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E. W. DAVIS

2,446,044

WRITING IMPLEMENT

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Fig. 1.

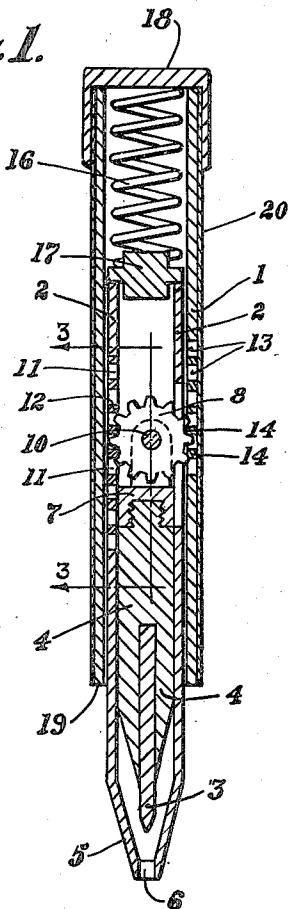


Fig. 2.

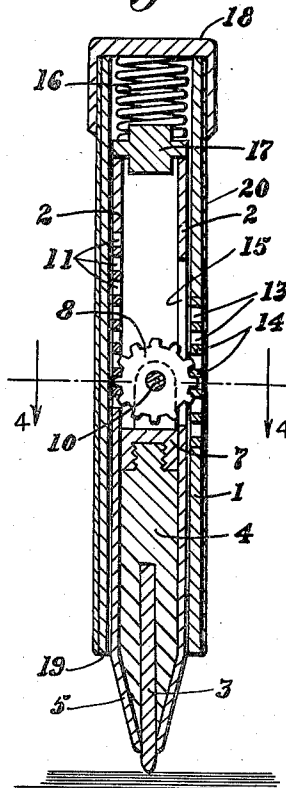


Fig. 3.

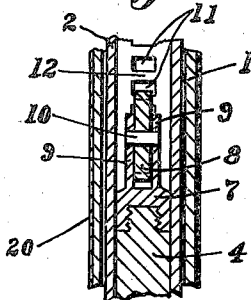
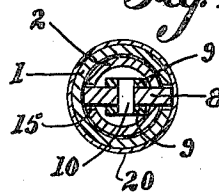


Fig. 4.



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WRITING IMPLEMENT

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8 Claims. (Cl. 120—9)

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This invention relates to writing implements, such as pencils and pens, and it has for one of its objects to provide a novel writing implement in which the marking element, whether it be in the form of the lead of a lead pencil or in the form of the point of a pen, is normally retracted within and concealed by the body of the implement, but which will be projected beyond the tip of the implement when the latter is placed against the surface on which the marking is to be made and the user presses downwardly on the body of the implement.

The invention may be embodied in a writing implement which is constructed so that the marking element will be projected into its operative writing position by applying a relatively light downward pressure on the body of the implement, or said implement may be made so that the application of a considerably greater downward pressure on the body will be required to move the marking element from its retracted position into its projected operative marking position.

A further object of the invention is to provide a novel writing implement in which when the downward pressure on the body is released, the marking element will automatically move backwardly from its operative projected position into its retracted position within the implement body. While the invention may be embodied in writing implements designed for ordinary purposes, yet it is of especial advantage when embodied in a writing implement that is to be used under circumstances which require the making of several carbon copies of the written matter at the time that the original copy is made.

In conducting many lines of business which require the filling out of numerous forms, it is frequently necessary to make several carbon copies of the original form. If the number of such carbon copies is more than four or five, the person filling out the form has to bear down on the writing implement with considerable force in order to make the last carbon copy legible. In using an ordinary pencil for this purpose, there is no way for the writer to tell whether or not he is making a legible last carbon copy except by making frequent visual examinations thereof.

If in the performance of his duties, a person is required to make for a considerable length of time entries involving the making of a large number of carbon copies, the heavy pressure he is required to apply to the pencil or other writing implement in order to make the last carbon copy

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legible is quite fatiguing, and after working for some time his writing muscles may become tired, with the result that unconsciously the pressure he is applying to the writing implement is eased up somewhat, and may be eased up to a point insufficient to produce the required number of carbon copies.

As applied to a writing implement for making carbon copies, my invention has the advantage that whenever the user of the writing implement fails to bear down on it with sufficient force to make the required number of carbon copies, the marking element will be automatically moved backwardly from its operative marking position into its retracted position within the body of the implement, and the latter will thus become inoperative for making the original copy, which is the copy the writer sees as he writes. Hence, so long as the original copy is being made, the user of the implement knows that he is applying sufficient pressure to the implement to produce the required number of carbon copies, while whenever the implement fails to make the original copy, the writer knows he is not applying sufficient pressure to make the last carbon copy legible.

As applied to a writing implement in the form of a pencil designed for ordinary use, the invention provides a pencil in which the lead is normally in its retracted position within the body of the pencil so that when the pencil is carried in one's pocket, there is no exposed lead to soil the inside of the pocket or to mark papers or other articles that may be in the pocket, while when the implement is withdrawn from the pocket and put to use for writing purposes, the normal downward pressure which the writer will apply to the body of the implement in order to make a mark on the paper will automatically move the lead forwardly into its operative writing position in which it projects forward of the pencil tip and is thus fully exposed for writing purposes.

In order to give an understanding of the invention, I have illustrated herein a selected embodiment thereof, in which the marking element is shown as the lead of a lead pencil, but I wish to make it clear that the invention is not limited to an implement of the pencil type, but is equally applicable to writing implements in which the marking element is in the form of a pen point of any suitable type.

In the drawings:

Fig. 1 is a longitudinal section through a writing implement of the pencil type embodying the

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invention and showing the lead or marking element in its normal retracted position within the body of the implement.

Fig. 2 is a similar view showing the writing implement in condition for writing with the marking element projected into its operative position and exposed for writing purposes.

Fig. 3 is a section on the line 3—3, Fig. 1.

Fig. 4 is a section on the line 4—4, Fig. 2.

As stated above, I have chosen to illustrate my invention herein as it might be embodied in a writing implement of the pencil type in which the marking element is in the form of the lead of the lead pencil, and in order to keep the illustration of the invention in a simple form, I have shown a marking element in which the lead is located within a lead-carrying member in the manner of an ordinary lead pencil. I wish to state, however, that the invention is not confined in its use to a writing implement of this type, but is applicable generally to pencils of various types, and also to pens of various types.

In the construction herein illustrated, the body portion of the writing implement comprises two concentric shell or casing elements, an outer shell 1 and an inner shell 2 which is enclosed within the outer shell, said shells being movable relative to each other in an axial direction.

The inner shell member 2 has located within it the marking element, which, as stated above, is herein shown as the lead 3 of a lead pencil which is carried in a suitable lead-carrying member 4 that is located within the inner shell 2 and is movable therein so that the lead 3 may be moved from its retracted inoperative position within the shell 2 as shown in Fig. 1 to an exposed operative writing position in which it projects beyond the tip 5 of the inner shell as shown in Fig. 2.

As stated above, the lead-carrying member 4 may be the simple form herein illustrated or may be the more complicated form used in various types of pencils.

The tip portion 5 of said inner shell is preferably tapered as illustrated and is provided at its end with an aperture 6 of a size to receive and guide the lead 3.

The implement is so constructed that normally the lead 3 or other marking element is in a retracted position within the inner casing member 2, but when sufficient downward pressure is applied to the outer casing member, the marking element will be projected beyond the tip 5 of the inner member as shown in Fig. 2, and will thus be exposed for writing purposes, said lead or marking element remaining so exposed so long as the requisite downward pressure is applied to the outer member. Whenever the pressure on the outer member is relieved, however, the marking element is automatically retracted into the body of the implement.

To provide for such operations, the lead-carrying member 4 is connected at its upper end to a head element 7 on which is mounted for turning movement a gear member 8 that meshes with teeth formed in both the outer shell member 1 and the inner shell member 2.

The head 7 is shown as having two upstanding ears 9 between which the gear 8 is located, said gear being mounted for rotation on a pin or shaft 10 carried by the ears 9.

The inner shell member 2 is formed in one side with a plurality of spaced openings or slots 11 to receive the teeth of the gear 8, the portions 12 of the inner shell between the slots

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functioning as gear teeth adapted to mesh with the teeth of the gear 8.

The outer shell member 1 is also provided with a plurality of spaced openings 13 to receive the teeth of the gear 8, the dividing portions 14 between the openings 13 also functioning as gear teeth to mesh with the gear 8.

The inner shell member 2 is provided with a longitudinal slot 15 which registers with the openings 13 of the outer shell member and in which the gear 8 operates, the pivotal pin 10 for the gear 8 being located slightly at one side of the axial line of the implement so as to enable the gear 8 to mesh properly with the teeth 12 and 14 formed in the inner and outer shell members.

Located within the implement body is a spring 16 which acts against the inner and outer members and tends normally to hold them in the relative positions shown in Fig. 1. This spring is seated at its lower end against a head 17 carried by the upper end of the inner shell member 2, and at its outer end it seats against a cap 18 secured to the upper end of the outer shell member 1.

With the parts in their normal relative positions shown in Fig. 1, the inner shell member 2 is held by the spring 16 with its tip end 5 projected some distance beyond the lower end 19 of the outer shell member, and the marker-carrying member 4 is in its retracted position with the lead or other marking element 3 located inside of the tip 5 of the inner shell member.

When the end of the tip 5 is placed against a supported sheet of paper or against any supporting surface and downward pressure is applied to the outer shell member 1, the downward movement of the outer shell member relative to the inner shell member will rotate the gear 8 in a clockwise direction, Fig. 1, and so long as the inner shell member is held against the supporting surface such rotating movement will cause a relative downward movement of the head 7 and the marker-carrying member 4 relative to the inner shell member. When during such downward movement the marking element 3 is carried into the aperture 6 and comes against the paper or supporting surface, the continued downward pressure will operate through the gear 8 to retract the inner shell member and thus raise it from the paper or supporting surface as shown in Fig. 2, thereby leaving the marking element 3 fully exposed for writing purposes.

Said marking element 3 will thus remain exposed so long as sufficient downward pressure is applied to the outer casing, but whenever the pressure is relieved or eased up to a point insufficient to overcome the action of the spring 16, then the latter comes into play to retract the marking element and restore the parts to the relative position shown in Fig. 4 in which the said marking element is located entirely within the inner shell, and the implement is inoperative for writing purposes.

In making the device, a spring 16 will be chosen which is of sufficient strength so that the downward pressure which it is necessary to apply to the outer casing in order to project the marking element into writing position will be sufficient for the purpose for which the implement is to be used.

If, for instance, the writing implement is to be used for ordinary writing purposes, a relatively light spring 16 will be used, so that the pressure which a person normally applies to the implement

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body in ordinary writing will be sufficient to compress the spring and move the marking element from its retracted position into its operative writing position.

On the other hand, if the implement is to be used in making carbon copies, then the spring 16 will be of sufficient strength so that the pressure required to project the marking element into its operative position will be sufficient to make the required number of carbon copies.

When, therefore, the device is being thus used, the person using it knows that he is making the required number of carbon copies for which the implement is built so long as he is applying sufficient downward pressure on the implement body to make the original copy.

If in using the device the writer fails to maintain the necessary downward pressure on the outer casing to make the required number of carbon copies, the spring 16 will act automatically to retract the marking element and thus render the implement inoperative even for making an original copy.

As I have stated above, although reference has been made to the use of the implement in making carbon copies, yet the invention is also adaptable for use in writing implements that are designed for ordinary writing purposes, and when applied to an instrument of this type, the marking element will normally be held in its retracted position situated within the implement body, but as soon as the implement is used for writing purposes, the downward pressure which the writer normally applies to the implement body will automatically project the marking element forwardly from its retracted position into its exposed writing position.

In order to give the implement a finished appearance, I propose to enclose the outer shell member 1 in an envelope 20 which may be of metal or of plastic material or any other suitable material. This envelope 20 covers the openings 13 in the outer member and gives the implement a finished appearance.

I claim:

1. A writing implement having a body, a marking element within said body, said body and marking element being relatively movable to retract the marking element into an inoperative position within the body or to project it into an operative writing position, and means normally holding the marking element in its retracted position but responsive to pressure applied to the implement body to project the marking element into its operative writing position.

2. A writing implement for use in making an original and a plurality of carbon copies, said implement having a body, a marking element within said body movable relative thereto between a retracted inoperative position within said body and a projected operative writing position, and means normally holding the marking element in its retracted inoperative position but responsive to pressure applied to the implement body in the direction of its length sufficient in amount to make the required number of carbon copies to project said marking element into its writing position.

3. A writing implement for use in making an original and a plurality of carbon copies, said implement having a body, a marking element within said body movable relative thereto between a retracted inoperative position within said body and a projected operative writing position, and means normally holding the marking element in

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its retracted inoperative position but responsive to pressure applied to the implement body in the direction of its length sufficient in amount to make the required number of carbon copies to project said marking element into its writing position, said means operating automatically to move the marking element into its inoperative position whenever the pressure on the implement body is reduced below that required for making the desired number of carbon copies.

4. A writing implement comprising a body presenting inner and outer shell members movable relative to each other in the direction of their length, a marker-carrying member and a marking element carried thereby located within the inner shell member and movable relative thereto between an inoperative position in which the marking element is located within said inner shell member and an operative position in which said marking element is projected beyond said inner shell member, and means, including a spring, normally holding the marking element in its inoperative position but responsive to pressure applied to the outer shell member in the direction of its length to move the inner shell member backwardly relative to the outer shell member and to move the marker-carrying member forwardly relative to the inner shell member.

5. A writing implement for use in making an original copy and a plurality of carbon copies, said implement comprising a body presenting an outer shell member and an inner shell member movable relative to each other in the direction of their length, a marker-carrying member and marking element carried thereby within the inner shell member and movable relative thereto between an inoperative position in which the marking element is located within the inner shell member and an operative writing position in which said marking element is projected beyond the inner shell member, and means responsive to a pressure applied to the implement body in the direction of its length sufficient in amount to make the required number of carbon copies to move the inner shell member backwardly relative to the outer shell member and to move the marker-carrying member forwardly relative to the inner shell member from its inoperative to its operative position.

6. A writing implement for use in making an original copy and a plurality of carbon copies, said implement comprising a body presenting an outer shell member and an inner shell member movable relative to each other in the direction of their length, a marker-carrying member and marking element carried thereby within the inner shell member and movable relative thereto between an inoperative position in which said marking element is located within the inner shell member and an operative writing position in which it is projected beyond the inner shell member, and means responsive to a pressure applied to the implement body in the direction of its length sufficient in amount to make the required number of carbon copies to move the inner shell member backwardly relative to the outer shell member and to move the marker-carrying member forwardly relative to the inner shell member from its inoperative to its operative position, said means operating automatically to move the marker-carrying member backwardly into its inoperative position and the inner shell member forwardly into its initial position whenever the pressure on the implement is reduced below that

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required for making the required number of carbon copies.

7. A writing implement comprising a body presenting inner and outer shell members movable axially relative to each other, a marker-carrying member and marking element carried thereby within the inner shell member and movable relative thereto between an inoperative retracted position and an operative writing position, a gear carried by the marker-carrying member, said inner shell member having gear teeth meshing with the gear on one side thereof and the outer shell member having gear teeth meshing with the gear on the outer side thereof, whereby pressure applied to said outer shell member in the direction of its length operates through said gear to move the inner shell member backwardly and to move the marker-carrying member forwardly from its inoperative to its operative position.

8. A writing implement comprising a body presenting inner and outer shell members mov-

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able axially relative to each other, a marker-carrying member and marking element carried thereby within the inner shell member and movable relative thereto between an inoperative retracted position and an operative writing position, a gear carried by the marker-carrying member, said inner shell member having gear teeth meshing with the gear on one side thereof and the outer shell member having gear teeth meshing with the gear on the other side thereof, a compression spring acting against both the inner shell member and outer shell member and normally holding the inner shell member in its forward position and the marker-carrying member in its retracted inoperative position, whereby pressure applied to the outer shell member in the direction of its length compresses the spring and operates through said gear to move the inner shell member backwardly relative to the outer shell member and to project the marker-carrying member forwardly into an operative position.

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