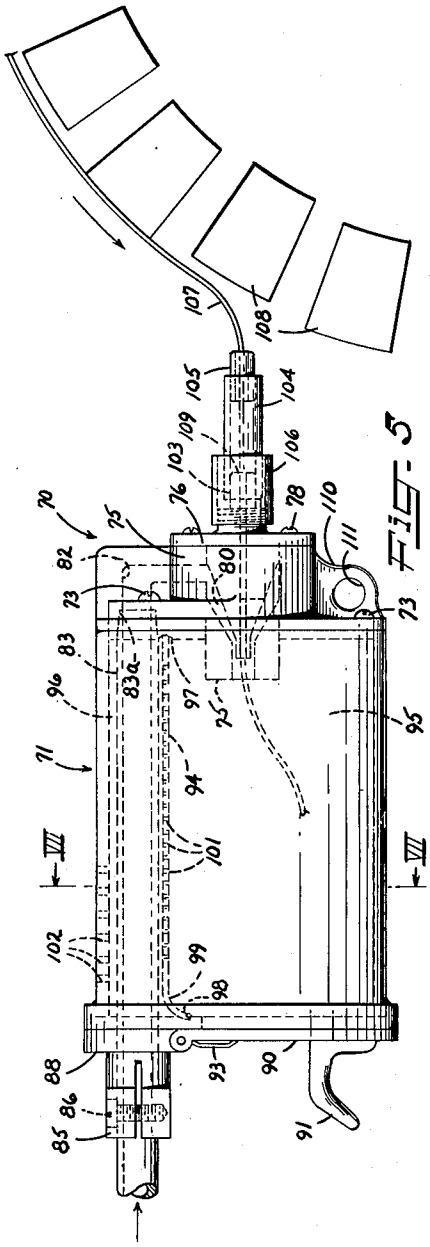

FIG. 5

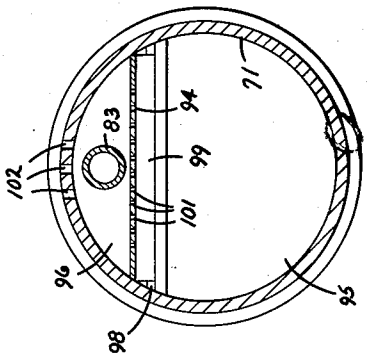

FIG. 7

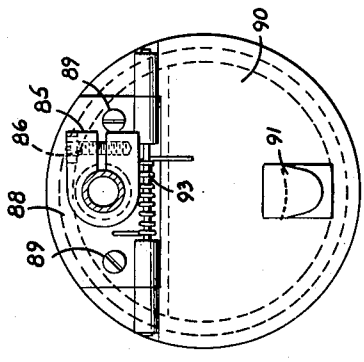

FIG. 6

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STRAND-CATCHING DEVICE

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22 Claims. (Cl. 28—71.5)

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This invention relates to an apparatus for catching and collecting a running strand and particularly to a portable device which may be used to lace strand-handling machinery. The term "strand" includes all types of continuous filamentary or fibrous bundles of natural fiber and/or synthetically prepared filamentary material such as yarn, cord, thread, tow, and monofilament.

In the manufacturing of textile strands, the usual rates of passing running strands over processing equipment has until present times been such that a skilled operator could manually lace a strand material through the various machines needed to carry out desired processing steps. For example, in the spinning of rayon at the usual linear rates of less than 100 meters per minute, a strand of filamentary material is readily led by hand around guides, reels, godets, etc. However, it is the desire of the industry to process rayon yarn by continuous methods at ever increasing rates of travel. When the strand moves at rates of 120 meters or more per minute, the strand can no longer be laced by hand, and mechanical methods must be resorted to. Great difficulty is encountered particularly in lacing units of machinery operating at these increased processing speeds, when the units are spaced at some distance from each other such as on different floors.

It is an object of the invention to provide a portable device for collecting a running yarn moving at any possible processing speed. Another object is to provide an implement for severing a continuous strand moving rapidly with respect to the implement, and for catching the end of the portion of the strand advancing toward or past the implement, and collecting the strand as it advances. It is a further object to provide apparatus which will facilitate the lacing of strand-handling machinery through which a running strand passes at rates which render manual threading of the machine impossible. Other objects, features and advantages of the invention will become apparent from the following description of the invention and the drawing relating thereto in which

Fig. 1 is a side view of an embodiment of the invention with its strand-receptacle removed;

Fig. 2 is a section view along line II—II of Fig. 1 showing the device in thread-receiving relationship with a reel surface;

Fig. 3 is a section view of a device similar to that illustrated in Fig. 2 but modified in several minor respects;

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Fig. 4 is an unsectioned side view of the closure shown in section in Fig. 3;

Fig. 5 is a side view of a modified embodiment of the invention;

Fig. 6 is an end view of the apparatus of Fig. 5 illustrating in greater detail a closure therefor; and

Fig. 7 is a sectional view taken along line VII—VII of Fig. 5.

Briefly, the invention comprises method and a portable apparatus for severing a running strand supported by a surface, such as that of a thread-advancing reel, and collecting or receiving the running strand while applying it to another portion of the path through which it is intended that the strand shall pass. Severing of the strand is effected by a hard tubular tip which is connected by a short resilient flexible duct with a device for forcibly withdrawing the strand and continuously passing it to a receptacle. The device applies suction to the tip to effect the capture of an end of the strand and passage of the strand through a portion of the passageway of the device. Air or other gas under pressure is introduced into the passageway in a direction coinciding with the movement of the strand to urge the strand through the device with greater force than is obtainable by vacuum means.

Figs. 1 and 2 illustrate by side and section views, respectively, one embodiment of the invention in which a housing is interiorly formed to a predetermined contour, which in conjunction with the exterior contour of a member 6, forms a chamber 7. The parts 5 and 6 are preferably, though not necessarily, annular so as to obtain effective circulation and distribution of air or other gas introduced under considerable pressure into the chamber 7. Air may enter the chamber through a tube 9 in threaded relationship with an opening 10 through the wall of the housing 5. The opening 10 may be offset with respect to the axis of the passageway 12, as shown in Fig. 1 to impart to the air a generally rotary as well as an axial component of motion while it passes through the chamber 7 and enters the passageway 12. The air passing at high velocity through the small annular clearance at 14 tends to produce a vacuum at the orifice 15 at the end of the passageway 17. Reduction of the air pressure below atmospheric at this point of course, promptly produces an inrushing of air at the tip 18 and through the passage 17 in contiguous duct relationship with the tip. The velocity of the air is sufficient to pull a

loose strand end into the tip 18 and continuously advance the strand through the passage.

The movement of the strand through the passages 12 and 17 of the device is the result of its contact with the air passing through the passages. The degree of pull upon the strand is dependent upon the velocity of the air with relation to speed of the strand. It is found that vacuum means produces sufficient pull to capture a loose end thereof and continuously pass a strand which is being continuously discharged from a strand-handling device directly to the device 4 if the influence of the suction on the strand is not opposed by appreciable frictional forces acting on the strand. However, to obtain sufficient draft on the strand to pull it around elements which frictionally impede the movement of the strand such as guides and godets, it is necessary to use other means than suction. In the apparatus of the invention the path along which suction is applied is preferably short so that a loose end of the strand captured by the device may be brought quickly into a region along its path in which the air velocity is much greater than can be produced by vacuum means. The portion of the path along which the air is forced by pressure may be extended to any length which does not render the device unduly cumbersome but which provides sufficient contact of the air with the strand to keep the strand taut while lacing it through processing equipment. Air supplied under pressure to the device therefore provides the suction necessary for capturing the strand and, moreover, the gas current needed to secure adequate movement of the strand when the strand is subjected to frictional restraint.

On account of the necessity for producing a strand end which may be captured and led from a rotating reel surface, it is necessary to cut or break the strand while it is wound about the reel surface. A light blow by a sharp or abrasive-edged object comprising a non-resilient material such as metal, plastics, etc. against the reel will ordinarily sever the strand and produce a loose end. However, it is also necessary to avoid injuring the surfaces of the reel elements. For example, if such elements are constructed of glass, or coated with porcelain or other vitreous material to withstand corrosion, their surfaces are readily chipped or otherwise injured by an object of appreciable hardness and weight brought into engagement with the rapidly rotating reel. Moreover, damage may result to the object.

An essential feature of the invention, therefore, is the inclusion of a resilient portion in the duct means used as a member to engage and to sever a running strand in the manner hereinbefore described, to catch an end thereof, and to subsequently withdraw and collect the strand. Accordingly, the tip 18, which may be a short tubular element of sufficient hardness to cut or otherwise sever the strand, is connected with the tubular portion 20 of the member 6 by a flexible resilient conduit 22 constituted of a material of rubber-like elasticity such as rubber itself. The resilient element 22 has the important function of absorbing shock resulting from the impact occuring when the tip 18 is brought into contact with the reel surface.

A further advantage accruing from the use of the flexible tube is the oscillation of the tip 18 produced when the tip is brought into contact with the uneven surface of a thread-advancing surface during rotation. When the apparatus of the invention is used in connection, for example, with a thread-advancing reel of the longitudinal bar construction the tip 18 comes into contact primarily with the edges of bars 32 such as shown in cross section in Fig. 2. As the tip is held in engagement with the reel it chatters or vibrates as it undergoes a series of collisions or impacts with the edges or side surfaces of the bars. The effect is accentuated considerably if the device 4 engages the reel surface at a position wherein the one set of bars is raised relative to the alternately spaced set. The severing is thus accomplished primarily by impact and thus obviates the use of a sharp-edged tip 18 needed for cutting the strand and the necessity for maintaining the sharp tips. Moreover, the use of a dull-edged tip permits the use of extremely hard materials such as steel-tungsten alloys without excessive injury to the surfaces of the bars or other thread-supporting elements of a reel.

The weight of the body of the device 4 and the receiver 26 secured thereto produces sufficient inertia to cause appreciable injury to the surfaces of reel parts if the inertia is not absorbed by resilient means. The resilient tube 22, however, absorbs any shock by permitting instantaneous movement of the tip 18 as it is brought into contact with the surface of the reel. By this expedient, severe jolting or dislodgement of the device 4 from the hands of an operator is avoided which might result if the device was equipped with a rigid extension for engaging the normally uneven surface of a thread-advancing reel.

The open end of a bag 26 which receives the strand or other material drawn into the device is secured about an annular surface 31 of the device by a clamp 29. An annular ridge 28 or shoulder is provided to effct more positive attachment of the bag 26. Since some of the liquids which accompany the strand into the device 4 are of such a nature as to be irritating to human skin and the nasal, oral and respiratory passages of the human body with which they might come in contact, and are corrosive to plant fixtures and machinery if discharged into the plant atmosphere, a collecting means for the liquids is highly desirable. The bag 26 comprises preferably, a tightly woven fabric or other similarly apertured material which is permeable to gas but substantially impermeable to liquid. The bag should be large enough to provide sufficient area for the air used to operate the device to escape through the walls of the bag while retaining the liquid which may be carried by the strand drawn into the device and discharged into the bag. When the strand-processing equipment carried by the device includes reels which handle dry or partly dried yarn such as drying reels, the liquid received into the bag 26 is absorbed to some extent by dry yarn accumulated in the bag. The dry strand collected in the bag acts as an absorbent for the excess liquid which may be received from wet rolls.

Fig. 3 illustrates a modified device 35 including a modified receptacle 37 for receiving yarn and liquid. In general construction, the device 35 resembles the device 4 of Fig. 2. The outer end of the strand-catching tube 39 is formed on a bias with respect to the axis of the tube to provide a projecting point or edge 41 to implement severing of the strand supported on a reel when the tube is brought into contact therewith. The portion 43 is secured to the portion 44 in threaded relationship at 46 whereas, in the device of Fig. 2, parts 5 and 6 are fastened together by the plurality of small bolts 19. The shape or con-

tour of the chamber 48 is different than that of the chamber 7 of the device 4 to illustrate that the proportions thereof are not critical to the invention.

A rigid container 37 is attached to the device 35 by securing the collar 50 in any desired manner to the surface 51 of the housing 44. The container 37 may be formed of any suitable material such as sheet metal, a molded structure comprising a thermoplastic or thermosetting synthetic resin which may or may not be reinforced with a fibrous material, or a metal protected from corrosion by an interiorly applied rubber or resinous coating. The container 37 is provided with a filter 52 of any suitable fibrous material. The filter 52 may take any form such as that shown wherein fibrous or absorbent material or other material which accomplishes separation of liquid from the air or other gas passing through the filter, is supported within an independent cell or casing 53 which is readily removable and insertable with respect to the container 37. The filter 52 may be positioned as shown by a circumferential groove 55 formed in the wall of the container 37 and a spring 56 secured to a cap 58 for the container to urge the filter 52 against the groove when the cap 58 is in place.

The cap 58 may be secured to the container 37 by such means as the bayonet joint shown of which a small protruding member 60 provided in the outer surface of the container wall projects into a groove 59 pressed or otherwise formed along the interior surface of the cap rim 57. The cap may be readily removed or attached to the container by bringing the protrusion into proper cooperation with the groove and turning the cap through an angle corresponding to the arc formed by the groove with respect to the diameter of the cap rim 57. The cap 58 is provided with the apertures 62 to permit the escape of the air or other gas which traverses the interior of the container 37. The strand which enters the container is collected in the chamber 64. After an appreciable length of strand is collected in the chamber, the strand itself acts as an absorbent or collecting medium for liquid which under some conditions may be drawn into the container. However, any liquid which escapes the chamber 64 is collected by the filter 52.

Fig. 5 illustrates in side view a modification of the invention particularly adapted for service where the thread-engaging device is used to transfer thread through narrow passages such as between members of a single machine or between machines separated by a wall, floor, or ceiling which may be apertured to permit passage of the thread-engaging device. It is desired to keep such apertures to a minimum size and to have the outer surfaces of the thread-catching device smoothly contoured so that there are as few laterally projecting parts as possible to catch on equipment, the edges of the apertures provided for its transfer, etc. The device illustrated in Figs. 5, 6 and 7 is provided for safer usage around production equipment. The apparatus shown in Fig. 5 comprises an injector portion 70 and a strand-receptacle portion 71 fastened thereto by screw-head studs 73. For simplicity of construction, the longitudinal walls of the receptacle portion are preferably annular. They may be formed from any metallic or plastic material of sufficient rigidity. Preferably, the walls are formed from a transparent material so that an operator may readily know when to empty

the receptacle portion of strand collected therein. The injector portion 70 comprises an outer generally annular member 75 and an annular core-like member 76 which is fastened to member 75 by screw-head studs 78. When assembled, an annular chamber 80 is formed between the inner frusto-conical surface of the member 75 and the outer frusto-conical surface of the member 76 and other contiguous surfaces of the members. A conduit 82 formed in the member 75 extends between and connects the annular chamber 80 and the interior of a tube 83 supported longitudinally within the receptacle 71 adjacent the inner peripheral surface of its cylindrical wall. The tube 83 has a threaded end 83a which fits within an appropriately threaded aperture contiguous with the duct 82 of the member 75. The tube 83 is held in place also by a sleeve clamp 85 and the stud 86. The sleeve clamp 85 is integral with the hinge plate 88 fastened to the end wall of the receptacle 71 by screws 89. A closure 90 is secured to the plate 88 in hinged relationship. A trigger or finger-grip 91 is attached to the closure 90 to facilitate the opening of the receptacle for the unloading of strand. A spring 93 urges the closure into the closed position as shown and exerts sufficient force to hold the closure in a closed position in opposition to any pressure above atmospheric produced in the receptacle by operation of the injector 70. Additional holes similar to the apertures 102 may be provided through the closure or through the cylindrical wall 95, if desired.

An apertured baffle 94 separates the interior of the receptacle 71 into two compartments indicated in Fig. 5. The larger one 95 is used for collecting strand within the device pulled thereinto by the operation of the injector portion 70. The smaller compartment 96 provides space through which the tube 83 may extend without coming into contact with the strand, thus avoiding the tangling or wrapping of strand which might result in difficulty in unloading the receptacle. The baffle 94 is secured within the receptacle by engagement of its ends with grooves 97 and 98 provided in the opposite end walls of the receptacle. A curved portion 99 of the baffle causes it to function as a spring when slipped into position. The baffle may be perforated as shown along substantially its entire length and the greater part of its width by the apertures 101 through which, as well as through apertures 102 extending through the annular wall of the receptacle, air may escape readily from the receptacle in a lateral direction. In order to collect any liquid material which may be carried into the receptacle during use of the apparatus, mineral wool, glass fiber, or any other material which will filter or collect liquid droplets from the air passing out of the receptacle may be packed into the smaller compartment 96 of the receptacle in the space surrounding the tube 83.

As described heretofore in connection with similar parts of other modified embodiments of the invention, the injector portion 70 is provided with a tubular element 104 to give the required resiliently-flexible support to a thread-engaging tip 105 illustrated as receiving the strand 107 from reel bars 108 in an operative manner. A tubular guard 106 is supported in threaded relationship on an exterior annular shoulder of the member 76. The guard 106 protects the soft flexible tube 104 from injury which occurs when the portion of the tube extending over the edge 109 of the tubular extension 103 comes into contact with moving reel parts, etc.

Since it may be desired to pass a device through an aperture of a floor or ceiling to another machine located on another floor or in a room, the apparatus may be provided, if desired, with a ring-like or apertured portion 110 having a hole 111 into which a hook may be inserted or a cord attached so that the apparatus may be manually pulled to another point such as a point on the surface of a revolving thread-advancing reel designated as a transfer point.

Air or other gas may be supplied under pressure from a reservoir (not shown) to the apparatus just described or any of the previously described embodiments of the invention, preferably through a flexible hose or tubing (not shown). To provide the strand-catching apparatus with the portability necessary to service a plurality of spaced machines or to transfer the running strand from machine to machine, the hose necessary to reach the machines may be stored, for example, on a spring-operated reel, or other hose storing and retracting means.

The apparatus of the invention herein described in various embodiments is a highly desirable and efficient means for capturing and collecting a running strand from all types of equipment. It may be used for handling strand traveling at any conceivable processing speed. It has great versatility in being adapted to the requirements of any particular use since it is readily portable and may be easily regulated by merely adjusting the pressure of the air or other gas supplied to it. Minor changes in design will be apparent to those skilled in the art of jet construction to adapt the apparatus to obtain desirable performance characteristics under varying conditions such as variations in denier, weight, and linear speed of the yarn being handled.

While preferred embodiments of the invention have been shown and described, it is to be understood that changes and variations may be made without departing from the spirit and scope of the invention as defined in the appended claims.

I claim:

1. A method of catching and collecting a running strand comprising supporting the strand upon a surface of greater hardness than the material of the strand, directing a second surface of greater hardness than the material of the strand against the supporting surface to sever the strand by impact while simultaneously applying suction along a path integrally associated with the second surface to the region of impact to capture a loose strand-end produced by the impact, and continuously removing the strand through a region adjacent the second surface and along a path which includes as a portion the path through which the suction is applied.

2. A method of catching and collecting a running strand comprising supporting the strand upon a surface of greater hardness than the material of the strand, directing a second surface of greater hardness than the material of the strand against the supporting surface to sever the strand by impact while simultaneously applying suction along a path fixed with respect to the second surface to the region of impact to capture a loose strand-end produced by the impact, continuously removing the strand along a path which includes as a portion the path through which the suction is applied, and directing a high velocity gaseous stream into the path to produce the suction and to produce a high gaseous velocity along the remaining portion of the path in a direction away from the region of impact.

3. The method of claim 2 wherein the strand is supported on an uneven surface.

4. The method of claim 2 wherein the strand is supported on a thread-advancing reel of the type wherein bars arranged longitudinally with respect to the reel axis may move relative to adjacent bars to produce strand-advancing.

5. A method of catching and collecting a running strand comprising supporting the strand upon a surface of greater hardness than the material of the strand, directing a second surface of greater hardness than the material of the strand against the supporting surface to sever the strand while simultaneously applying suction along a path integrally associated wth the second surface to the region of engagement of the surfaces to capture an end of the severed strand, continuously removing the strand through a region adjacent the second surface along a second path which includes the path through which the suction is applied, and forcing a gaseous stream at high velocity into the second path in a direction extending away from the second surface at an angle oblique with respect to the general direction of the path.

6. A method of catching and collecting a running strand, comprising supporting the strand upon a surface moving with the strand, of greater hardness than the material of the strand, directing a second surface of greater hardness than the material of the strand against the supporting surface to sever the strand while simultaneously applying suction along a path integrally associated with the second surface to the region of engagement of the surfaces to capture an end of the severed strand, continuously removing the strand through a region adjacent the second surface along a second path which includes as a portion the path through which the suction is applied, forcing a gaseous stream at high velocity into the second path in a direction extending away from the second surface at an angle of less than 90 degrees with respect to the direction of the path, and discharging the gaseous stream and the strand into a strand-collecting region, and filtering liquid from the gas which passes through and out of the strand-collecting region.

7. Apparatus in the form of a portable unit for severing a running strand supported by a surface having a hardness greater than the material of the strand, and catching the severed end thereof, comprising a small rigid tubular element having a hardness greater than the material, a suction device having a passage, and a short flexible resilient tubular member connected with the rigid member and having its bore in communication with the passage of the suction device.

8. Apparatus for severing a running strand supported by a surface having a hardness greater than the material of the strand, for catching the advancing severed end thereof, and for continuously collecting the strand, comprising a small rigid tubular strand-receiving element having a hardness greater than the material of the strand, a device for longitudinally advancing the strand connected with a reserve supply of gas at a pressure greater than atmospheric, said device having a passageway for the strand extending therethrough and provided with duct means within the device for conducting the gas at elevated pressure into the passageway, said duct means opening into the passageway in a direction extending away from the strand-re-

ceiving end thereof, and a flexible resilient tubular member connecting the element and the strand-receiving end of the passageway.

9. Apparatus for severing a running strand supported by a surface having a hardness greater than the material of the strand, for catching the advancing severed end thereof, and for continuously collecting the strand, comprising a small rigid tubular strand-receiving element having a hardness greater than the material of the strand, a device for longitudinally advancing the strand connected with a reserve supply of gas at a pressure greater than atmospheric, said device having a passageway for the strand extending therethrough and provided with duct means within the device for conducting the gas at elevated pressure into the passageway, said duct means opening into the passageway in a direction extending away from the strand-receiving end thereof, a flexible resilient tubular member connecting the element and the strand-receiving end of the passageway, and a strand-receiving receptacle having gas permeable walls in communication with the strand-discharging end of the passageway for collecting the strand.

10. Apparatus for severing a running strand supported on an uneven surface having a hardness greater than the material of the strand, for catching the advancing end of the severed strand, and for continuously collecting the strand, comprising a small rigid tubular element having a hardness greater than the material of the strand, a suction device having a strand receiving port and a strand discharging port, a flexible resilient tubular member connecting the element to the strand receiving port of the suction device, a strand-collecting receptacle connected with the strand discharging port and comprising rigid walls defining a strand-collecting space, an apertured wall portion, and a filter for collecting liquid disposed between the space and the apertured wall portion.

11. Apparatus for severing a running strand supported by a surface having a hardness greater than the material of the strand, for catching the advancing end of the severed strand, and for continuously receiving the strand comprising a body portion, a central passage through the body portion having a strand-receiving end and a strand-discharging end, an annular chamber in the body portion disposed concentrically with respect to a central passageway and separated therefrom by an annular wall, said annular chamber having a small annular end portion terminating in a circumferential region of the central passageway at an angle less than 90 degrees to the axis of the passageway, duct means extending through an outer wall of the body connecting the chamber to exteriorly disposed means for supplying a gas under pressure, a container having gas permeable walls in communication with the strand-discharging end of the central passageway, filter means positioned within the container for separating gaseous and liquid materials, and conduit means contiguous with the strand-receiving end of the passageway comprising a rigid portion having a hardness greater than the material of the strand, and a resilient portion connecting the rigid portion and the strand-receiving end of the passageway.

12. Apparatus for severing a running strand supported by a surface having a hardness greater than the material of the strand, for catching the advancing end of the severed strand, and for continuously receiving the strand comprising a body portion, a central passage through the body portion having a strand-receiving end and a strand-discharging end, an annular chamber in the body portion disposed concentrically with respect to a central passageway and separated therefrom by an annular wall, said annular chamber having a small annular end portion terminating in a circumferential region of the central passageway at an angle less than 90 degrees to the axis of the passageway, duct means extending through an outer wall of the body connecting the chamber to exteriorly disposed means for supplying a gas under pressure, a container having a gas-permeable wall in communication with the strand-discharge end of the central passageway, and conduit means contiguous with the strand-receiving end of the passageway comprising a rigid portion having a hardness greater than the material of the strand and a resilient portion connecting the rigid portion and the strand-receiving end of the passageway.

13. Apparatus as in claim 12 wherein the container comprises a bag of tightly woven textile material.

14. Apparatus as in claim 12 wherein the container comprises a rigid material, said container enclosing a strand-collecting space and a filter disposed between the space and an outlet in a wall of the container through which gas may pass into the outer atmosphere.

15. Apparatus as in claim 12 in which the container comprises rigid walls, a strand-collecting space, a removable closure having an apertured wall, and a removable liquid-collecting filter disposed within the container between the space and the apertured wall of the closure.

16. Apparatus as in claim 12, said container having rigid walls, the duct means having a portion extending longitudinally through the container adjacent a wall thereof for connecting the exteriorly disposed gas supply means with the portion of the duct means which extends through the wall of the body, a closure in the end of the container opposite the strand-discharge portion of the central passageway of the body, and spring means for urging the closure into the closed position.

17. Apparatus as in claim 12 wherein the container has walls comprising a transparent material.

18. Apparatus as in claim 12 in which an annular guard for the resilient portion of the conduit extends from the body to enclose in radially spaced relationship at least the part of the resilient portion overlapping any portion of the body.

19. Apparatus as in claim 12, said container having rigid walls, the duct means having a portion extending longitudinally through the container adjacent a wall thereof for connecting the exteriorly disposed gas supply means with the portion of the duct means which extends through the wall of the body, and apertures through the portion of the container wall adjacent the duct means for permitting the escape of gas.

20. Apparatus as in claim 19 wherein the portion of the duct extending through the container is separated from a strand-collecting region of the container by baffle means to assure and facilitate the discharging of a mass of strand from the container.

21. A method of catching and collecting a running strand comprising supporting the strand upon a moving surface having a hardness greater

than that of the material comprising the strand, directing a second surface of greater hardness than the material of the strand against the supporting surface and the strand to sever the strand by impact, capturing the loose end of the portion of the strand advancing toward the second surface at the point of impact and continuously transferring said strand portion by suction along a controlled path extending from the second surface, and moving the path and the second surface to a transfer point for the yarn.

22. A method of catching and collecting a runing strand comprising supporting the strand upon a moving surface having a hardness greater than that of the material comprising the strand, directing a second surface of greater hardness than the material of the strand against the supporting surface and the strand to sever the strand by impact, sucking the loose end of the portion of the strand advancing into the region where severance thereof occurred toward the second surface and thereafter continuously sucking said strand portion along a controlled path extending from the second surface, and moving said path to bring the running strand into engagement with a running receiving surface.

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