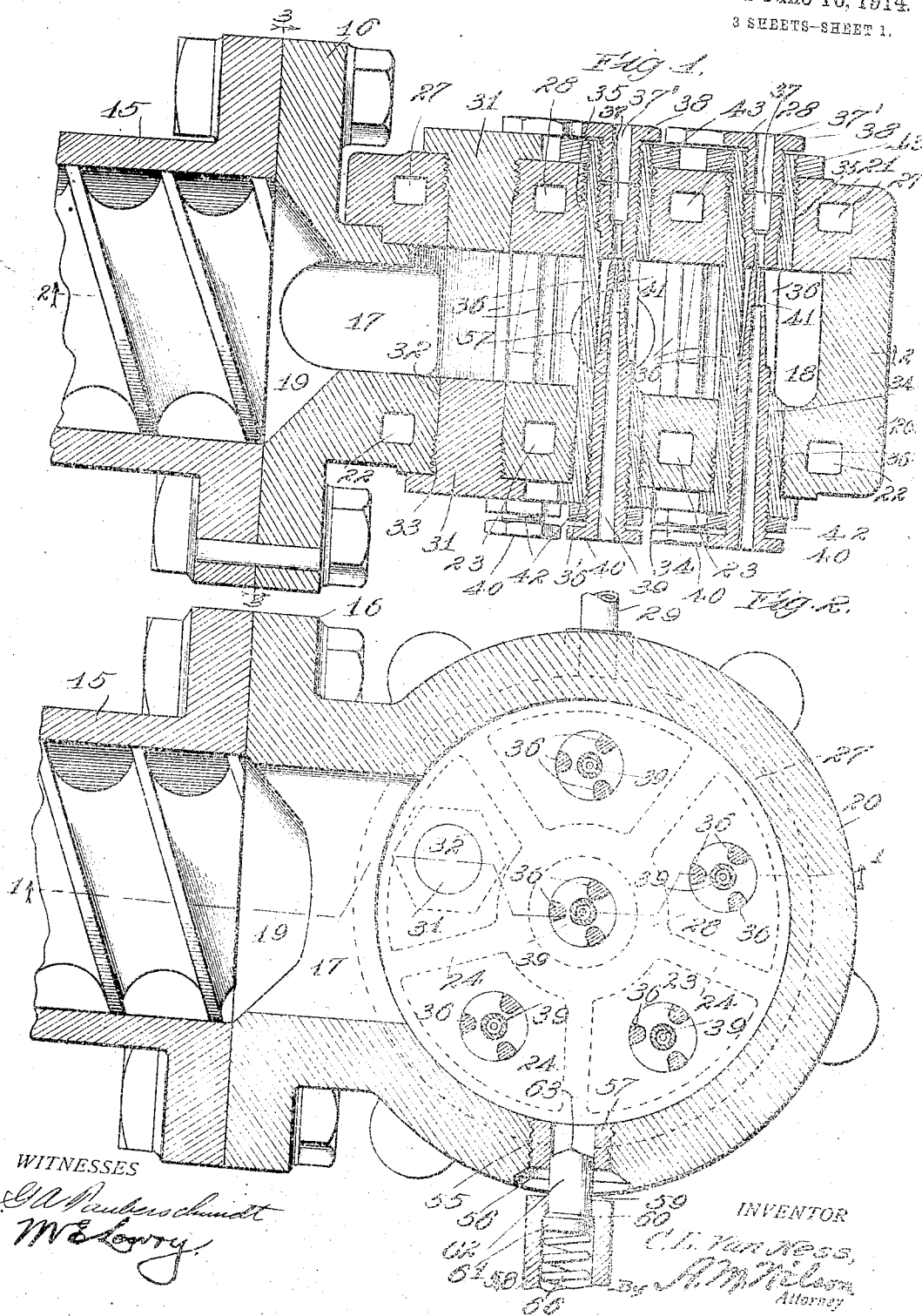


C. L. VAN NESS.
 HEAD FOR INSULATING MACHINES.
 APPLICATION FILED MAY 22, 1912.

1,100,002.

Patented June 16, 1914.

3 SHEETS-SHEET 1.



WITNESSES

C. A. Schubert
W. E. Perry

INVENTOR

C. L. VAN NESS
A. M. Wilson
 Attorney

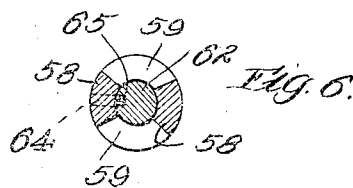
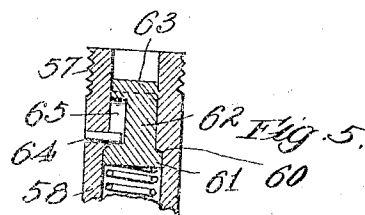
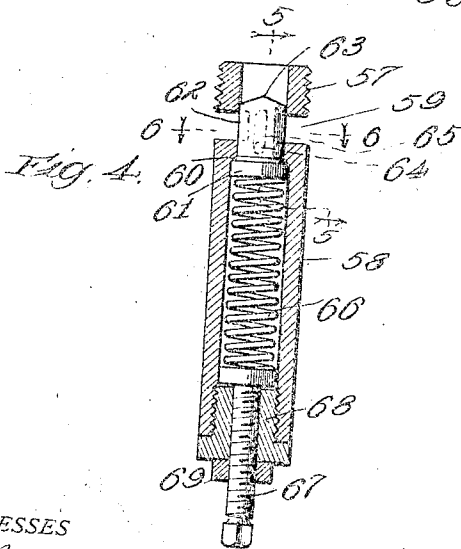
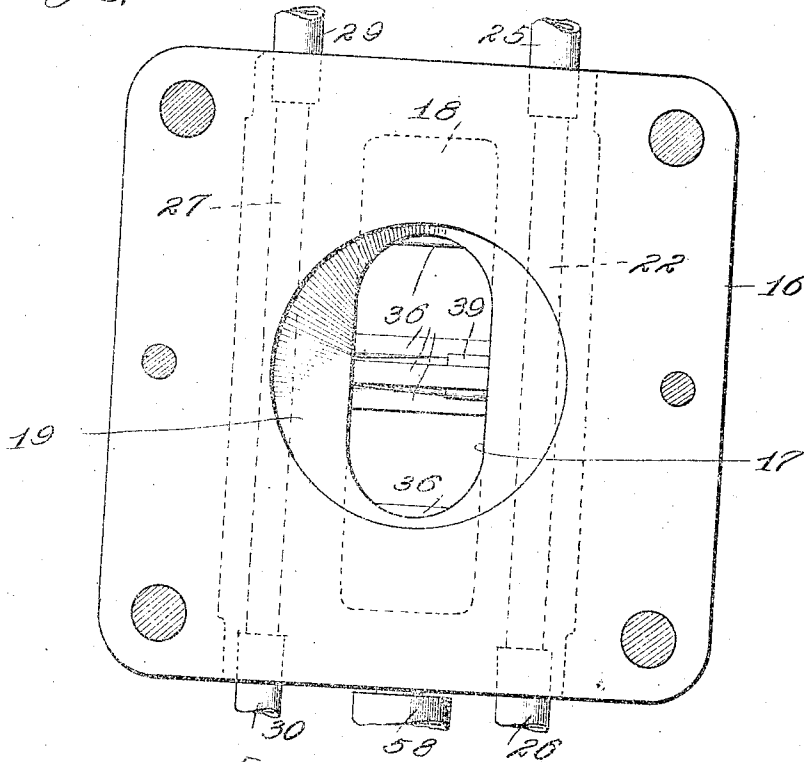
C. L. VAN NESS.
HEAD FOR INSULATING MACHINES.
APPLICATION FILED MAY 22, 1912.

1,100,002.

Patented June 16, 1914.

3 SHEETS—SHEET 2.

Fig. 3.



WITNESSES

C. L. Van Ness
McElroy

INVENTOR

C. L. Van Ness
By *R. M. Wilson* Attorney

C. L. VAN NESS.
 HEAD FOR INSULATING MACHINES.
 APPLICATION FILED MAY 22, 1912.

1,100,002.

Patented June 16, 1914.

3 SHEETS—SHEET 3.

Fig. 7.

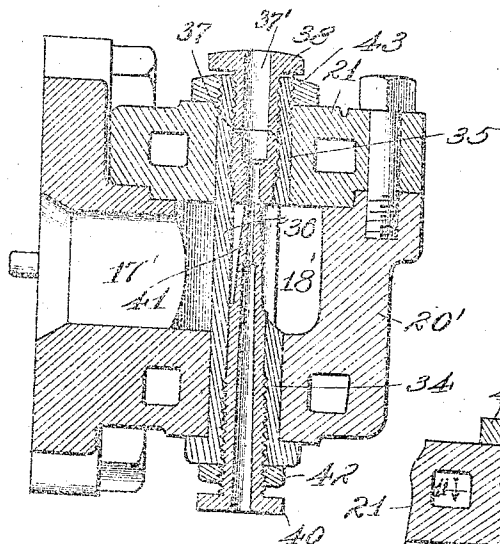


Fig. 9.

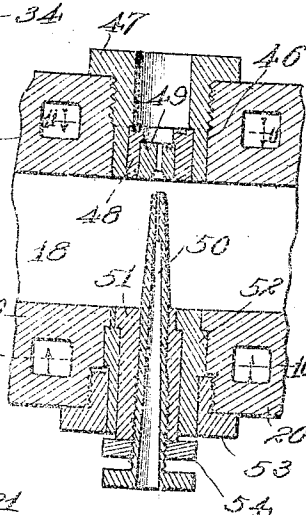


Fig. 8.

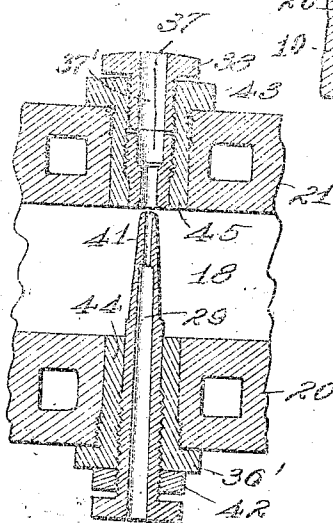


Fig. 10.

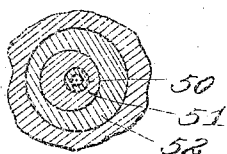
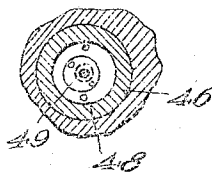


Fig. 11.



WITNESSES

E. A. Paulschmidt
W. E. Lowry

INVENTOR

C. L. Van Ness

By

R. M. Wilson Attorney

UNITED STATES PATENT OFFICE.

CLAIR L. VAN NESS, OF AKRON, OHIO.

HEAD FOR INSULATING-MACHINES.

1,100,002.

Specification of Letters Patent.

Patented June 16, 1914.

Application filed May 22, 1912. Serial No. 699,056.

To all whom it may concern:

Be it known that I, CLAIR L. VAN NESS, a citizen of the United States, and residing at Akron, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Heads for Insulating-Machines, of which the following is a specification.

This invention relates to certain new and useful improvements in heads for insulating machines, and has for its main object to provide an insulating head by means of which more than one wire may be covered with the insulation at one time.

Another object of the invention is to provide an insulating head with one or more sets of guiders and dies, any or all of which may be used at the same time, and each of which sets is adjustable independent of the other sets, whether adjustment of the guider alone or die alone or adjustment of both the guider and die is desired.

A further object of my invention is to provide an insulating head which may be of the single or multiple form, and in which the construction is such as to enable all the operating parts contained within the insulating head to be readily reached from the outside of the head.

A still further object of the invention is to provide in connection with an insulating head, a relief means, preferably automatic in its operation, whereby any excess pressure that may obtain within the chamber of the insulating head will be relieved, so that the proper insulating of the wire may not be interfered with.

A still further object of the invention is to provide in an insulating head, temperature regulating means so arranged as to be in close proximity to the parts of the head which it is desired to maintain at a proper temperature to prevent overheating of the insulation material or chilling of the same during operation of insulating the wire.

A still further object of my invention is to provide an insulating head in which a multiple of dies can be used, which may be of the same size, or of varying sizes as may be desired, thus providing means for the insulation of different diameters of wire at the same time and by use of the same insulating head.

A still further object of the invention is to provide an insulating head so constructed that the wire or wires may be fed or

drawn therethrough, with the head disposed so that the dies lie horizontally or vertically or at any angle between a horizontal and a vertical line.

A still further and important object of my invention is to provide in an insulating head having a multiplicity of guiders and dies, means providing for the obtaining of a sufficient body of material to coat the wire within a space where such material may be readily controlled to prevent the same vulcanizing or chilling.

With the above general objects in view, and others which will appear hereinafter as the detailed description proceeds, the invention consists in the novel construction, combination, and arrangement of parts as will be hereinafter described and then claimed, and in describing the invention in detail, reference will be had to the accompanying drawings forming a part of this specification, and wherein like numerals of reference will be used to designate like parts throughout the different views of the drawings, which latter show practical and preferred embodiments of my invention, and in which drawings—

Figure 1 is a longitudinal sectional view of an insulating head of a multiple form in accordance with my invention, certain of the guider and die tap holes being shown as blanked and the head being shown as attached in position to a suitable stuffing machine or press. Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1. Fig. 3 is a transverse sectional view taken on the line 3—3 of Fig. 1, showing the insulating head in end elevation. Fig. 4 is a central longitudinal sectional view of the pressure relief valve detached from the head and shown in the relief position. Fig. 5 is a detailed sectional view of the same partly broken away taken on the line 5—5 of Fig. 4. Fig. 6 is a cross-sectional view of the relief valve taken on the line 6—6 of Fig. 4. Fig. 7 is a longitudinal sectional view of an insulating head similar to that shown in Fig. 1, but having but a single guider and die, the guider and die being identical with those shown in Fig. 1. Fig. 8 is a similar view broken away showing a modified form of insulating head. Fig. 9 is a similar view showing a still further modification particularly as to the means for adjusting the guider and die. Fig. 10 is a sectional view taken on the line 10—10 of Fig. 9, and, Fig.

11 is a similar view of the die shown in Fig. 9, the view being taken on line 11—11 of said figure.

My invention, in so far as the embodiments of the same are herein illustrated, relates particularly to that type of insulating heads known as "side delivery," that is, the material with which the wire is coated is fed to the side of the wire, instead of in line with the wire, as in devices known generally in the art as "straight delivery" devices.

I have shown in Figs. 1 and 2, an insulating head illustrating one embodiment of my invention, as attached to a suitable compressor having a feed or pressure screw for feeding the material into the insulating head. This compressor is designated generally by the numeral 15, and since the insulating head in accordance with my invention may be attached to any suitable feeding machine, no detailed description or illustration of the latter is deemed necessary.

The insulating head is provided with a face plate 16, adapted to be suitably secured to the discharge spout of the feeding machine or compressor in any suitable manner, and in the multiple form of the insulating head shown in Figs. 1, 2, and 3 of the drawings, said plate is provided with an oblong feed opening 17 leading in to the cylindrical material receiving chamber 18 in the insulating head, such opening 17 at its inlet end, however, being flared outwardly into a circular receiving mouth 19, in order to better provide for the reception of the insulating or plastic material from the compressor. In the multiple form of head as shown in Figs. 1 to 3, the opening 17 is of elongated form in order to provide for the necessary admittance of sufficient material within the relatively narrow compartment or chamber 18, thus providing for the obtaining of a sufficient body of material within such chamber 18, but where the head is constructed with but a single die and guider as in Fig. 7, obviously, the inlet passage or opening 17 may be circular in form, as such form of opening will feed sufficient material into the chamber 18' in a construction of insulating head such as shown in Fig. 7. The insulating head comprises, in addition to the face plate 16 a body comprising a main or barrel member 20 and a face or cap plate member 21 which is fitted to and suitably secured to the body or barrel member 20 in any desirable manner. The chamber 18 or 18' above referred to is in the body or barrel member 20.

The member 20 has a continuous circular passageway 22, for the circulation of any suitable temperature controlling liquid, such as steam, hot water, etc., such passage surrounding the guiders to be herein after referred to, and being located in close

proximity to such guiders. Said member 20 has the circular continuous passage-way 23 which surrounds that guider and die disposed axially of the head, the passage-way 23 being in communication with the passage-way 22 through radial ways 24 as illustrated in Fig. 2 of the drawings. An inlet pipe 25 for the cooling or heating medium is connected with passage-way 22, and an outlet pipe 26 leads from passage-way 23. Similarly, the member 21 is provided with a circular continuous passage-way 27, and a circular passage-way 28, an inlet pipe 29 being connected to passageway 27, and an outlet pipe 30 leading from passage-way 28, said two passage-ways being in communication one with the other by radial passage-ways in the same manner as the passage-ways 22 and 23 are connected. I desire to call particular attention in this connection to the arrangement and location of these passageways, the same being such that they are in proximity to the respective guiders and dies, so as to maintain the desired temperature around the guiders and dies, to keep the plastic material within the chamber 18 at the desired consistency.

In the multiple die construction illustrated in Fig. 1, the insulating head is shown with one of the guider and one of the die openings blanked, that is, the guider and die removed from the head, and the respective openings therefor blanked, by plugs 31. The openings provided in the insulating head for the guiders and for the dies are uniform, so that any one or more of such openings may be blanked at any time desired, the guider and the die being removed, and the plugs as 31 inserted in the openings.

The said openings designated 32 are threaded only a partial distance of their length, such threaded portions designated 33 being provided simply that the plugs may be secured in the openings to blank the same when desired, the remainder of the openings being unthreaded so as to provide a neat seat for the tie member which connects the guider and the die together.

The guider and the die, in the construction shown in Figs. 1 to 3 are both mounted in a tie member comprising sleeve portions 34 and 35, connected together by spaced bars 36, preferably having their inner edges rounded off as clearly shown in Fig. 2 of the drawings, so as not to interfere with the passage of the plastic material onto the wire. These bars lie within the chamber 18, while the sleeve portions of the tie or connector are seated respectively in the openings 32 provided therefor in the members 20 and 21. The sleeve portion 34 has a head 36' on its outer end which abuts against the outer face of the body or barrel 20, while the sleeve portion 35 is interiorly threaded to receive the exteriorly threaded shank of

the die 37, such die being preferably formed in two sections, the outer section 37' provided on its outer end with a nut 38, the outer portion of the bore of the die being enlarged or of greater diameter than the inner portion of such opening, as in the usual construction, since the diameter of the inner portion of the die controls the thickness of the plastic material applied to the wire. By forming the die in two parts, the outer part or head end acts as a lock when the die is in position and as the dies are interchangeable, one lock member does for all. The outer end of the main or inner member 37 of the die is provided with a groove or notches so that it can readily be screwed into position or adjusted by a suitable tool.

The guider 39 is exteriorly threaded, and provided on its outer end with a head 40, such guider threading into the sleeve 34 of the tie or connector and having an aperture 41 in its inner end substantially conforming to the diameter of the wire being coated. The guider is secured in its adjusted position by means of a lock nut 42 mounted on the threaded shank of such guider, and which abuts when the guider is in adjusted position against the outer face of the head 36 of the tie or connector. The sleeve end 35 of the tie or connector is exteriorly threaded at its outer end, to receive a lock nut 43, which when screwed up against the outer face of cap or end plate 21 holds the tie or connector firmly in its seats in the head. The object of this construction of tie member with die and guider sleeves in one piece is to obtain absolutely perfect alinement of the die and guider, as the head can be reamed through at one setting of the reaming machine.

In Fig. 7, the same form of guider, die and connector is illustrated in connection with an insulating head having a single die and guider instead of a multiple die header as illustrated in Figs. 1 to 3. Since the construction of the guider, the die, and the connector is the same as that above described in connection with Figs. 1 and 3, the same reference numerals have been applied thereto, and the members of the insulating head have also been similarly designated.

In Fig. 8, I illustrate a construction in which the guider and the die are similar to the construction shown in Figs. 1, 2, 3 and 7, but instead of the connector extending across the chamber 18, I employ for the guider a sleeve 44, and for the die a sleeve 45. The guider and the die are seated in the respective sleeves in the same manner as the guider and die in the construction shown in Figs. 1, 2, 3, and 7 are seated in the sleeve ends of the tie or connector.

In Fig. 9, I show a further modified form of construction, providing for a simple adjustment for centering the die with the

guider and vice versa. This construction embodies two eccentrics, and oscillation of the die member in either direction for a partial turn will give the die the required distance from the center, and by rotating the die carrier in connection with the die, the exact location of the center of the guider is found, making perfect alinement. This construction embodies a sleeve 46 which I term a die seat, being threaded into the opening in the insulating head and provided on its outer end with a nut or head 47. In its inner end said sleeve is provided with a seat for a die carrying member 48, which in turn has a seat for the die 49, the die being eccentrically mounted in the sleeve 46. The die and die carrier are provided with recesses that a spanner wrench or other suitable instrument may be used for adjusting the same. The guider 50 in this construction is threaded into a sleeve 51, in which it is eccentrically mounted, such sleeve being in turn eccentrically mounted in a sleeve 52 constituting the seat, and held in its position by a clamping ring 53 which engages the member 20, the guider being secured in adjusted position by a lock nut 54 in the same manner as the guider in the other forms of construction is located in its adjusted position. The clamping ring 53 holds the guider mechanism in place, yet allows free adjustment of the wire guider 50 back and forth after it is in alinement, being held in the adjusted position by the lock nut 54.

In order to prevent overloading of the insulating head, and insure a uniform coating of the wire, I provide a relief means preferably automatic in its operation, and which is herein shown in the form of a relief valve mechanism which is attached to the head, and in communication with the chamber of the head in which the plastic material is received. In the present illustration this relief valve is shown as being suspended from the lower side of the insulating head, substantially centrally thereof, but obviously its exact location is immaterial. In accordance with the present showing however, I provide the head on its under side with the threaded opening 55 having a flaring outer end 56, and into the threaded portion of which opening is inserted the exteriorly threaded upper end 57 of an elongated valve casing 58. Directly below the threaded upper end 57 of the valve casing the latter is cut-away as at 59 on opposite sides of the casing, the casing being provided at a point directly below said cut-away portions with an interior seat 60, to be engaged by a head 61 carried by a plunger 62 which is mounted in the valve casing, and provided with a beveled or tapered head 63 and is limited in its downward movement under pressure by a pin 64 carried by

the valve casing and riding in a groove 65 provided therefor in the side wall of the plunger 62. Said plunger 62 has its valve 61 held normally seated by the spring 66, the tension of which is regulated by an adjusting screw 67 working through a gland 68 in the lower end of the valve casing 58, the screw being held in adjusted position in any desirable manner as by a lock nut 69 thereon. The spring 66 being adjusted to a tension equaling the pressure at which the plastic material is to be fed into the chamber of the head, it will be obvious that in case the pressure in the chamber exceeds the tension of the spring 58, the plunger will recede under pressure and allow discharge of the material through passages 59, the spring 66 immediately closing the discharge passage upon the excess pressure in the chamber being relieved. Obviously, the pin 64 prevents turning of the plunger and thus keeps the beveled or tapering sides of its head opposite the cut away portions 59, to split the discharge into such openings.

The general operation of the invention will be readily understood by those skilled in the art, but I desire to call particular attention to the mounting of the guider and the die, whether the head be employed with a single guider and die, or with a number of guiders and dies, in such manner that an absolute centering of the guider with respect to the die is at all times assured. It is to be noted that both the guider and the die are mounted in members which remain stationary during any adjustment of the guider or the die, any adjustment of the die or of the guider independently of each other not destroying in any way the perfect alinement of the two members with respect to each other, since the guider and die are mounted in alined members which retain at all times the perfect alinement of the guider and die.

As will be readily understood, the chamber 18 or 18', through the general arrangement of its walls provided by the body-portion 20 and the cap 21, is of substantially fixed dimensions, such changes which might result from the use of a greater or less number of wire guiding structures, not varying these dimensions during the operation of the device, these dimensions remaining constant during operation. As a result, the material remains under any desired pressure, so that the pressure is practically constant, thereby providing uniformity in product.

I also desire to call attention to the construction which enables access to the guiders and dies to be had from the exterior of the insulating head, and to the described manner for securely affixing the guiders and dies in their adjusted position, preventing displacement of one relatively to the other during operation. I also desire to call at-

tention to the elongated chamber which receives the insulating or plastic material, since the provision of such chamber enables me to provide a plurality or multiple of dies and guiders in the same head, any one of which or all of which may be used at the same time, the form of the chamber providing sufficient space for the supplying of the insulating or plastic material to the several dies, and also that the guiders and dies may be of varying or uniform diameter as may be desired, all within the same insulating head. Owing to the ready access which may be had to both the guiders and the dies, it requires but a minimum amount of time to blank any of the openings in the insulating head which it may not be desired to use. It also renders simple and easy, the cleaning of the entire head when desired.

I also desire to call attention to the arrangement of the water jacket which as before stated, is such as to be in close proximity to the guiders and dies, especially around the dies where the rubber is shaped, so as to maintain a temperature around them which will obviate danger of the insulating or plastic material either heating or chilling to an undue or undesired extent. Also the provision of the pressure relief valve reduces materially the attention required to be devoted to the device during operation, since any excess pressure which may obtain in the chamber of the insulating head is provided for, especially where the relief valve is one of an automatically operating form, such as herein shown.

In the multiple form shown in Figs. 1, 2 and 3 and also in the single die construction shown in Fig. 7, I desire to call particular attention to the tie or connector which not only assures a perfect alining of the die and guider, but also provides a simple and effective mode of locking the parts in position, and in addition, acts to break the flow of insulating material against the guider point, thus protecting the same against displacement with respect to the die.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:—

1. In an insulating head, a body comprising a main member and an end or cap plate secured thereto, the main member having a chamber therein to receive plastic material, a wire guider mounted in the main member, a die mounted in the end plate but in alinement with the wire guider, and a carrying member connecting the main member and cap plate and contacting with and forming a support for the guider and die.

2. In an insulating head, a body comprising a main member and an end or cap plate, said members combinedly forming a

chamber to receive plastic material, a member connecting said main member and cap plate, said latter member passing through the chamber, a wire guider inserted in one end of said connecting member, and an independent die member mounted within said connecting member in opposition to the wire guider.

3. In an insulating head, a main member and a cap plate secured thereto, the main member having a chamber to receive the plastic material, a sleeve mounted in the main member and having a length to extend through the cap plate, a wire guider, and a die member, said guider and die member being insertible into the sleeve from opposite ends of the latter and removably secured therein and each being independently longitudinally adjustable within the sleeve.

4. In an insulating head, a main member and a cap plate secured thereto, said member and plate removably combinedly forming a chamber to receive the plastic material, a wire guider, a die member, and means mounted within and connecting said main member and cap plate for providing alining seats for said guider and said die, the con-

nection between said means and the guider and die permitting relative adjustment in the direction of length of the guider.

5. An insulating head having a chamber of fixed dimensions to receive the plastic material, means for supplying material to the chamber under substantially constant pressure, opposing walls of said chamber having a plurality of alined openings, each pair of openings being adapted to form seats for complete wire guiding and die structure, means whereby the alined openings may be rendered inactive without affecting the structures of other openings, and means carried by the head for automatically controlling the pressure in said chamber, said latter means being positioned to provide relief to said chamber regardless of the activity of any or all of the wire guiding and die structures.

In testimony whereof I affix my signature in presence of two witnesses.

CLAIR L. VAN NESS.

Witnesses:

LEORA FLETCHER,
W. R. IRVIN.