

Nov. 9, 1948.

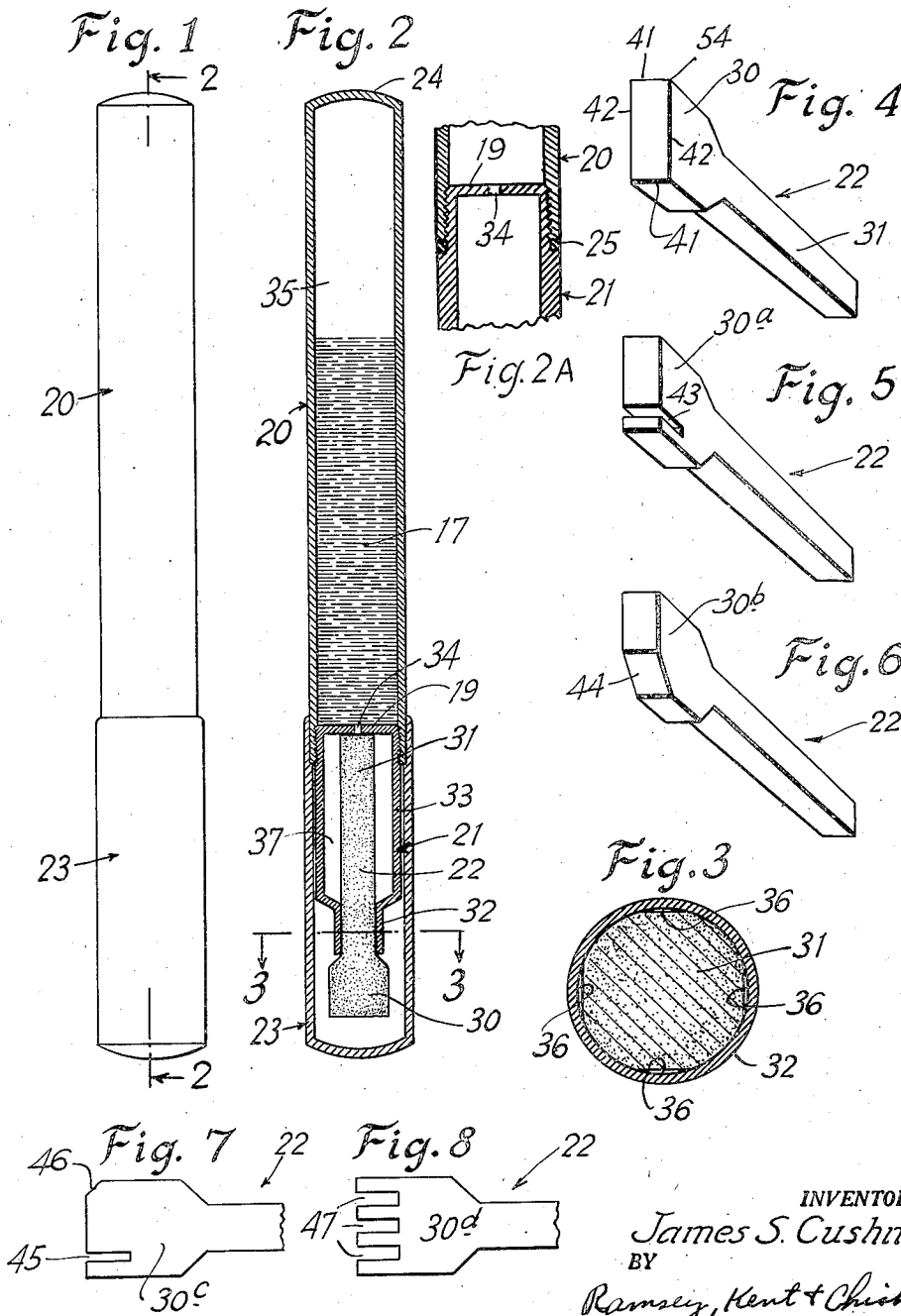
J. S. CUSHMAN

2,453,201

MARKING DEVICE

Filed July 14, 1944

2. Sheets-Sheet 1



INVENTOR.
James S. Cushman
BY
Ramsey, Kent & Chisholm
ATTORNEYS

Nov. 9, 1948.

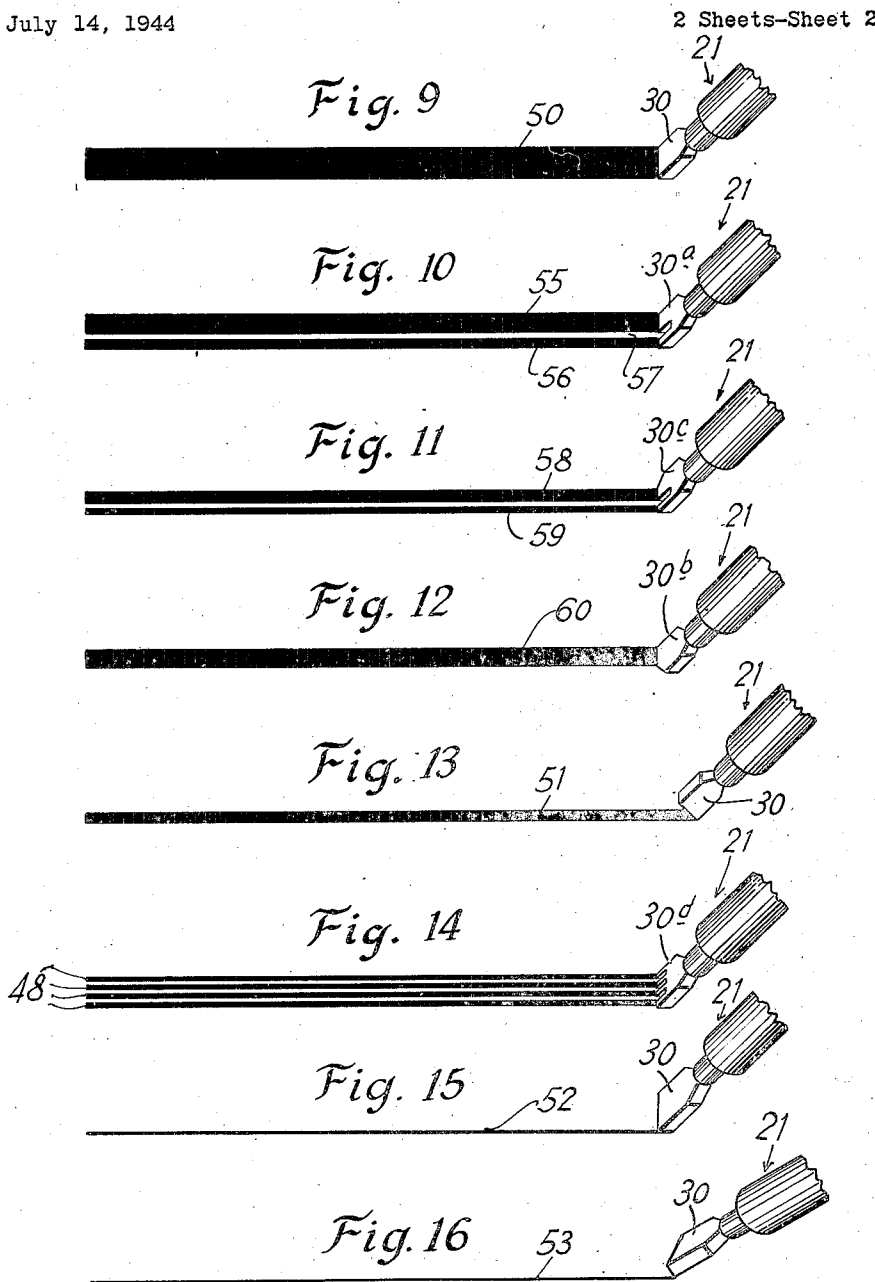
J. S. CUSHMAN

2,453,201

MARKING DEVICE

Filed July 14, 1944

2 Sheets-Sheet 2



INVENTOR.

James S. Cushman

BY

Ramsey, Kent & Chisholm

ATTORNEYS

UNITED STATES PATENT OFFICE

2,453,201

MARKING DEVICE

James S. Cushman, New York, N. Y., assignor to
Cushman & Denison Manufacturing Company,
Inc., New York, N. Y., a corporation of New York

Application July 14, 1944, Serial No. 544,941

6 Claims. (Cl. 15—134)

1

This invention relates to marking devices. Various features of the invention are particularly applicable to fountain type marking devices for marking with ink. For convenience I use the term "ink" to include any liquid useful for marking. A device embodying my invention may be used for marking the surface of any article which will receive and retain the ink, and among such uses are marking shipping boxes and cartons, making signs and notices, etc.

Heretofore marking devices have been made which are in the general form of a fountain pen, and which have employed highly volatile quick-drying inks that are applied with a wick-like element. Such inks are usually of very low viscosity, and difficulty has been experienced in so regulating the flow of the ink as to keep the nib properly supplied but without flooding. Additionally, such marking devices of the prior art have not provided for the making of a desirable number of different widths of lines, and the nibs used have not been desirably smooth acting, and have not possessed a desirably high degree of firmness and reliability.

A general object of the present invention is to improve marking devices of the type having a non-metallic nib and adapted for using quick-drying ink.

Another object of the invention is to provide for marking devices an improved non-metallic nib adapted for making marks or lines of different widths, and/or adapted for making a plurality of coordinated marks or lines simultaneously.

A further object of the invention is to provide simple and improved regulation of the flow of ink from the fountain or reservoir of the marking device to the marking portion of the nib or the like.

Further objects, and objects relating to details and economies of construction and use will more definitely appear from the detailed description to follow.

In the claims, as well as in the description, parts are identified by specific names for convenience, but such nomenclature is intended to be as generic, in its application to analogous parts, as the prior art will permit. The best form in which I have contemplated applying my invention is illustrated in the accompanying drawings forming a part of this application in which:

Fig. 1 is an elevation of a marking device with the dust-cap in protective position. In this view the nib points downwardly, but it will be under-

2

stood that the device will ordinarily be carried with the nib pointing upwardly.

Fig. 2 is a longitudinal section taken in general on the line 2—2 of Fig. 1.

Fig. 2A is a detail view, in longitudinal section, showing the attachment of the front end structure to the barrel.

Fig. 3 is a detail section on the line 3—3 of Fig. 2.

Figs. 4, 5, and 6 are perspective views showing three specific forms of nibs for incorporation in the marking device shown in Figs. 1, 2 and 3.

Figs. 7 and 8 are fragmentary plan views showing additional forms of nibs which may be used in the structure shown in Figs. 1, 2 and 3.

Figs. 9, 10, 11, 12, 13, 14, 15 and 16 are more or less diagrammatic views illustrating the making of various lines, and combinations of lines, with various specific forms of nibs.

Reference will first be had to Figs. 1, 2, and 3. The marking device includes a barrel designated as a whole by 20; a front end structure designated as a whole by 21, a nib designated as a whole by 22, and a protective cap designated as

a whole by 23. One end of the barrel 20 is closed by an end wall 24, and the other end of the barrel receives the front end structure 21 which may be threaded into the barrel. As shown in Fig. 2A, a gasket 25 may be used to seal the front end 21 to the barrel 20, this gasket being compressed between the end of barrel 20 and an annular ledge on the front end structure 21. By unscrewing the front end 21, the barrel may be filled with ink 17, after which the front end is replaced.

The protective cap 23, when mounted on the front end of the marking device as shown in Figs. 1 and 2, acts not only as a dust-cap to protect the nib from dust, but also as a closure to prevent evaporation of the ink. The cap 23 may conveniently make a telescopic friction fit with the front end of the barrel 20, being readily removable for telescopic mounting on the other end of the barrel when the marking device is to be used. An alternative arrangement is to provide screw threaded engagement between the cap 23 and the front end of the barrel, with either telescopic or screw threaded engagement of the cap with the other end of the barrel.

The barrel 20, the front end 21, and the cap 23 may be made of any material, having sufficient strength and rigidity, that is sufficiently inert to the ink. For the quick-drying inks which I have employed, I have found aluminum satisfactory for these three parts, but other metals may be used; and non-metallic materials such

as hard rubber, "plastics," resin, etc., may also be used.

The nib is made of resilient material which is compressible and absorbent. I have found nibs cut from thick sheets of hard felt to be satisfactory. As shown in Figs. 2 and 4, the nib 22 has a front end portion or body 30 which is homogeneous with a square shank portion 31 of lesser cross-section area than that of body 30. The shank 31 is adapted to be forcibly telescoped through restricted tubular portion 32 of front end structure 21 and to extend throughout the length of enlarged tubular portion 33 of such front end structure. The front end element 21 has a terminal wall 19 provided with a small hole 34 leading to the ink reservoir 35 that is formed in barrel 20. The free end of nib shank 31 abuts against the end wall 19, covering the hole 34. The cross-sectional size of shank 31, in relation to the cross-sectional size of the restricted tubular portion 32 of the front end duct, is such that the corners of the shank are compressed when the shank is inserted into the duct. This places the corner portions of the shank in slightly impacted relationship with portion 32 of the duct, leaving between the corners of the shank longitudinal lines 36 of superficial contact between the shank and duct portion 32.

In use, the ink passes by gravity through hole 34 and suffuses by capillarity through the entire nib 22. To permit this action to continue, air must be allowed to replace the ink withdrawn from reservoir 35. This takes place by air passing along the lines 36 of superficial contact between the nib shank 31 and the duct portion 32, and thence along the shank 31 to the free end thereof. The contact between the free end of shank 31 and the wall 19 is preferably such as to prevent flooding of the ink into space 37, but this contact is not so tight as to prevent air working its way, as required, past the end of shank 31 and through hole 34 in the reservoir 35. The air present in space 37 is available for prompt influx into reservoir 35 to release ink with the rapidity required for making heavy marking strokes. This may result in temporary impoverishment of the air supply within the space 37 but such impoverishment is overcome within a short time by continued slow flow of outside air along flow lines 36 to the space 37.

The terminal marking portion of the nib 22 may have a variety of shapes such as shown in Figs. 4 through 8. In Fig. 4 the body 30 of the nib has a marking end in the form of a rectangle. This rectangle has ends 41, 41, and sides 42, 42. In Fig. 5 the body 30a is similar to that shown in Fig. 4 but the terminal marking portion is interrupted by a longitudinal notch 43. In Fig. 6 the body 30b has the form produced by chamfering at 44 a marking end such as shown in Fig. 4. In Fig. 7 the body 30c is notched at 45 and chamfered at 46. In Fig. 8 the body 30d is notched with a plurality of notches 47 (3 shown).

When the marking device is provided with a nib having the specific form shown in Fig. 4, it may be used for making marks or lines having a variety of widths, including widths such as shown in Figs. 9, 13, 15, and 16. Fig. 9 shows a wide line 50 being made with a side 42 of the rectangular marking end in contact with the surface to be marked. Fig. 13 shows a line 51 of medium width being made with an end 41 of the rectangular marking end in contact with the surface. Fig. 15 shows a relatively narrow line 52 being made with an end 41 of the rectangle

in contact with the surface, but in this case the nib is being moved in a direction parallel to the length of end 41 instead of transversely thereto as in Fig. 13. Fig. 16 shows a quite narrow line 53 being made with merely a corner such as 54 in contact with the surface.

Fig. 10 shows how a nib such as shown in Fig. 5 may be used to simultaneously draw a relatively wide line 55 and a relatively narrow line 56, the two lines being separated by a space of substantially constant width 57. As shown in Fig. 11, a nib such as that of Fig. 7 may be used to draw similarly related lines 58 and 59. In this case, the chamfering of the nib at 46 reduces the width of the wider of the two lines. This same nib may also be used to draw various other lines, including a single line of moderate width made by placing the chamfered portion 46 in contact with the surface to be marked.

Fig. 12 shows a single wide line 60 being drawn with a nib such as shown in Fig. 6. In this case the forwardmost face of the nib is placed in contact with the surface to be marked. A single line of lesser width may be drawn with the same nib by placing the chamfered face 44 in contact with the surface to be marked. Fig. 14 shows the drawing of a plurality of relatively narrow parallel lines 48 (four shown) with a nib such as shown in Fig. 8.

It is believed that the illustrations given as to specific forms of nibs and the widths and combinations of lines that may be drawn with them are sufficient to illustrate the multiplicity of widths and combinations of lines that may be drawn with a device of the present invention. No attempt has been made to illustrate all of the different lines that may be drawn with each individual nib, nor has any attempt been made to illustrate all of the specific forms of nibs contemplated by the present invention. While the drawing of straight lines has been shown in Figs. 9 through 16, it will be realized that the lines may be curved, discontinuous, etc. as is desirable in forming letters or numerals, drawing figures; maps, posters, etc.

Having described my invention, I claim:

1. A marking device, comprising: a reservoir for receiving a quantity of marking fluid and provided with an elongated cylindrical duct through which said fluid may be withdrawn, a nib element of hard felt through which the marking fluid suffuses by capillarity, said nib element having a terminal marking portion for movement in contact with the surface of an article to be marked and having a rectangular shank disposed in said duct and along which air passes to the reservoir as fluid is withdrawn therefrom, at least a portion of the length of the shank being a duct-engaging portion which has its corners in frictional, slightly-impacted relationship with said duct, thereby providing between the corners of the shank longitudinal lines of superficial contact between the shank and the duct and along which the air passes toward the reservoir.

2. A marking device, comprising: a reservoir for receiving a quantity of marking fluid and provided with an elongated duct through which said fluid may be withdrawn, a nib element of compressible absorbent material through which the marking fluid suffuses by capillarity, said nib element having a terminal marking portion for movement in contact with the surface of an article to be marked and having a shank disposed in said duct and along which air passes to the reservoir as fluid is withdrawn therefrom, at least

5

a portion of the length of the shank being a duct-engaging portion which is in frictional slightly-impacted relationship with said duct, said duct-engaging portion of the shank having a cross-sectional shape different from that of the engaged portion of the duct and providing thereby at least one longitudinal line of superficial contact between the shank and the duct and along which the air passes toward the reservoir.

3. A marking device, comprising: a reservoir for receiving a quantity of marking fluid and provided with an elongated cylindrical duct through which said fluid may be withdrawn, a nib element of resilient absorbent material through which the marking fluid suffuses by capillarity, said nib element having a terminal marking portion for movement in contact with the surface of an article to be marked and having a shank of polygonal cross section disposed in said duct and along which air passes to the reservoir as fluid is withdrawn therefrom, at least a portion of the length of the shank being a duct-engaging portion which is in frictional, slightly-impacted relationship with said duct and thereby providing longitudinal lines of superficial contact between the shank and the duct and along which the air passes toward the reservoir.

4. A marking device as in claim 2, in which the engaged portion of the duct is of reduced cross section, and the duct includes an enlarged air-space portion between its engaged portion and the reservoir.

6

5. A marking device as in claim 2, in which the engaged portion of the duct is of reduced cross section and is spaced from the reservoir, the bottom of the reservoir is provided with a perforation, the duct includes an enlarged air-space portion adjacent to the reservoir, the nib shank extends through the air-space portion, and the end of the shank lies against the bottom of the reservoir and covers the perforation therein.

6. A marking device as in claim 2, in which the engaged portion of the duct is of reduced cross section and is spaced from the reservoir, the duct includes an enlarged air-space portion adjacent to the reservoir, and the nib shank extends through the air-space portion, the bottom of the reservoir being adapted to feed fluid to the end portion of said nib shank.

JAMES S. CUSHMAN.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
938,846	Gunn	Nov. 2, 1909
1,297,675	Garvey	Mar. 18, 1919
1,542,333	Buehrer	June 16, 1925
1,968,062	Wood	July 31, 1934
2,097,496	Lunzer	Nov. 2, 1937
2,143,712	Rissman	Jan. 10, 1939