

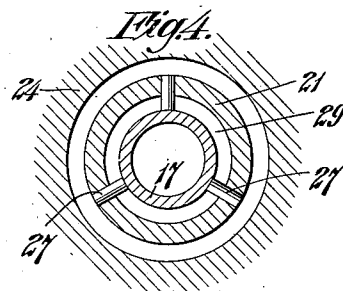
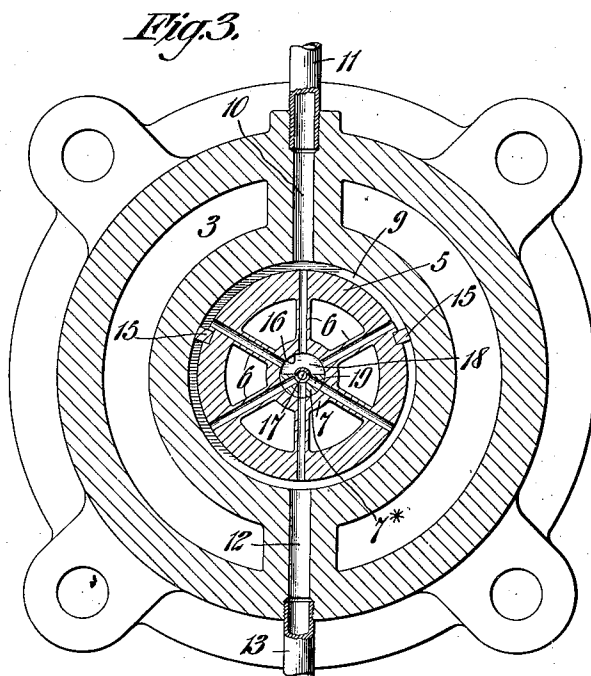
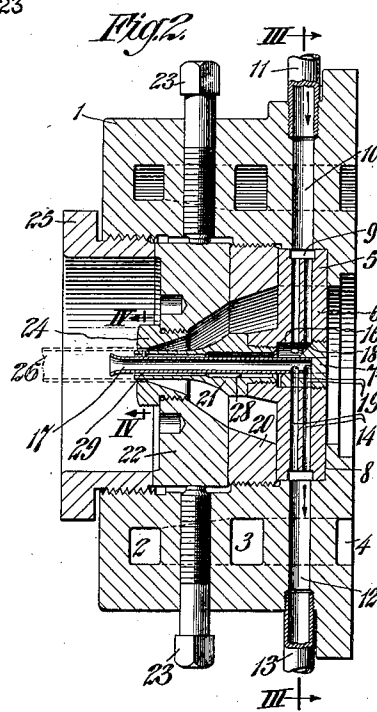
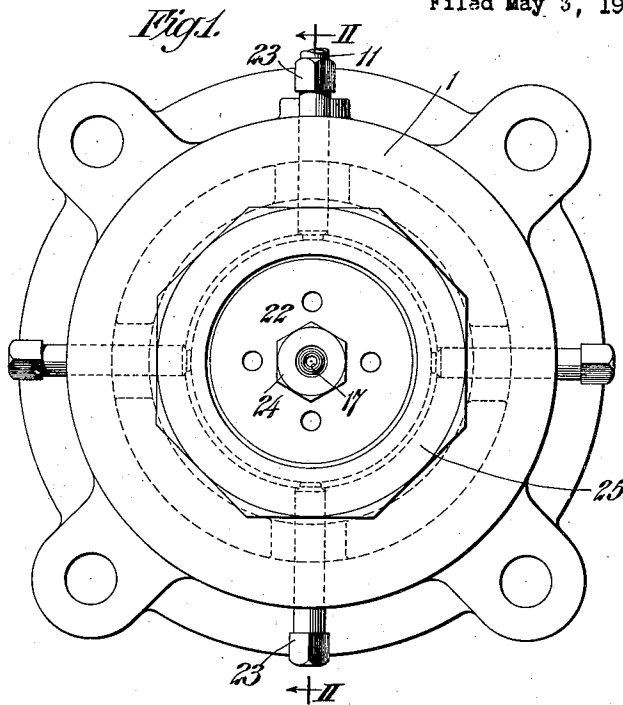
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V. ROYLE

CORE BRIDGE FOR TUBING MACHINES

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CORE BRIDGE FOR TUBING MACHINES.

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To all whom it may concern:

Be it known that I, VERNON ROYLE, a citizen of the United States, and resident of Paterson, in the county of Passaic and State of New Jersey, have invented a new and useful Improvement in Core Bridges for Tubing Machines, of which the following is a specification.

This invention relates to improvements in core bridges for tubing machines and, more particularly, to means for supplying a non-adhesive powder, such as soapstone or talc, to the interior of the tubing as it is extruded from the machine.

An object of the invention is to provide means for exhausting the air, which carries the non-adhesive powder, otherwise than through the tubing itself, in order to avoid the effects of back pressure in the tubing.

Another object consists in providing certain improvements in the form, construction and arrangement of the several parts, whereby the above named and other objects may be effectively attained.

A practical embodiment of the invention is represented in the accompanying drawings, in which—

Fig. 1 represents a front elevation of a portion of the head of a tubing machine including my invention.

Fig. 2 represents a section taken in the plane of the line II—II of Fig. 1, looking in the direction of the arrows.

Fig. 3 represents a section taken in the plane of the line III—III of Fig. 2, looking in the direction of the arrows.

Fig. 4 represents an enlarged detail section taken in the plane of the line IV—IV of Fig. 2, looking in the direction of the arrows.

I have found that, when tubing machines are employed for the purpose of extruding tubing of small diameter in considerable length, the air which is forced to the interior of the tubing for the purpose of depositing on the walls thereof a non-adhesive powder, is retarded in the freedom of its movement by surface friction, and this retarding effect becomes so pronounced after a considerable length of tubing has been extruded, as to practically stop the inflow of air, or, at least, to render ineffective its operation of carrying and depositing the non-adhesive powder. In some cases, indeed, the air is so trapped as to distort by

inflation, and thereby ruin, a portion of the tubing. In order to overcome this pronounced disadvantage, I have provided means for exhausting the air otherwise than through the tubing itself, so as to provide a circuit of incoming and outgoing air through the core bridge of the machine, and thereby maintain effective functioning of the air current in depositing the non-adhesive powder uniformly and adequately as the tubing is extruded, irrespective of the diameter or length of the tubing.

Referring to the drawings, 1 denotes the front piece of a tubing machine which may be secured to the head of the machine that houses the screw or plodder (not shown) in any suitable manner. The front piece includes connected chambers 2, 3, 4, for the circulation of a temperature controlling medium, in a well understood manner.

The core bridge includes a rim 5, spokes 6 and a hub 7, and is seated in a suitable recess 8 formed in the front piece 1.

The periphery of the rim 5 of the core bridge has a groove 9 fashioned therein, which groove is adapted to register with a radially disposed inlet port 10 that is formed in the front piece 1 and designed for connection with the threaded end of a pipe 11. The pipe 11 leads from a suitable source of compressed air and non-adhesive powder (not shown).

The groove 9 also communicates with another radially disposed port 12, which is formed in the front piece 1 opposite the port 10, and is intended for communication with the threaded end of an exhaust pipe 13 that leads to any desired point or receptacle.

The spokes 6 of the core bridge are each formed with a pair of ducts 14, all of which open into the peripheral groove 9. It will be observed by reference to Fig. 3, that a pair of plugs 15 are located in the last named groove so as to separate it into two parts, and thereby prevent direct communication from the port 10 through the groove 9 to port 12. There are six spokes in the core bridge, and three of them open into one portion of the groove 9 while three open into the other portion.

The hub 7 of the core bridge has an axially disposed bore 16, into which is threaded a plug 17*. The plug is also axially recessed to receive the inner end of a tube 17. That

portion of the plug 7* which is adjacent the spokes 6 that lead to the portion of the groove 9 which communicates with the port 10, is cut away on a slant, as indicated at 18, in order to provide a chamber for the reception of the air and non-adhesive powder flowing in through pipe 11, port 10, groove 9 and ducts 14 in the said spokes. The slanting face on the plug 7* serves to urge the incoming air and powder outwardly through the core.

The ducts 14 in the three spokes which open into that portion of the groove 9 which is in communication with the exhaust pipe 12, register with corresponding ducts 19 that are radially disposed in the plug 7* and open into the interior of the tube 17.

The core bridge is held in place by a ring 20 that is threaded into the front piece 1; and a suitable core 21 is screwed into the hub 7 of the core bridge.

The die is composed of an outer portion 22 that is adjustably held in position in the front piece 1 by radially arranged cap screws 23, threaded into the front piece; and an inner portion or mouth piece 24 that is screwed into the portion 22.

A locking nut 25 is threaded into the front piece 1 so as to firmly secure the die in position against the ring 20.

It will be observed that the tube 17 projects from the hub 7 of the core bridge through the core 21 and projects outwardly beyond the face of the mouth piece 24 of the die, into the interior of the tubing 26 being extruded. It is supported near its free end by pins 27 that are seated in the core 21.

It will also be observed that the interior of the core, which surrounds the tube 17 and thereby constitutes a jacket for the latter, is bored to two different diameters, so that one portion of the space between the core and tube is greater in width than the other. The wider portion is denoted by 28 and the narrower portion by 29.

In operation, when the machine is set to work and the tubing 26 is being extruded, the compressed air carrying the non-adhesive powder will enter through pipe 11 and port 10, from which it will pass into the adjacent portion of the groove 9. The powder laden air will fill the said portion of the groove 9 and then pass down through the ducts 14 in the spokes 6 which open into the said portion of the said groove. After passing through these ducts, the air and powder will enter the chamber formed by the cut-away portion 18 of the plug 7* and thence pass outwardly through spaces 28 and 29, surrounding tube 17, and to the interior of the tubing 26 being manufactured. By having space 29 narrower than space 28, the passage through which the air and powder travels is gradually constricted so as to cause the powder to be eject-

ed in a thin sheet or spray around the flared end of the tube 17. The projecting end of the tube 17 is flared outwardly so as to positively direct the powdered material against the interior wall of the tubing 26. The powder laden air will naturally pass along through the tubing 26 to a considerable extent, but some of it will pass backwardly through the interior of tube 17 and thence outwardly through ducts 19 and corresponding ducts 14 in the three spokes 6 that open into the portion of the groove 9 which communicates with exhaust port 12 and pipe 13. The proportion of air and powder thus escaping will naturally increase as the length of the tubing extruded from the machine increases, since this increase in length of the tubing will raise the back pressure generated therein owing to the surface friction of the air on the interior of the tubing; so that the arrangement may be said to be one in which the amount of air and powder escaping through the exhaust port 12 and pipe 13 is automatically regulated by the exigencies of the state of operation of the machine, thereby eliminating the faulty operation and injurious results previously mentioned.

If desired, a certain amount of suction may be generated in pipe 13 in order to maintain the exhaust free and effective.

I desire it to be understood that various changes may be resorted to in the form, construction and arrangement of the several parts without departing from the spirit and scope of my invention; and hence, I do not intend to be limited to the details herein shown and described, except as they may be included in the claims.

What I claim is:

1. A device of the character described comprising, means for extruding the tubing, means for supplying a medium conveying a non-adhesive powder to said tubing, and means for exhausting any excess of said medium.

2. A device of the character described comprising, means for extruding the tubing, means for supplying an air current conveying a non-adhesive powder to said tubing, and means coacting with said supply means for exhausting any excess of said air current.

3. A device of the character described comprising, means for extruding the tubing, an element located within the tubing as it is extruded, means for supplying a medium conveying a non-adhesive powder along said element to said tubing, and means for exhausting any excess of said medium along said element.

4. A device of the character described comprising, means for extruding the tubing, an element located within the tubing as it is extruded, means for supplying an air current conveying a non-adhesive powder along said element to said tubing, and means

for exhausting any excess of said air current along said element.

5 5. A device of the character described comprising, means for extruding the tubing, a hollow element located within the tubing as it is extruded, means for supplying a medium conveying a non-adhesive powder along said element to said tubing, and means for exhausting any excess of said medium along said element, the said medium in one case moving along the outside of the element and in the other case along the inside thereof.

10 6. A device of the character described comprising, means for extruding the tubing, a hollow element located within the tubing as it is extruded, means for supplying an air current conveying a non-adhesive powder along said element to said tubing, and means for exhausting any excess of said air current along said element, the said air current in one case moving along the outside of the element and in the other case along the inside thereof.

20 7. A device of the character described comprising, means for extruding the tubing, a hollow element located within the tubing as it is extruded, means for supplying a medium conveying a non-adhesive powder along the outside of said element to said tubing, and means for exhausting any excess of said medium along the inside of said element.

25 8. A device of the character described comprising, means for extruding the tubing, a hollow element located within the tubing as it is extruded, means for supplying an air current conveying a non-adhesive powder along the outside of said element to said tubing, and means for exhausting any excess of said air current along the inside of said element.

30 9. A device of the character described comprising, a core bridge, a core around which the tubing may be extruded, ducts in said bridge, a passage in said core communicating with the ducts, means for supplying a medium carrying a non-adhesive powder to some of the ducts, whereby the medium will pass through the passage in the core into the tubing and means communicating with others of said ducts for permitting the exhaust of any excess of said medium from the passage in the core.

35 10. A device of the character described comprising, a core bridge, a core around which the tubing may be extruded, a peripheral groove in the bridge, ducts in the bridge communicating with the groove, a passage in said core communicating with the ducts, means for supplying a medium conveying a non-adhesive powder to a part of said groove, whereby the medium will pass through some of said ducts and the passage in the core into the tubing, and means communicating with another portion of said

groove and with others of said ducts for permitting the exhaust of any excess of said medium from the passage in the core.

11. A device of the character described comprising, a core bridge, a core around which the tubing may be extruded, ducts in said bridge, a passage in said core communicating with some of said ducts, a hollow element located in the passage in the core and communicating with others of said ducts, means for supplying a medium carrying a non-adhesive powder to the ducts which communicate with said passage, whereby the medium will pass through said passage into the tubing, and means communicating with the ducts which communicate with the hollow element for permitting the exhaust of any excess of said medium.

12. A device of the character described comprising, a core bridge, a core around which the tubing may be extruded, a peripheral groove in the bridge, ducts in the bridge communicating with the groove, a passage in the said core communicating with some of said ducts, a hollow element located in the passage in the core and communicating with others of said ducts, means for supplying a medium carrying a non-adhesive powder to a part of said groove which communicates with the ducts that communicate with said passage, whereby the medium will pass through said passage into the tubing, and means communicating with the part of said groove which communicates with the ducts that communicate with said hollow element for permitting the exhaust of any excess of said medium.

13. A device of the character described comprising, a core bridge, a core around which the tubing may be extruded, ducts in said bridge, a passage in said core communicating with some of said ducts, a hollow element located in the passage in the core and communicating with others of said ducts, said hollow element having a flared mouth projecting forwardly from the core, means for supplying a medium carrying a non-adhesive powder to the ducts which communicate with said passage, whereby the medium will pass through said passage into the tubing, and means communicating with the ducts which communicate with the hollow element for permitting the exhaust of any excess of said medium.

14. A device of the character described comprising, a core bridge, a core around which the tubing may be extruded, a peripheral groove in the bridge, ducts in the bridge communicating with the groove, a passage in the said core communicating with some of said ducts, a hollow element located in the passage in the core and communicating with others of said ducts, said hollow element having a flared mouth projecting forwardly from the core, means for sup-

plying a medium carrying a non-adhesive powder to the part of said groove which communicates with the ducts that communicate with said passage, whereby the medium will pass through said passage into the tubing, and means communicating with the part of said groove which communicates with the ducts that communicate with said hollow element for permitting the exhaust of any excess of said medium.

15. A device of the character described comprising, a core bridge, a core around which the tubing may be extruded, ducts in said bridge, a passage in said core communicating with some of said ducts, a hollow element located in the passage in the core and communicating with others of said ducts, means for supplying a medium carrying a non-adhesive powder to the ducts which communicate with said passage, whereby the medium will pass through said passage into the tubing, and means communicating with the ducts which communicate with the hollow element for permitting the exhaust of any excess of said medium, the space between the inner wall of said passage and the outer wall of said hollow element being greater at one point than at another.

16. A device of the character described comprising, a core bridge, a core around which the tubing may be extruded, a peripheral groove in the bridge, ducts in the bridge communicating with the groove, a passage in the said core communicating with some of said ducts, a hollow element located in the passage in the core and communicating with others of said ducts, means for supplying a medium carrying a non-adhesive powder to a part of said groove which communicates with the ducts that communicate with said passage, whereby the medium will pass through said passage into the tubing, and means communicating with the part of said groove which communicates with the ducts that communicate with said hollow element for permitting the exhaust of any excess of said medium, the space between the inner wall of said passage and the outer wall of said hollow element being greater at one point than at another.

17. A device of the character described comprising, a core bridge, a core around which the tubing may be extruded, ducts in said bridge, a passage in said core communicating with some of said ducts, a hollow element located in the passage in the core and communicating with others of said ducts, said hollow element having a flared mouth projecting forwardly from the core, means for supplying a medium carrying a non-adhesive powder to the ducts which communicate with said passage, whereby the medium will pass through said passage into the tubing, and means communicating with

the ducts which communicate with the hollow element for permitting the exhaust of any excess of said medium, the space between the inner wall of said passage and the outer wall of said hollow element being greater at one point than at another.

18. A device of the character described comprising, a core bridge, a core around which the tubing may be extruded, a peripheral groove in the bridge, ducts in the bridge communicating with the groove, a passage in the said core communicating with some of said ducts, a hollow element located in the passage in the core and communicating with others of said ducts, said hollow element having a flared mouth projecting forwardly from the core, means for supplying a medium carrying a non-adhesive powder to a part of said groove which communicates with the ducts that communicate with said passage, whereby the medium will pass through said passage into the tubing, and means communicating with the part of said groove which communicates with the ducts that communicate with said hollow element for permitting the exhaust of any excess of said medium, the space between the inner wall of said passage and the outer wall of said hollow element being greater at one point than at another.

19. A device of the character described comprising, a core bridge having a hub, a core having a passage therein, and a hollow element located in said passage and entering the hub, part of said hub being cut away to form a chamber about a portion of said hollow element.

20. A device of the character described comprising, a core bridge having a hub, a core having a passage therein, a hollow element located in said passage and entering the hub, part of said hub being cut away to form a chamber about a portion of said hollow element, and ducts connecting said chamber with the periphery of the bridge.

21. A device of the character described comprising, a core bridge having a hub, a core having a passage therein, a hollow element located in said passage and entering the hub, part of said hub being cut away to form a chamber about a portion of said hollow element, ducts connecting said chamber with the periphery of the bridge, and ducts connecting said hollow element with the periphery of the bridge.

22. A device of the character described comprising, a core bridge having a hub, a core having a passage therein, and a hollow element located in said passage and entering the hub, part of said hub being cut away on a slant to form a chamber about a portion of said hollow element.

23. A device of the character described comprising, a core bridge having a hub, a core having a passage therein, a hollow ele-

ment located in said passage and entering the hub, part of said hub being cut away on a slant to form a chamber about a portion of said hollow element, and ducts connecting said chamber with the periphery of the bridge.

24. A device of the character described comprising, a core bridge having a hub, a core having a passage therein, a hollow element located in said passage and entering the hub, part of said hub being cut away on a slant to form a chamber about a portion of said hollow element, ducts connecting said chamber with the periphery of the bridge, and ducts connecting said hollow element with the periphery of the bridge.

25. A device of the character described comprising, a core bridge having a hub, a core having a passage therein, and a hollow element located in said passage and entering the hub, the space between the inner wall of the passage and the outer wall of the hollow element being greater adjacent the hub than adjacent the outer end of the hollow element, part of said hub being cut away on a slant leading toward the outer end of the hollow element.

In testimony, that I claim the foregoing as my invention, I have signed my name this first day of May, 1923.

VERNON ROYLE.