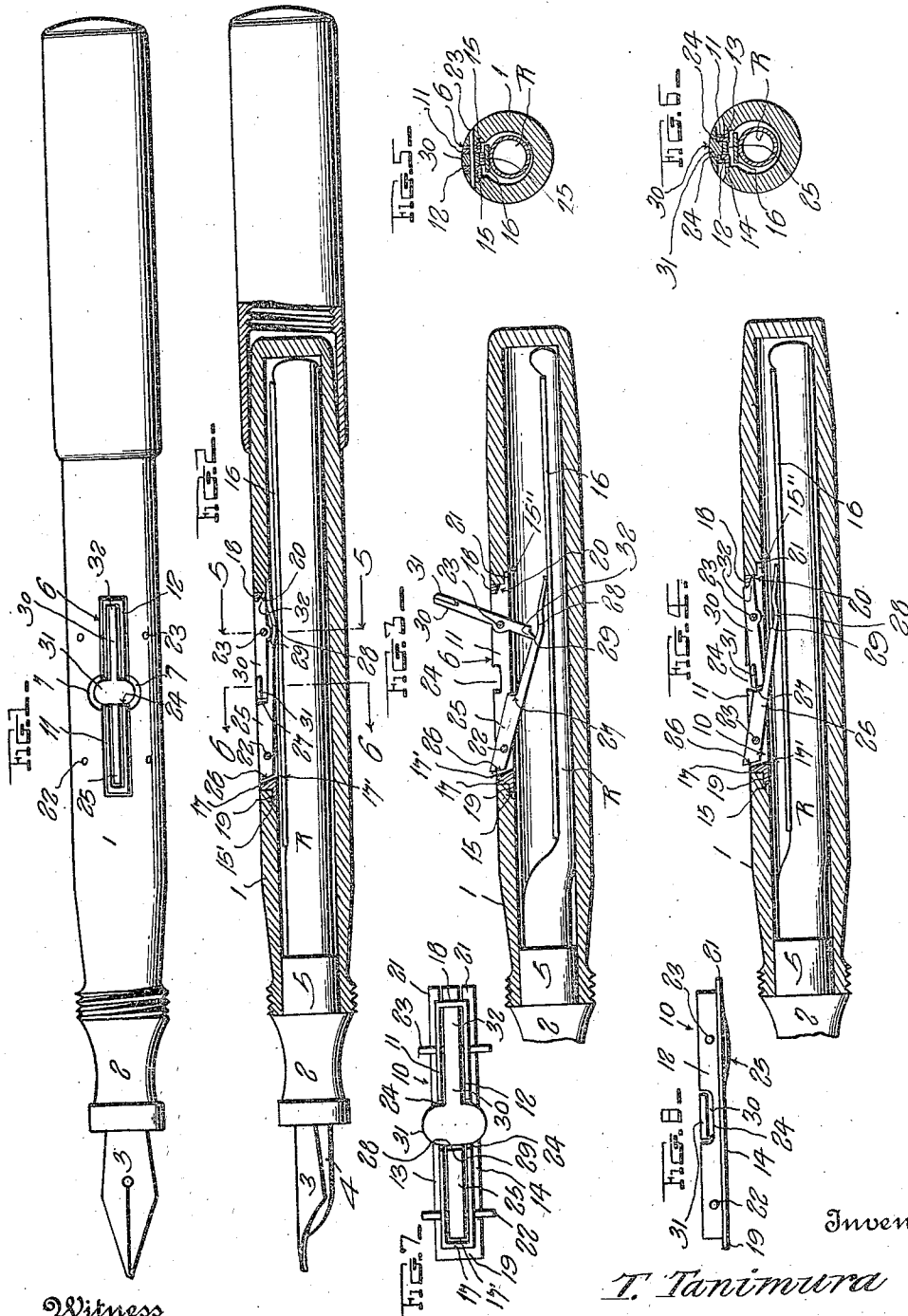


T. TANIMURA.
 FOUNTAIN PEN.
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1,267,288.



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FOUNTAIN-PEN.

1,267,288.

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To all whom it may concern:

Be it known that I, TAGIRO TANIMURA, a citizen of Japan, residing at Rock Springs, in the county of Sweetwater and State of Wyoming, have invented certain new and useful Improvements in Fountain-Pens; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to self-filling fountain pens and more particularly to that type which are equipped with compressible sacks of soft rubber adapted to store the ink and to fill themselves by suction after they have been suitably compressed.

The principal object of the invention is to provide simple and efficient means for uniformly compressing the ink sack throughout its length to effectively empty it of air when it is to be filled with ink.

Another object is to provide means for forcibly ejecting a limited amount of ink when the pen point is dry, thus starting the ink to flow.

Another object is to provide a device of this character having a lever so constructed and mounted that when one end thereof is lowered to its extreme limit, it will eject all the air from the ink reservoir and the other end when so lowered will eject a limited quantity of ink from said reservoir.

Another object is to provide a device of this character in which two levers of the first and third class are employed for cooperation to quickly expel the air from the reservoir with a minimum amount of exertion and in which the lever of the third class operates to hold the other lever normally in closed inoperative position.

This and other objects of the invention are accomplished by providing a frame in which the fulcrums of the levers are mounted and which with the connected parts is inserted as a unit in a longitudinal slot provided for its reception in the pen barrel.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in precise embodiment of the invention herein disclosed may be made

within the scope of what is claimed without departing from the spirit of the invention.

In the accompanying drawings:—

Figure 1 represents a top plan view of a fountain pen equipped with this attachment; 60

Fig. 2 is a longitudinal section thereof with the levers shown in closed position;

Fig. 3 is a similar view of the pen barrel with the levers shown in open operative position; 65

Fig. 4 is a similar view with the levers shown in the position for starting the flowing of the ink when the pen point is dry;

Fig. 5 is a transverse section taken on the line 5—5 of Fig. 2; 70

Fig. 6 is a similar view taken on the line 6—6 of Fig. 2; 75

Fig. 7 is an enlarged detail plan view of the attachment detached; and,

Fig. 8 is a side elevation thereof. 80

In the embodiment illustrated, the filler constituting the invention is shown applied to a fountain pen comprising a barrel 1 fitted at one end to a holder 2 carrying a point 3 and a feeding tube 4. A soft rubber ink sack or reservoir R extends through substantially the entire length of the bore of the barrel 1 and has its open end fitted to the inner end 5 of the holder 2 in the usual manner. 85

The barrel 1 is slotted longitudinally at 6, the slot having an enlarged finger space 7 intermediate of its ends.

The several elements of the attachment are united so as to be inserted as a single unit into the slot 6 of the pen barrel. This unit comprises a frame 10 having side bars 11 and 12 equipped at their lower edges with laterally projecting longitudinally extending flanges 13 and 14 which are adapted to fit in recesses 15 at the sides of the slot 6 on the inner face of the pen barrel so that when in assembled operative position, the inner face of the frame will be flush with the inner face of the pen barrel to avoid any projections for contact with the pressure bar 16 which latter is of usual construction and lies between the reservoir and the frame 10. 90 95 100

End bars 17 and 18 connect the opposite ends of the side bars 11 and 12 and a flange 19 projects laterally from the lower edge of the front end bar 17 to fit a recess 15' at the rear end of the slot 6 on the inner face of the pen barrel. The lower edge of the 110

rear end bar 18 is spaced inwardly from the bottoms of the side bar flanges forming a seat 20 for a purpose to be described.

The flanges 13 and 14 project at their rear ends beyond the cross bar 18 to form attaching fingers 21 which are inserted in recesses 15' at the rear end of the slot 6 on the inner face of the pen barrel.

This frame 10 is of a height or depth corresponding to the thickness of the side walls of the pen barrel so that when the frame is inserted in the slot 6 with its flanges disposed in the recesses 15, 15' and 15'', its inner and outer faces will be flush with the inner and outer faces of the pen barrel.

Pins 22 and 23 extend through the side bars 11 and 12 of the frame near the opposite ends thereof and enter the pen barrel on opposite sides of the slot 6 as shown clearly in Fig. 1. These pins perform the double function of anchoring means for the frame 10 and of fulcrums for two levers 25 and 30 soon to be described. The upper edges of the side bars 11 and 12 have registering recesses or notches 24 positioned to receive the head 31 of the lever 30 to provide for the positioning of the upper face of said lever flush with the upper face of the frame 10 and also to permit said head to be depressed into said recesses a predetermined distance controlled by the depth of the recesses which are greater than the thickness of the head for a purpose to be described.

The lever 30 which will be termed the operating lever is a lever of the first class and is fulcrumed on the pin 23, being of a length equal to substantially one-half of the length of the frame 10. This lever has a flat head 31 at its front end and a longitudinally projecting toe 32 at its rear end, said toe being designed to fit against the lower edge of the rear cross bar 18 between the flanges of the side bars 11 and 12, said cross bar serving as a stop to limit the closing movement of the lever, whereby its head 31 is housed in the recesses 24 with its lower inner face positioned so as to be spaced from the bottoms of the recesses 24 to provide for its being depressed into said recesses when desired to accomplish an object presently to be described.

The lever 25 which is a lever of the third class is fulcrumed at one end on the pin 22, its free end being designed to engage the pressure bar 16 which is the point of resistance of said lever 25. This lever is substantially the same length as the frame 10 less the thickness of the front end bar 17 and the front end of this lever is beveled as shown at 26 to fit a correspondingly beveled seat 17' on the inner face of said bar 17. This lever 25 has the rear portion of its outer face cut away to adapt the portion thereof which underlaps the lever 30 to fit within the frame 10 so that its lower face will be substantially flush with the inner or

lower faces of the side bar flanges 13 and 14. A shoulder 27 is formed at the inner end of the cut-out portion of said lever 25 and is adapted to engage the headed end of lever 30, the outer face of the lever 25 being said shoulder 27 and its front end being disposed flush with the outer face of the frame 10 and with that of the lever 30 when the parts are in closed inoperative position. (See Fig. 2). The combined thickness of the cut-away rear portion of the lever 25 and of the lever 30 which overlaps said cut-away portion corresponds to the depth of the frame 10 so that when in closed position, the outer faces of said levers and frame will be arranged flush with each other. The cut-away rear portion of the lever 25 has a recess 28 in its outer face between its ends with a right-angular shoulder 29 formed at the front end of said recess, the bottom of said recess being inclined rearwardly and outwardly from said shoulder to facilitate the engagement of the toe 32 of the lever 30 when the latter is swung outward to open operative position, as shown in Fig. 3. The free end of lever 25 fits snugly between the ends 21 of flanges 13 and 14 of the frame 10.

In the use of this attachment, the parts being in the position shown in Figs. 1 and 2, and it is desired to deflate the ink reservoir preparatory to filling said reservoir with ink, all that is necessary is to grasp the head 31 of the lever 30 between the tips of the thumb and forefinger and move said lever outwardly, causing its toe-carrying end to move inwardly against the underlying portion of the lever 25 whereby the toe of said lever 30 moves toward the fulcrum of lever 25 and forces said lever inwardly until said toe comes into engagement with the shoulder 29 at the end of the recess 28 of said lever 25, which operates to stop said lever 30 by means of which said levers are held in interlocking position, the lever 25 bearing against the pressure bar 16 and forcing it against the reservoir, thereby deflating it. This movement of the levers completely empties said reservoir and to fill it with ink, all that is necessary is to submerge the end of the filler tube 4 in ink and then swing the lever 30 back into closed position which will disengage its toe from the lever 25 and permit the latter to move into closed position under the action of the expanding reservoir. When the reservoir is filled, the pressure bar will be forced against the lever 25 and hold the same in closed position and this lever, bearing against the toe-carrying end of lever 30, operates to hold it in closed position against accidental opening. When the parts are in this position, the head 31 of lever 30 is disposed in the recesses 24 of the frame 10, (see Fig. 8), with its inner face spaced slightly from the bottoms of said recesses so that when it is desired to eject a small quan-

tity of ink from the reservoir, in order to start it to flowing when the pen point is dry, all that is necessary is to force said head inwardly thereby causing the lever 30 to bear against lever 25 and force it inwardly a distance sufficient to eject a small quantity of ink from the reservoir, the movement of said lever being controlled by the space between the inner face of head 31 and the bottoms of the recesses 24.

From the foregoing description, it will be seen that the lever 30 operates both as a deflating lever and as an ink starting lever and that the pins 22 and 23 perform the double function of attaching means for securing the frame to the pen barrel and of fulcrums for the levers 25 and 30.

While I have described the principle of operation of the invention, together with the device which I now consider to be the best embodiment thereof, I desire to have it understood that the device shown is merely illustrative and that such changes may be made as are within the scope of the claimed invention.

I claim:—

1. An ink sack deflating device for fountain pens comprising a presser bar, a member operable in two directions, and means associated with said bar and said member and being engaged by said member when the latter is operated in one direction to force said bar into complete sack deflating position, said means being also engaged by said member when the latter is operated in the other direction to force said bar into partial sack deflating position.

2. An ink sack deflating device for fountain pens comprising two levers, one being operable in two directions and when operated in one direction engaging the other lever to force the latter into complete sack deflating position and when operated in the other direction engaging said other lever to force the same into partial sack deflating position.

3. An ink sack deflating device for fountain pens comprising a lever fulcrumed at one end, another lever fulcrumed intermedi-

ate of its ends, the fulcrums of said levers being relatively fixed and in spaced relation, the last mentioned lever when closed overlapping the first mentioned lever and having both of its ends operable to depress the latter, and means for limiting the depression thereof by one of said ends.

4. An ink sack deflating device for fountain pens comprising an open rectangular frame having registering notches in the outer edges of the side bars thereof, a lever fulcrumed at one end in one end of said frame and extending longitudinally of the same, another lever fulcrumed intermediate of its ends at a point spaced inwardly from the other end of said frame, and when closed, overlapping the first mentioned lever, a head provided on one end of said lever and being disposed in said notches, said head forming a stop for limiting the movement of the last named lever when the latter is actuated in one direction, and coacting elements carried by said levers for limiting the opening movement of one relatively to the other when the last mentioned lever is actuated in the other direction.

5. In a fountain pen, the combination of a barrel having a slot therein and recesses communicating with said slot on the inner face of said barrel, a rectangular open frame disposed in said slot and having flanges extending laterally outwardly from the inner edges of the sides and ends thereof, said flanges being seated in said recesses, a pair of spaced pins extending transversely through said frame and having their ends anchored in the pen barrel, levers fulcrumed on said pins within said frame, one lever overlying the other, the overlying lever engaging the other when opened to force the other into working position.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

TAGIRO TANIMURA.

Witnesses:

S. P. SNYDER,
ROBT. D. MURPHY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."