March 19, 1935. O. K. REINHARDT 1,995,131

BOBBIN MAKING MACHINE

Filed Sept. 3, 1931 5 Sheets-Sheet 1

FIG.3.

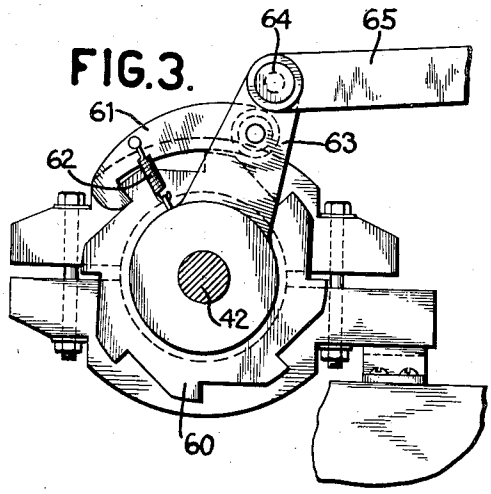


FIG.1.

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BOBBIN MAKING MACHINE

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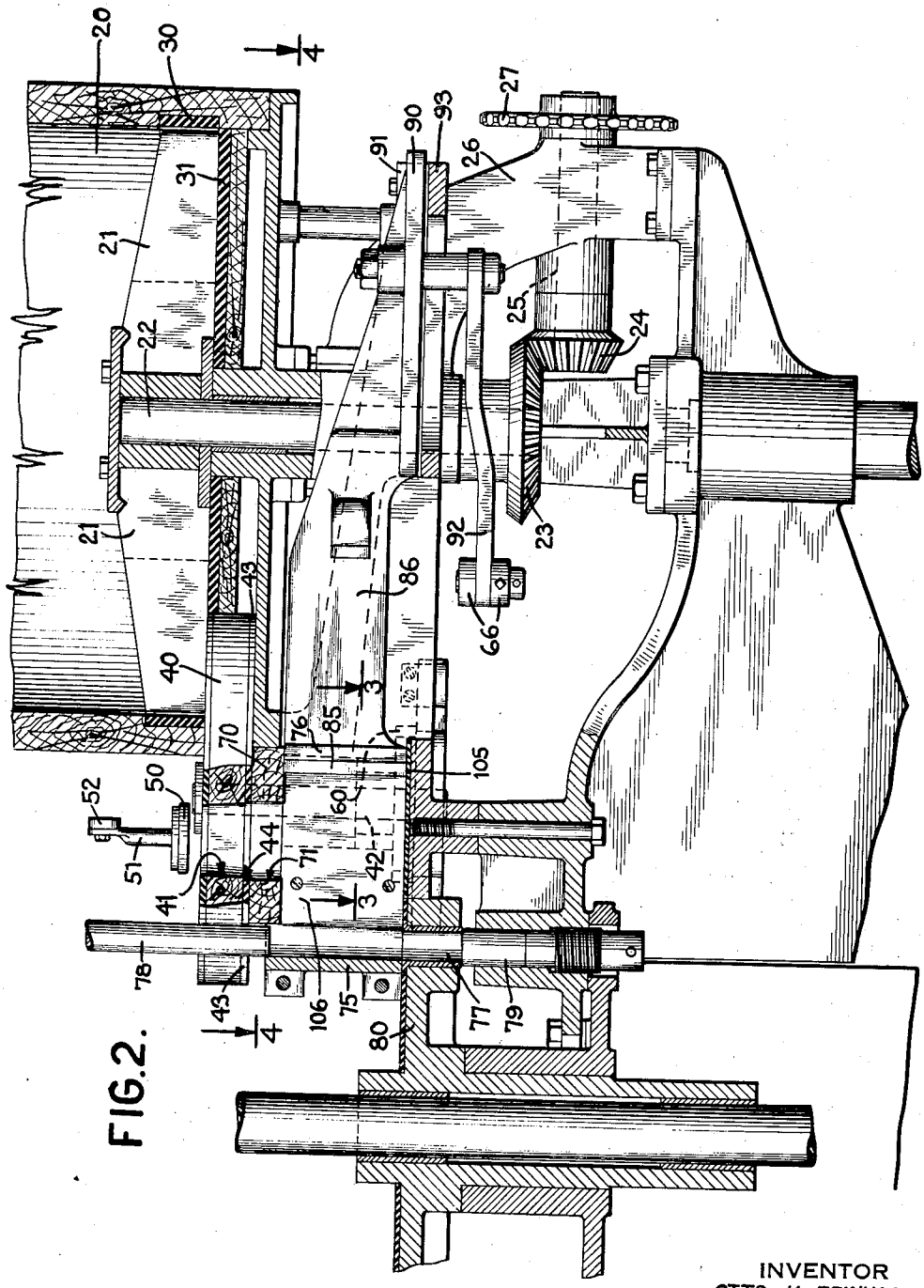


FIG. 2.

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BOBBIN MAKING MACHINE

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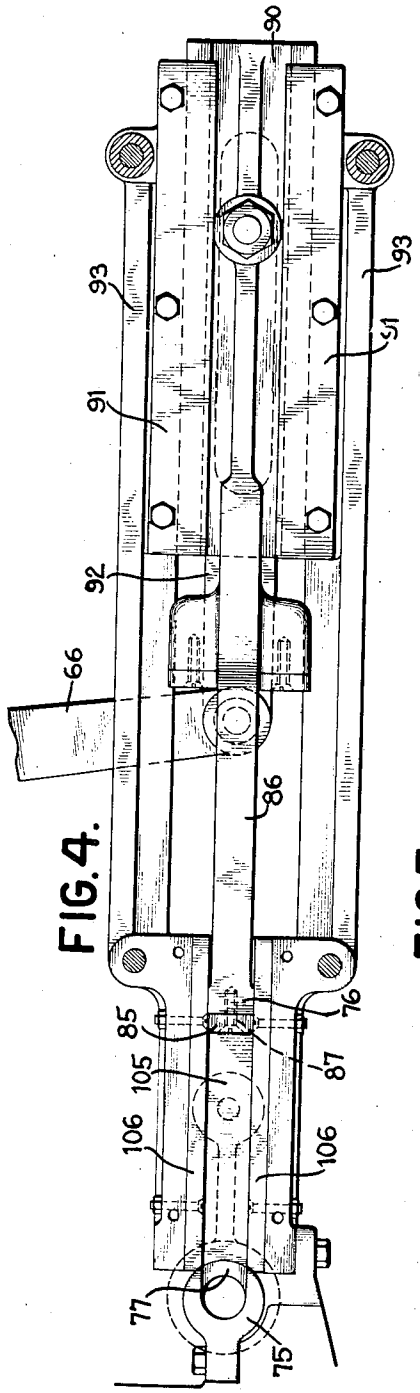


FIG. 4.

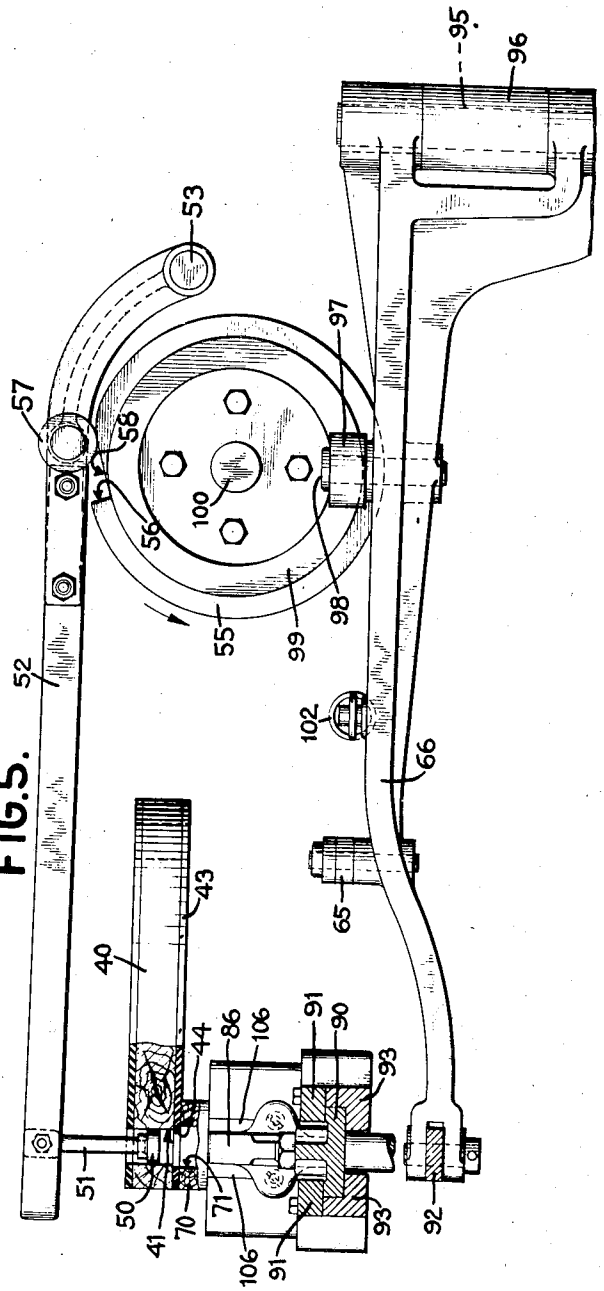


FIG. 5.

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BOBBIN MAKING MACHINE

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FIG.6.

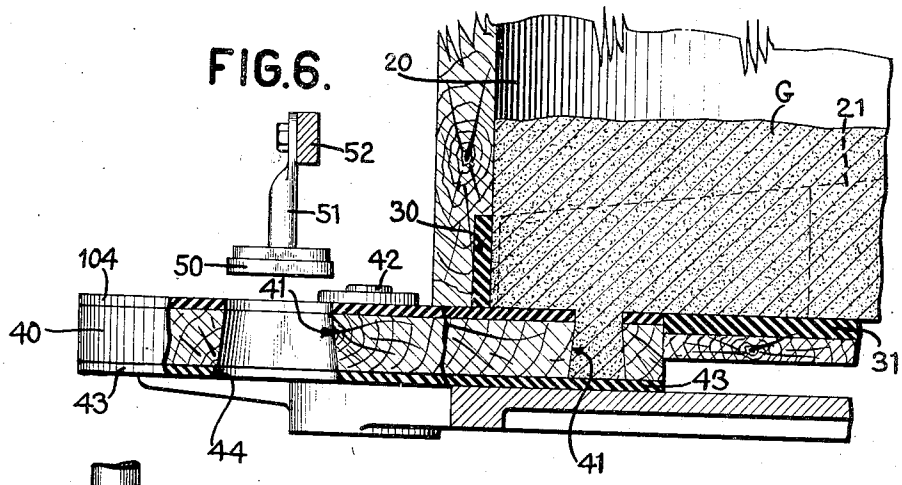


FIG.7.

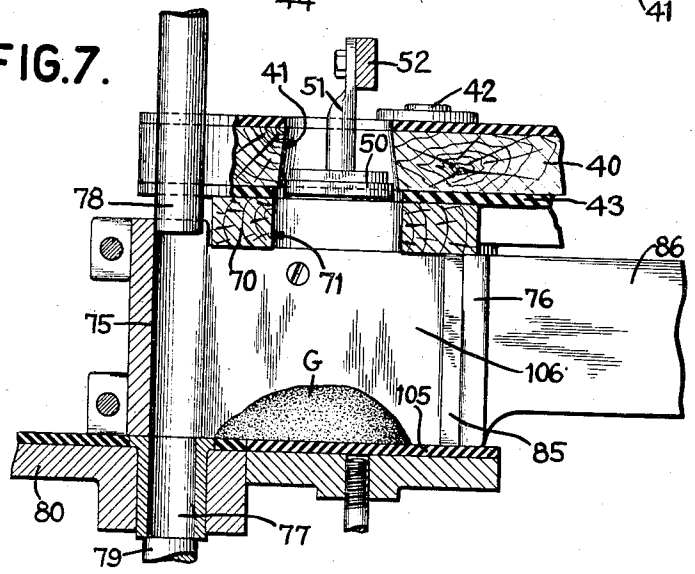


FIG.8.

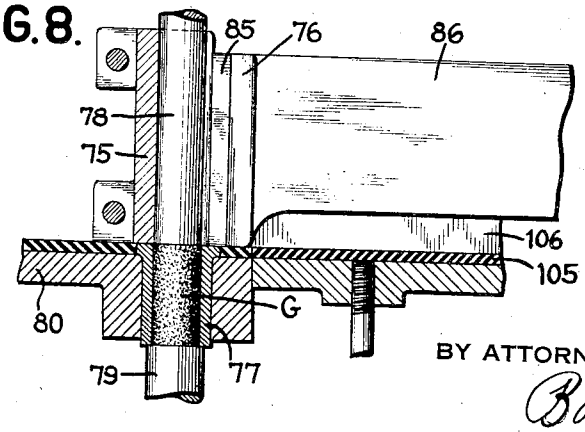
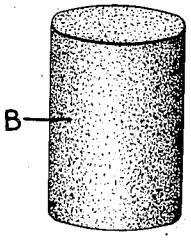


FIG.9.



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BOBBIN MAKING MACHINE

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FIG.10.

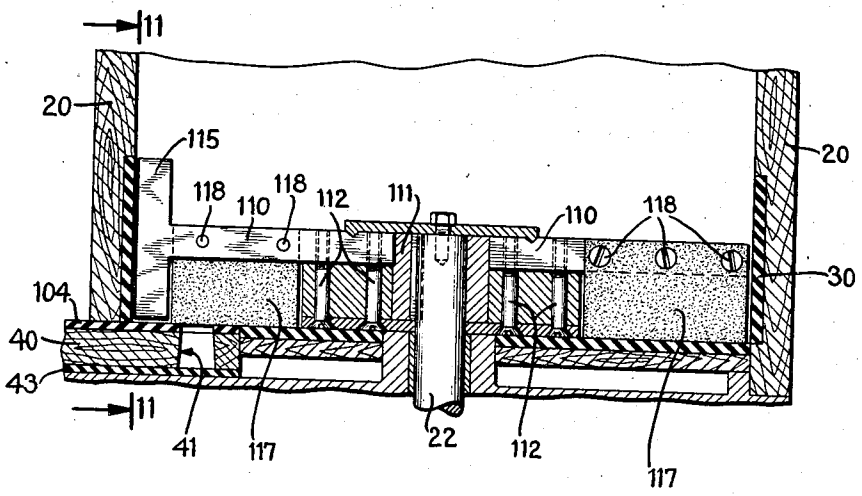
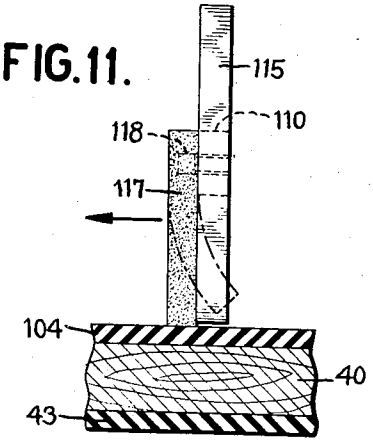


FIG.11.



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Patented Mar. 19, 1935 1,995,131

UNITED STATES PATENT OFFICE

1,995,131

BOBBIN MAKING MACHINE

Otto Karl Reinhardt, Jamaica, N. Y., assignor to Bond Electric Corporation, Jersey City, N. J., a corporation of Delaware

Application September 3, 1931, Serial No. 560,926

8 Claims. (Cl. 18—5)

This invention relates to battery bobbin making machines. The machine automatically measures a quantity of agglomerate which is sufficient for the formation of a single bobbin and delivers and presses it into a mold having at least the diametric dimension of the finished bobbin. The mechanism is attachable to a machine by means of which carbon pencils are inserted within the bobbin and other operations performed if desired in order to form the finished bobbin with the pencil embedded therein and having its end protruding from one end of the bobbin.

An object of the invention is to construct an automatic mechanism for measuring the proper quantity of agglomerate or bobbin mix needed to form a bobbin and delivering and pressing the agglomerate into a mold by mechanism of a novel and new design.

Another object is to construct a novel measuring mechanism by means of which the proper quantity of agglomerate is measured from a bulk supply for delivery to a bobbin forming mold.

Another object is to construct a bobbin forming machine in which the parts are compactly assembled together so that the mix travels a relatively short distance from the hopper to the mold. Again a minimum number of parts are utilized which efficiently and effectively perform the functions required in the formation of a battery bobbin.

Another object is to construct a stirring or mixing device for the agglomerate in the hopper which will not permit the formation of cake upon the hopper walls or upon the stirring blades.

By practically enclosing the various chambers and passages through which the agglomerate passes from the hopper to the mold, the agglomerate has less opportunity of drying out or absorbing moisture and consequently caking is not a difficulty. This feature constitutes a further object of the invention.

Other objects of the invention will be more apparent from the following description, taken in connection with the accompanying drawings which illustrate the preferred embodiment of the invention, in which:

Figure 1 is a plan view of the device showing the hopper in which the bulk agglomerate or mix is placed with the measuring wheel, the means for pressing the agglomerate out of the pocket in the measuring wheel, the mold into which the agglomerate is finally pressed in order to form the bobbin and also shows in dotted lines the plunger in its retracted position and its operating mechanism for pressing the mix into the matrix.

Figure 2 is a cross-section through the mold and the hopper of the machine showing the various parts in their relation to each other.

Figure 3 is a detailed view, taken on line 3—3 of Figure 2, of the ratchet mechanism by means of which the measuring plate or wheel is intermittently rotated to bring the pockets containing the agglomerate into position for delivery to the mold.

Figure 4 is a plan view, taken on line 4—4 of Figure 2, of the slide and plunger for pushing the agglomerate into the matrix preparatory to forcing it into the forming mold.

Figure 5 is a partial section through the slide and through the measuring disc of the machine showing also the cam and lever mechanisms for pressing the agglomerate out of the pockets in the measuring wheel and for retracting the slide and member carried thereby which pushes the agglomerate or mix towards the matrix preparatory to pressing the agglomerate into the bobbin forming mold, and is taken on line 5—5 of Figure 1.

Figure 6 is a partial cross-section through the measuring mold and hopper of the bobbin forming machine.

Figure 7 is an enlarged cross-section similar to Figure 6, showing the agglomerate pressed out of the measuring pocket and lying within the chamber therebeneath preparatory to being pushed towards the matrix at the end of the chamber.

Figure 8 is an enlarged cross-section through the bobbin forming mold showing the agglomerate pressed into the bobbin forming mold.

Figure 9 is a perspective view showing the form of the agglomerate or mix within the bobbin forming mold prior to the insertion of the carbon pencil therein.

Figure 10 is a cross-section through the hopper for the bulk agglomerate with yieldable or flexible blades and a scraper upon the outer end of one of the blades.

Figure 11 is an end view of the scraper and flexible blade showing the manner in which the flexible blade is yieldable backward.

Bobbin forming machines have not been entirely successful because of the difficulty of handling the agglomerate. The agglomerate must be of a certain consistency or moisture content within fairly narrow limits in order to

be properly pressed into the mold and to retain its form after removal therefrom. The agglomerate, largely because of the limits of its moisture content and also because of the natural peculiarity of the material, cakes very easily and hence difficulties arise in the operation of an automatic machine for forming the bobbins and particularly in the devices for measuring a quantity of the material from the bulk which have been eliminated by the construction of machine to be described herein. The bobbin forming machine of the invention successfully measures the required quantity of agglomerate which may be an excess thereof for the formation of a single bobbin and then forms the bobbins so that they are formed without imperfections in the mold and so that they adhere together after removal from the bobbin forming mold.

The bulk agglomerate or mix G is placed within the hopper 20 which is circular in form and within which the mixing or stirring paddles or blades 21 rotate. Four of such stirring blades are shown, although any number is suitable for the purpose. The blades are carried upon a shaft 22 disposed centrally within the hopper and projecting down through the bottom thereof. A gear 23 is secured to the shaft 22 and meshes with a pinion 24 which is mounted upon a shaft 25 carried in a bracket 26. A sprocket wheel 27 is secured to the shaft 25 and is connected to the driving means for rotating the blades 21 within the hopper 20. The side wall of the hopper 20 is lined with a ring 30 of a hard material which resists the abrading action of the agglomerate and also the pitting action thereof. The bottom of the hopper is lined with a plate 31 of the same material. Any mechanism for driving the rotating blades or paddles is contemplated and that shown herein is illustrative only, the primary object being that the blades shall rotate in order to keep the agglomerate stirred and mixed and in order to assure that the measuring pockets will be filled with a sufficient quantity of agglomerate for one bobbin, which mechanism will now be described.

The bottom of the hopper has a segment or portion removed therefrom into which the measuring means or disc 40 is inserted. The top surface of the measuring disc 40 is flush or level with the bottom of the hopper so that the measuring means or wheel forms a portion of the bottom of the hopper. A plurality of pockets 41 are cut into the measuring disc 40 and pass completely therethrough. The measuring disc 40 is carried upon a vertical shaft 42 and is intermittently rotated by a ratchet mechanism to be described. The bottom of the measuring disc 40 is supported upon a stationary plate 43 which plate has an aperture 44 therethrough in alignment with the pockets 41 when they reach a point outside of the hopper 20. A measuring means or pocket which is movable into the hopper either at the bottom or any other wall of the hopper is within the scope of the invention.

The agglomerate is retained within the measuring pockets 41 until the pocket is carried outside of the hopper 20 into the position shown in Figures 1 and 2. With the pocket in this position, the pressing means 50 is in alignment with the pocket 41 and is carried or forced downwardly to press the agglomerate out of the pocket through the aperture 44 in the plate 43. This pressing means is shown to better advantage in Figures 1 and 5. The pressing means 50 is carried upon a rod 51 which is secured to the lever 52 which lever is pivotally carried upon the pin 53 so that the lever may have vertical movement thereby moving the pressing means 50 vertically downward through the pocket 41 in the measuring disc 40 and removing the agglomerate or mix therefrom. The vertical movement of the pressing means 50 into and out of each pocket 41 is accomplished by a cam 55 having a recess 56. A roller 57 carried on the lever 52 rides upon the cam 55 and drops into the recess 56 which drops the pressing means 50 into the pocket. The incline 58 on the cam again raises the roller 57 and the pressing means 50 out of the pocket 41. The cam 55 with its depression 56 is so timed that the intermittently rotating measuring disc 40 is stationary beneath the pressing means 50 until the pressing means descends into the pocket to remove the agglomerate therefrom and then is raised therefrom. It will also be observed that the pressing means is positioned outside of the hopper 20.

The measuring disc 40 as referred to hereinbefore, rotates intermittently in order to carry the pockets 41 into the hopper so that they may be filled with agglomerate or mix therein and then carries them out of the hopper to a position beneath the pressing means 50 where the agglomerate is pressed out of the pockets. The intermittent rotation of the measuring disc 40 is accomplished by ratchet means consisting of a ratchet wheel 60 carried upon the shaft 42, shown in Figure 3, which ratchet wheel is engaged by a pawl 61. A spring 62 keeps the pawl 61 in engagement with the ratchet wheel 60. The pawl is carried upon an arm 63 pivotally mounted on the shaft 42. The arm 63 carries a pin 64 with which the connecting link 65 is pivotally connected. The connecting link is in turn connected with a lever 66 which oscillates by mechanism which will be subsequently described.

The oscillation of the lever 66 to the left as shown in Figure 1 oscillates in turn the arm 63 in a counter-clockwise direction so that the pawl 61 is advanced to engage the next tooth on the ratchet wheel 60. Upon the return or movement to the right of the lever 66 as viewed in Figure 1, the pawl 61 rotates the ratchet wheel 60 which in turn rotates the measuring disc 40 to bring the next pocket 41 into the bottom of the hopper 20 and also to carry another pocket 41 out of the hopper filled with the agglomerate and beneath the pressing means 50 for removal of the agglomerate therefrom.

Immediately beneath the pressing means 50 is a chamber into which the agglomerate falls when it is pressed from the pockets 41 by the pressing means 50, as illustrated in Figure 7. This chamber is substantially the width of the pockets 41 so that all of the agglomerate will fall therein. The chamber is closed at the top by means of a block 70 having an aperture 71 therethrough in alignment with the pocket 41 so that the agglomerate will pass unobstructed into the chamber therebeneath. At one end of the chamber is a semi-circular matrix 75 and at the other end of the chamber is a reciprocating member 76 which advances within the chamber after the agglomerate G has been pressed out of the measuring pocket 41 and pushes the agglomerate towards or into the matrix 75. The agglomerate falls into the mold 77 or is pressed thereinto

by a plunger 78 which reciprocates through the matrix 75 while the member 76 is in its advanced position, as shown in Figure 8. The plunger 78 presses the agglomerate G into the mold 77 against the botton pin 79 so that the agglomerate is firmly packed within the mold. The mold 77 is preferably carried upon a rotating plate 80 which carries the agglomerate filled mold to other positions for further operation, such as the insertion of a carbon terminal or pin therein. Since this mechanism is not part of this invention, the construction and additional operations will not be described.

It should be noted that the distance through which the agglomerate travels from the hopper 20 to the mold 77 is relatively short which assures that the agglomerate will not materially alter in its consistency or moisture content thereby assuring that the agglomerate will not cake prior to its being pressed into the mold 77. This short travel of the agglomerate is obtained by the construction of the machine whereby the measuring pocket 41 passes into the hopper to be filled with agglomerate, the filling being accomplished by the agglomerate dropping into the pocket and assisted by the rotating blades. Incidentally, the pockets 41 move in a direction opposite to the direction of the rotating of the blades 21 thereover which gives better assurance that a sufficient quantity of agglomerate will fall into the pocket.

The pocket 41 moves outside of the hopper 20 into position beneath the pressing means 50 which operates immediately to press the agglomerate therein out of the pocket and into the chamber immediately beneath the pocket and pressing means 50. The matrix 75 is at the end of this chamber beneath the pressing means 50 and is so positioned that the plunger 78 is immediately adjacent to the periphery of the measuring disc 40, as shown in Figure 1. This arrangement of the elements of the machine not only provides a very short travel of the agglomerate from the hopper to the mold 77, but, in addition, provides a compact construction for the machine. Then too, the agglomerate is practically covered throughout its path from the hopper 20 until it is compressed into the mold 77 and no opportunity is offered for the moisture content to alter and tend to cake. The mix is more likely to cake in the small quantities measured out for a bobbin by the pockets 41 than in the bulk material in the hopper which is constantly being mixed by the blades 21. The plunger 78 is the same plunger heretofore used to press the agglomerate G into the mold 77 and it constitutes no part per se of the invention, but does constitute a part in its combination with the other mechanism disclosed herein. The plunger 79 presses the agglomerate G into the mold 77 so that it retains its shape after the carbon pencil has been inserted and any other desired operations performed, such as the bobbin B, shown in Figure 9 without the pencil.

The member 76 is movable or reciprocable within the chamber beneath the pressing means 50. This member carries a flat face 85 and pushes the agglomerate towards the matrix 75. The movable member 76 ends its movement or stroke just short of the near edge of the mold 77 and the plunger 78 when it moves downwardly to press the agglomerate into the mold. The face of the member is also flat so that upon the downward movement of the plunger 78, any excess of agglomerate of mix may squeeze out from under the end of the plunger into the space and corners between the plunger 78 and plate 85. In practice there will always be an excess of mix in the chamber and preferably in the pockets also, so that any deficiency in the quantity of agglomerate in some of the pockets will not result in a deficiency of mix for the bobbin. The reciprocating member 76 in addition is advanced by a spring as will be described, so that the advanced position of the member may adjust itself if necessary to the quantity of excess agglomerate in the chamber. The plate 85 is preferably of a hard, wear and corrosion resisting material and is attached to the movable member 76 by means of the screws 87 so that it may be renewed whenever necessary.

The movable member 76 is carried upon a bar 86, better shown in Figure 4. The bar 86 is attached to a sliding member 90 which is slidable in the ways formed by the bars 91 and 93. The slide 90 is operatively connected to the lever 66 by means of a connecting link 92. The lever 66 is carried upon the pivot 95 supported by the bracket 96 so that the lever 66 may oscillate. The lever 66 carries a roller 97 on a pin 98 which roller contacts with the cam 99. This cam is carried upon the plate whose outer edge forms the cam 55. The cams 55 and 99 are carried upon a shaft 100 which rotates them at the proper speed.

The two cams are integral and rotate in unison in order that the timing of the movement of the two levers 52 and 66 and their associate mechanism will be in proper relation to each other. This proper relation is such that the movable member 76 is at the extreme right of the chamber, as shown in Figure 7, at the time the pressing member 50 has descended to press the agglomerate out of the measuring pocket 41 into the chamber in front of the movable member 76. Since the rotation of the measuring disc 40 is brought about by the ratchet mechanism connected with the lever 66, the intermittent rotation of the measuring disc is also properly timed so that the disc is stationary upon the downward movement of the pressing means 50 into a pocket 41. A spring 102 keeps the roller 97 of the lever 66 in contact with its cam 99 and also provides the resilient means for advancing the reciprocating member 76 to push the mix towards and into the matrix 75. The cam 99 therefore retracts the member 76 but does not advance it for reasons stated hereinbefore.

The rotating measuring disc 40 carrying the pockets 41 is the preferred form of construction, although other mechanism having the same function is contemplated by the invention in which a measuring pocket is movable into the hopper to be filled by agglomerate therein after which it is movable out of the hopper in which position the agglomerate is pressed out of the pocket into a chamber therebeneath. In fact, in the first machine constructed, a sliding member with a single pocket therein was used to measure the proper quantity of agglomerate from the bulk of material within the hopper and to carry it outside of the hopper where it was pressed therefrom into a chamber immediately therebeneath.

In order to minimize the rapid wear usually associated with the movement of the agglomerate, all parts which contact therewith are preferably lined with a hard material which resists wear and corrosion, several of which are purchasable under trade names. The top surface of the measuring disc 40 is lined with a plate 104 and the stationary plate 43 upon the bottom face of the measuring disc 40 are both of this material. The bottom of the chamber upon which the agglom-

erate falls from the measuring pocket 41 and upon which the movable member 76 moves in order to push the agglomerate towards the matrix 75 is also lined with a plate 105 as well as the side walls 106 of the chamber. In other words, practically all surfaces exposed to contact with the bobbin material are lined.

In order to obtain more thorough stirring of the mix within the hopper 20 and to more effectively avoid caking of the mix therein, the mixing head shown in Figure 10 has been devised. In this construction of stirring device, the shaft 22 is operatively connected with at least one but preferably a plurality of outwardly radiating bars or arms 110 which are spaced from the bottom of the hopper 20. The bars 110 are secured to a head or hub 111, or other suitable structure keyed to the shaft 22, by means of the screws 112. Any method of securing the bars 110 for driving connection with the shaft 22 is contemplated by the invention.

The outer end of at least one of the bars 110 carries a scraper 115 which is a relatively narrow bar projecting well above the bar 110 and adapted to scrape the inner periphery of the hopper 20. One such scraper bar has been found satisfactory in order to keep the agglomerate or mix within the hopper well stirred together. The agglomerate within the hopper spills over the top and sides of the scraper bar 115 and obtains thereby effective stirring and mixing of the agglomerate. In addition, the scraper 115 prevents the formation of caked agglomerate along the walls of the hopper.

The bar 110 also carries a yielding blade 117 which may be secured to the bar 110 by means of the screws 118. The yielding blades 117 are adapted to yield backwardly, shown in dot and dash lines in Figure 11, from their direction of rotation shown by the arrow in Figure 11, and thereby permit a lump of agglomerate which is just beginning to cake to pass therebeneath. The downward pressure of the yielding blade also assists in crushing and mixing such lump which is beginning to cake and if it is in the path of the pocket 41 in the measuring wheel 40, it will press the lump into the pocket. Caking upon the blade 117 and in the mass of agglomerate in the hopper is therefore avoided.

A blade 117 of rubber having sufficient stiffness to ordinarily retain a vertical position against the pressure of the agglomerate or mix within the hopper as the blades rotate is suitable for the purpose. The rubber blade 117, however, has sufficient resiliency so that when the pressure becomes greater than normal against the blade, the blade will yield as shown in Figure 11, and bend or flex backwardly from the direction of rotation to pass a lump of mix which is beginning to cake therebeneath. The downward pressure brought about by yielding backwardly of the flexible blade, also tends to crush and break up the lump or to press it within a pocket 41 in case the lump is in the path of one of these pockets in the bottom of the hopper. It is believed also that the flexible rubber blade 117 by the flexing of the surface which is pressing the mix in front of the blade, tends to break loose any of the agglomerate which might begin to adhere to the front surface of the blade so that the agglomerate cannot cake upon the flexible blade.

It will be noted that the yielding blade 117 which is attached to an arm 110 which does not carry a scraper 115, extends to the end of the arm or adjacent to the inner periphery of the hopper 20. The yielding blade 117 which is carried by an arm 110 which does carry a scraper 115, ends adjacent to the inner edge of the scraper so that the blade may yield or flex backwardly when a lump of agglomerate which is tending to cake and harden comes in contact therewith or tends to harden and cake upon the blade.

Various modifications will occur to those skilled in the art in the configuration, composition and disposition of the various component elements going to make up the invention as a whole, as well as the application thereof to various purposes and no limitation is intended by the phraseology of the foregoing description or illustrations in the accompanying drawings except as indicated in the appended claims.

I claim:

1. A battery bobbin making machine comprising a hopper for the agglomerate comprising a bottom having a portion cut away, an intermittently rotatable plate disposed partly without the hopper and having a part of its face forming a portion of the bottom of the hopper, at least one measuring pocket carried by the plate and movable into and out of the bottom of the hopper, rotating blades within the hopper substantially contacting with the bottom thereof and the plate, means outside of the hopper to press the agglomerate out of the measuring pocket, a substantially inclosed receiving chamber directly beneath the pressing means, a vertical matrix at one end of the chamber and adjacent to the edge of the rotatable plate, a member movable in the chamber to push the agglomerate into the matrix, a mold in alignment with the matrix, and a plunger reciprocating vertically adjacent to the rotatable plate and through the matrix to press the agglomerate into the mold.

2. A battery bobbin making machine comprising a hopper for the agglomerate comprising a bottom having a portion cut away, rotating blades within the hopper, an intermittently rotatable plate having a part of its face forming a portion of the bottom of the hopper, at least one measuring pocket carried by the plate and movable into and out of the bottom of the hopper, the measuring means moving in a direction through the hopper opposite from the direction of movement of the blades thereover, means outside of the hopper to press the agglomerate out of the measuring pocket, a receiving chamber beneath the pressing means, a vertical matrix at one end of the chamber, a reciprocating member movable in the chamber to push the agglomerate into the matrix, a pivoted lever connected to the reciprocating member, a cam engaging and retracting the lever, a spring connected with the lever to resiliently advance the reciprocating member, ratchet means driven by the lever and connected with the measuring plate to intermittently rotate the same, a mold in alignment with the matrix, and a plunger reciprocating vertically adjacent to the rotatable plate and through the matrix to press the agglomerate into the mold.

3. A machine for making cylindrical bobbins for dry cells comprising, in combination, a cylindrical hopper for the agglomerate comprising a flat bottom whereof a portion on one side of a diameter is cut out in an arc of a circle intersecting the plane of the hopper wall in two points, a rotatable circular measuring plate disposed in the plane of the hopper bottom and whereof a portion of its face enters the cut-out portion of

the hopper bottom and completes the bottom, a plurality of measuring pockets carried by the plate, rotating blades within the hopper substantially contacting with and movable over the bottom thereof and over the portion of the rotatable plate within the bottom of the hopper to deliver agglomerate into the measuring pockets, means to intermittently rotate the plate to move the plate to bring the pockets seriatim into and out of the bottom of the hopper and in a direction opposite to the direction of movement of the blades thereover, an agglomerate receiving chamber beneath the measuring plate to receive agglomerate from the measuring pockets, a matrix at one end of the chamber and means to push the agglomerate from the chamber into the matrix.

4. A machine for making cylindrical bobbins for dry cells comprising, in combination, a cylindrical hopper for the agglomerate comprising a flat bottom whereof a portion on one side of a diameter is cut out in an arc of a circle intersecting the plane of the hopper wall in two points, a rotatable circular measuring plate disposed in the plane of the hopper bottom and whereof a portion of its face enters the cut-out portion of the hopper bottom and completes the bottom, a plurality of measuring pockets carried by the plate, rotating blades within the hopper substantially contacting with and movable over the bottom thereof and over the portion of the rotatable plate within the bottom of the hopper to deliver agglomerate into the measuring pockets, means to intermittently rotate the plate to move the plate to bring the pockets seriatim into and out of the bottom of the hopper and in a direction opposite to the direction of movement of the blades thereover, an agglomerate receiving chamber beneath the measuring plate to receive agglomerate from the measuring pockets, means outside of the hopper to press the agglomerate out of a measuring chamber into the receiving chamber, a matrix at one end of the chamber and means to push the agglomerate from the chamber into the matrix.

5. A machine for making cylindrical bobbins for dry cells comprising, in combination, a cylindrical hopper for the agglomerate comprising a flat bottom whereof a portion on one side of a diameter is cut out in an arc of a circle intersecting the plane of the hopper wall in two points, a rotatable circular measuring plate disposed in the plane of the hopper bottom and whereof a portion of its face enters the cut-out portion of the hopper bottom and completes the bottom, a plurality of measuring pockets carried by the plate, rotating blades within the hopper substantially contacting with and movable over the bottom thereof and over the portion of the rotatable plate within the bottom of the hopper to deliver agglomerate into the measuring pockets, means to intermittently rotate the plate to move the plate to bring the pockets seriatim into and out of the bottom of the hopper and in a direction opposite to the direction of movement of the blades thereover, an agglomerate receiving chamber beneath the measuring plate having a substantially horizontal bottom to receive agglomerate from the measuring pockets, means outside of the hopper to press the agglomerate out of a measuring chamber into the receiving chamber, a matrix at one end of the chamber, a member movable horizontally in the chamber to push the agglomerate into the matrix, a mold adapted to register with the matrix and a plunger reciprocating through the matrix to press the agglomerate into the mold.

6. A machine for making cylindrical bobbins for dry cells comprising, in combination, a cylindrical hopper for the agglomerate comprising a flat bottom whereof a portion on one side of a diameter is cut out in an arc of a circle intersecting the plane of the hopper wall in two points, a rotatable circular measuring plate disposed in the plane of the hopper bottom and whereof a portion of its face enters the cut-out portion of the hopper bottom and completes the bottom, a plurality of measuring pockets carried by the plate, rotating blades within the hopper substantially contacting with and movable over the bottom thereof and over the portion of the rotatable plate within the bottom of the hopper to deliver agglomerate into the measuring pockets, means to intermittently rotate the plate to move the plate to bring the pockets seriatim into and out of the bottom of the hopper and in a direction opposite to the direction of movement of the blades thereover, an agglomerate receiving chamber directly beneath the measuring plate having a substantially flat bottom to receive agglomerate from the measuring pockets, means outside of the hopper to press the agglomerate out of the measuring chamber into the receiving chamber, a vertically disposed matrix at one end of the chamber, a reciprocating member movable horizontally in the chamber to push the agglomerate into the matrix, a mold adapted to register with the matrix therebeneath and a plunger reciprocating through the matrix to press the agglomerate into the mold.

7. A machine for making cylindrical bobbins for dry cells comprising, in combination, a cylindrical hopper for the agglomerate comprising a flat bottom whereof a portion on one side of a diameter is cut out in an arc of a circle intersecting the plane of the hopper wall in two points, a rotatable circular measuring plate disposed in the plane of the hopper bottom and whereof a portion of its face enters the cut-out portion of the hopper bottom and completes the bottom, a plurality of measuring pockets carried by the plate, rotating blades within the hopper substantially contacting with and movable over the bottom thereof and over the portion of the rotatable plate within the bottom of the hopper to deliver agglomerate into the measuring pockets, means to intermittently rotate the plate to move the plate to bring the pockets seriatim into and out of the bottom of the hopper and in a direction opposite to the direction of movement of the blades thereover, an agglomerate receiving chamber directly beneath the measuring plate having a substantially flat bottom to receive agglomerate from the measuring pockets, means outside of the hopper to press the agglomerate out of the measuring chamber into the receiving chamber, a vertically disposed matrix at one end of the chamber, a vertical member formed with a flat face movable horizontally in the chamber, a mold adapted to register with the matrix therebeneath and a plunger reciprocating through the matrix to press the agglomerate into the mold.

8. A machine for making cylindrical bobbins for dry cells comprising, in combination, a cylindrical hopper for the agglomerate comprising a flat bottom whereof a portion on one side of a diameter is cut out in an arc of a circle intersecting the plane of the hopper wall in two points, a rotatable circular measuring plate disposed in the plane of the hopper bottom and whereof a

portion of its face enters the cut-out portion of the hopper bottom and completes the bottom, a plurality of measuring pockets carried by the plate, rotating blades within the hopper substantially contacting with and movable over the bottom thereof and over the portion of the rotatable plate within the bottom of the hopper to deliver agglomerate into the measuring pockets, means to intermittently rotate the plate to move the plate to bring the pockets seriatim into and out of the bottom of the hopper and in a direction opposite to the direction of movement of the blades thereover, an agglomerate receiving chamber directly beneath the measuring plate having a substantially flat bottom to receive agglomerate from the measuring pockets, means outside of the hopper to press the agglomerate out of the measuring chamber into the receiving chamber, a vertically disposed semi-cylindrical matrix at one end of the chamber, a vertical member formed with a flat face movable horizontally in the chamber to push the agglomerate into the matrix, a mold in register with the matrix and a plunger reciprocating through the matrix to press the agglomerate into the mold.

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