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PATENTED OCT. 27, 1903.

F. J. LUDINGTON.  
CREASING DEVICE FOR CONTINUOUS CIGARETTE MACHINES.

APPLICATION FILED JAN. 30, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

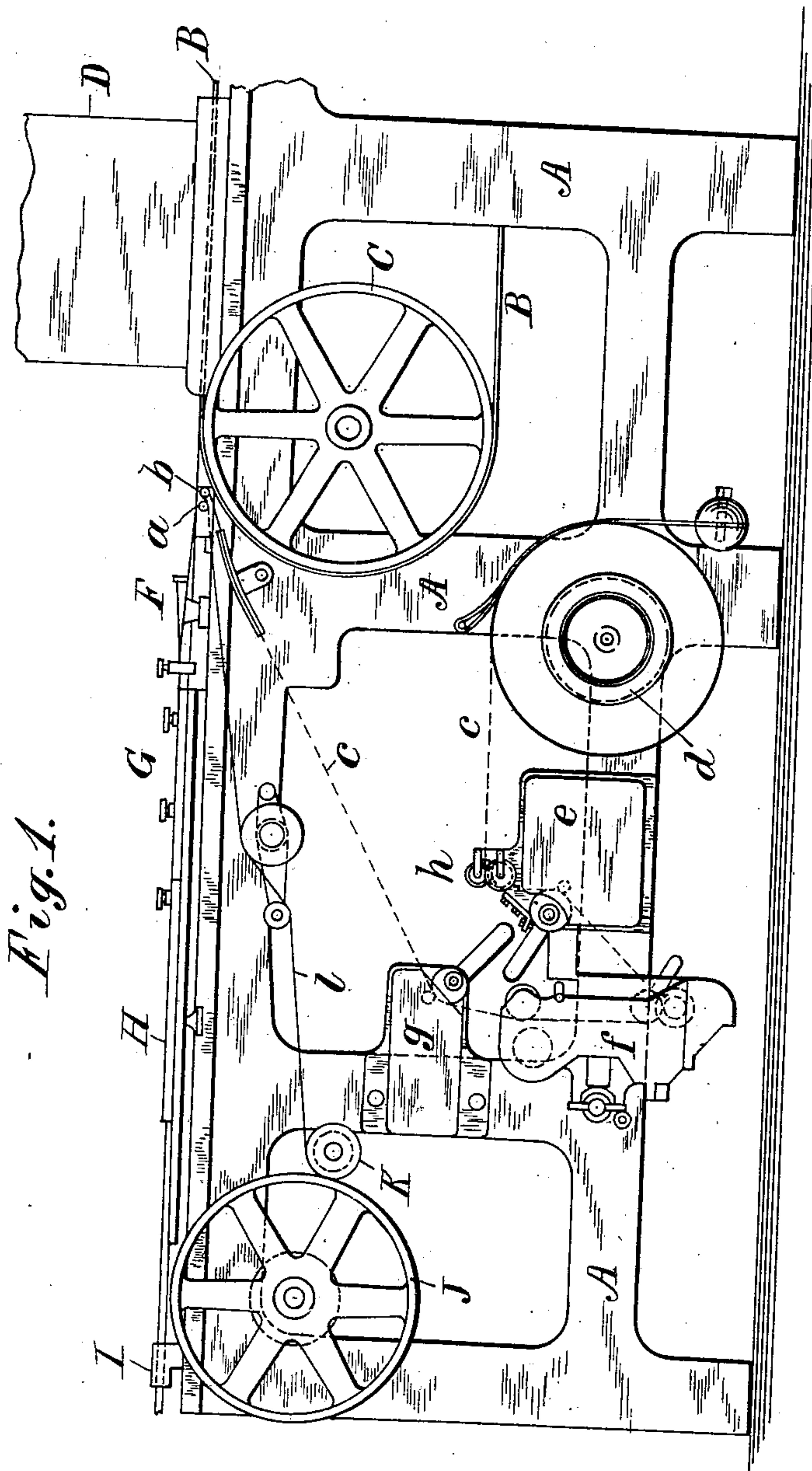


Fig. 1.

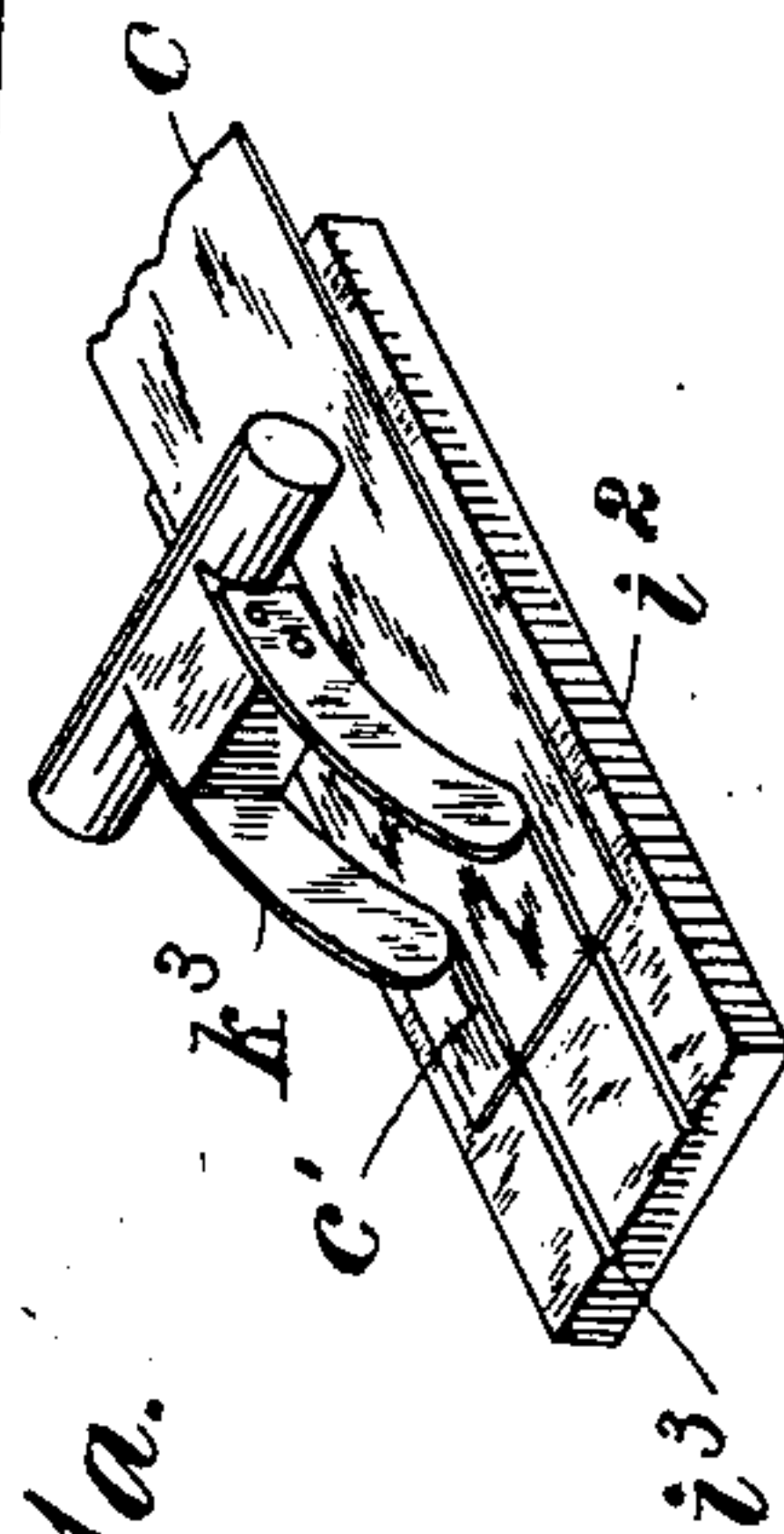


Fig. 1a.

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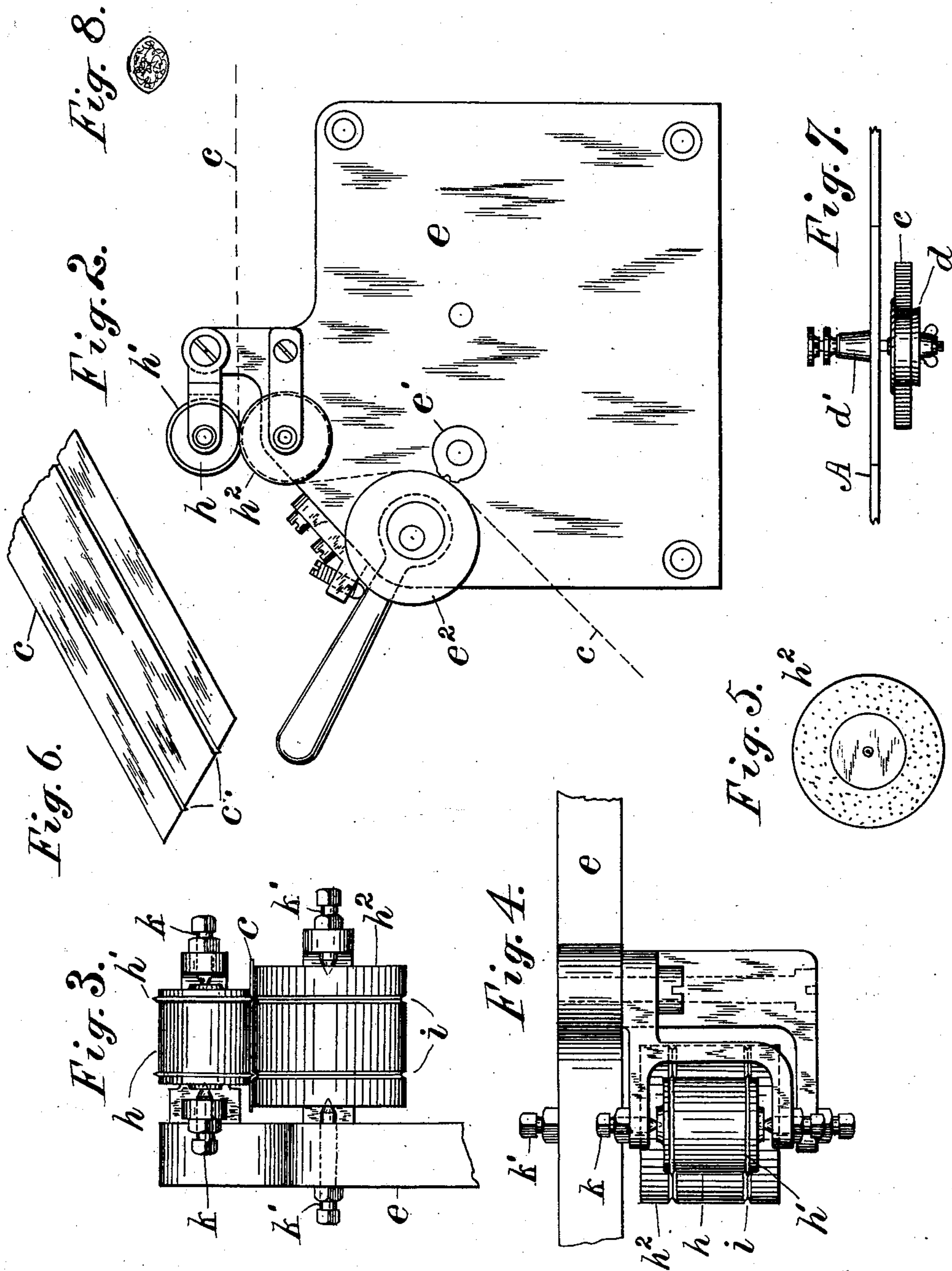
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# UNITED STATES PATENT OFFICE.

FRANK J. LUDINGTON, OF WATERBURY, CONNECTICUT.

CREASING DEVICE FOR CONTINUOUS-CIGARETTE MACHINES.

SPECIFICATION forming part of Letters Patent No. 742,338, dated October 27, 1903.

Application filed January 30, 1903. Serial No. 141,150. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK J. LUDINGTON, a citizen of the United States, of 63 Bank street, Waterbury, county of New Haven, State of Connecticut, have invented certain new and useful Improvements in Creasing Devices for Continuous-Cigarette Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The present invention relates to such continuous-cigarette machines as are employed in making cigarettes of oval cross-section; and the object of the invention is to furnish a means to form parallel creases in the wrapper while it is supported in a flat condition, as in this condition it can be guided accurately to the creasing devices and the creases thus formed at a proper distance apart and at a uniform distance from either edge of the wrapper. The flat wrapper is suitably supported during the creasing operation, and the creases are preferably formed by so-called "creasing-knives," which may consist of spring-plates or of thin collars adapted to press grooves into the paper. Where such rotary knives are employed, the support for the paper is also of rotary character, and the supporting-roll is preferably coated with a yielding substance, like india-rubber, to receive the pressure of the creasing-knives. The wrapper for cigarettes of this class is commonly printed at intervals before it is delivered to the forming devices, and means is provided for leading the wrapper from a suitable reel to the printing devices and guiding the paper to form the printed impressions at a suitable distance from the edges of the wrapper. The forming of the creases is preferably done in the wrapper prior to the printing operation, as any treatment of the wrapper after printing tends to blur the printed impressions, and by locating the creasing-rolls between the first or "size" printer and the roll of paper the creasing may be thus effected and the rolls adjusted to crease the paper when it is properly guided to the creasing devices. To thus adjust the rolls, they are preferably mounted upon longitudinally-adjustable bearings, by which they may be set in any lateral relation to the edges of the wrapper.

The invention will be understood by reference to the annexed drawings, in which—

Figure 1 is an elevation of a continuous-cigarette machine, only such parts being shown as relate to the present invention. Fig. 1<sup>a</sup> is a perspective view of a flat creasing-plate applied to a wrapper and flat table. Fig. 2 is an elevation of the first or size printer with the creasing-rolls applied thereto, the view being upon a much larger scale than Fig. 1. Fig. 3 is a front elevation, and Fig. 4 is a plan, of the creasing-rolls upon a still larger scale; and Fig. 5 is an end view of the bearing-roll. Fig. 6 shows a piece of the wrapper *c* with creases *c'*, and Fig. 7 is a plan of the adjustable reel-bearing.

The machine shown in Fig. 1 is of the type having an endless tape carried through the cigarette-forming devices and delivered with the wrapper to the forming devices by small rolls at the leading end of such devices. In such a machine the tobacco is deposited upon an endless belt and delivered from such belt to the wrapper.

A designates the frame of the machine; B, the feed-belt, shown in part, with one of its supporting or driving wheels C.

D is the hopper for delivering tobacco upon the feed-belt.

F designates collectively the barrel-feed or gathering device, which shapes the wrapper and tobacco for the first folding appliance, (indicated at G,) from which the tobacco passes to the pressing device, (indicated at H,) from which the cigarette is delivered through a guide I.

The endless tape *l* is shown carried over the tape-wheel J, located at the delivery end of the forming devices and extended from a guide-roll K to a leading-roll *a* at the end of the barrel-feed F. The wrapper *c* is shown extended from a reel *d* through a size-printer *e* and through color-printers *f* and *g*, from the latter of which it is led to a roll *b* at the entrance of the barrel-feed, which delivers it upon the tape *l*.

The creasing device is designated collectively *h* in Fig. 1, and the size-printer *e* is shown upon a much larger scale in Fig. 2, with a bearing-roll *h*<sup>2</sup> arranged to support the wrapper in the place of the idler which



is ordinarily used to carry the wrapper into the size-printer. The size-printer *e* is shown with type-roll *e'* for printing with the "size," and with pressing-rolls *e''* to press the wrapper thereon, and with the creasing device arranged to operate upon the flat wrapper before any printed impressions are made.

The creasing-roll *h* in Figs. 2 to 4 is shown provided with two thin collars, each beveled upon its opposite sides to form a so-called "creasing-knife," which in practice is made sufficiently round and smooth upon its edge to press a groove or crease in the wrapper without injuring the latter.

The bearing-roll *h''* is shown in Figs. 2 to 4 with grooves *i* of width a little greater than the creasing-knives to permit the pressing of the groove into the thin paper of the wrapper. The appearance of the creased wrapper is indicated in Fig. 6. The roll is shown with thick rubber coating and may be made with or without grooves if formed with a yielding coating. The reel *d* is shown in Fig. 7 mounted upon the frame *A* by a longitudinally-adjustable spindle *d'*, which serves by its adjustment to vary the lateral relation of the wrapper to the printing devices.

By mounting the creasing-roll upon the first or size printer it operates to crease the wrapper before any printed impressions are made upon the same, and it places the creasing-roll in a position where the lateral adjustment of the wrapper affects its relation to the creasing and printing devices simultaneously. When the wrapper is adjusted laterally for the printers by means of the stud *d'*, the creasing device may require adjustment laterally to vary the distance of the grooves *c'* upon the edge of the wrapper, and such lateral adjustment is secured in the present invention by mounting the creasing-roll upon the adjustable conical centers *k*, by which it may be moved longitudinally of its own axis.

The bearing-roll *h''*, which is shown grooved in Fig. 3, is also provided with adjustable centers *k'* to set the grooves *i* directly beneath the creasing-knives. If the bearing-roll be made with ungrooved yielding surface, as shown in Fig. 5, no lateral adjustment would be needed. In Fig. 1<sup>a</sup> an alternative construction of the creasing device is shown with two thin blades *k''* fitted above grooves *i''* in a flat table *i''*, the end of the wrapper *c* being shown between the knives and the table and creased thereby.

The roller construction for the knives, which is shown in Fig. 3, is preferable to the use of stationary knives as causing less frictional resistance to the movement of the wrapper and as guiding the wrapper more effectively, so that the creases are uniformly made in the same.

Fig. 8 shows the wrapper in the form to which it is bent by the cigarette-forming devices with the creases disposed at two opposite sides and the edges of the wrapper overlapped, as is necessary, to secure them upon the filler.

lapped, as is necessary, to secure them upon the filler.

It is obvious that the formation of the grooves in the wrapper at a suitable distance apart to form the corners of the cigarette serves to produce sharp corners at a uniform distance from the edges of the wrapper and that the means herein employed to form such creases is readily adjustable to vary their relation to the edges of the wrapper, and thus locate them at the desired distance from either edge of the same.

Having illustrated two different means for producing the creases in the flat wrapper, it will be readily seen that it is not material what means are employed provided the flat wrapper is formed with the parallel creases at a suitable distance to make the corners of the cigarette. It is also immaterial at what point the creases are made in the movement of the wrapper from the reel to the cigarette-forming device.

It is well known that so-called "Turkish" cigarettes, which are made by hand, exhibit sharp corners at the opposite edges of the cigarette, and such sharp corners are equally desirable upon a machine-made cigarette.

I have already in a prior application, Serial No. 132,056, filed November 20, 1902, for patent on a continuous-cigarette machine made claim to a creasing device which folds the wrapper into tubular form and flattens it to produce creases.

The present invention furnishes a still simpler means of producing creases upon the wrapper by indenting the creases into the wrapper without folding the latter. Such indented creases bend the fibers of the paper in a suitable manner to produce the sharp corners upon the edges of the cigarette when the wrapper is molded about the tobacco in the forming devices, and as the creasing mechanism employs two creasing implements at a fixed distance apart it necessarily makes the creases parallel and at precisely the distance desired to form such corners.

Having thus set forth the nature of the invention, what is claimed herein is—

1. In a continuous-cigarette machine, the combination, with means for forming a cigarette of oval cross-section and means for supplying the wrapper thereto, of means operating upon the flat wrapper before its delivery to the forming devices, to press parallel creases in the flat wrapper at a suitable distance apart to make the corners of the cigarette.

2. In a continuous-cigarette machine, the combination, with means for forming a cigarette of oval cross-section and means for supplying the wrapper thereto, of a support for the flat wrapper and two creasing-knives arranged and operated to form parallel creases in the wrapper at a suitable distance to make the corners of the cigarette.

3. In a continuous-cigarette machine, the combination, with means for forming a cigarette



rette of oval cross-section and means for securing the wrapper thereto, of means for printing at intervals upon the wrapper, a support for the flat wrapper, and means for forming, before the printed impressions are made, two creases in the flat wrapper at a suitable distance apart to make the corners of the cigarette.

4. In a continuous-cigarette machine, the combination, with means for forming a cigarette of oval cross-section, of a reel carrying a supply of the paper wrapper, means for delivering the wrapper in a given path from the reel, means adjacent to the reel for supporting the wrapper, and two creasing-knives arranged and operated to form parallel creases upon the wrapper at a suitable distance to make the corners of the cigarette.

5. In a continuous-cigarette machine, the combination, with means for forming a cigarette of oval cross-section, of a reel carrying a supply of the paper wrapper, means for delivering the wrapper in a given path from the reel, and a printing device interposed between the reel and the forming devices, of a support for the wrapper between the reel and the printing devices, and two knives arranged and operated to form parallel creases upon the wrapper at a suitable distance to make the corners of the cigarette.

6. In a continuous-cigarette machine, the combination, with means for forming a cigarette of oval cross-section and means for supplying the wrapper thereto, of a supporting-roll to sustain the flat wrapper and a roll having two circular knives pressed upon the wrapper to form parallel creases in the same at suitable distances to make the corners of the cigarette.

7. In a continuous-cigarette machine, the

combination, with forming devices to form a cigarette of oval cross-section and a printer for printing upon the wrapper at intervals before it is delivered to the forming devices, of a creasing device applied to the first or "size" printer and comprising a supporting-roll for the flat wrapper and a roll with circular knives pressed upon the wrapper to form parallel creases in the same.

8. In a continuous-cigarette machine, the combination, with forming devices to form a cigarette of oval cross-section, and means for guiding the wrapper laterally in its movement to the forming devices, of a creasing-roll applied to the flat wrapper to form parallel creases in the same to make the corners of the cigarette, the creasing-roll having means to adjust it longitudinally to vary the relation of the creases to the edge of the wrapper.

9. In a continuous-cigarette machine, the combination, with forming devices to form a cigarette of oval cross-section, means for guiding the wrapper laterally in its movement to the forming devices, a printer for printing upon the flat wrapper, and a reel for delivering the wrapper to the printer, of a creasing-roll arranged and operated to form two parallel creases in the flat wrapper between the reel and the first or "size" printer, and means for adjusting said creasing-roll longitudinally to vary the relation of the creases to the edge of the wrapper.

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

FRANK J. LUDINGTON.

Witnesses:

C. M. TRUMAN,  
V. M. SHAW.