(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 030 137**
A1

(12) # EUROPEAN PATENT APPLICATION

(21) Application number: **80304278.7**

(51) Int. Cl.³: **B 43 K 29/08**

(22) Date of filing: **28.11.80**

(30) Priority: **30.11.79 JP 155021/79**

(43) Date of publication of application:
10.06.81 Bulletin 81/23

(84) Designated Contracting States:
CH DE FR GB IT LI

(71) Applicant: **YORKER RESEARCH CORPORATION**
3-47-8, Yushima Bunkyo-ku
Tokyo(JP)

(71) Applicant: **Lin, Oscar A.**
3-47-8, Yushima Bunkyo-ku
Tokyo(JP)

(72) Inventor: **Lin, A. Oscar**
3-47-8, Yushima Bunkyo-ku
Tokyo(JP)

(74) Representative: **Squibbs, Robert Francis et al,**
M. J. Stephens & Co. Royal Building 11 St. Andrew's Cross
Plymouth, PL1 2DS(GB)

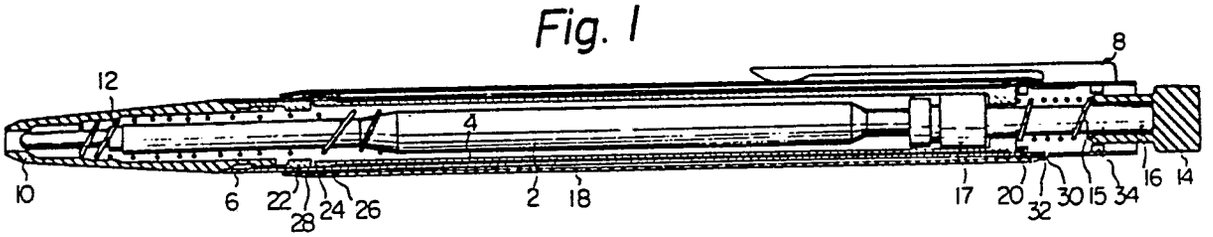
(54) **A writing instrument incorporating a world time indicator.**

(57) A writing instrument is provided which has an incorporated world time indicator. The indicator comprises an inner cylinder (4) on which surface is provided a table of standard times of important cities of the world, and an outer cylinder (6) which coaxially surrounds the inner cylinder (4) and is rotatable relative thereto. The outer cylinder (6) has a series of view windows through which can be seen at a glance the corresponding standard times of different cities as marked on the inner cylinder (4). In one embodiment, the outer cylinder is constituted by the body (6) of the writing instrument, the latter being provided with an actuator which serves both to project the writing core or ink cartridge (2) out of the body (6) and to rotate the inner cylinder (4) within the body (6).

EP 0 030 137 A1

./...

Fig. 1



A WRITING INSTRUMENT INCORPORATING A WORLD TIME INDICATOR

This invention is concerned with a writing instrument equipped with a world time indicator.

In modern society, international communications have become common place, and people often need to know the exact time in other cities of the world. As is widely known, there exist hard-to-remember time differences among cities in different countries, and people face difficulties in trying to know the correct time of the cities in question.

Hitherto, a number of electronic wrist watches equipped with world time indication means have been developed.

However, most of them are troublesome because they require a complex operation in order to find out the time in other cities. Furthermore, they are relatively expensive.

It is an object of this invention to provide a world time indicator which is easy to handle, compact in size, and may be produced at a reduced cost. It is another object of the present invention to provide a world time indicator which is readily available anytime a need arises to know the time in other time zones of the world.

According to the invention, these objects are achieved by the provision of a world time indicator incorporated in a writing instrument wherein a world time table is arranged on the peripheral surface of an inner cylinder mounted rotatably within the writing instrument and the outer body of the instrument has view windows serving to display at a glance the standard time of the time zones concerned.

This invention is primarily based on the following two findings. In the first place, areas of the world have their own standard times based on longitude totaling 24 different standard times. The standard time difference is

expressed in hours, "minutes" and "seconds" are mostly uniform all over the world. Therefore, the number of minutes and seconds can be determined by the time of the place where one is and only information on the "hour" is necessary in order to know the exact time in another area of the world.

In the second place, a writing instrument such as a ball point pen, propelling pencil and fountain pen are commodities which are normally carried by people in pockets, or handbags or are on a desk for daily use, and are readily available at relatively low prices. This invention, based on the above-mentioned findings, combines a world time indicator with a writing instrument. Since the outer body of the writing instrument can be used as part of the indicator arrangement and, in addition, the internal space of the instrument may be effectively utilized to accomodate other parts of the indicator, a particularly compact design can be acheived. Further, a writing instrument according to the invention has multiple functions in that it serves as a writing means, on the one hand, and a world time indicator, on the other hand. Thus, an additional utility is imparted. Moreover, such an indicatorgives an attractive appearance to the writing instrument which could not be enjoyed in an ordinary writing instruments. Preferably, the actuating member, such as a push button is efficiently utilized also as an actuator for the world time indicator.

The present invention will now be described in more detail with reference to the embodiments thereof illustrated in the accompanying drawings, in which:

Fig. 1 is a cross-sectional view of a ball point pen embodying the invention;

Fig. 2 is a perspective view, part cut-away, of the ball point pen shown in Fig. 1;

Fig. 3 is a developed view of a world time table to be printed on the inner tube shown in Fig. 2;

Fig. 4 is a view, similar to Fig. 2, of the ball

point pen, but showing the pen as rotated through a certain angle;

Fig. 5 is a cross-sectional view of another embodiment of the invention;

Fig. 6 is a developed view of another form of a world time table; and,

Fig. 7 is a cross-sectional view of still another embodiment of the ball point pen according to this invention.

Fig. 1 shows an example of applying the invention to a ball point pen.

An elongate core or ink cartridge with a ball point 2 is housed in a rotatable inner tube 4 which has a cylindrical cavity therethrough. The inner tube 4 is received within a co-axial outer tube 6. Near the top end of the outer tube 6 is provided a clip 8 for attaching the ball--point pen in position to a pocket of a coat. At the other end of the outer tube 6, there is mounted a tapered, hollow member 10.

The core or ink cartridge 2 is resiliently held inside the main body of the ball-point pen which comprises the inner tube 4, the outer tube 6, and the tapered member 10, by means of a compression coil spring 12 bearing against an inside wall of the tapered member 10. A push button 14 is provided at the top end of the main body of the ball-point pen. The push button 14 is permanently subjected to a biassing force towards the outside of the main body of the ball-point pen from a compression coil spring 15 which comes in contact with both the lower edge of the push button 14 and the top end of the inner tube 4. The base part 17 of an actuator 16 accommodating the head of the core or ink cartridge 2 is engaged with the inner tube 4 by means of a spline coupling (not shown) in such a manner that these two parts slide relative to each other upon axial movement of the actuator but rotate together by interlocking with each other when the actuator is turned in the direction of its circumference.

The push button 14 has two different functions. In

the first place, it is used to rotate the inner tube 4 for time indication. The user holds the push botton in his fingers and rotates it in either direction thereby to rotate the actuator 16, fixed to the push button 14, conjointly through a desired angle so that the inner tube 4 which is coupled with the actuator 16 by a spline is in turn rotated in a desired direction. Another function of the push button is to propel the ink cartridge or core 2 out of the tapered portion of the ball-point pen, when the ball-point pen is to be used as a writing instrument. When the push button 14 is pressed into the body of the ball--point pen by the user's finger, the pointed end of the core 2 is pushed out of the tapered member of the ball-point pen. The core 2 is held in its projected position by a proper stopping mechanism accommodated in the base part 17. In this way, this ball-point pen can perform its original function as a writing instrument.

Preferably, an outer shell or sheath 18 is provided for protection of the main body of the ball-point pen, and is designed to rotate through a fixed angle around the outer tube 6.

Rings 20 and 22, located respectively at the upper and lower ends of the inner tube 4, are for keeping the inner tube 4 at a fixed position. A ring 24 secured to the outer tube 6 and rings 26 and 28 secured to the shell 18 are for lateral positioning of the outer shell 18. Preferably, the outer tube 6 has adjacent to the upper end thereof a slot 30 which extends circumferentially through a certain angle and which engages a projecting tongue 32 formed at the upper end of the protection shell 18. The slot 30 cooperates with the associated tongue 32 thereby guiding the rotation of the outer shell 18 and limiting the rotational angle thereof.

A ring 34 is provided for stabilizing the lengthwise movement of the push button 14.

Referring to Fig. 2, the world time indicator will now be described. The construction and operation of the indicator are as follows.

Fig. 2 is a perspective view, part cut-away, of the writing instrument of Figure 1, showing the inner tube 4, outer tube 6 and protection shell 18. A plurality of rows of figures 42 are printed on the outer circumference of the inner tube 4. As shown in Fig. 3, which is a developed view of the inner tube 4, these rows of figures are arranged in such a manner as to form, when developed, a table of standard times of selected cities or time zones of the world. Each row of figures 42 consists of twenty four figures corresponding to every hour of the day, arranged in order around the circumference.

Each vertical row of figures 42 is for indicating the standard time in a respective one of a number of selected cities of importance throughout the world. The vertical rows of figures 42 are arranged in order across the table according to the time differences between the selected cities. Those figures which are horizontally aligned in the table of Figure 3, that is, in the lengthwise direction of the inner tube 4, indicate the corresponding times in the selected cities at a chosen moment. Therefore, the difference of the positions of the same figures in different rows of the figures 42 corresponds to the difference of standard time among those cities.

The outer tube 6 which covers the inner tube 4 has two series of openings or windows 44 of which only the series of openings 44 is visible in Fig. 2. The openings 44 are located so as to correspond to the positions of the rows of figures 42, thereby allowing at-a-glance reading of selected figures from the outside. The openings 44 are aligned along the lengthwise direction of the outer tube 6. Adjacent to each opening 44, the outer tube bears one or more city names, such as TOKYO, NEW YORK, etc., on the surface thereof, the rows of figures in the table corresponding to the local standard time of those cities.

With the foregoing arrangement, the figures in respective rows 42 that appear simultaneously through the longitudinally aligned openings 44 will indicate the local standard time of the cities at a specific time.

Operation of the time indicating arrangement aforementioned is as follows.

Assume that a user wishes to know what time it is in New York when it is 9:35 in Tokyo.

The user holds the tapered portion 10 of the outer tube 6 with the fingers of his left hand, and rotates the push button 14 in either direction by using the fingers of his right hand, until the figure "9" in the rows of the figures 42 appears in the opening 44 where the city name "TOKYO" is attached, as shown in Figure 2. When the figure "9" is obtained for the city of "TOKYO", the figures appearing in other windows 44 show the corresponding "hour" in respective cities 46 at the time when the Tokyo time is nine o'clock. For example, the figure appearing through the opening 44 for "NEW YORK" will indicate the "hour" in New York. Thus, seeing the opening 44 for "NEW YORK", it is possible to know that it is 19 in New York when it is nine in Tokyo. Because "minutes" and "seconds" are mostly uniform throughout different cities in the world, the user can read the "minutes" and "seconds" from his own watch to obtain the correct "hour", "minutes", and "seconds" in New York.

Assuming that the user's watch reads 35 minutes and 47 second, the current time in New York is 19:35 and 47 seconds, that means 35 minutes and 47 seconds past seven in the evening.

As described above, standard times of the different areas in the world can be obtained. As there is provided an international date line 48 at a suitable position on the inner tube 4, the user can recognize the necessity for putting the date forward or backward by one day, according to this date line 48. Furthermore, GMT (Greenwich Mean Time) 50 is indicated at a proper position of the inner tube 4 (Figure 4). A special mark 51 is attached to the city names of the countries such as Singapore where the standard time is advanced by a half hour, so that a correct local time can be obtained (Figure 4).

The protective shell or sheath 18 is provided with a larger opening 52 for exposing the figures in the rows 42 on the inner tube 4 as well as the city names 46 marked near the openings 44 of the outer tube 6. The opening 52 is set to reveal the figures and city names 46 at an operative position of the time indicator, as shown in Figure 2. In its rest position, the protection shell 18 can be turned by holding the protection shell 18 with the fingers of the right hand and holding the outer tube 6 with the fingers of the left hand and by rotating the outer tube 6 through an angle determined by the length of the slot 30 until the figures and the city names 46 are covered for protection.

Fig. 4 is a perspective view,part cut-away,of the outer tube shown in Fig. 2 but rotated through an angle, say 75°. As seen in Fig. 4, another series of openings 54 is formed on the outer tube 6, spaced from the series of openings 44 shown in Fig. 2 and corresponding to the positions of each row of figures 42. City names 56 are also provided near the openings 54.

In Fig. 4, the openings 54 are so positioned that the times indicated therethrough are 5 hours behind those shown in the openings 44. Therefore, the city names indicated near the openings 54 are selected so that their local standard time are 5 hours behind the standard times of the cities indicated in the corresponding openings 44.

Thus, with the two series of openings 44 and 54, provided respectively along the lengthwise direction of the outer tube 6, it is possible by a single operation to indicate the time in twice as many different areas.

The openings are not limited to two series. For simpler construction, there may be only one. Additional series of openings will enable indication of time in a larger number of cities where standard times are different. In the embodiment shown in Fig. 2 and 4, there are 14 openings indicating the time of 14 different areas. However, the number of openings is not limited to 14. Furthermore, the

number of rows of the figures is not limited to seven; larger or smaller number of rows are also possible.

Although in the foregoing description the invention is described with reference to the use of the indicator in a ball-point pen, the invention can also be applied to other writing instruments such as a propelling pencil or fountain pen. Moreover, while the above example is of a push button type ball-point pen wherein the core is propelled by use of a push button, this invention can be adapted to a writing instrument of the type which has a cap 62 serving to protect the inner tube 4 as shown in Fig. 5.

Fig. 6 shows another form of the world time table that is provided on the circumferential surface of the inner tube. In this embodiment, the table comprises seven vertical rows and twelve horizontal lines. Each vertical row is subdivided into two columns of sign groups each consisting of a code ("A" for A.M. and "P" for P.M.) and an hour number from 1 to 12 (the exception to this being the sign groups for A12 and P12 which are replaced by the designations "NOON" and "MID" respectively). The two columns of the same vertical row are spaced from one another in such a manner that any pair of horizontally aligned sign groups from the two columns can be made to appear simultaneously in one window of the outer tube. The two sign groups of each pair represent two adjacent hours of the day while adjacent sign groups in a column represent hours separated by a two-hour interval. Since there are only twelve horizontal lines, this embodiment is particularly suitable for a writing instrument having a smaller diameter.

Fig. 7 shows another embodiment of this invention, similar to that shown in Fig. 1, wherein the protection shell 18 is held in position by stop rings 72 and 74 fixed to the outer tube at the upper and lower ends of the outer shell 18.

CLAIMS

1. A writing instrument characterised in that it incorporates a world time indicator comprising a first cylindrical element (14) coaxially surrounded by and rotatable relative to a second hollow cylindrical element (6), the outer cylindrical surface of the first element (4) being provided with a plurality of first indications (42) so arranged as to form, when developed, a table of standard times at different locations throughout the world, and the second element (6) being formed with at least one series of spaced apertures (44) extending in the axial direction of the element, said second element (6) having adjacent to said apertures (44) a plurality of second indications (46) representing said different locations throughout the world, the first and second elements (4, 6) being so arranged that the writing instrument can be manually operated to cause relative rotation of said elements (4, 6) whereby any desired axially extending line of first indications (42) can be aligned with said apertures (44) to thereby display the standard time at said different locations for a given time at one said location.

2. A writing instrument characterised in that it incorporates a world time indicator comprising a first cylindrical element (14) coaxially surrounded by and rotatable relative to a second hollow cylindrical element (6), one said element being constituted by the body (6) of the writing instrument, the outer cylindrical surface of the first element (4) being provided with a plurality of first indications (42) so arranged as to form, when developed, a table of standard times at different locations throughout the world, and the second element (6) being formed with at least one series of spaced apertures (44) aligned along the axial direction of the element, said second element (6) having adjacent to said apertures (44) a plurality of second indications (46) representing said different locations throughout the world, the first and

second elements (4, 6) being so arranged that the writing instrument can be manually operated to cause relative rotation of said elements (4, 6) whereby any desired axially extending line of first indications (4) can be aligned with said apertures (44) to thereby display the standard time at said different locations for a given time at one said location.

3. A writing instrument according to Claim 2, wherein the said second cylindrical element is constituted by the instrument body (6) and the first cylindrical element is constituted by an inner tube (14) rotatably mounted within the body (6), the body (6) being formed with a tapered end portion (10) and the writing instrument further including a core member (2) which extends through the inner tube (4) and is provided with a writing point, and actuator means (16) connected to said core member (2) and said inner tube (4) for propelling the core (2) so as to project its writing point outwards from the tapered end portion (10) of the body (6) and for rotating said inner tube (4) relative to the body (6) to operate the world time indicator.

4. A writing instrument according to Claim 3, further comprising a protective sleeve (18) mounted on said instrument body (6) for rotation through an angle and having an elongate window through which said apertures (44) can be exposed.

5. A writing instrument according to Claim 2, wherein the body (6) of the instrument is provided with a writing point at one end and constitutes said first cylindrical element, said second cylindrical element being constituted by a detachable clipped cap (62) mounted rotatably on said body (6) and having at least one series of said axially aligned apertures (44).

6. A writing instrument according to any one of Claims 2 to 5, wherein the circumferentially extending row (42) in said table indicates in sequence the hours of a day for a said location while the longitudinally extending

row in said table indicates the standard times of different locations at a given time.

7. A writing instrument according to any one of Claims 2 to 5, wherein each of the circumferentially extending rows (42) is subdivided into two columns each comprising twelve indications differentiated by two hour intervals.

Fig. 1

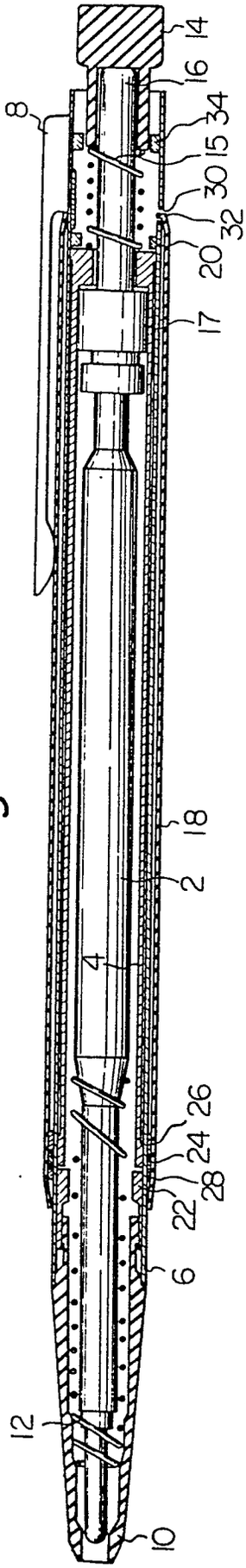

14
16
8
34
15
30
32
20
17
18
2
4
26
24
28
22
6
12
10

Fig. 2

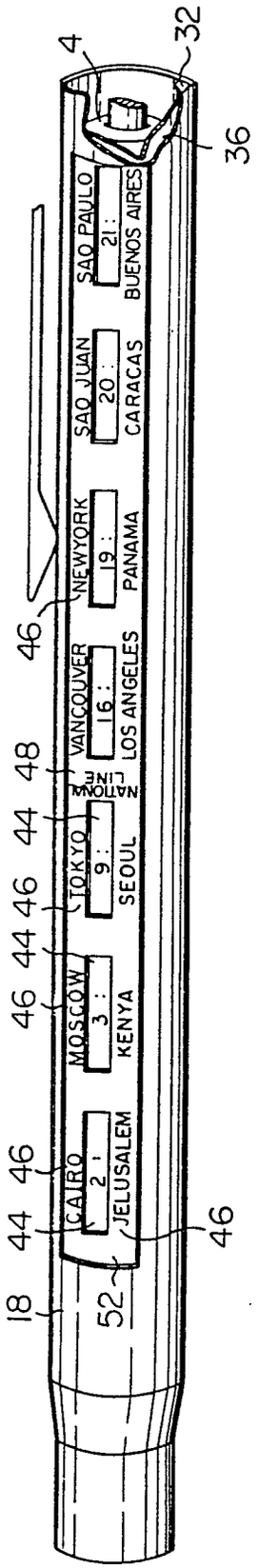

4
32
36
SAO PAULO
21 :
BUENOS AIRES
SAO JUAN
20 :
CARACAS
NEWYORK
19 :
PANAMA
VANCOUVER
16 :
LOS ANGELES
TOKYO
9 :
SEOUL
MOSCOW
3 :
KENYA
CAIRO
2 :
JELUSALEM
NATIONAL LINE
46
48
44
46
44
46
46
44
18
52

Fig. 3

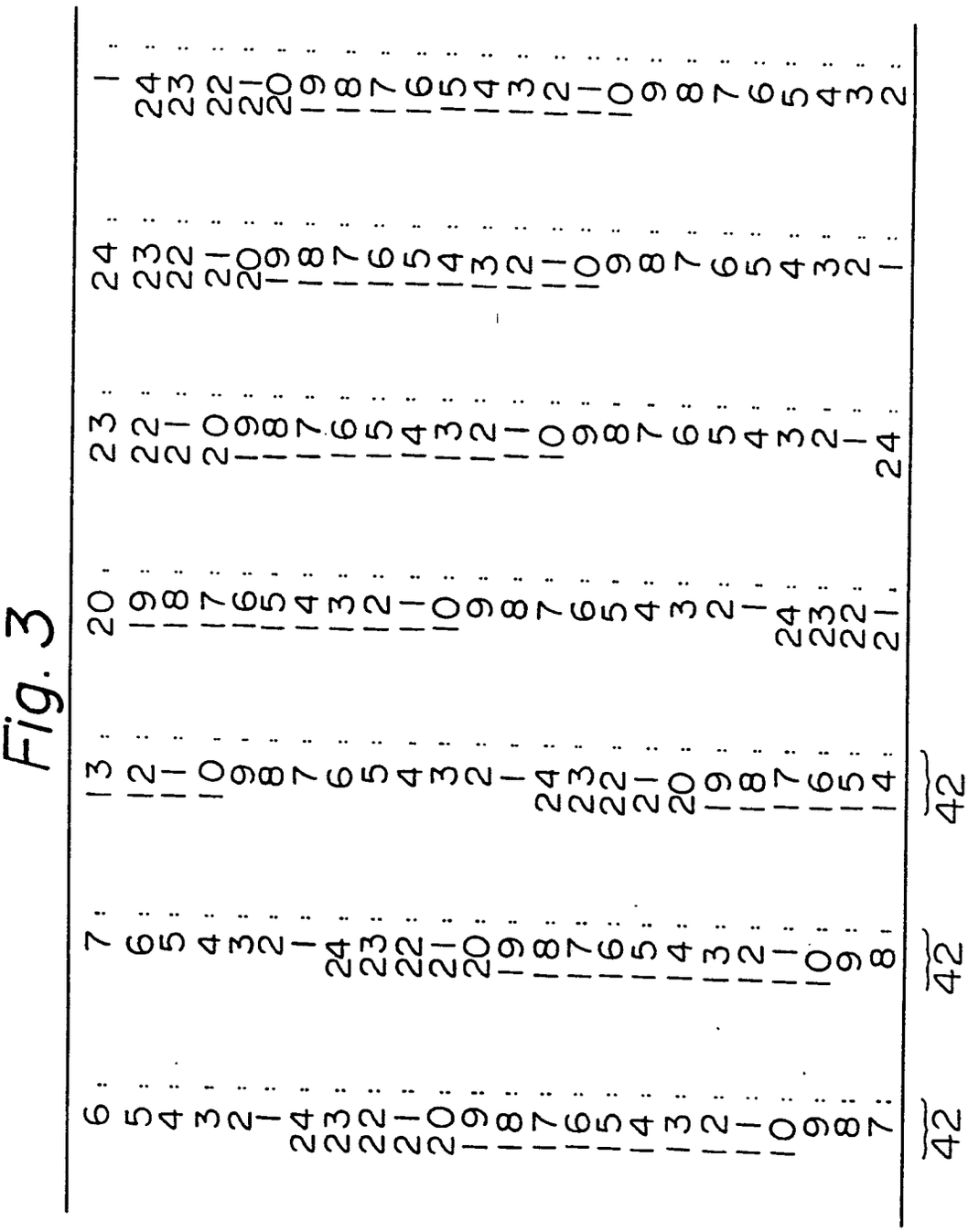


Fig. 4

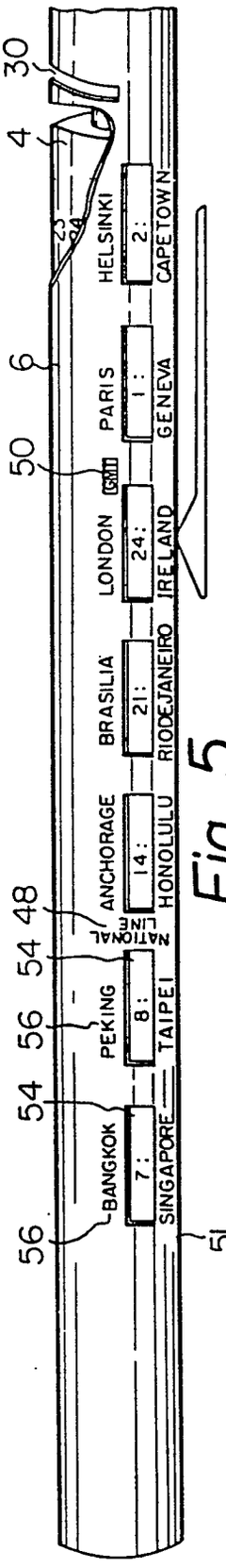


Fig. 5

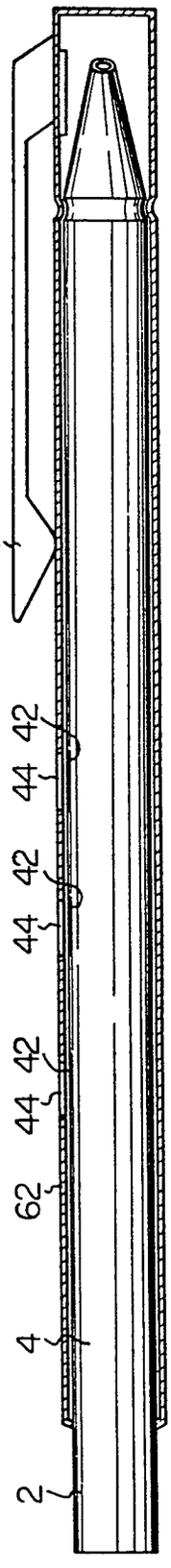


Fig. 7

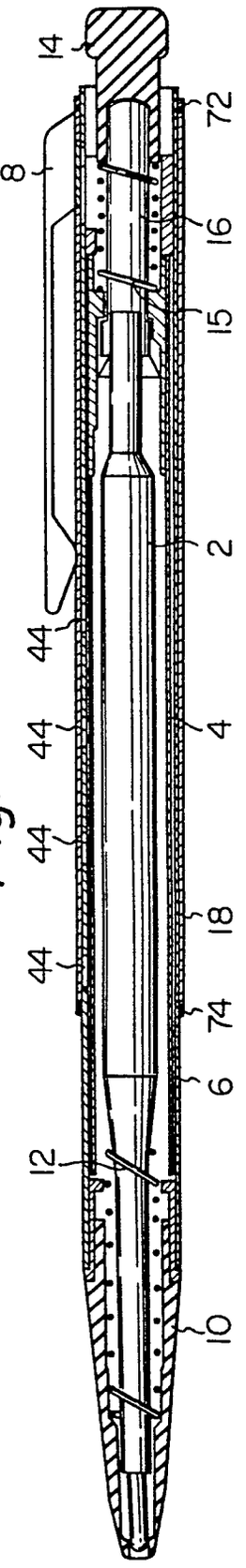


Fig. 6

A5	A6	A6	A7	MID	A1	P7	P8	P10	P11	P11	MID	MID	A1
A3	A4	A4	A5	A10	A11	P5	P6	P8	P9	P9	P10	P10	P11
A1	A2	A2	A3	A8	A9	P3	P4	P6	P7	P7	P8	P8	P9
P11	MID	MID	A1	A6	A7	P1	P2	P4	P5	P5	P6	P6	P7
P9	P10	P10	P11	A4	A5	A11	NOON	P2	P3	P3	P4	P4	P5
P7	P8	P8	P9	A2	A3	A9	A10	NOON	P1	P1	P2	P2	P3
P5	P6	P6	P7	NOON	A1	A7	A8	A10	A11	A11	NOON	NOON	P1
P3	P4	P4	P5	P10	P11	A5	A6	A8	A9	A9	A10	A10	A11
P1	P2	P2	P3	P8	P9	A3	A4	A6	A7	A7	A8	A8	A9
A11	NOON	NOON	P1	P6	P7	A1	A2	A4	A5	A5	A6	A6	A7
A9	A10	A10	A11	P4	P5	P11	MID	A2	A3	A3	A4	A4	A5
A7	A8	A8	A9	P2	P3	P9	P10	MID	A11	A1	A2	A2	A3

European Patent Office

EUROPEAN SEARCH REPORT

Application number
EP 80 30 4276

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl.³)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
	CH - A - 347 098 (BRUNNER) * Page 1, lines 14-36 * --	1,3	B 43 K 29/08
A	US - A - 2 777 636 (WEISER) * Column 1, line 63 - column 2, line 24 * --	1,2	
A	US - A - 2 158 431 (SANDERS) * Column 1, line 38 - column 2, line 9 * --	1,2,4,5	TECHNICAL FIELDS SEARCHED (Int. Cl.³)
A	US - A - 2 262 818 (REESE) ----	1,2	B 43 K 29/00 G 04 B 19/00 47/00

CATEGORY OF CITED DOCUMENTS

X: particularly relevant
A: technological background
O: non-written disclosure
P: intermediate document
T: theory or principle underlying the invention
E: conflicting application
D: document cited in the application
L: citation for other reasons

&: member of the same patent family, corresponding document

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	05-03-1981	LAMMINEUR

EPO Form 1503.1 06.78