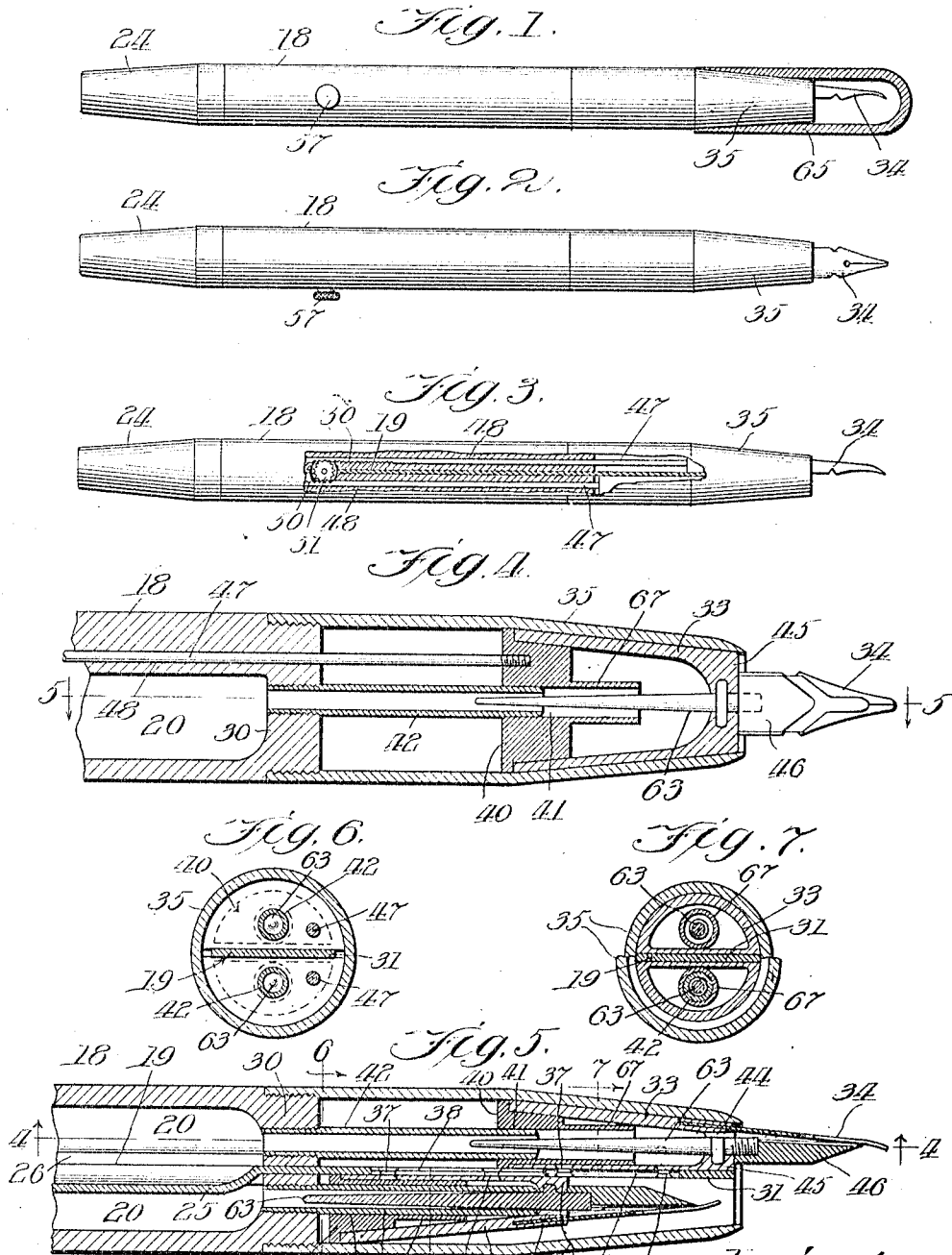


G. A. COOPER.
 DUPLEX FOUNTAIN PEN.
 APPLICATION FILED JUNE 27, 1910.

1,035,538.

Patented Aug. 13, 1912.
 2 SHEETS—SHEET 1.



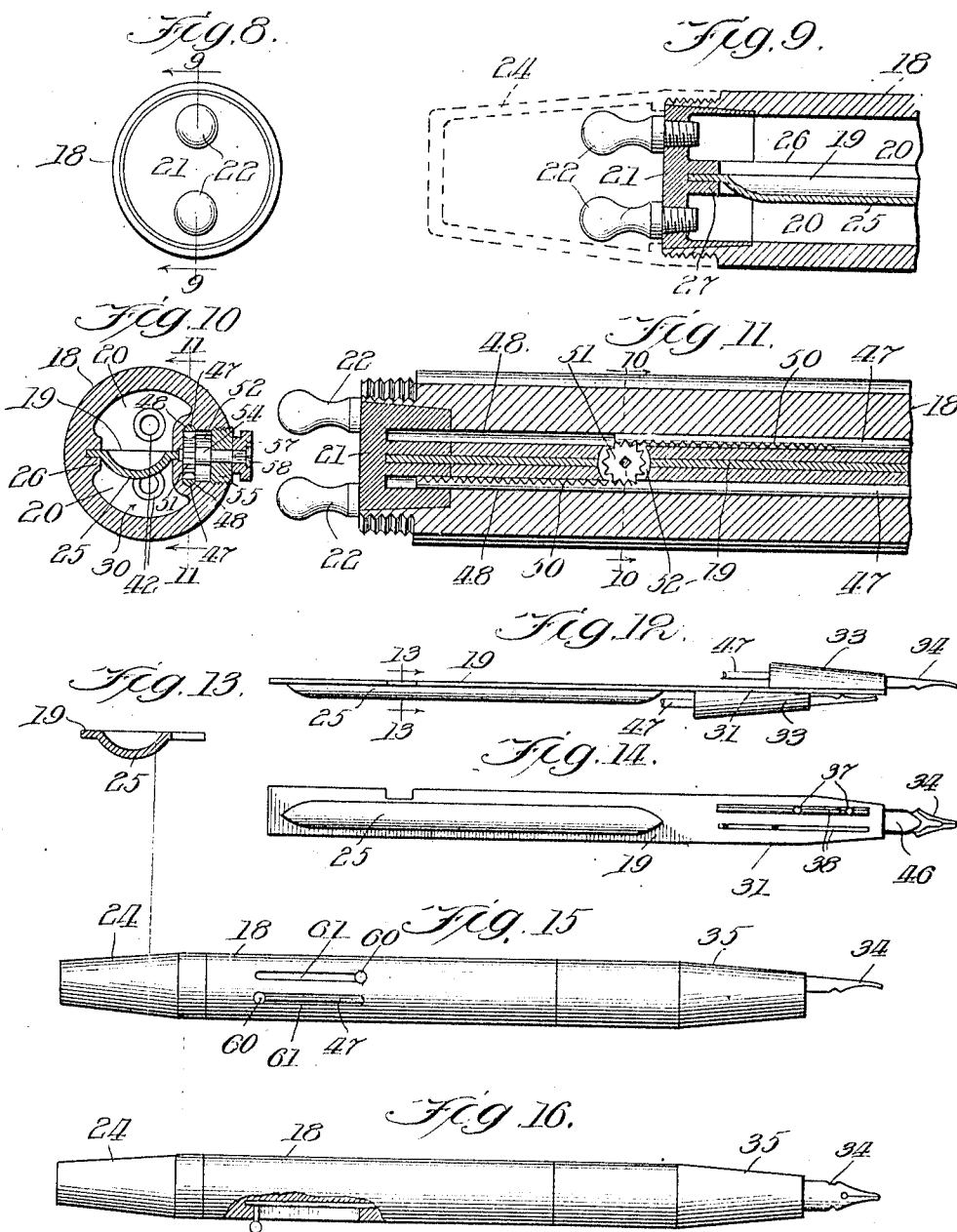
Witnesses: *Harry S. Gaither* *William Goldberger* *George A. Cooper*
William Goldberger *William Goldberger* *his atty*

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Witnesses:

Harry S. Gauthier
 William Goldberger.

Inventor:
 George A. Cooper

by William L. H. S. atty

UNITED STATES PATENT OFFICE.

GEORGE A. COOPER, OF OAK PARK, ILLINOIS.

DUPLEX FOUNTAIN-PEN.

1,035,538.

Specification of Letters Patent.

Patented Aug. 13, 1912.

Application filed June 27, 1910. Serial No. 548,958.

To all whom it may concern:

Be it known that I, GEORGE A. COOPER, a citizen of the United States, and a resident of Oak Park, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Duplex Fountain-Pens; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

This invention relates to a duplex fountain pen arranged with a plurality of ink reservoirs for inks of different color or characters and provided with a plurality of pen points each adapted to be separately supplied with ink from its reservoir.

The object of the invention is to provide a pen by which to write with inks of different colors or having other distinguishing characters, the pen points being mounted on a single hand piece or barrel, and having means whereby each pen point may be separately used for an ink of one color or character with the same facility as in a single pen.

A further object of the invention is to provide means for cutting off the flow of ink from each pen point when in its non-writing position and for opening the flow of ink to each pen point when it is in writing position.

A further object of the invention is to provide means for alternately moving the pen points into their writing and non-writing positions.

Other objects of the invention will appear from the subjoined description, and the invention consists in the matters herein-after set forth and more particularly pointed out in the appended claims.

In the drawings, Figure 1 is a side elevation of a pen embodying my invention, with the cap shown in section. Fig. 2 is a side elevation of the pen, turned ninety degrees from the position shown in Fig. 1. Fig. 3 is a view similar to Fig. 1, with parts broken away and other parts shown in section. Fig. 4 is an enlarged longitudinal section on line 4-4 of Fig. 5. Fig. 5 is a longitudinal section on the line 5-5 of Fig. 4. Fig. 6 is a transverse section on line 6-6 of Fig. 5. Fig. 7 is a transverse section on the indirect line 7-7 of Fig. 5. Fig. 8 is a view of the pen barrel with the end cap removed. Fig. 9 is a longitudinal section on

the line 9-9 of Fig. 8, showing the end cap in dotted lines. Fig. 10 is a transverse section on the line 10-10 of Fig. 11. Fig. 60 11 is a longitudinal section on the line 11-11 of Fig. 10. Fig. 12 is an edge view of the barrel partition and the integral feed chamber guide, showing the feed chambers in position thereon. Fig. 13 is a transverse 65 section on the line 13-13 of Fig. 12. Fig. 14 is a side elevation of the parts shown in Fig. 12, with one of the feed chambers removed. Fig. 15 is a side elevation of a modified form of the pen. Fig. 16 is a side 70 elevation of the pen shown in Fig. 15 turned ninety degrees from the position shown in the latter figure, and partially broken away.

The barrel 18 of the pen is divided by a longitudinal partition 19 into two longitudinal 75 ink reservoirs 20, 20 which are adapted to be supplied with ink through openings in the end wall 21 of the barrel closed by the screw-threaded plugs 22. The filling end of the barrel and said plugs are covered 80 by a cap 24 screw-threaded to the barrel. The partition 19 is laterally offset, as shown at 25, so as to make one of the reservoirs larger than the other. If, for instance, the pen be employed for red and black ink, it 85 will usually be desirable that the reservoir for the red ink be smaller than that for the black ink. The partition may be formed as a separate part and fitted at its side and end in the grooved portions 26, 27 of the 90 barrel and its end wall. When so made the end wall 21 will have the form of a cap that has a slip fit in the outer end of the barrel, and said cap may be locked to the barrel by the screw-threaded cap 24 in the manner 95 shown in Fig. 9.

As herein shown, the partition 19 is extended through the end wall 30 at the writing end of the barrel to constitute a guide bar 31 which projects from the barrel to support and guide the pen point feed chambers 100 33, 33 in the outer ends of which the pen points 34, 34 are mounted. In the present construction both pen points are located at one end of the barrel and are adapted to be 105 alternately shifted into and out of writing position; one pen point and its feed chamber occupying a writing position while the other pen point and its feed chamber occupies a non-writing position. The said feed chambers 33 are contained within and partially 110 supported and guided by the tubular extension 35 of the barrel which is screw-threaded to the barrel and is tapered from a point

about midway of its ends to its outer end. The outer end of said extension is open. One of the feed chambers is located on one side of the guide bar 31 and the other on the other side thereof, each occupying the space between the guide bar and the adjacent wall of the extension.

The said feed chambers are slidably connected with the guide bar 31 by means of screws or rivets 37, 37 which extend through longitudinal guide slots 38, 38 in said guide bar and into the inner flat walls or sides of the feed chambers, which latter fit flat against said guide bar. One slot 38 of the guide bar 31 is depressed on one side of the bar and the other slot is depressed on the other side of said bar, whereby the countersunk heads of the rivets or screws on the depressed sides of the guide bar are flush with the faces of the guide bar to avoid interference with the flat faces of the feed chambers which slide thereon. The walls of the feed chambers opposite to the flat inner walls thereof are tapered to correspond with the taper of the extension 35, so that when each chamber is slid forwardly to project its pen point into its writing position, as shown at the upper side of Fig. 5, the engagement of the tapered surfaces of the extension and chamber constitutes a stop to limit the outward movement of the feed chamber.

The rear end walls 40 of the feed chambers comprise separately formed plugs which are fitted in the rear hollow ends of the feed chambers, and said plugs are provided with central openings 41 into which extend the ends of feed tubes 42 by which ink is conveyed from the reservoir 20 to the feed chambers. The rear ends of said tubes are screw-threaded into and extend through the end wall 30 of the barrel. The ink is supplied from each feed chamber to its pen point through a feed opening 44 in the front wall 45 of the feed chamber, the ink flowing beneath the pen point or nip into the space between the same and the feed grooved block 46, in a manner familiar in fountain pen constructions.

The feed chambers are adapted to be shifted into writing and non-writing positions by means of actuating bars or rods 47, 47 which are screwed or otherwise attached at their forward end to the rear walls or feed chambers and extend backwardly through passages 48 in the thickened portion of the wall of the pen barrel, as shown in Figs. 3, 4, 10 and 11. The said actuating bars are connected at the outer end of the barrel to, or are provided with, manually operable means by which the bars and the ink chambers connected thereto may be slid forwardly and backwardly.

As shown in Figs. 1, 2, 3, 10 and 11, the actuating bars 47 may be provided with gear teeth or racks 50 which are adapted to be

engaged by a pinion 51 rotatively mounted in a chamber 52 in the thickened portion of the barrel wall and arranged between said racks. The said pinion 51, as best shown in Fig. 10, is fixed to the inner end of a rotative shaft 54 that has a step bearing at its inner end in the thickened portion of the barrel wall and has rotative bearing near its outer end in a plug 55 which is screw-threaded into the chamber 52. The said shaft 54 is enlarged inside of the plug to prevent withdrawal of the pinion and shaft, and the shaft is rotated through the medium of a disk 57 that is fitted over the outer squared end of the shaft and is attached thereto by a countersunk screw 58 that extends into a screw-threaded axial opening of the shaft, with its head overlapping said disk. With this construction, rotation of the shaft 54 and its attached pinion serves to advance one of the feed chambers and its pen point through the outer end of the barrel extension 35 into writing position, and to simultaneously retract the other feed chamber and its pen point to its non-writing position within said extension; these positions being shown in Fig. 5.

In lieu of the rack and pinion actuating mechanism described, I may provide the outer ends of the actuating bars 47 with the finger pieces or lugs 60, 60 that extend outwardly through the parallel slots 61, 61 in the barrel wall, as shown in Figs. 15 and 16, whereby each feed chamber and its pen point may be retracted and advanced without regard to movement of the other chamber. In this construction both of the pen points may be retracted or brought to their non-writing positions at the same time.

I may provide means for cutting off the flow of ink from the feed tubes 42 to the interior of the feed chambers 33 when said chambers occupy their inner or non-writing positions. In order to effect this result, I may provide the rearwardly extending pins 63, 63 that are fixed at their forward ends in the forward end walls 45 of the feed chamber and extend rearwardly therefrom, through the feed chambers, a distance beyond the rear end walls of the chambers into the feed tubes 42. The said pins 63 are tapered inwardly and are of such size at their forward or larger ends that when they are moved rearwardly with the feed chambers and pass into the feed tubes, the forward ends of said feed tubes are closed by the larger parts of the tapered pins. The said tapered pins and ends of the feed tubes constitute, therefore, valves for cutting off the flow of ink from the reservoirs to the feed chambers when the latter occupy their rearmost or non-writing positions.

In order to prevent ink which may flow back into the feed chambers from the spaces between the pen points and the feed

blocks 45, escaping from the feed chambers between the rear walls thereof and feed tubes 42, when said chambers occupy their rearmost positions, I may provide the said rear walls of the chambers with the tubular extensions 67 which extend a substantial distance inwardly from the rear walls of the chambers and serve as guards to prevent passage of ink between said tubes and chamber walls when the writing end of the pen is directed upwardly. The outer or writing end of the barrel may be covered by the usual slip cap 65, shown in Fig. 1, to protect the pen points.

While I have described the illustrated embodiment of my invention with considerable particularity as to details, it will be understood that the invention is not limited to the details shown and that the invention is capable of considerable structural variation within the scope and spirit thereof. It is not limited, therefore, to the details shown, except as to those claims in which said details are hereinafter specifically set forth.

I claim as my invention:—

1. A duplex fountain pen comprising a barrel provided with two fixed ink reservoirs and two pen points movable relatively thereto into and out of writing position and connected to move alternately in opposite directions adapted to separately receive ink from said ink reservoirs, and means positively actuable upon movement of the pen points into and out of writing position for controlling the flow of ink from the reservoirs to said pen points.

2. A duplex fountain pen comprising a barrel formed with two ink reservoirs, two pen point feed chambers movable relatively to said reservoirs into and out of writing position, and each arranged to receive ink from one of said reservoirs, means for actuating said feed chambers, and valves operable upon movement of the feed chambers to control the supply of ink thereto.

3. A duplex fountain pen comprising a barrel formed with two ink reservoirs, two pen point feed chambers each arranged to receive ink from one of the reservoirs and movable relatively to the reservoirs into and out of writing position, means for actuating said feed chambers, and means operable upon the movement of said chambers into and out of writing position arranged to cut off the supply of ink to each chamber when in its non-writing position.

4. A duplex fountain pen comprising a barrel formed with two ink reservoirs, two pen point feed chambers at one end thereof movable relatively to the reservoirs into and out of writing position, ink controlling valves operated by movement of the feed chambers, said barrel being provided with rearwardly extending passages, and means connected to said feed chambers and extend-

ing through said passages and provided at their rear ends with means for actuating the same.

5. A duplex fountain pen comprising a barrel formed with two ink reservoirs, two pen point feed chambers at one end thereof movable relatively to each other into and out of writing position, ink controlling valves actuable by movement of said chambers, said barrel being provided with rearwardly extending passages, and reciprocating actuating bars in said passages connected at their forward ends to said feed chambers and provided at their rear ends with means for reciprocating the same.

6. A duplex fountain pen comprising a barrel formed with two fixed ink reservoirs, two pen point feed chambers at one end thereof movable relatively to the reservoirs into and out of writing position, means for cutting off the flow of the ink from each feed chamber when the latter is in its non-writing position, and means for actuating said feed chambers to simultaneously move one of the same and its pen point into writing position and to move the other chamber and its pen point into non-writing position.

7. A duplex fountain pen comprising a barrel formed with two fixed ink reservoirs, two pen point feed chambers movable relatively to the reservoirs into and out of writing position, means for cutting off the flow of ink from each feed chamber when the latter is in its non-writing position, and rack and pinion mechanism for actuating said feed chambers to simultaneously move one into writing position and the other into non-writing position.

8. A duplex fountain pen comprising a barrel formed with two fixed ink reservoirs, two pen point feed chambers movable relatively to said reservoirs into and out of writing position, means for cutting off the flow of ink from each feed chamber when the latter is in its non-writing position, said barrel being provided with rearwardly extending passages, reciprocating actuating bars in said passages connected at their forward ends to said feed chambers and provided at their rear ends with racks, and a rotative pinion between and meshing with said racks.

9. A duplex fountain pen comprising a barrel formed with two ink reservoirs, two pen point feed chambers, each communicating with one of said reservoirs, a guide bar projecting from the barrel on which said chambers are slidably mounted and means for moving said chambers into and out of writing position.

10. A duplex fountain pen comprising a barrel formed with two ink reservoirs, two pen point feed chambers, each communicating with one of said reservoirs, a slotted

guide bar arranged between said chambers with which said chambers have guiding connection and means for moving said chambers into and out of writing position.

5 11. A duplex fountain pen comprising a barrel formed with two ink reservoirs, two pen point feed chambers, each communicating with one of said reservoirs, a guide bar projecting from the barrel between said
10 chambers on which said chambers are slidably mounted, a hollow extension open at its outer end and fixed to the barrel and surrounding said chambers and guide bar, and means for moving said chambers into and
15 out of writing position, said extension having means to constitute a stop to limit the outward movement of said chambers.

12. A duplex fountain pen comprising a barrel formed with two ink reservoirs, two
20 pen point feed chambers, each communicating with one of said reservoirs, said chambers having flat inner sides and tapered outer sides, a guide bar fixed to the barrel arranged between and engaging the flat sides
25 of the chambers and on which they slide, a tubular extension of the barrel surrounding said chambers and tapered to engage the tapered sides of the chambers to limit their outward movement, and means for moving
30 said chambers into and out of their writing positions.

13. A duplex fountain pen comprising a barrel formed with two ink reservoirs, two
35 pen point feed chambers movably and guidingly connected with the forward end of said barrel, fixed feed tubes extending forwardly from the reservoirs into the rear ends of the chambers and over which said
40 chambers slide, and means for moving said feed chambers into and out of writing position, with means for cutting off the supply of ink to each chamber when in its non-writing position.

14. A duplex fountain pen comprising a
45 barrel formed with two ink reservoirs, two pen point feed chambers movably and guidingly connected with the forward end of said barrel, fixed feed tubes extending forwardly from the reservoirs into the rear ends of the
50 chambers and over which said chambers slide, means carried by the chambers to close said feed tubes when the chambers are in non-writing position, and means for moving
55 said feed chambers into and out of writing position.

15. A duplex fountain pen comprising a barrel formed with two ink reservoirs, two
60 pen point feed chambers movably and guidingly connected with the forward end of said barrel, fixed feed tubes extending forwardly from the reservoirs into the rear ends of the chambers and over which said
chambers slide, tapered pins fixed to the

chambers and extending backwardly through the chambers into said feed tubes and 65 adapted to close the feed tubes when the chambers are in non-writing position, and means for actuating the feed chambers.

16. A duplex fountain pen comprising a barrel formed with two ink reservoirs, two
70 pen point feed chambers movably and guidingly connected with the forward end of said barrel, fixed feed tubes extending forwardly from the reservoirs into the rear ends of the chambers and over which said chambers
75 slide, means carried by the chambers to close said feed tubes when the chambers are in non-writing position, the rear walls of the feed chambers being provided with interior tubular extensions through which the feed
80 tubes slide when the feed chambers are moved into non-writing position, and means for actuating the feed chambers.

17. A duplex fountain pen comprising a barrel provided at its end with two pen
85 point feed chambers, a partition extending longitudinally through the barrel to divide the barrel into two ink reservoirs and formed with a longitudinally arranged, lateral offset or depression to enlarge one reser-
90 voir and correspondingly reduce the other reservoir, and means affording communication between said reservoirs and feed chambers.

18. A duplex fountain pen comprising 95 two pen points movable into and out of writing position and so arranged that one is adapted to be moved into writing position when the other moves to its non-writing position, separate means for supplying ink
100 to the pen points and valve means controlled by the movement of the pen points into and out of writing position for opening the supply of ink to and cutting it off from the pen
105 points.

19. A duplex fountain pen, comprising a barrel having two independent ink reservoirs, a pen point feed chamber associated with each of said reservoirs and slidably mounted in relation thereto for movement into and
110 out of writing position, ink-feeding means between each reservoir and its feed chamber, means for actuating said feed chambers to move them into writing and non-writing positions, and means for establishing commu-
115 nication between each of said feed chambers and its reservoir when the same is moved to writing position.

In testimony, that I claim the foregoing as my invention I affix my signature in the
120 presence of two witnesses, this 18th day of June, A. D. 1910.

GEORGE A. COOPER.

Witnesses:

W. L. HALL,

WILLIAM GOLDBERGER.