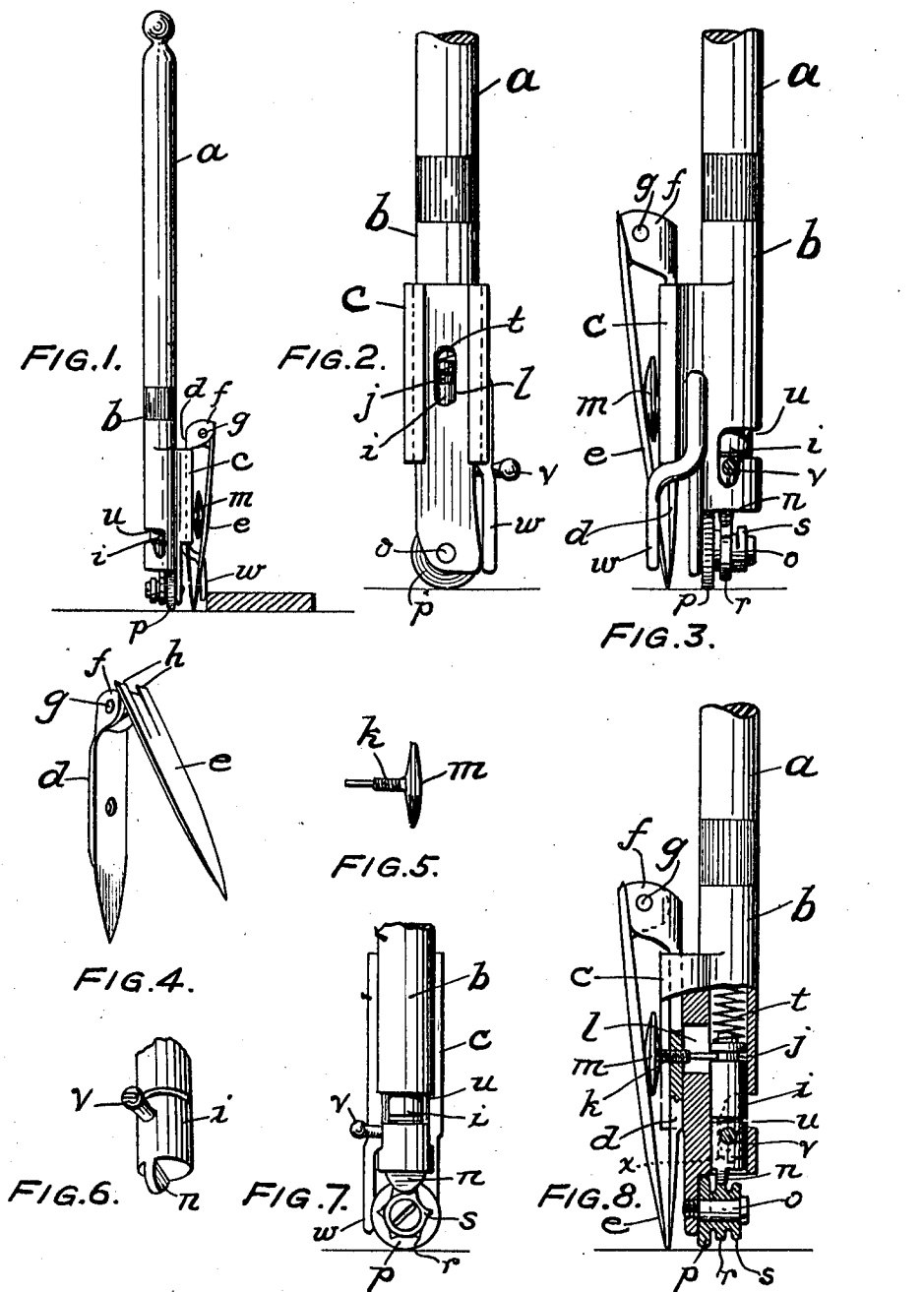


D. C. LEWIS.
DRAFTSMAN'S PEN.
APPLICATION FILED JULY 23, 1918.

1,314,879.

Patented Sept. 2, 1919.



WITNESS:

Robt. R. Stetzel.

Dean C. Lewis

BY *Frank L. Bussar*
ATTORNEY.

UNITED STATES PATENT OFFICE.

DEAN C. LEWIS, OF PHILADELPHIA, PENNSYLVANIA.

DRAFTSMAN'S PEN.

1,314,879.

Specification of Letters Patent.

Patented Sept. 2, 1919.

Application filed July 23, 1918. Serial No. 246,309.

To all whom it may concern:

Be it known that I, DEAN C. LEWIS, a citizen of the United States, residing at Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Draftsmen's Pens, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

The object of my invention is to provide a pen for mechanical draftsmen, similar to what is called a ruling pen, which is adapted, when drawn over the surface of the paper on which the drawing is being made, to form dotted or broken lines and which may be adjusted to make a plurality of distinctive types of dotted or broken lines. Thus, it is frequently necessary to make, on a single drawing, a considerable number of dotted or broken lines, which, when made with an ordinary ruling pen, require the expenditure of considerable time; and, moreover, it is practically impossible to make the dots or dashes of uniform dimensions uniformly spaced apart. It is also commonly necessary to make different forms of dotted lines. Thus, one line may comprise a series of dashes of uniform length. Another line may comprise a series of alternating short and long dashes. It is obvious that any instrument which can be used to make such lines automatically, rapidly and with any approach to ideal accuracy, will save much time and enable the draftsman to turn out more artistic work.

My invention comprises an instrument adapted to attain the objects specified, a preferred embodiment being shown in the drawings, in which—

Figure 1 is a side elevation of the instrument.

Fig. 2 is an enlarged front view of the instrument with the pen omitted.

Fig. 3 is an enlarged side view of the head of the instrument.

Fig. 4 is a perspective view of the pen.

Fig. 5 is a detail view of the adjusting screw for the pen.

Fig. 6 is a detail view of the cam-block for operating the pen.

Fig. 7 is a rear view of the head of the instrument.

Fig. 8 is an enlarged side view largely in section of the head of the instrument.

The holder comprises a shank *a* having a cylindrical forward or lower portion *b* provided with a side bracket *c*, in which is slidably mounted one jaw or blade *d* of the pen proper. The other jaw or blade *e* of the pen is pivoted, at its upper end, to the upper end of jaw *d*. Preferably, the upper end of jaw *d* is provided with ears *f* between which extends a pin *g* on which the upper end of the jaw *e* is sleeved. The jaw *e* is wider than its sleeved end, and is slitted longitudinally, in line with opposite ends of the sleeve, forming spring fingers *h* which slide upon the ears *f* as the jaw *e* is opened, as shown in Fig. 4. When the jaw *e* is moved toward its closed position, the fingers *h* act as springs to wholly close the jaw, but when the jaw *e* is opened beyond a certain distance, the fingers *h* engage the upper faces of the ears *f* in such manner as to hold the jaw *e* in its open position. This construction affords a ready means for cleaning the pen.

Within the cylindrical part *b* of the holder slides longitudinally a block *i* having, near its upper end, a circumferential groove *j* adapted to receive the end of a pin *k* which is threaded into the jaw *d* of the pen and passes through a slot *l* in bracket *c*. The pin *k* is virtually a thumb-screw, the head *m* of which is positioned between the two jaws of the pen. When the head *m* is turned so that it actually engages the face of jaw *d*, it allows the jaw *e* to swing in so that its lower end nearly or quite touches the lower end of jaw *d*. By screwing it out slightly, the lower ends of the jaws of the pen may be spaced apart more or less. Thereby the thickness of the line to be inked by the pen may be predetermined. By removing the pin *k*, the pen may be removed from the holder.

It is clear that by raising the block *i*, the pen will be similarly raised. By providing mechanism to raise and lower the block at regular intervals, the feed of ink from pen to paper will be interrupted at intervals, thereby forming a dotted or broken line. The following mechanism is provided to so actuate the block *i*:

Secured to the lower end of the holder is

a transversely extending stud *o* on which turns a sleeve provided with three wheels or disks, namely: a knurled wheel *p* which is adapted to roll continuously upon the paper, and two cam disks *r* and *s*, one of which, *r*, is provided with a number of projections and depressions uniformly spaced apart and the other of which, *s*, is provided with a periphery which is plain except for two spaced-apart projections. The lower end of the block *i* is provided with a cam or projection *n*, which is in operative relation with one or the other of the cam disks, dependent upon whether the block is in the position shown in Figs. 1, 3, 7 and 8, or whether the block is turned from this position 180 degrees on its axis, as is hereinafter explained. The block *n* is held yieldingly depressed by means of a coil spring *t* within the cylindrical body *b* above the block *i*.

Assuming the parts to be positioned as shown most clearly, perhaps, in Fig. 8, that the pen carries a suitable quantity of ink, and that the instrument is rolled over the paper, it is clear that the wheel *p* will rapidly rotate the cam disk *r*, which will lift the block *i* at short but regular intervals, the spring *t* returning the block immediately after the projection *n* overrides each high point. Hence the pen will alternately contact with and recede from the paper, forming a dotted or regularly broken line. The instrument may be rolled over the paper with great rapidity, allowing the line to be drawn as rapidly as it is possible, with an ordinary ruling pen, to draw a continuous line. During this operation the cam disk *s* is inoperative.

The cylindrical body *b* is provided with a slot *u*, which extends about half-way around its circumference and, at each end of its curved portion, extends downward. Extending radially from the block *i* is a pin *v*. When the projection *n* is in engagement with the cam disk *r* the pin *v* is in one of these downwardly extending ends of the slot. By means of the pin *v*, the block *i* may be raised by hand and given about half a turn on its axis, the pin moving throughout the curved part of the slot *u* until it reaches the opposite downwardly extending end of the slot, the spring *t* then acting to depress the block and bring the projection *n* in line with the cam disk *s*.

With this adjustment, if the instrument is rolled over the paper, the block *i* and the pen are not acted upon throughout the greater part of the rotation of the cam disk *s*, but during the relatively short remainder of its rotation the block and pen are raised and lowered twice in quick succession. Thereby there is formed on the paper a series of alternate long and short lines.

It is obvious that the cam disks *r* and *s* may be shaped to actuate the block *i* in any man-

ner desired, whereby the pen will be caused to form a line of any desired character.

Bracket *c* carries a stationary guide finger *w*, by which the pen may be directed or led along an edge, as indicated in Fig. 1.

I prefer to make the block *i* in two parts which are adjustable relatively to one another to shorten or lengthen the block. To this end the upper portion of the block is provided with a depending threaded neck *x* which engages a threaded socket in the lower portion of the block. If the points of the pen wear away, the two portions of the block may be turned on their axes relatively to one another to shorten the block correspondingly. In this way the points of the pen may be maintained always on a level with the periphery of the wheel *p*, except when lifted by one of the cam disks. The pin *v* is screw-threaded in the block and engages the neck *x*, thereby holding the two parts of the block from accidentally turning relatively to one another.

Having now fully described my invention, what I claim and desire to protect by Letters Patent is:

1. A draftsman's instrument comprising a holder, a pen, a plurality of cams operable in the movement of the instrument over a drawing surface, a block movable longitudinally of the holder and connected with the pen, and means to turn the block to bring it into operative relation with one or the other of the cams.

2. A draftsman's instrument comprising a holder, a wheel carried by the holder and adapted to contact with the drawing surface, a plurality of cam disks turning with the wheel, a pen, and a block slidable up and down in the holder and so connected with the pen as to impart its movement thereto, said block being turnable to bring it into operative relation with one or the other of the cam disks.

3. A draftsman's instrument comprising a holder having a head, a block slidable in said head, a pen slidable on the holder and connected with the block to move up and down therewith, said head provided with a slot extending part way around it and downward at each end of its curved portion, a pin carried by the block and movable in the slot, a spring yieldingly pressing the block downward, and a plurality of cams operable in the movement of the instrument over a drawing surface, said block being in operative relation with one or the other of said cams dependent upon which end of the slot is engaged by the pin.

4. A draftsman's instrument comprising a holder, a bracket carried by the holder, a pen slidable in said bracket longitudinally of the holder, a block movable longitudinally of the holder and provided with a circumferential groove, a pin carried by the pen and

engaging said groove, and a plurality of cams, operable in the movement of the instrument over a drawing surface, said block being turnable to bring it into operative relation with one or the other of said cams.

5 5. A draftsman's instrument comprising a holder, a bracket carried by the holder, a pen slidable in said bracket longitudinally of the holder, a block movable longitudinally of the holder and provided with a circumferential groove, a pin carried by the pen and engaging said groove, a wheel carried by the holder and adapted to contact with the drawing surface, a plurality of
10 cam disks turning with the wheel, and a cam carried by the block and in operative relation with one or the other of the cam disks, said block being turnable to bring its cam into operative relation with one or the other
15 of the cam disks.

6. A draftsman's instrument comprising a holder and a pen comprising two jaws, the first jaw being carried by the holder and provided with ears, the second jaw pivoted
20 to the first jaw between said ears and slitted to form spring fingers adapted to engage said ears.

7. A draftsman's instrument comprising a holder, a bracket carried by the holder, a
25 pen comprising two jaws, one of said jaws slidable on the bracket, a pin threaded in the slidable jaw and extending through a slot in the bracket, and a head on the pin,

said head extending between the jaws, the second jaw being pivoted on the first jaw and adapted, when swung toward the first jaw, to engage said head. 35

8. A draftsman's instrument comprising a holder, a wheel carried thereby and adapted to roll over a drawing surface, a pen slidable longitudinally on the holder, a block
40 connected with the pen and slidable longitudinally on the holder, means controlled by said wheel to reciprocate the block longitudinally of the holder, and means to vary
45 the length of the block.

9. A draftsman's instrument comprising a holder, a pen comprising two jaws one of which is carried by the holder while the other is pivotally attached to the first jaw, and an adjusting screw the shank of which
50 extends through one jaw and threads in the holder and the head of which is positioned between the two jaws, whereby the distance between the jaws at the working end of the pen may be regulated by adjusting the head
55 of the screw, while, for purposes of cleaning, the pivoted jaw may be swung open without preliminarily manipulating the adjusting screw and when returned to operative position, will automatically assume the position
60 to which it was previously adjusted.

In testimony of which invention I have hereunto set my hand, at Philadelphia, Pa., on this 20th day of July, 1918.

DEAN C. LEWIS.

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