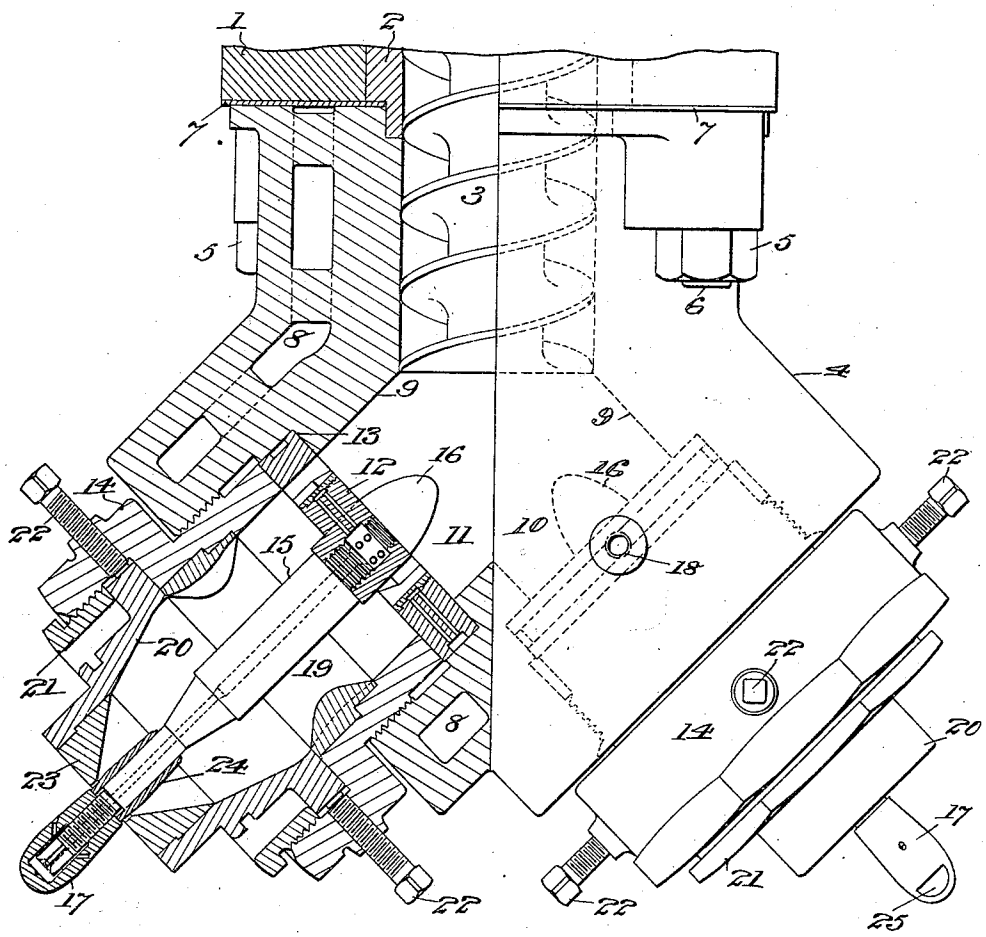
July 1, 1930. V. ROYLE 1,768,790

HEAD FOR EXTRUDING MACHINES

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Fig. 1.



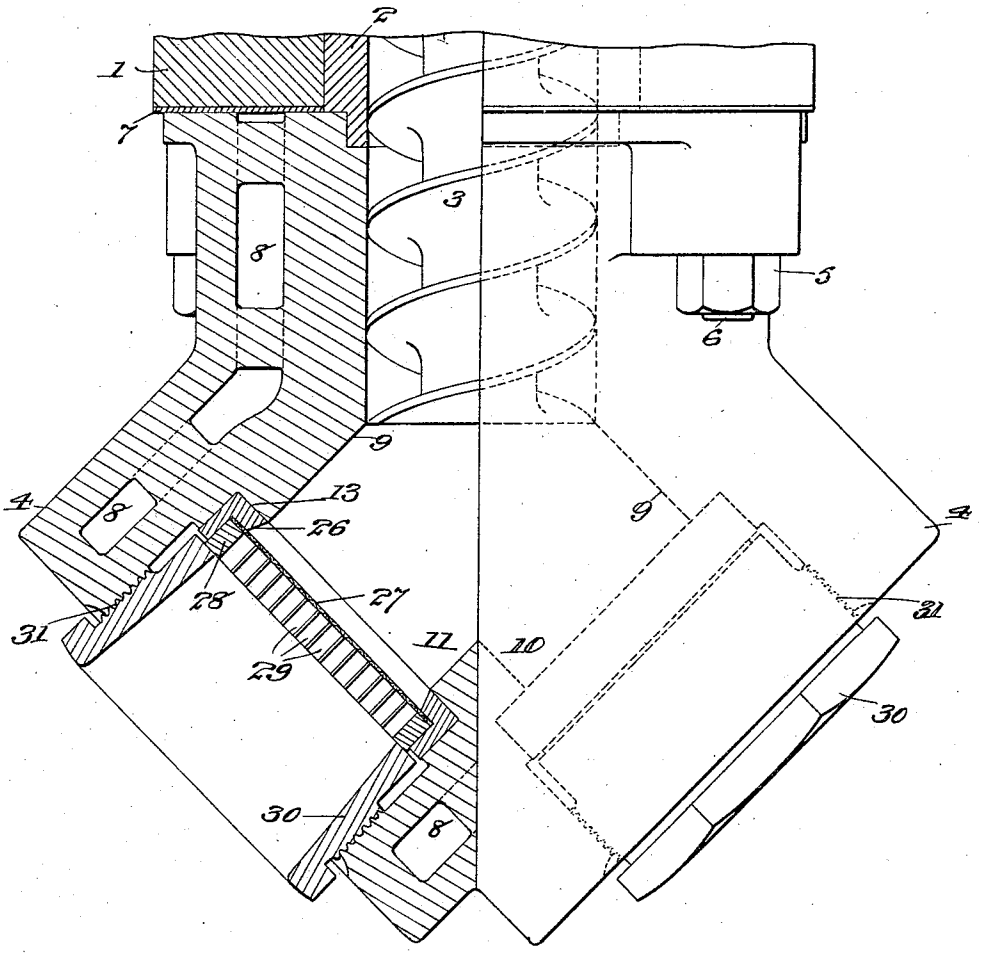

INVENTOR
Vernon Royle
BY
Brosius & Brosius
his ATTORNEYS

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*Fig. 2.*




INVENTOR
Vernon Royle
BY
his ATTORNEY

Patented July 1, 1930 1,768,790

# UNITED STATES PATENT OFFICE

VERNON ROYLE, OF PATERSON, NEW JERSEY

## HEAD FOR EXTRUDING MACHINES

Application filed October 14, 1927. Serial No. 226,156.

This invention relates to an improvement in heads for extruding machines, and has for an object to provide a device of the character which is so constructed as to enable the ejection of tubed material or of strained material through a plurality of outlets, the material being extruded by a single screw or plodder.

Another object consists in providing such a device in which the two outlets for the ejected material are at an angle to each other.

Another object consists in providing such a device in which the chamber of the head, immediately in advance of the screw, is flared forwardly or outwardly on lines substantially parallel with the longitudinal axes of the outlets.

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

Practical embodiments of the invention are represented in the accompanying drawings, in which

Fig. 1 represents a plan view, partly in section, of the device fitted as a tubing machine; and

Fig. 2 represents a similar view of the device fitted as a straining machine.

Referring to the form shown in Fig. 1, the machine casing, to which the head is adapted to be attached, is indicated at 1, and it is provided with the usual bore liner represented at 2. The screw or plodder is marked 3.

The head, as a whole, is denoted by 4, and it is fitted to be secured to the machine casing 1 by nuts 5 that are threaded upon stud bolts 6 protruding from the machine casing. It is usually desirable to interpose a washer or packing ring 7 between the head and the machine casing.

Suitable passages 8 may be formed in the head 4 for the circulation of a temperature controlling medium, as is customary in these devices.

The interior of the head 4, adjacent the front or outer end of the screw 3, is flared outwardly as indicated at 9, and the said head is provided with a pair of openings or holes 10, 11 which have their longitudinal axes substantially parallel with the flaring walls 9. This provides a plurality of outlets for the material extruded by the screw 3 and a flared chamber between the screw receiving portion of the head and the outlets or openings.

In each of the holes or openings 10, 11, there is inserted a set of tubing elements or parts for forming the material into tubes, each of said sets being like the other.

The specific form and arrangement of these tubing sets constitutes no part of the present invention, but is covered by application for United States patent, filed by James W. Devine, September 1, 1927, Serial No. 216,929. Accordingly, the said parts will merely be referred to without detailed description of their construction, arrangement, or function.

The core bridge is marked 12, and it is held seated in a shoulder 13 formed in the head 4 by a member 14 that is threaded into the opening 11. The core is marked 15 and it has a rear extension 16 and a forward extension 17. The core bridge, core, and extension 17 have openings therein for the influx of a nonadhesive powder and its distribution on the inner walls of the tube being extruded. The said powder may be fed in through an opening 18, shown at the right hand side in Fig. 1. An annulus 19 is fitted into the interior of the member 14 and held in position by a part 20 that is seated in the member 14 and locked therein by a ring nut 21. The part 20 is centered by set screws 22, and it carries a ring 23 that is intended to cooperate with an inner die member 24 fitted on the core 15, to form the opening through which the tube is extruded. The end of the extension 17 is fashioned for the reception of a wrench as indicated at 25, at the right of Fig. 1.

Referring to the form shown in Fig. 2, it may be said that the only difference lies in the substitution of two sets of straining elements for the sets of tubing elements shown in Fig. 1.

The said sets of straining elements are the same, so that one only will be described. A ring 26, which is internally flared, is seated against the shoulder 13 of the head 4.

The said ring is L-shaped in cross section and it receives a screen 27 and a foraminous plate 28, the holes of which are marked 29.

The said plate and screen are held in engagement with the ring 26, and the latter is held seated in the head 4, by a ring nut 30 that is threaded, as indicated at 31, into an opening of the head 4. The interior of the ring nut is outwardly flared, but not as abruptly as the interior of the ring 26.

The front portion of the outside of the ring nut 30 is of angular formation for the reception of a suitable wrench.

In operation, referring to both forms, the material is urged forwardly by the screw 3 and thence passes outwardly through the sets of tubing elements or straining elements, as the case may be. Owing to the fact that each of the openings 10 and 11 in the head 4 is as large in area as the screw receiving portion or bore of the head, the effective outlet for the material is at least twice the size of the said screw receiving portion so that very free movement of the material is permitted and back pressure thereof upon the screw greatly decreased. Furthermore, when the tubing elements are employed, two tubes are simultaneously produced, and this arrangement facilitates the rapid extrusion of tubes of comparatively small diameter by the action of a screw of comparatively large diameter, which result could not be obtained to nearly the same degree by the employment of a single opening head in connection with a screw. When the straining elements are used, as shown in Fig. 2, there is a certain advantage resulting from the facts that the ring 26 is flared outwardly, the screen is greater in area than the screw receiving portion of the head, and the locking ring 30 is flared outwardly. However, as these features are claimed in another application of mine, they will not be claimed herein.

The structure of this head is not complicated, is readily produced, and is adapted for use with any approved form of extruding machine. There is no difference in the form of the head whether it be for employment with the tubing elements or the straining elements, so that its field of use is enlarged.

It will 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; 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 head for cooperation with the screw of an extruding machine, said head having a plurality of tubular openings interconnected adjacent the screw for the passage of material therethrough, the longitudinal axes of said openings being in substantially the same plane as the axis of the screw.

2. A head for cooperation with the screw of an extruding machine, said head having a plurality of tubular openings interconnected adjacent the screw for the passage of material therethrough, the longitudinal axes of said openings being in substantially the same plane as the axis of the screw, each of said openings being adapted for the reception of either tubing elements or straining elements.

3. A head for cooperation with the screw of an extruding machine, said head having a plurality of tubular openings interconnected adjacent the screw for the passage of material therethrough, the longitudinal axes of said openings being in substantially the same plane as the axis of the screw, each of said openings having a cross sectional area substantially as great as the cross sectional area of the screw receiving portion of the head.

4. A head for cooperation with the screw of an extruding machine, said head having a plurality of tubular openings interconnected adjacent the screw for the passage of material therethrough, the longitudinal axes of said openings being in substantially the same plane as the axis of the screw, the combined cross sectional area of said openings being greater than the cross sectional area of the screw receiving portion of the head.

5. A head for cooperation with the screw of an extruding machine, said head having a plurality of tubular openings interconnected adjacent the screw for the passage of material therethrough, the longitudinal axes of said openings being in substantially the same plane as the axis of the screw, and a chamber formed in said head between said openings and the screw receiving portion of the head, said chamber being outwardly flared from the screw receiving portion toward the openings.

6. A head for cooperation with the screw of an extruding machine, said head having a plurality of tubular openings interconnected adjacent the screw for the passage of material therethrough, the longitudinal axes of said openings being in substantially the same plane as the axis of the screw, and a chamber formed in said head between said openings and the screw receiving portion of the head, said chamber being outwardly flared from the screw receiving portion toward the openings, the walls of said chamber being substantially parallel with the longitudinal axes of the openings.

7. A head for cooperation with the screw

of an extruding machine, said head having a plurality of tubular openings interconnected adjacent the screw for the passage of material therethrough, the longitudinal axes of said openings being in substantially the same plane as the axis of the screw and diverging from a point adjacent the end of the screw, each of said openings being adapted for the reception of either tubing elements or straining elements.

8. A head for cooperation with the screw of an extruding machine, said head having a plurality of tubular openings interconnected adjacent the screw for the passage of material therethrough, the longitudinal axes of said openings being in substantially the same plane as the axis of the screw and diverging from a point adjacent the end of the screw, the convergent ends of the tubular openings forming a chamber adjacent the end of the screw, each of said openings being adapted for the reception of either tubing elements or straining elements.

In testimony, that I claim the foregoing as my invention, I have signed my name this 11th day of October, 1927.

VERNON ROYLE.