(No Model.)

G. HACKER.

PENCIL AND ANALOGOUS ARTICLES.

No. 294,317. Patented Feb. 26, 1884.

Fig: 1

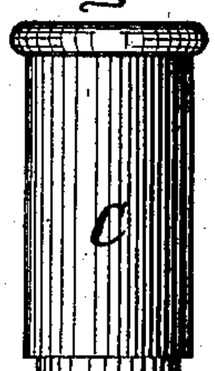


Fig: 2

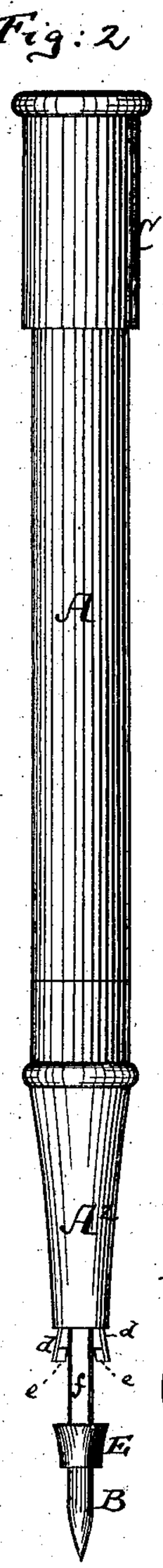


Fig: 3

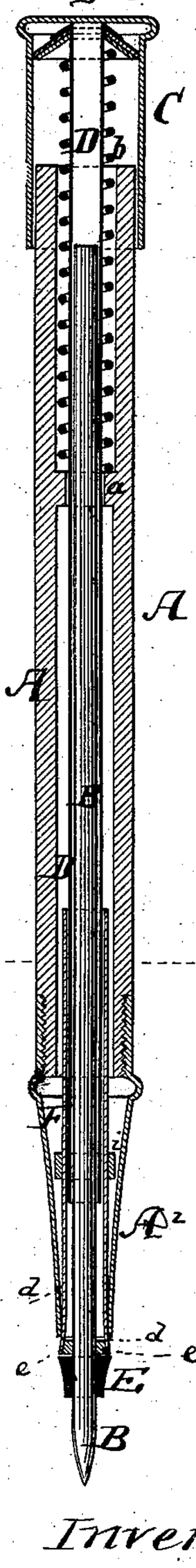


Fig: 4

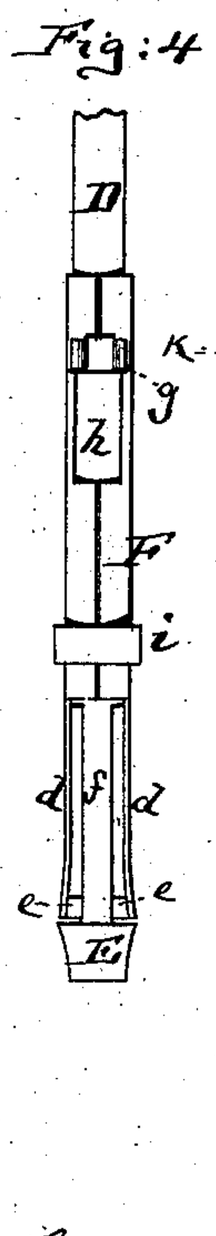


Fig: 5

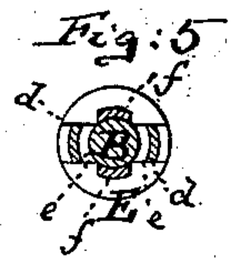
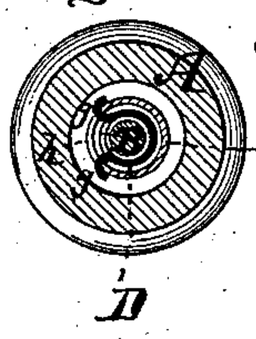


Fig: 6



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UNITED STATES PATENT OFFICE.

GEORG HACKER, OF NUREMBERG, BAVARIA, GERMANY, ASSIGNOR TO GUSTAVUS SCHWAUHAEUSSER, OF SAME PLACE.

PENCIL AND ANALOGOUS ARTICLES.

SPECIFICATION forming part of Letters Patent No. 294,317, dated February 26, 1884.

Application filed January 4, 1884. (No model.)

To all whom it may concern:

Be it known that I, GEORG HACKER, a resident of Nuremberg, Bavaria, Germany, have invented an Improvement in Pencils and Analogous Structures, of which the following is a full, clear, and exact description, reference being made to the accompanying drawings, in which—

Figure 1 is a side view, on an enlarged scale, of a pencil containing my invention. Fig. 2 is a side view of the same, showing the lower tube partly pushed out. Fig. 3 is a central longitudinal section of the same. Fig. 4 is a side view of certain inner parts of the same. Fig. 5 is a horizontal section on the plane of the line *c c*, Fig. 1; and Fig. 6 is a horizontal section on the plane of the line *k k*, Fig. 3.

This invention relates to mechanism for moving the lead in a pencil-holder, so as to push it out when necessary and retain it in the new position.

The invention, although illustrated as applied to a pencil-holder, is applicable to all mechanism by which an object is held and at the same time pushed forward, and then retained in the new position, and when I say "pencil" in this specification I desire it to be understood that all uses to which my invention is applied are to be embraced by this specification.

The invention consists, principally, in combining an outer push-ring with mechanism by which it can be moved outward and drawn inward, and with a pair of detents or jaws, which are arranged to hold the lead while the push-ring is being drawn inward.

In the drawings, the letter A represents a tubular pencil-case, which is a tube, made of wood or any other material, adapted to receive within it the lead B. The shell or tube A has in its upper portion an internal shoulder, *a*, on which rests a coiled spring, *b*, which reaches up to and supports a push-button, C, that is fitted over the upper end of the tube A, as is clearly shown in Fig. 3. This push-button C is rigidly attached to the upper end of a tube, D, of smaller diameter than the tube A, said tube D extending lengthwise through the center of the tube A, and being of such size as to receive within it the lead B. Fig. 3 shows the tube D in heavy black lines, and shows that in the position of the parts as there represented the lower end of the tube D proper is contained within the nozzle-like lower extension, A^2, of the tube A; but Fig. 4 shows one of two downwardly-extending arms, *f*, that project from the lower end of the tube D and serve to suspend beneath the open end of the nozzle A^2 the short push-ring E, which embraces the lead tightly beneath said nozzle, and at a distance therefrom. Fig. 5 shows the two arms *f f*, which project downward from the lower end of the tube D. Around the lower portion of the tube D is also placed a short tube, F, which is likewise embraced by the outer shell, A, as shown, and which carries at its lower end two spring-arms, *d d*, which at their lower ends have on their inner faces jaws *e e*. The said jaws, in the normal position of the pencil, which is shown in Fig. 3, and which is its working position, are between the ring E and the nozzle A^2, and are tightly pressed against the lead in that position, because their spring-arms *d* bear tightly against the inner walls at the lower end of the said nozzle, and are by said inner walls crowded against the lead to retain it in place while under pressure in the act of writing. The tube F is connected with the tube D in such a manner that it has a certain independent longitudinal movement thereon. To this end lugs *g* project from the tube D through a slot, *h*, in the tube F, as is indicated in Figs. 3 and 6. When these lugs strike the upper end of the slot *h*, as in Fig. 4, the ring E will be close to the jaws *e;* but when they are moved away from the upper end of said slot, the ring E will be away from the jaws *e*, as in Fig. 2.

The structure as described operates substantially as follows: A lead, B, having been inserted in the tube D, and being embraced by the ring E and jaws *e*, if it should now be desired to push the lead B farther out, the button C is pressed into the position shown in Fig. 2. This moves the tube D down, and with it the ring E, which ring, by a series of inner teeth, or because of an inner frictional surface, engages the lead B and pulls it down with it, as clearly indicated in Fig. 2. While the tube D is being thus pushed, it

carries, by frictional contact, the tube F a short way down with it, until the shoulder *i* on the tube F arrests the further downward movement of F by striking the inner tapering walls of the nozzle A^2. By this slight downward motion of the tube F the spring-arms *d* are pushed out into the position shown in Fig. 2 sufficiently far to cause the jaws *e* to spring apart and release their hold upon the lead; hence the lead is, during the downward movement of the ring E, entirely within the grasp of said ring and released from the jaws *e*. When, now, the button C is let go, the spring *b* will expand and will push the button back into the position shown in Fig. 3, thereby raising the tube D and with it the ring E; but the inner face of the ring E is of such construction, owing to the shape of the teeth thereon, or of the elastic or frictional lining with which it is provided, that during its upward movement it will not bite the lead, and will therefore not draw it back with it; but so soon as the ring E has been started in its upward movement, the tube F is also promptly drawn up by frictional contact with the tube D, and the spring-jaws are contracted again and made to bite the lead, while the ring E completes its upward movement. In other words, the lead B is pushed out by the ring E, and prevented from following said tube E on the back-stroke by the spring-jaws *d e*.

The tube F, in order to be in proper frictional contact with the tube D, is by preference split, as indicated in Fig. 4, but may, if desired, be lined with an elastic lining to effect the same purpose.

I do not here claim any particular arrangement of the inner face of the ring E for biting the lead during the outward stroke and running loose on it during the inward stroke, as such arrangements are well known to mechanics, and not of my invention; but

What I do claim is—

1. The combination of the ring E, with means, substantially as described, for imparting a reciprocating movement to it, with the spring-jaws *d e*, and means, substantially as described, for moving the same, and with the outer tube, A A^2, all arranged so that the object B, which is embraced by the ring E, can be pushed out by said ring, and will then be retained and prevented from returning to its former position by the spring-jaws *d e*, substantially as described.

2. The combination of the tube A A^2 with the push-button C, spring *b*, tubes D F, the tube D having lugs *g*, for engaging the tube F, and with the push-ring E and spring-detents *d e*, substantially as herein shown and described.

3. The combination of the tube A A^2 with the push-button C, spring *b*, tubes D and F, push-ring E on tube D, and spring-detents *d e* on tube F, substantially as herein shown and described.

4. The combination of the tube A A^2 with the push-button C, spring *b*, tube D, arms *f*, ring E, tube F, shoulder *i*, and spring-detents *d e*, substantially as herein shown and described.

GEORG HACKER.

Witnesses:
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