

July 19, 1966

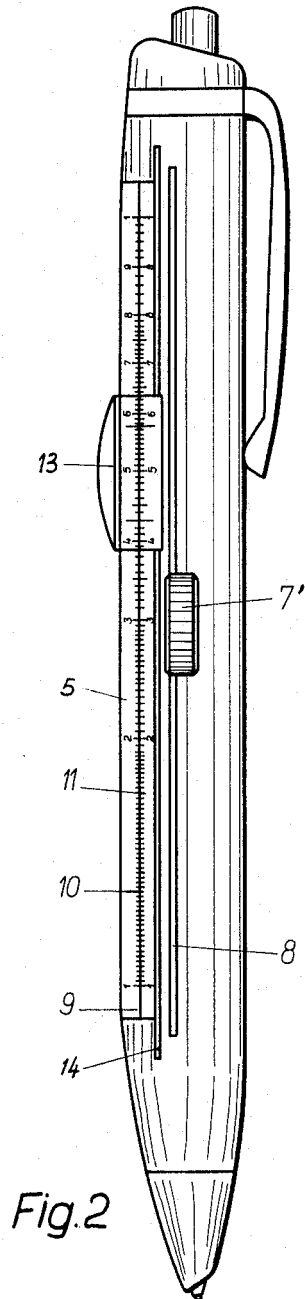
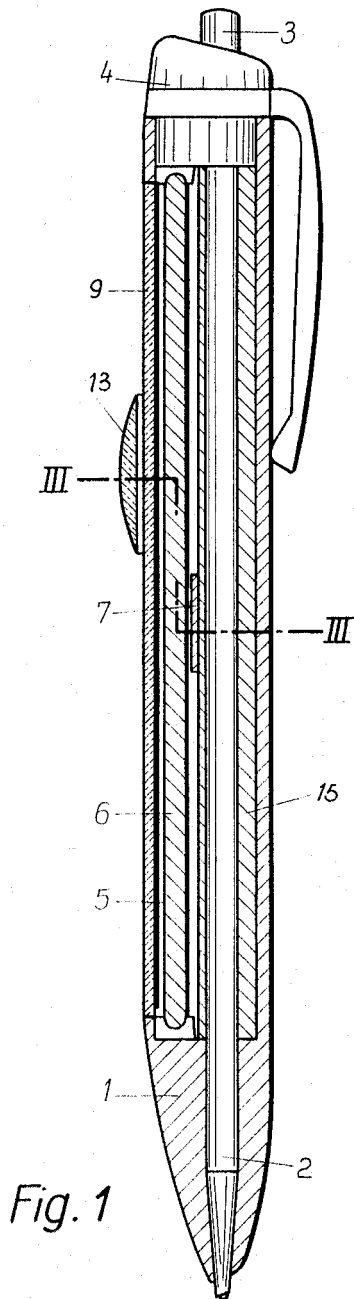
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3,261,548

WRITING IMPLEMENT WITH SLIDE RULE

Filed March 27, 1964

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 3

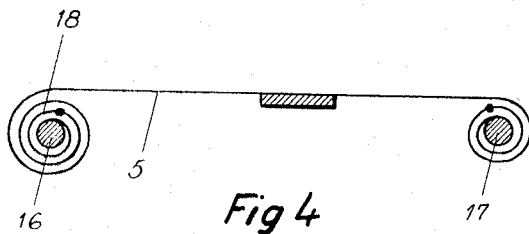
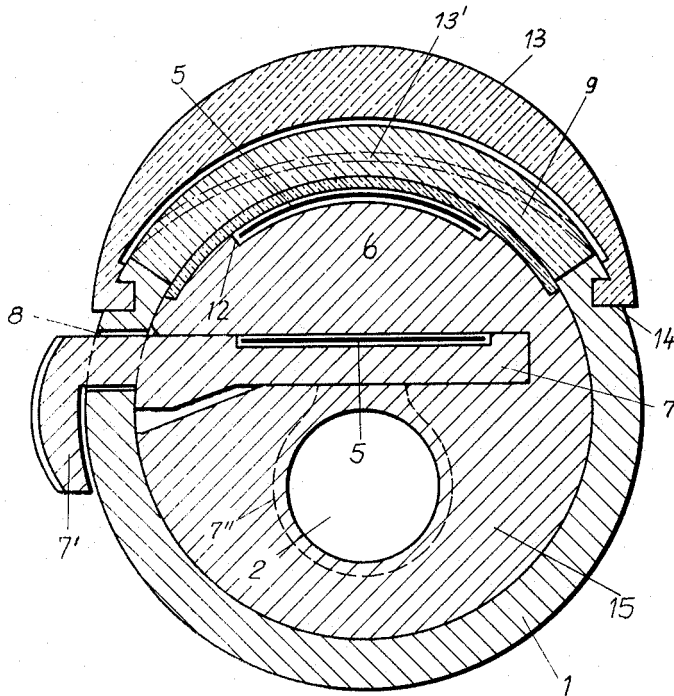


Fig 4

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1

3,261,548

## WRITING IMPLEMENT WITH SLIDE RULE

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Filed Mar. 27, 1964, Ser. No. 355,319

Claims priority, application Germany, Apr. 5, 1963,

J 23,500

2 Claims. (Cl. 235—71)

The present invention relates to a writing implement 10 which is combined with a slide rule.

The need for a practical combination of a writing implement with a slide rule has been felt for a long time and such implements have already been made in the form of pen and pencil holders, mechanical pencils, fountain pens, ball-point pens and the like. All of the known constructions had, however, the disadvantage of either permitting only a small part of the length of the writing implement to be used for the slide rule or of being too bulky, of having parts which projected over or considerably increased the required dimensions of the actual writing implement or interfered with an easy manipulation thereof when used for writing, or of requiring adjustments to be made before the implement when first used as a slide rule could be used for writing, or vice versa.

The principal objects of the invention are to provide a combined writing implement and slide rule which overcomes the above-mentioned disadvantages, permits almost the entire length of the implement to be used for the provision of slide rule scales thereon, has a very convenient size for writing, and does not have any parts which interfere with the function and easy manipulation of the writing implement.

According to the invention, the above-mentioned objects are attained by providing at the inside of the casing of the writing implement a flexible tape which is movable from the outside in the longitudinal direction of the casing and is provided on its upper side with logarithmic scales similar to those which in a conventional slide rule are marked on the slide bar. These scales on the movable tape are associated in the usual manner with fixed scales which are marked adjacent to the longitudinal edges of the tape, for example, on a fixed guide member within the casing on which the tape is slidably supported or on another fixed insert within the casing or on the casing itself. At least the scales on the movable tape are visible through a longitudinal slot in the casing and they are preferably covered by a transparent window which covers the slot either at the inner or outer side of the casing or more preferably forms a solid arcuate part which is inserted into the slot and fills it out completely. Such a window has the advantage that, except for a narrow longitudinal slot which has to be additionally provided in the wall of the casing for guiding a small outer knob or the like which is connected to the tape for moving the same along the inside of the casing, the outside of the casing has a smooth unbroken surface which gives the writing implement a pleasing appearance and facilitates its manipulation. Furthermore, such a solid window insert forms a secure protection of the scales. Of course, instead of providing such a separate window in the casing, it is also possible to make the entire casing of a transparent material and, if desired, to cover the same on the inside with an opaque lining or coloring, except at the part thereof above the scales.

The flexible tape may either be of an endless type which is looped over a longitudinal guide member or a pair of end rollers within the casing and is adapted to be moved back and forth by the mentioned control knob, or it may be of a limited length but greater than that

2

of the writing implement. In such a case, the tape may be wound upon or unwound from a small roller which is provided at the inside of the casing near one end thereof, or both ends of the tape may be wound upon a pair of small rollers which are mounted at the inside of the casing near the ends thereof. This latter embodiment of the invention has the advantage that the tape may be of a considerable length and will thus permit a much longer scale to be marked thereon. If either of these two last embodiments of a tape of a limited length is employed, one of the two rollers or the single roller is preferably provided with a spring for winding the tape back to its zero position.

The new implement has the advantage that instead of requiring the usual stiff slide bar to be pushed longitudinally through the slide rule, the flexible tape may be shifted indirectly and much more easily through the implement and its graduations may thus also be brought more easily and accurately into alignment with those on the fixed scales. Since the flexible tape extends entirely within the writing implement it also avoids the previous disadvantage of a rigid slide bar which extended beyond the slide rule and the writing implement carrying the same. Therefore, regardless of the particular position to which the graduations on the flexible tape are shifted relative to those on the fixed scales, the movable part will never project beyond the writing implement and will therefore never interfere with it when used for writing. Due to its particular construction, the slide rule may be provided entirely within the otherwise unused space at the inside of almost any conventional writing implement so that the usual shape of the latter does not have to be changed. Since it is provided entirely within the writing implement, the slide rule and its scales are also fully protected from being scratched or soiled. The writing implement itself may form a ball-point pen either with a fixed or retractable insert, a mechanical pencil, or the like.

The above-mentioned as well as numerous additional objects, features, and advantages of the present invention will become more clearly apparent from the following detailed description thereof which is to be read with reference to the accompanying drawings, in which—

FIGURE 1 shows an axial section of a writing implement according to the invention;

FIGURE 2 shows a side view of the writing implement according to FIGURE 1;

FIGURE 3 shows an enlarged cross section which is taken along the line III—III of FIGURE 1; while

FIGURE 4 shows a diagrammatic illustration of a modification of the flexible tape.

For the purpose of an example, the writing implement is illustrated in the drawings in the form of a retractable ball-point pen which has a casing 1 containing the ball-point insert 2 which may be advanced and retracted by a conventional mechanism, not specifically shown, which is contained in the end portion 4 and is operated by means of a pushbutton 3. As may be seen in FIGURES 1 and 3, the ball-point insert 2 preferably extends slightly eccentrically to the longitudinal axis of the casing 1 so as to have a greater amount of space available for accommodating the movable parts of the slide rule.

In place of the usual slide bar of a conventional slide rule, an endless flexible tape 5 is provided at the inside of the casing 1 and looped over the ends of a guide member 6, and it is adhesively secured to a setting member with a knob 7 thereon which projects through a longitudinal slot 8 in the casing 1 to the outside. The upper side of tape 5 carries a logarithmic scale 10 which can be seen from the outside through a longitudinal slot in the wall of casing 1 which is completely filled out by an arcuate window 9 of a transparent plastic. The gradua-

tions on the scale 10 correspond to those of the scale on the slide bar of a conventional slide rule. The associated fixed scales of the slide rule, only one of which is indicated in FIGURE 2 at 11, are marked directly adjacent of the lateral edges of tape 5 either on the outer surface of the guide member 6 or on the inner surface of the window 9.

When the setting knob 7 is shifted along the slot 8, the flexible tape 5 and the scale 10 thereon are shifted relative to the fixed scales 11 in a similar manner as a slide bar is shifted relative to the fixed scales of a conventional slide rule. In order to permit the results of the adjustment to be easily read, a slide member 13 of a transparent plastic is provided which is guided in a pair of longitudinal grooves 14 in the outer side of casing 1, as clearly shown in FIGURE 3. If desired, this slide member 13 may be of a curvature so as to magnify the scale readings.

If the outer surface of the casing 1 including the arcuate window 9 is to be entirely smooth and uninterrupted, except by the narrow slot 8 and the knob 7, a slide member 12 may also be inserted into the window itself. The window may then be molded so as to have a transverse arcuate slot 13', as indicated in dot-and-dash lines in FIGURE 3 which extends longitudinally between the opposite ends of the window. A thin strip of transparent plastic, not shown, may then be inserted into this slot 13' so as to be slidable longitudinally therein, and the lateral ends of this strip may be bent over loosely against the outer surface of the window 9. These bent-over ends which are almost unnoticeable and retain the strip within the slot 13' may be tightly gripped between the thumb and index finger of one hand to move this slide member along the slot 13'.

The guide member 6 may form a part of a core 15 which is inserted into the casing 1 and permits the actual slide rule to be assembled separately from the casing 1. Instead of being guided in a slot in the core 6, 15, the setting member 7 may also be slidable along the ball-point insert 2 by means of a guide portion 7'', as indicated in dotted lines in FIGURE 3. In this case, the core 15 may be of a tubular or bifurcated cross section to permit the guide portion 7'' to be movable along the ball-point insert.

Although in the embodiment of the invention as above described the flexible tape 5 is of an endless length, it is also possible to employ one of a limited length, greater than the length of transparent part 9. In order in this form to accommodate the excess length of the tape, a small roller is provided to which one end of the tape 5 is secured and upon which the tape may be wound may then be rotatably mounted in the end portion 4 of the implement, while the other end is fastened to the setting member 7. This roller is preferably provided with a small spring to rewind the tape automatically to its zero position.

As illustrated diagrammatically in FIGURE 4, the tape may also be wound on and off two small rollers 16 and 17 which are rotatably mounted within the casing 1 near its opposite ends, and at least one of these rollers may be provided with a small spring which tends to return the tape to its zero position or to maintain the tape tightly stretched between the rollers. The tape may then be moved to the desired position either by means of the setting knob 7' or one of the rollers, for example the roller 17, may be provided with a small knob, not shown, on the outside of the casing which may be turned to wind the tape thereon from the other roller against the action of the springs on both rollers or at least against the action of a rewinding spring 18 on the roller 16. This embodiment of the invention permits the tape to be made of a considerable length so that a longer scale may be marked thereon.

Of course, instead of providing the writing implement with slide rule scales, it is also possible to apply thereon any other kinds of scales, tables, advertising texts, or the like. Also, two or more separate tapes may be installed in the writing implement in place of the single tape as shown. Furthermore, for increasing the length of the scales or the size of the graduations thereof, it is also possible to extend the tape as well as the fixed scales spirally around the central guide body and to provide the casing 1 with the spiral slots for the setting member 7 and for the window 9.

Although my invention has been illustrated and described with reference to the preferred embodiments thereof, I wish to have it understood that it is in no way limited to the details of such embodiments, but is capable of numerous modifications within the scope of the appended claims.

Having thus fully disclosed by invention, what I claim is:

1. A writing implement combined with a slide rule comprising an elongated casing of substantially circular cross-section containing a ball point pen extending from end to end thereof for writing, a part of said casing of a certain width and of substantial length being transparent, a flexible tape, means mounting said tape for sliding movement longitudinally in said casing, in a path parallel to, and located to one side of, the longitudinal axis of said pen, said tape having scales thereon visible through said transparent part, the length of said tape being substantially greater than the length of said transparent part, means to accommodate the excess length of the tape, means accessible from the outside of said casing for moving said tape longitudinally within and relative to said casing and fixed scales immovable relative to said casing and visible from the outside thereof and associated with said scales on said tape, said pen being offset from the central longitudinal axis of the implement, said window being curved substantially about the longitudinal axis of the implement, said implement having means interiorly of the window for holding the tape beneath the window in convexly curved condition substantially similar to the curvature of the window.

2. In a writing implement as claimed in claim 1, said tape having two parallel parts extending longitudinally of the implement, and a member separating said parts having a stationary rounded end portion around which the portion of the tape between said parallel parts slides.

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