Feb. 24, 1948. A. K. F. KOCH 2,436,437

PENCIL WITH MAGAZINE AND PUSH TYPE FEED

Filed Jan. 11, 1945

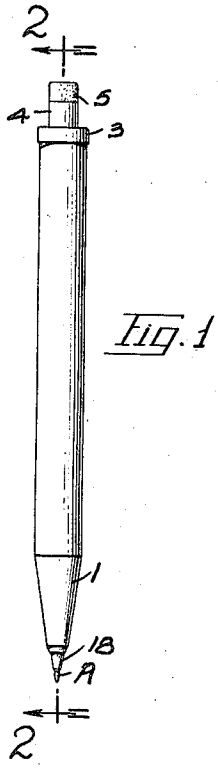


Fig. 1

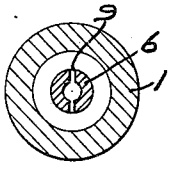


Fig. 3

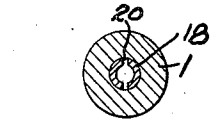


Fig. 4

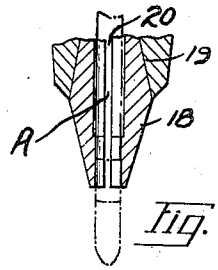


Fig. 5

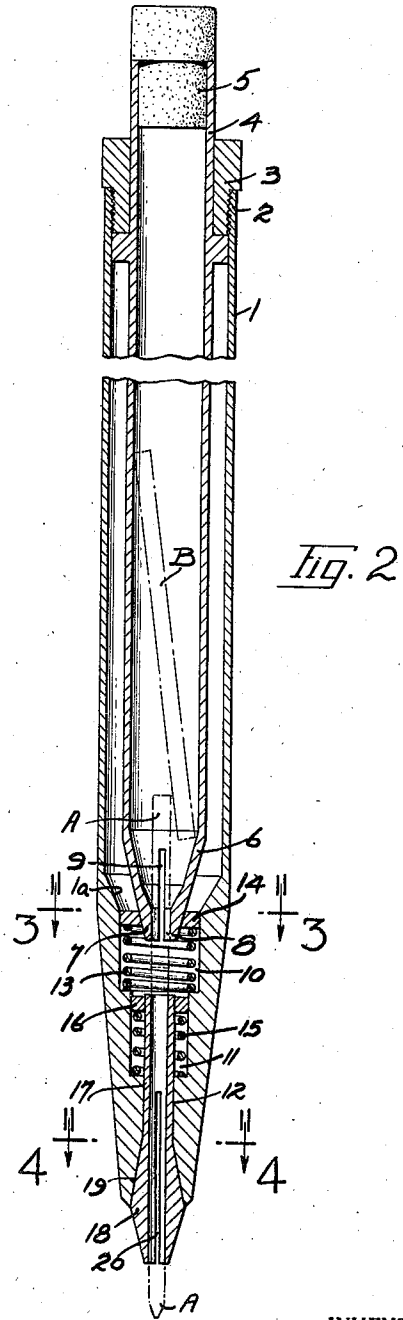


Fig. 2

INVENTOR.
August K. F. Koch.
BY
Grace J. Baldwin
Attorney

Patented Feb. 24, 1948

2,436,437

UNITED STATES PATENT OFFICE

2,436,437

PENCIL WITH MAGAZINE AND PUSH TYPE FEED

August K. F. Koch, Detroit, Mich.

Application January 11, 1945, Serial No. 572,397

2 Claims. (Cl. 120—17)

1

This invention relates to improvements in pencils, and refers particularly to pencils provided with a magazine and push type feed.

It is an object of the invention to provide such a pencil with means for preventing movement of the lead back into the body under any circumstances once it is in forwardly projecting, that is writing, position, so that irrespective of the amount of pressure exerted upon the lead the latter cannot slip back into the body.

Another object of the invention is to provide such a pencil including a collet for holding a lead in outwardly projecting position so that it cannot under any circumstances move back into the body, and a second collet for feeding a lead either from the magazine toward writing position, further outwardly as it wears away, or for feeding another lead from the magazine toward writing position to push the first lead further outwardly.

Yet another object of the invention is to provide such a pencil which is cheap and simple to manufacture and efficient in operation.

Having thus briefly stated some of the objects and advantages of the invention I will now proceed to describe a preferred embodiment thereof with the aid of the accompanying drawing, in which:

Figure 1 is a side elevation of the invention.

Figure 2 is a section on the line 2—2 of Figure 1, enlarged.

Figures 3 and 4 are sections on the lines 3—3 and 4—4 respectively of Figure 2, and

Figure 5 is a further enlarged and in one particular exaggerated sectional view of one end of the pencil.

Referring to the drawing, 1 designates a tubular casing internally threaded at one extremity 2 to receive an annular guide 3 which is externally threaded from its inner end to engage the aforesaid thread while the outer end of the said guide is of increased diameter to bear against the outer face of the casing extremity 2. Mounted for axial movement through the guide 3 and through a portion of the casing 1 is a tubular magazine 4 closed at its outer end by a removable plug 5. At its opposite extremity the magazine 4 terminates in an inner collet 6 which is tapered both internally and externally to its outer extremity 7 which is centrally apertured at 8; and from its apertured end the collet is longitudinally slotted, as at 9, for a portion of its length. The bore of the casing 1 has its greatest diameter at its end through which the magazine 4 extends and is then provided with a series of stepped bore portions each of which is progressively smaller as shown at 10, 11 and 12. The bore portion 10 is connected to the large bore portion of the casing by a tapered annular wall 1a, and the bore portion 12 forms a bearing. Mounted in the bore portion or counterbore 10 is a helical spring 13 which extends between the step between bore portions 10 and 11 and an annular disc 14 axially slidable in the latter and into which the tapered end of the inner collet 6 extends. Thus when the magazine is pressed inwardly the sides of the inner collet 6 are first compressed by the disc 14 to engage the periphery of a lead A extending through the collet, and then the collet and lead are moved downwardly together against the tension of the spring 13. When downward pressure on the magazine is released lateral pressure of the split sides of the collet 6 exerted by the bore of the disc 14 ceases so that the lead is released and the collet and magazine are returned to their initial positions by the spring 13, while the lead A remains stationary.

2

Extending between the base of the outer counterbore 11 and an annular flange 16 mounted for sliding movement therein is another coil spring 15. Axially slidable through the bearing 12 is a tubular shank 17 terminating at one extremity in a collet 18 the outer wall of which is of increasing diameter toward its outer end to coact with an inwardly tapered bore 19 provided in the adjacent end of the casing 1. The annular flange 16 is made integral with the tubular shank 17 so that pressure exerted by the coil spring 15 tends to draw the collet 18 which is longitudinally slotted from its outer extremity into the casing. The longitudinal slots are shown at 20. Thus inward movement of the collet 18 brings its flared surface into engagement with the tapered bore 19 and thus reduces the size of the collet bore so that the lead A is firmly engaged.

It will also be noted in Figure 5 that the bore of the outer extremity of the collet 18 is very slightly smaller, usually about two thousandths of an inch. This reduction in size is exaggerated in the drawing to render it visible. This reduced bore portion is of such size relative to that of the lead that any upward movement of the lead also moves the collet correspondingly whereupon the bore of the latter is immediately reduced and the lead firmly held so that no material upward movement of the latter can occur, which downward movement of the lead imparted by the collet 6 tends to move the collect 18 away from the tapered bore portion 19 to permit expansion of the latter collet and thus free downward movement of the lead.

It is of course understood that a lead is gradually fed from the magazine 4 into writing position by a series of downward movements of the magazine, and that as soon as one lead has passed completely into the upper collet 6 another one in the magazine, such as the lead shown at B drops into the collet for feeding through the collets.

While in the foregoing the preferred embodiment of the invention has been described and shown it is understood that alterations and modifications may be made thereto provided the said alterations and modifications fall within the scope of the appended claims.

What I claim is:

1. A pencil including a tubular casing, an axially movable magazine therein one extremity of which projects outwardly beyond the rear end of the casing, a split tapered collet on the other extremity of the magazine, said casing having a counterbore therein into which the collet extends, an annular disc in the counterbore into which the collet extends, a spring extending between the base of the counterbore and the disc tending to force the latter outwardly, said collet being adapted to be contracted by said disc upon inward movement of the magazine, a second split collet in the casing in axial alignment with the first collet and having a portion of increasing diameter toward its forward extremity, said casing having an inwardly tapered bore portion for coaction with said second collet portion of increasing diameter to contract said second collet upon inward movement of said second collet, and means tending to retain said second collet in engagement with said tapered bore portion.

2. A pencil including a tubular casing, an axially movable magazine therein one end of which projects outwardly beyond the rear end of the casing, a split tapered collect on the other end of the magazine, means in the casing for contracting said collect upon inward movement of the magazine, a second split collect having a portion of increasing diameter toward its front extremity, said second collet also having a tubular shank projecting therefrom toward the first collet supported in the casing for axial movement in alignment with the first collet, said casing having a counterbore therein into which the shank projects, an annular flange fixed on the shank, a spring extending from the base of the counterbore to said flange tending to move the latter and the second collet toward the first collet, and the casing having an inwardly tapered bore portion therein into engagement with which the portion of increasing diameter of said second collet is drawn by said spring to contract said second collet.

AUGUST K. F. KOCH.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
381,612	Bussler	Apr. 24, 1888
1,430,204	Waring	Sept. 26, 1922