

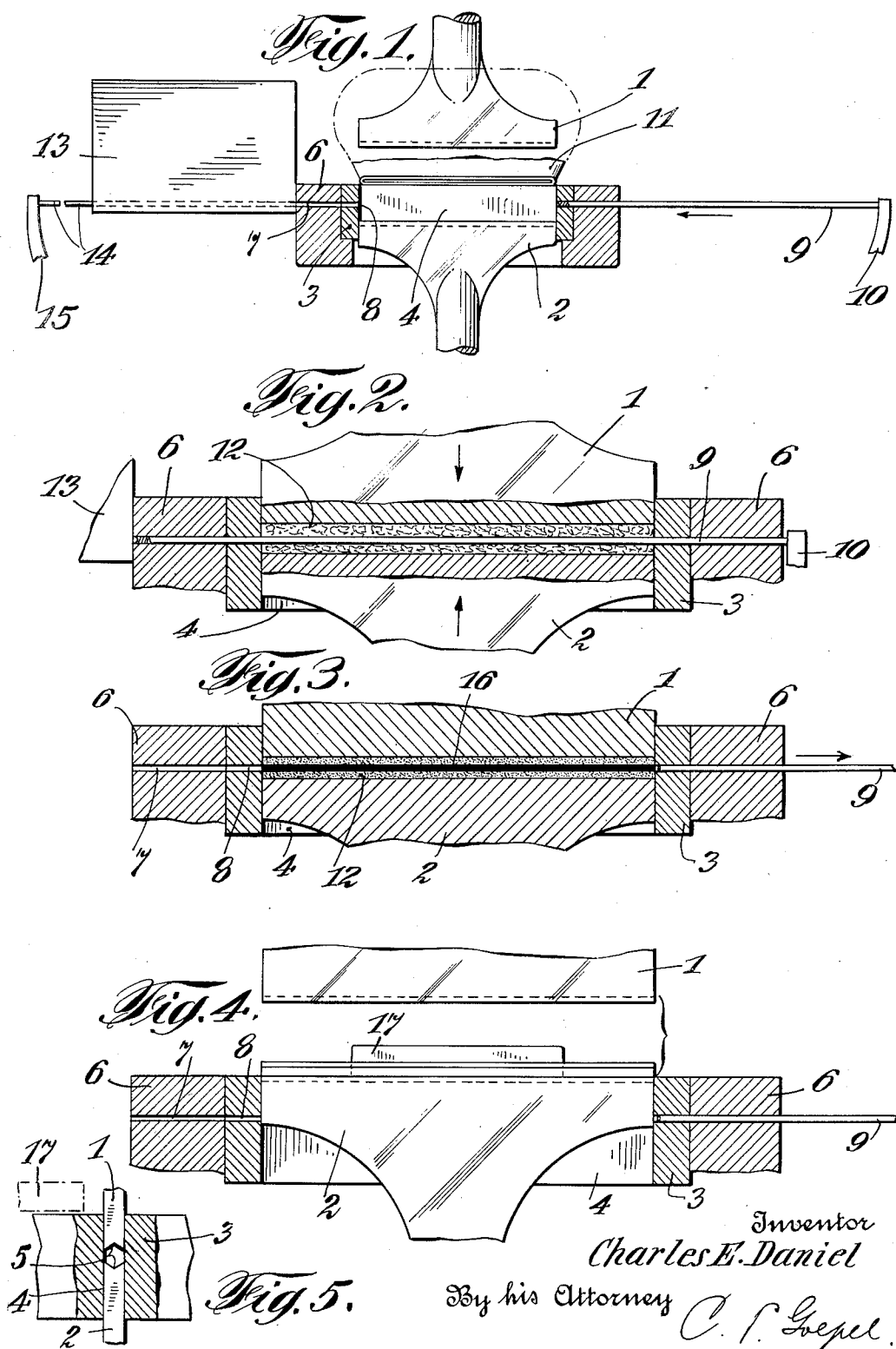
Aug. 15, 1933.

C. E. DANIEL

1,922,527

APPARATUS FOR MOLDING PENCILS AND THE LIKE

Filed March 3, 1928



UNITED STATES PATENT OFFICE

1,922,527

APPARATUS FOR MOLDING PENCILS AND
THE LIKECharles E. Daniel, Sandusky, Ohio, assignor to
The American Crayon Company, Sandusky,
Ohio, a Corporation of Ohio

Application March 3, 1928. Serial No. 258,768

2 Claims. (Cl. 18—5)

The invention relates to improvements in apparatus for molding pencils, especially pencils comprising a casing or envelope within which is a rod or stem of so-called lead or graphite; the casing being made of such material that portions thereof at the end must be cut away or otherwise removed in order to sharpen the pencil.

An object of the invention is to provide an easily operable apparatus for making the casing of the pencil out of material which can be molded and compressed into the required shape, with the rod or stem of lead or graphite in place therein. In the practice of the invention I employ suitable dies together with a hopper for delivering the material into a mold, compressing dies and parts which cooperate therewith, together with mechanism for enabling the rods or stems of lead or graphite or other suitable substance for writing, which will herein-
after be called "leads", to be inserted.

On the drawing,

Figure 1 is a view partly in section showing the mechanism constituting the mold in which the casing of the pencil is formed together with the hopper for supplying the leads to the pencil.

Fig. 2 is a similar view showing the parts in section with the pencil in process of formation.

Fig. 3 is a similar view showing the parts in the position when the molding of the pencil is completed and it is ready to be delivered from the mold.

Fig. 4 is a similar view showing the parts in position when the pencil is about to be discharged from the apparatus and

Fig. 5 is a transverse section showing diagrammatically the molding apparatus.

The same numerals identify the same parts throughout.

On the drawing I show a pair of dies 1 and 2 which have the form of plungers to work in a mold block 3 containing an opening 4 of a size to fit the configuration of these dies; each of the dies 1 and 2 is of considerable length as compared to the thickness thereof and their adjacent ends are provided with recesses 5, each having the form of a flattened V. These dies approach each other in the course of operation but do not meet and they will therefore form with the inside of the opening 4 through the die block 3 a hexagonal shaped space as indicated in Fig. 5. Hence, a pencil having six faces can be produced with this apparatus. The die block 3 can be mounted in suitable supports 6, one of which shown at the left has a round opening 7 in line with an opening 8 through the die block

for the passage of the lead into the pencil when the operation of molding is in progress. The other support 6 has a similar opening in line with another opening through the die block 3 leading to the mold cavity therein provided by the two ends of the dies 1 and 2 and the sides of the opening 4. Through these last named openings in the support 6 and mold block 3 reciprocates a rod 9 which may be of steel, attached to an arm 10 operated in any suitable manner. At 11 is indicated a hopper for material which is supplied to the opening 4 in the mold block 3 to provide the casing for the pencils and to be compressed by the dies 1 and 2. This material is indicated in Figures 2 and 3 by the numeral 12.

On the side of the apparatus opposite to that where the rod 9 is disposed I mount a hopper 13 which contains the leads. This hopper will have openings in the opposite ends, one of which will receive a rod or plunger 14 attached to an arm 15 and the purpose of this rod 14 is to reciprocate and push the leads from the hopper 13 successively through the adjacent openings or apertures 7 and 8 in the support 6 and die block 3 into the pencil. One of the leads is indicated at 16 in Fig. 3.

In actual operation the dies 1 and 2 will occupy the position shown in Fig. 1 where the lower die 2 closes the bottom of the opening 4 and the upper die is raised to expose the top of this opening. At this time the hopper 11 will be in position to discharge the material 12 into the opening 3 in sufficient amount to fill this opening. This hopper is mounted so as to be movable by any suitable apparatus which is not shown in the drawing. When the mold cavity is filled with the mold material the hopper 11 is retracted so as to permit the upper die 1 to move downward and this die will of course be guided so as to pass into the opening 4 which it fits. At the same time the rod 9 is moved to force its way through the mold material 12 and the two dies actuated to approach each other and thus partly compress the mold material around the rod 9 as indicated in Fig. 2. The apparatus for actuating the rod 9 is not shown but will be designed to operate as required.

The next step in the operation effects the withdrawal of the rod 9 leaving a longitudinal opening through the partly molded pencil casing in the mold cavity. The plunger 14 is now actuated pushing a lead through the outlet opening of the hopper 13 and through the openings 7 and 8 in the adjacent support 6 and adjacent end of the die block 3 into the longitudinal chan-

nel or central passage which the rod 9 has left in the partly molded pencil casing. The lead is of the same length as the mold cavity between the two opposite openings 8 as indicated in Fig. 3 and then the dies 1 and 2 are caused to approach each other a little more to effect the final compressing operation. Both dies then move upwardly as indicated in Fig. 4, the upper die 1 clearing the top of the mold block or die ring 3 and the lower die stopping when it reaches the top of the part 3 exposing the completed pencil. A part indicated at 17 in Fig. 5 now moves across the upper face of the mold block 3 and removes the pencil from the apparatus. Subsequently the pencil can be colored or polished or put through any other finishing process.

The various parts comprising the two dies 1 and 2, the hopper 11 and rod 9 and the plunger 14 and part 17 will of course be mounted to actuate in the order required and to the extent necessary to give the desired results; and the hopper 13 may have any suitable device for always causing a lead to be in the right position to be delivered by the instroke of the rod 14. The mechanisms for coordinating the movements of the parts illustrated on the drawing are not illustrated as they are not included within this invention.

By the apparatus shown and described it will be apparent that I can produce pencils of the desired shape very quickly and in an inexpensive manner. The material fed into the mold cavity from the hopper 11 will be of suitable composition to envelop the lead and form a permanent durable casing therefor which at the same time is soft enough to enable it to be readily cut or ground to keep one end of the lead 16 at a point for writing and while I have shown the dies so shaped at one end to produce hexagonal pencils, I may obviously design the parts to make round pencils or pencils of any other shape.

While I have described a preferred embodiment of my invention, I of course, reserve the

right to make changes in the parts or mode of proceeding consistent with the principle and scope of the invention as indicated by the meanings of the terms employed in the appended claims.

I claim:

1. Apparatus for molding pencils including a part having a mold cavity, vertically movable spaced dies, the lower die being movable within said mold cavity and constituting the base thereof and the upper die being movable into and out of said mold cavity, movable means for supplying moldable material to said cavity when the upper die is at the limit of its upward movement, means for supplying lead cores to the moldable material compressed within the mold cavity between said dies, and said lower die adapted for movement in the mold cavity to project the completed pencil above the upper end thereof for removal.

2. Apparatus for molding pencils comprising a part having a cavity extending vertically there-through, upper and lower relatively movable spaced dies, said lower die at all times operating within said cavity and constituting the base thereof, and said upper die being movable into and out of said mold cavity, means for feeding moldable material into the upper end of the mold cavity while the upper die is at the upward limit of its movement, said upper die adapted upon entering said cavity to initially compress the material between itself and the lower die, means for forming a bore through the compressed material, means for inserting a lead core into said bore, the further compression of the material being produced by relative movement of said dies acting to tightly encase said core therein, and the lower die being subsequently movable in said cavity to project the completed pencil above the upper end thereof, and means for removing the completed pencil from said die.

CHARLES E. DANIEL.