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PATENTED OCT. 2, 1906.

W. N. BOWMAN.  
SLUG COUNTER.

APPLICATION FILED NOV. 20, 1903. RENEWED MAR. 26, 1906.

2 SHEETS—SHEET 1.

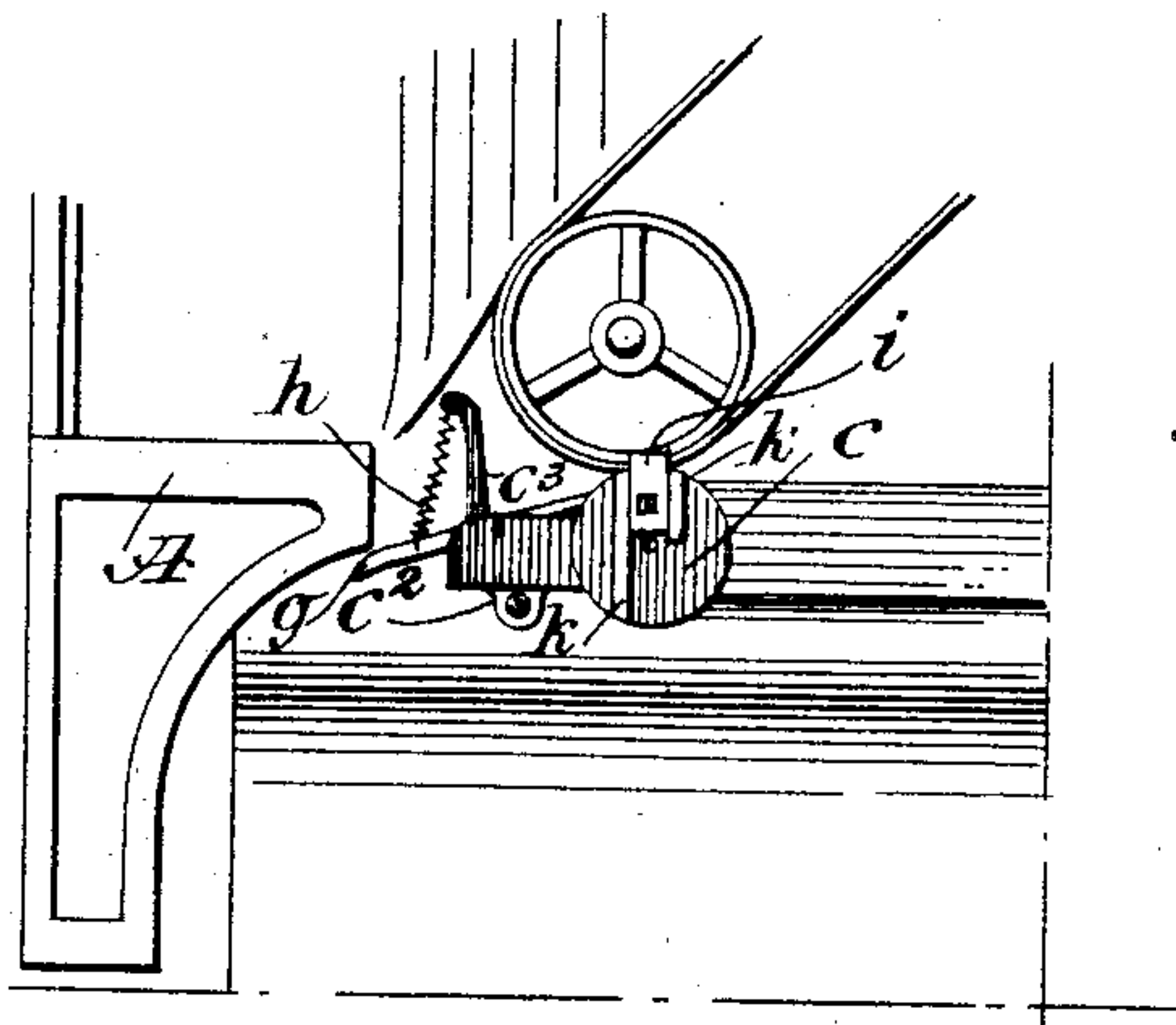


Fig. 1

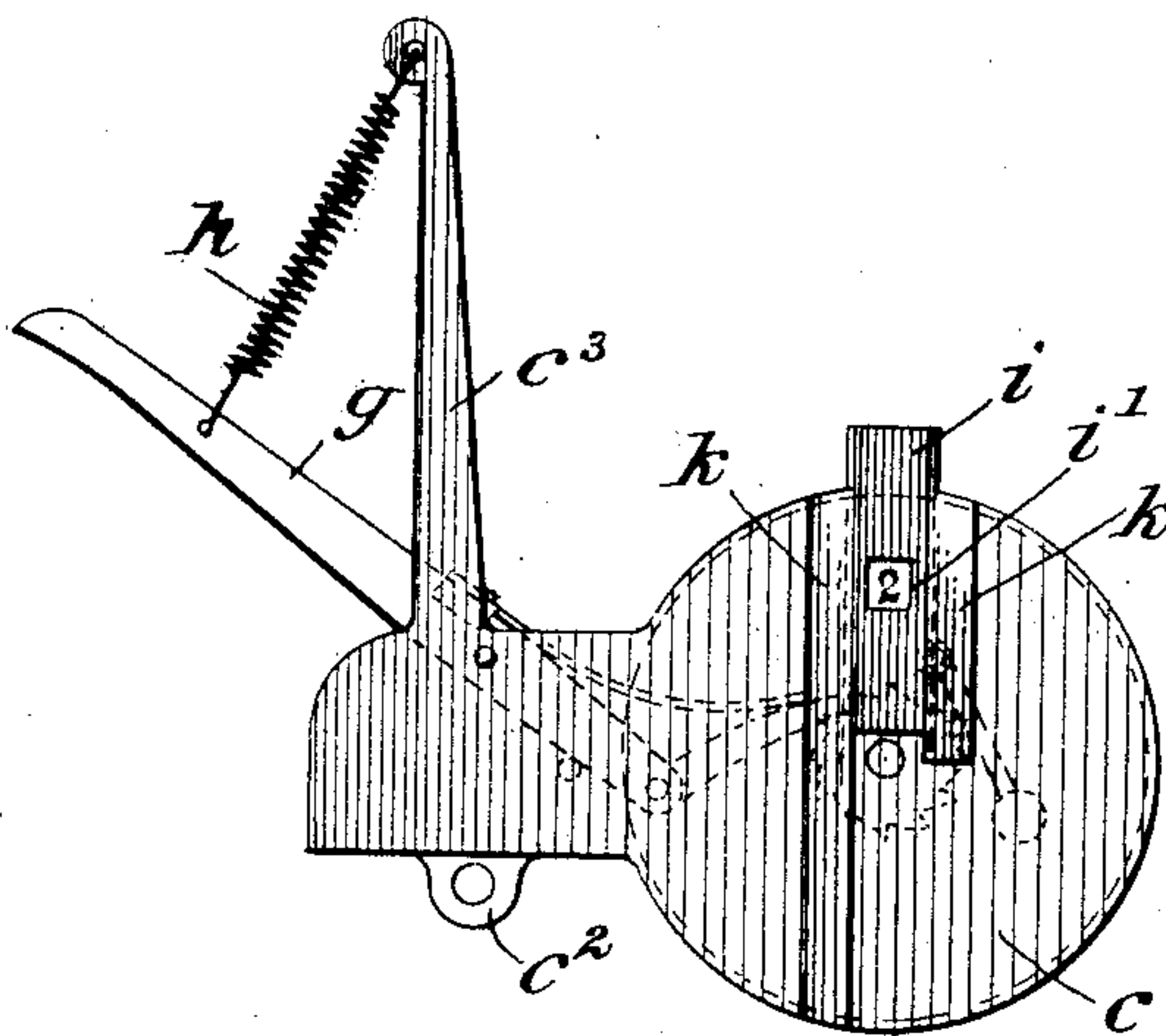


Fig. 2

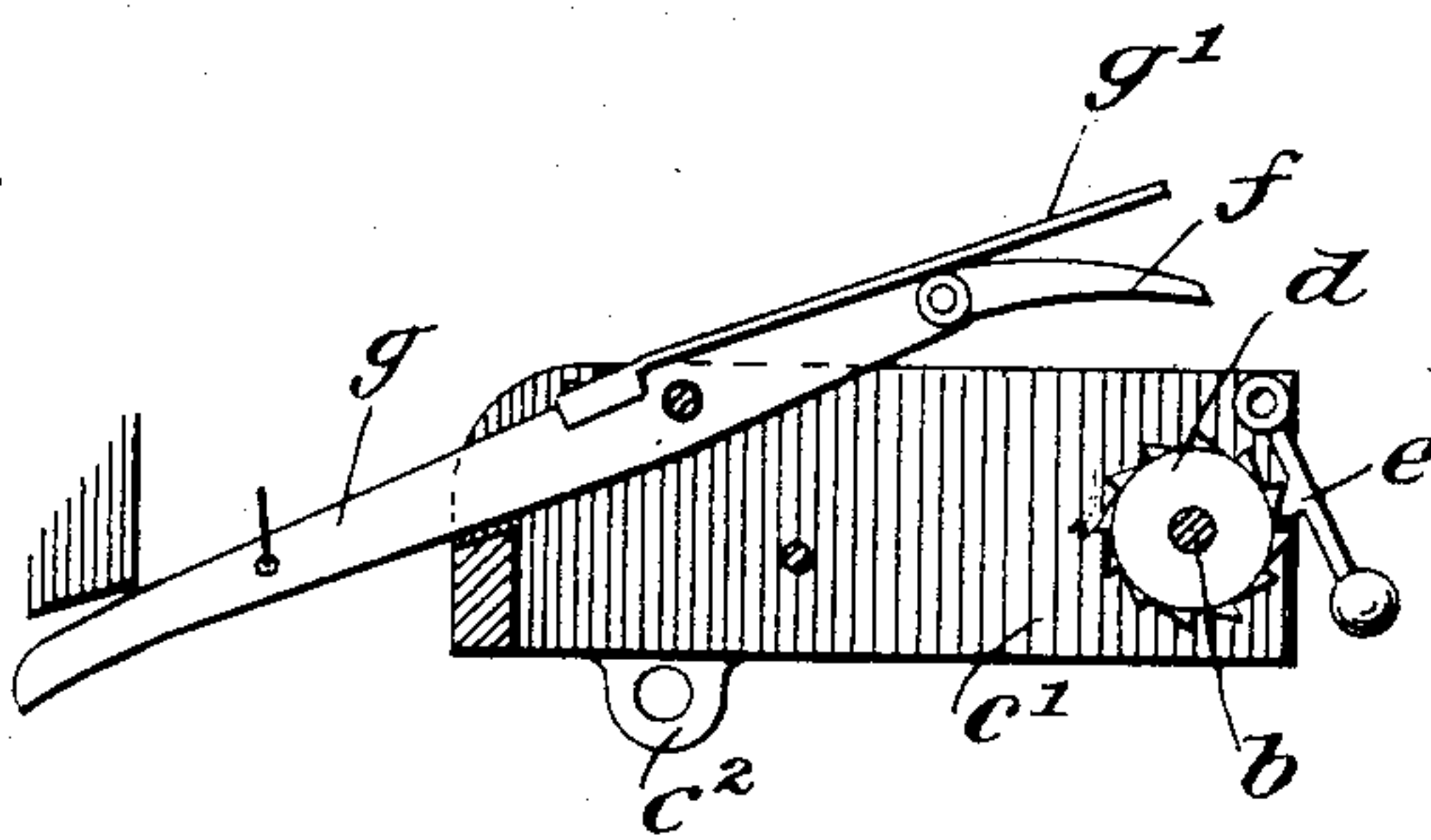


Fig. 3

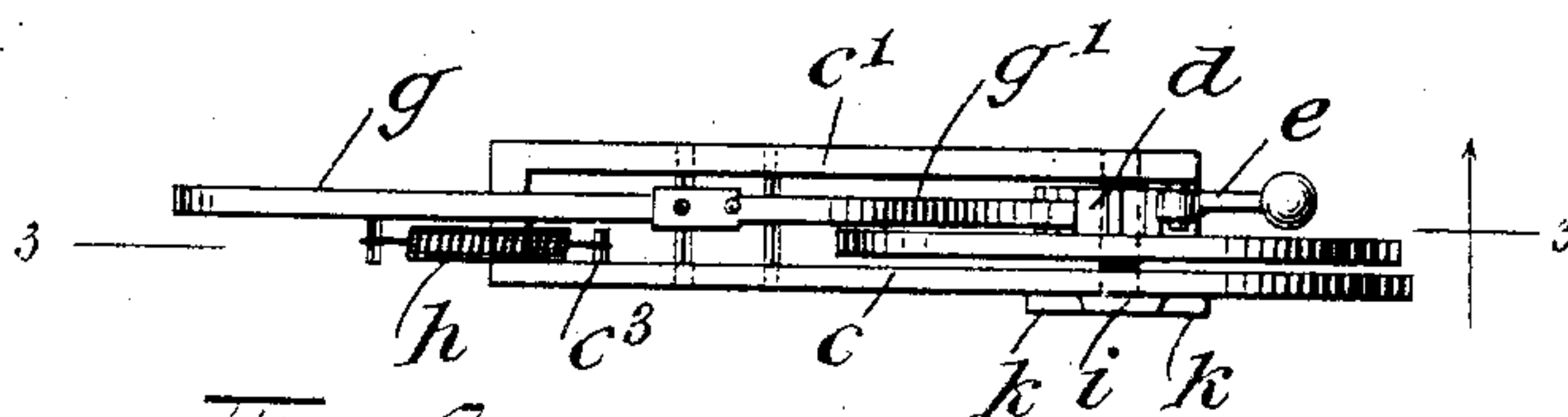


Fig. 4

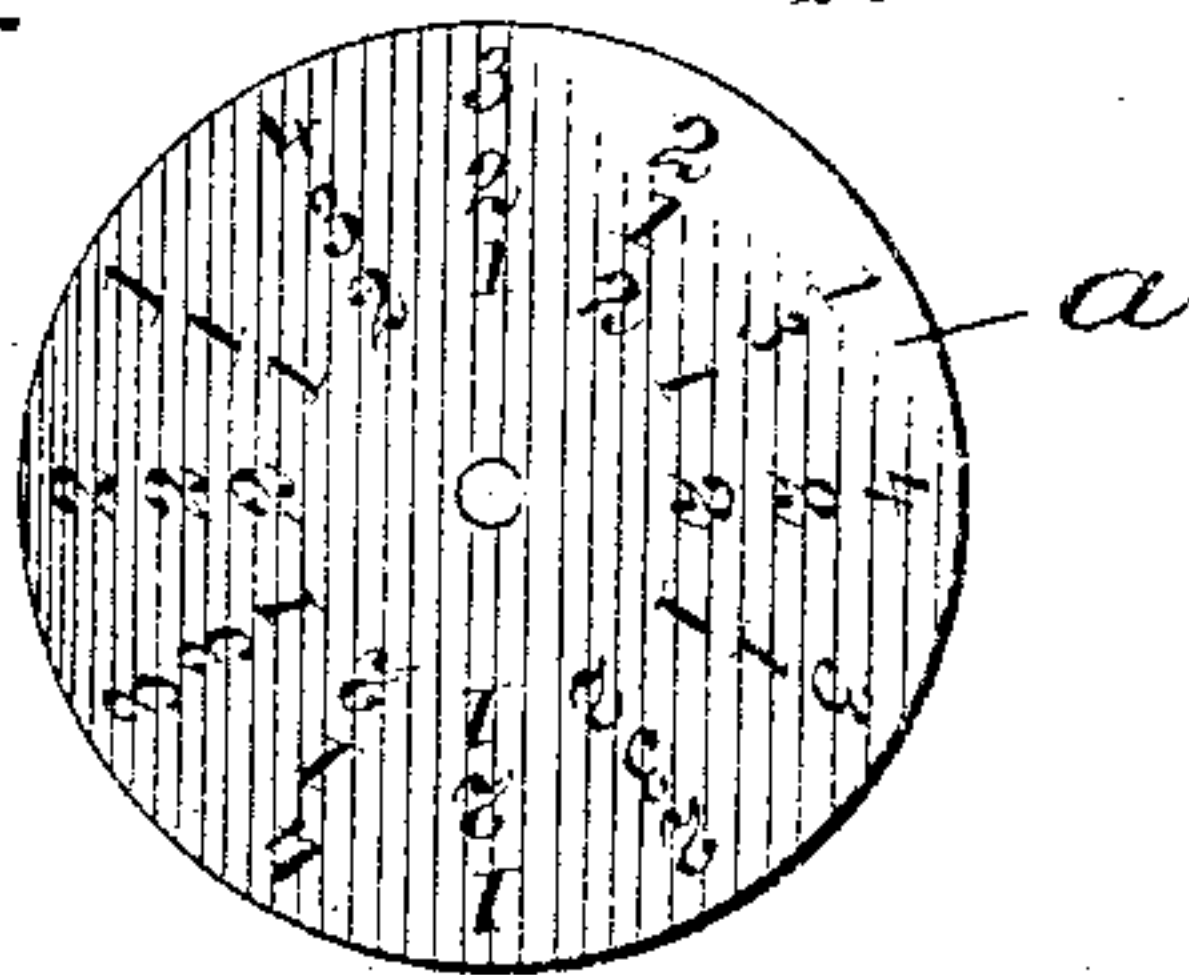


Fig. 5

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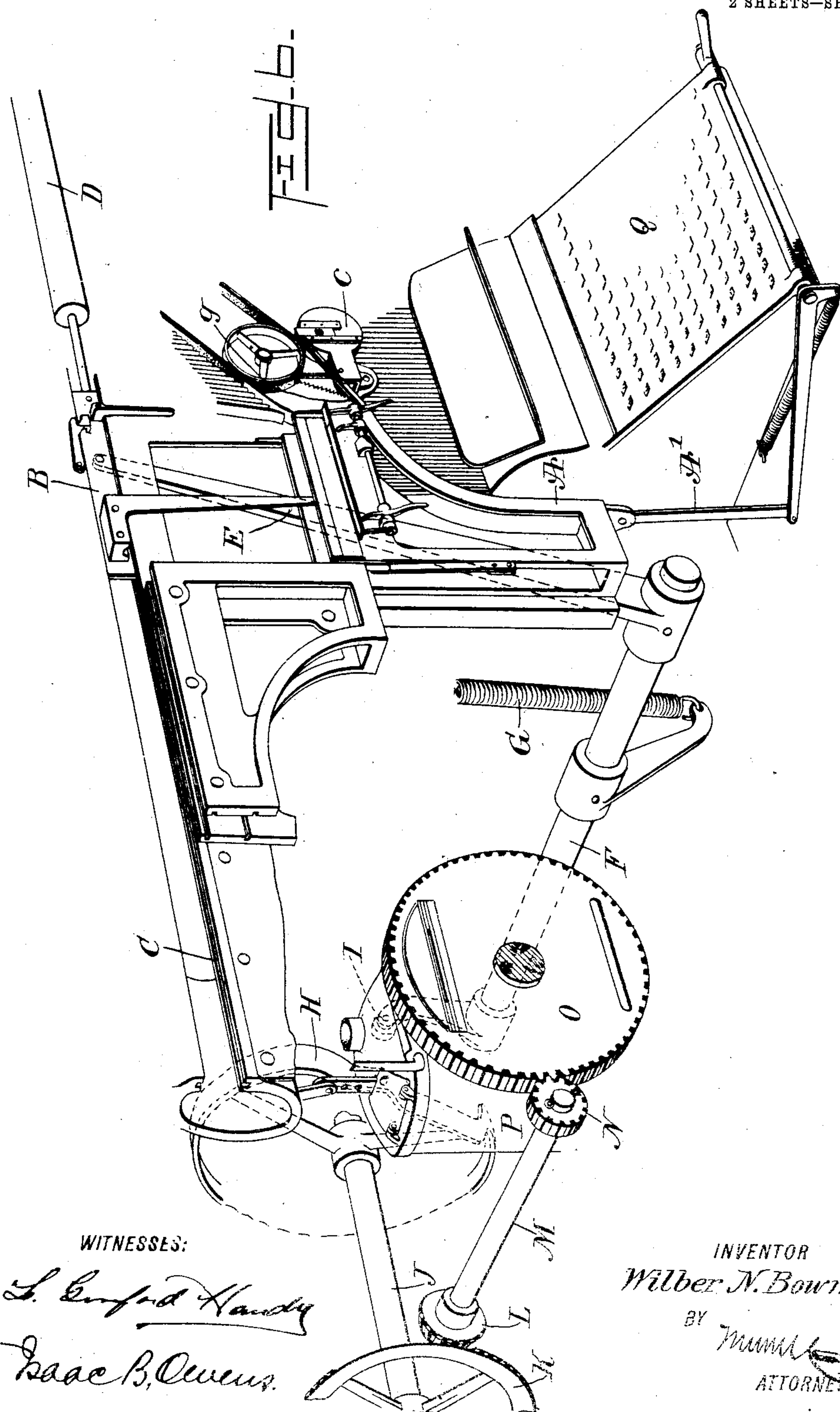
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2 SHEETS—SHEET 2.





# UNITED STATES PATENT OFFICE.

WILBUR N. BOWMAN, OF PIERRE, SOUTH DAKOTA.

## SLUG-COUNTER.

No. 832,033.

Specification of Letters Patent.

Patented Oct. 2, 1906.

Application filed November 20, 1903. Renewed March 26, 1906. Serial No. 308,033.

*To all whom it may concern:*

Be it known that I, WILBUR N. BOWMAN, a citizen of the United States, and a resident of Pierre, in the county of Hughes and State of South Dakota, have invented a new and Improved Slug-Counter, of which the following is a full, clear, and exact description.

The object of this invention is to enable an operator on a linotype-machine when setting up matter in which a plurality of slugs are used to form a single line to determine readily at any time what slug in the line is being cast. In this class of work it has heretofore been a common difficulty with operators to keep in mind the precise order of the slug on which they may be working, it being necessary to observe this order at all times, since different spacing and other movements are required when the line ends at the end of the slug and when one slug forms but a part of the whole line.

To this end my invention comprises a counter which is preferably of the general type disclosed in this application and applied to the linotype-machine in such a position as to operate once for every slug which is formed and which may be set for two-slug lines or three-slug lines, or lines made up of any number of slugs, as may be desired, this indicator showing the operator at a glance the position or order of the slug then being formed with respect to the complete line. For example, when a line formed of three slugs is being set the indicator will show "1" when the first slug is being cast, "2" when the second slug is being cast, and "3" when the third slug is being cast. Then when a second line is being started the indicator will show "1" again and repeat the above-described operation.

This specification is an exact description of one example of my invention, while the claims define the actual scope thereof.

Reference is to be had to the accompanying drawings, forming a part of this specification and illustrating, as an example, the preferred embodiment of my invention, in which drawings similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a front elevation showing my invention in use. Fig. 2 is an enlarged elevation of the counter. Fig. 3 is a sectional elevation on the line 3 3 of Fig. 4. Fig. 4 is a plan view of the counter or indicator. Fig. 5 is a face view of the dial, and Fig. 6 is a perspective view showing my invention co-

acting with the assembly-elevator of a commercial linotype-machine and illustrating such other parts of such machine as are concerned with the operation of the assembly-elevator in unison with the slug-forming mechanism.

The counter should be operated by a moving part of the commercial linotype-machine operating in unison with the slug-forming mechanism. It is essential that the arrangement be such as to give the counter one operation for each slug that is formed. As shown in Fig. 1, the counter is arranged to be operated by the assembly-elevator, (indicated in outline at A.) Each time that this elevator drops into position to receive the matrices it imparts a movement to the indicator, and in this manner the indicator is operated once for each slug that is formed.

In Fig. 6, B indicates the means for moving the line of matrices from the assembly-elevator when in raised position over toward the mold-wheel and its appurtenances. C is the guideway or track on which said means move. D is a pneumatic device for cushioning the movement of the means B, and E represents the arm which moves the said means. This arm is carried on a rock-shaft F, operated in one direction by a spring G and in the other direction by a cam H, acting on an arm I, attached to the rock-shaft. The said cam is carried on the drive-shaft or prime mover J. This shaft also carries a mutilated gear K, acting with a gear L to drive a shaft M, and said shaft in turn drives the mold-wheel O by means of a gear N, meshing with teeth on the periphery of the mold-wheel. P indicates the pot for supplying the metal to the mold. The operator through the keyboard Q and its appurtenant parts causes the proper matrices to fall into the assembly-elevator when the same is in the lower position. (Shown in Fig. 6.) When this is full or when the line is complete, the elevator A is raised manually through the medium of the devices A', and the matrices are then gathered by the means B and moved over to the first elevator (not shown) and from thence to the slug-forming mechanism O P. This action is brought about by the parts E, G, F, I, and H, in proper time with which operation the mutilated gear imparts movement to the devices M, N, and O and the slug is formed. It is in this manner that the assembly-elevator operates in unison or in a certain order with the slug-forming mechanism—that is to say, the as-



sembly-elevator rises or falls each time a line of matrices is sent across to the slug-forming mechanism, and consequently each time that a slug is formed.

5 The indicator is adapted for adjustment according to the number of slugs which go to make up the line. For example, in the case of a two-slug line the indicator may be adjusted to show the numbers "1, 2," indicating  
10 successively the two slugs constituting the line, and when these have been formed the indicator again reads "1, 2," indicating the two slugs of the next line. If three slugs are to constitute a line, the indicator upon proper  
15 adjustment will read "1, 2, 3" and then repeat, and if four slugs constitute a line the indicator upon proper adjustment will read "1, 2, 3, 4" and then repeat, and so on up to  
20 any number of slugs desired. This end I attain by providing a dial *a*, as shown in Fig. 5, said dial having according to the form here illustrated three concentric rows of figures, the inner row being made up of the numerals  
25 "1, 2" and repeat, the middle row being made up of the numerals "1, 2, 3" and repeat, and the outer row being made up of the numerals "1, 2, 3, 4" and repeat. The inner row of numerals is utilized when two-slug lines are being formed, the middle row when three  
30 slugs are being formed, and the outer row when four-slug lines are being formed. Said indicator is mounted on a central arbor *b*, carried to turn in a suitable framing comprising a front plate *c* and a back plate *c'*, rigidly  
35 connected together. This framing may be attached to the linotype-machine in any desired manner—for example, through the medium of lugs *c<sup>2</sup>*, formed on the frame and secured to a convenient portion of the linotype-machine. A ratchet *d* is attached to  
40 the arbor *b* within the frame *c c'* and with this ratchet operates an idler-pawl *e* and a driving-pawl *f*. Said pawl *f* is carried on a lever *g*, fulcrumed in the frame *c c'* and carrying a spring *g'*, which serves to press the pawl against the ratchet during the operation of the former. *h* indicates a spring for holding the lever *g* in the position shown in Fig. 2. Said spring *h*, as here shown, is attached to  
50 the lever *g* and to a projection *c<sup>3</sup>* from the frame of the indicator. The lever *g* is arranged in the path of the assembler-elevator, as shown in Fig. 1, and when said elevator is down to receive the matrices it throws the lever into the position shown in Figs. 1 and 3. When the elevator rises, the spring *h* moves the lever to the position shown in Fig. 2, and in this manner a partial revolution is given to the parts *b, d*, and *a*. The front plate *c* has  
60 a circular main portion carrying the dial *a*, and said circular portion of the front plate *c* is formed with a radial slot therein, over which slot lies a shutter-plate *i*, having an opening *i'* of a size sufficient to expose only  
65 one of the numerals on the disk or dial *a*.

Said shutter is adjustable radially on the circular portion of the plate *c* and is held in guides *k*, attached thereto. Now it will be seen that by adjusting the shutter the orifice *i'* thereof may be placed over any one of the  
70 three circular sets of figures on the dial *a*. The shutter therefore constitutes a means for covering or blanking two of the sets of numbers and for pointing out or directing attention to the other or remaining set of  
75 numbers. According to the adjustment shown in Fig. 2 the shutter is adjusted to expose the middle line, which is adapted for use when setting three-slug lines. Each time that the assembler-elevator rises the  
80 dial is operated, and if the operator starts with the numeral "1" in the middle line he is enabled to tell by a mere glance at the indicator just what slug in the line is being formed. When the length of the line, and consequently  
85 the number of slugs to the line, is changed, the adjustment of the shutter should be changed correspondingly. It will thus be seen that after the indicator is once adjusted the operator need only glance at the indicator to de-  
90 termine just what is the position of the slug in the line which he is setting.

Various changes in the form, proportions, and minor details of my invention may be resorted to at will without departing from  
95 the spirit and scope thereof. Hence I consider myself entitled to all such variations as may lie within the intent of my claims.

Having thus described my invention, I claim as new and desire to secure by Letters  
100 Patent—

1. An indicator-dial having two sets of numbers thereon, each set comprising two identical groups of progressing numbers arranged one in succession of the other, and the  
105 groups of one set of numbers each having more elements than the groups of the other set.

2. The combination with a linotype-machine, of an indicator having a part arranged  
110 in the path of a part of the linotype-machine, whereby to operate the indicator each time that a slug is formed by the linotype-machine, the indicator comprising a device having a plurality of sets of characters, each set  
115 having identical groups of characters arranged one in immediate succession of the other, and the groups of one set of characters being non-identical with the groups of the other set or sets, and adjustable means for  
120 blanking one or more of said sets of characters, for the purpose specified.

3. An indicator having two sets of numbers, each set comprising two identical  
125 groups of progressive numbers arranged one in succession of the other, and the groups of one set of numbers each having more elements than the groups of the other set.

4. An indicator having two sets of numbers, each set comprising two identical  
130



groups of progressive numbers arranged one in succession of the other and the groups of one set of numbers each having more elements than the groups of the other set, and  
 5 an adjustable means for blanking either set of numbers.

5. An indicator having two sets of characters, each set having identical groups of characters arranged one group in succession of the  
 10 other and the groups of one set of characters being non-identical with the groups of the other set of characters.

6. An indicator having two sets of characters, each set having identical groups of characters arranged one group in succession of the  
 15 other and the groups of one set of characters being non-identical with the groups of the other set of characters, and an adjustable means blanking either of said sets of characters.  
 20

7. An indicator, comprising a dial having two sets of characters, each set having identical groups of characters, one in immediate succession of the other and the groups of one  
 25 set being non-identical with the groups of the other set, and an adjustable means for blanking either set of characters at will.

8. The combination with a part of a linotype machine operating in unison with the  
 30 slug-forming mechanism, of an indicator having a part arranged in the path of said part of the linotype-machine whereby to operate the indicator each time that a slug is formed by the linotype-machine, said indicator including  
 35 an indicating member bearing a set of characters composed of identical groups arranged one group in succession of the other.

9. The combination with a part of a linotype-machine operating in unison with the  
 40 slug-forming mechanism, of an indicator having a part arranged in the path of said part of the linotype-machine whereby to operate the indicator each time that a slug is formed by the linotype-machine, said indicator including  
 45 an indicating device having two sets of characters each set having identical groups of characters arranged one in succession of the other, and the groups of one set of characters being non-identical with the groups of the  
 50 other set of characters, and an adjustable

means for blanking either of said sets of characters.

10. The combination with a part of a linotype-machine operating in unison with a slug-forming mechanism, of an indicator having a  
 55 part arranged in the path of said part of the linotype-machine whereby to operate the indicator each time that a slug is formed by the linotype-machine, said indicator including an  
 60 indicating member bearing a set of characters composed of groups arranged one group in succession of the other.

11. The combination with a part of a linotype-machine operating in unison with a slug-forming mechanism, of an indicator having a  
 65 part arranged in the path of said part of the linotype-machine to operate the indicator each time that a slug is formed by the linotype-machine, said indicator including an  
 70 indicating device having two sets of characters arranged one in succession of the other, and the groups of one set of characters being non-identical with the groups of the other sets of  
 75 characters, and an adjustable means for directing attention to any one of said sets of

12. An indicator having two sets of characters, each set having identical groups of characters arranged one group in succession  
 80 of the other, and the groups of one set of characters being non-identical with the groups of the other sets of characters, and an adjustable means for directing attention to either  
 one of said sets of characters.

13. An indicator having two sets of numbers, each set comprising two identical  
 85 groups of progressive numbers arranged one in succession of the other, and the groups of one set of numbers having more elements than the groups of the other set, and an adjustable  
 90 means for directing attention to either one of said sets of numbers.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILBUR N. BOWMAN.

Witnesses:

O. H. RUNYAN,  
 M. M. McINTYRE.