

Dec. 19, 1939.

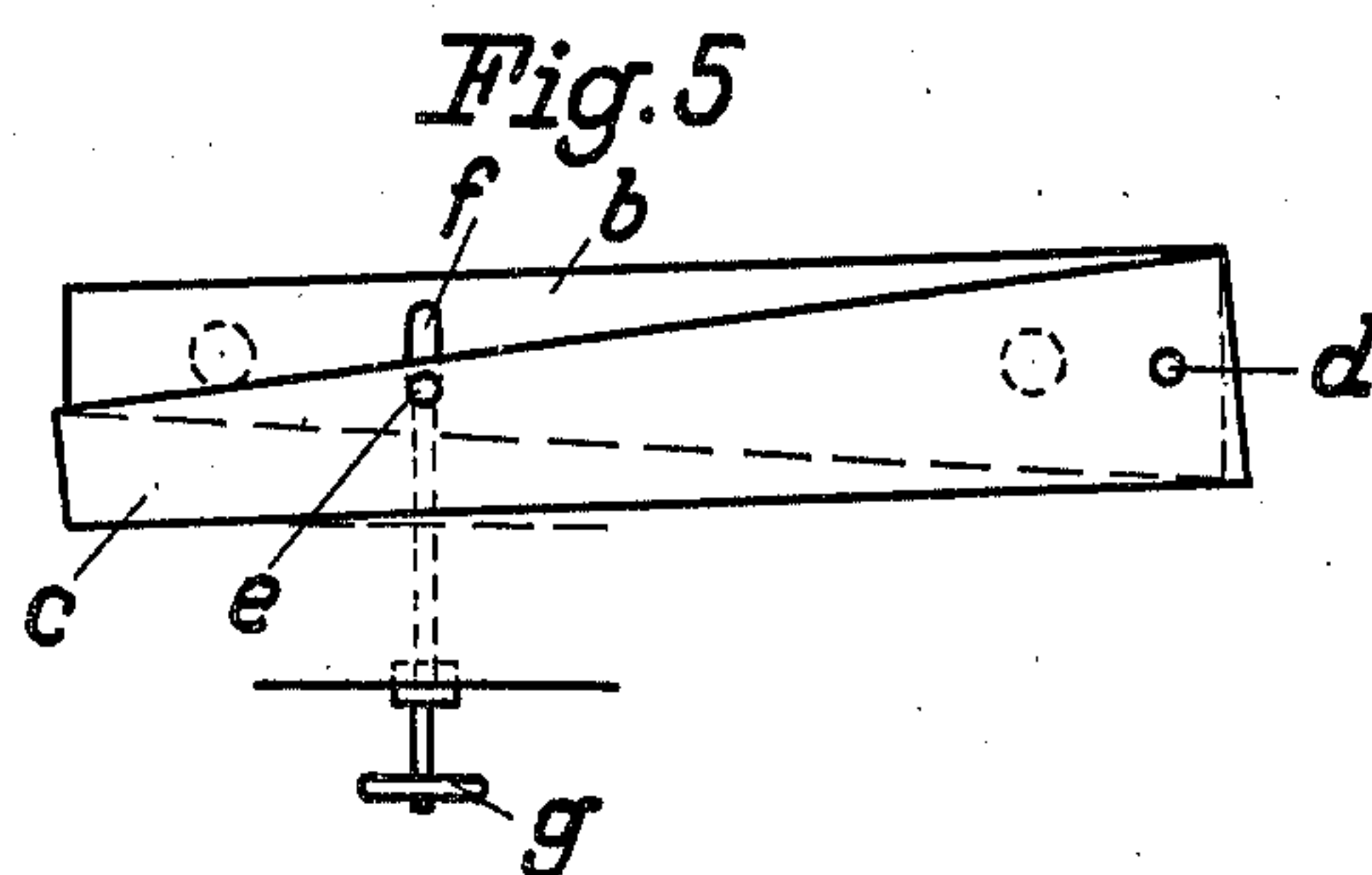
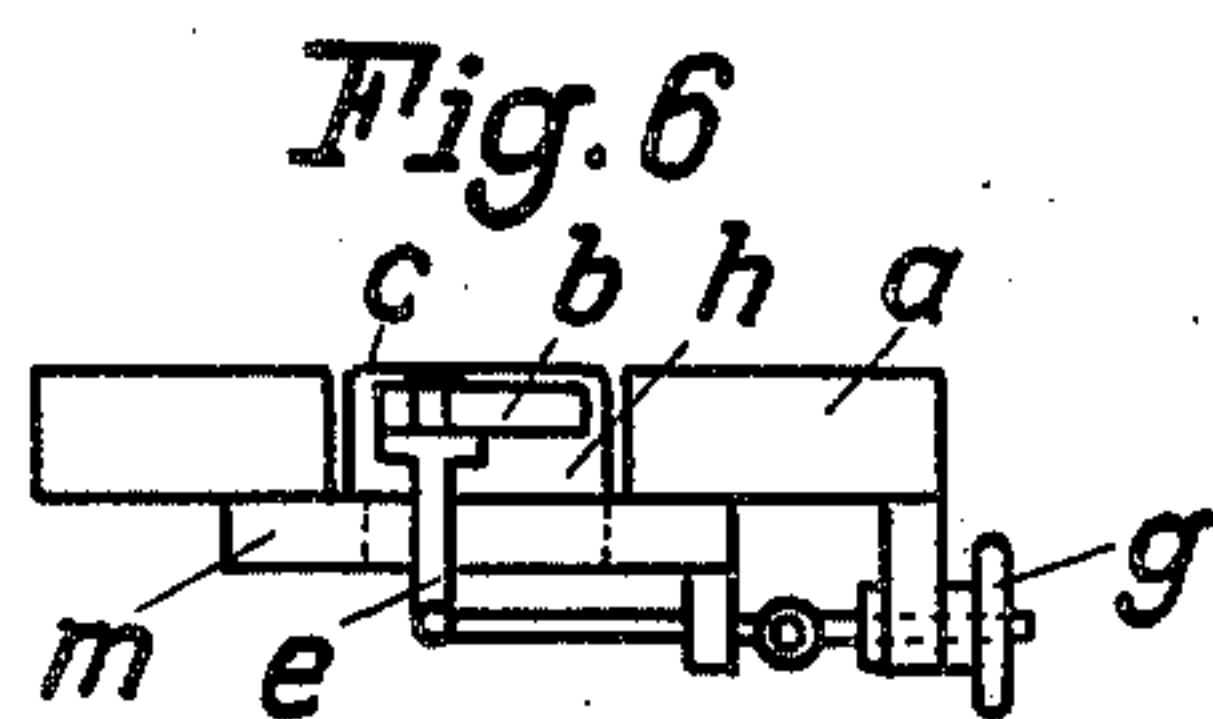
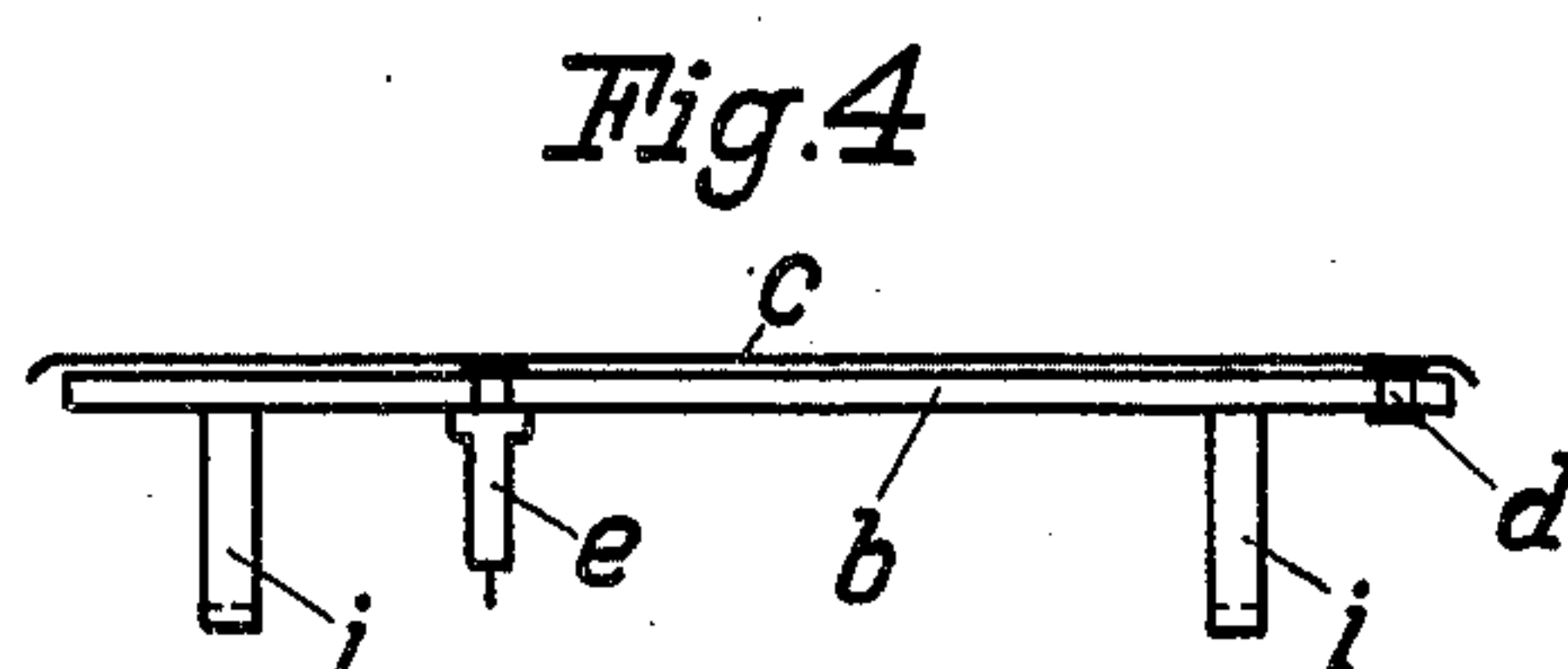
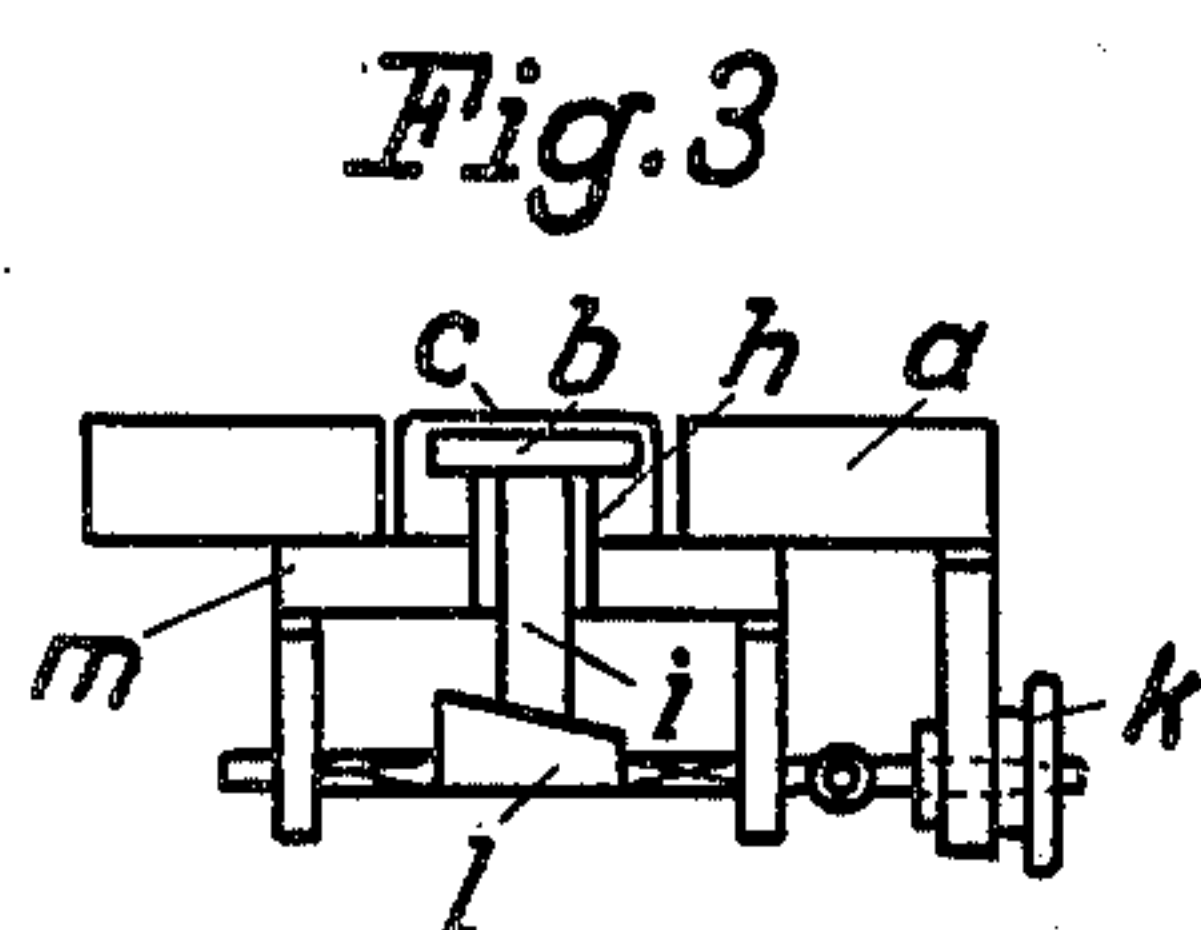
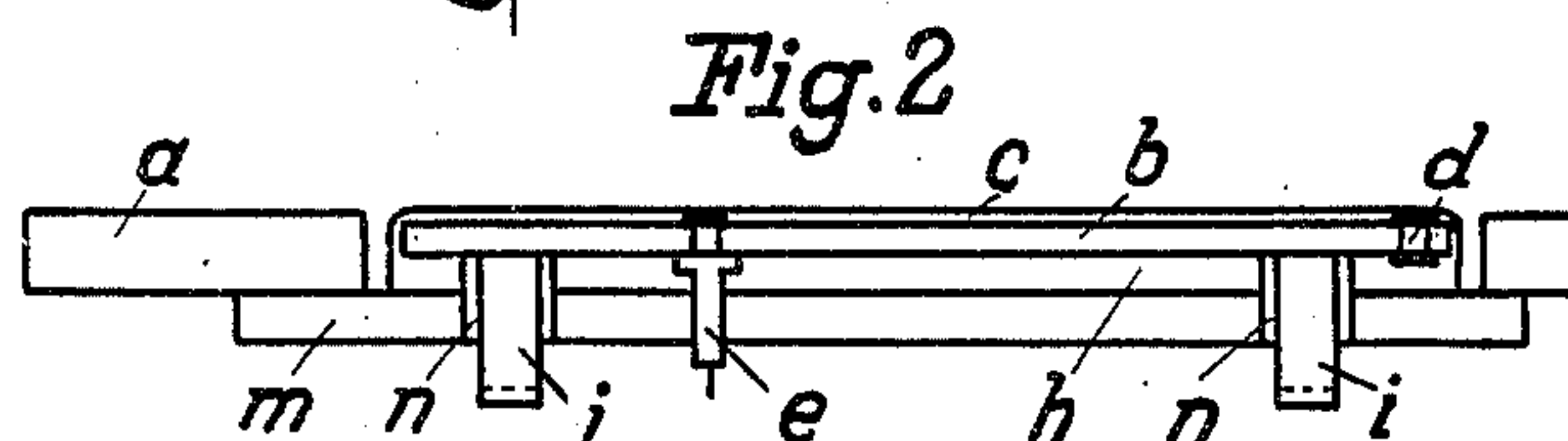
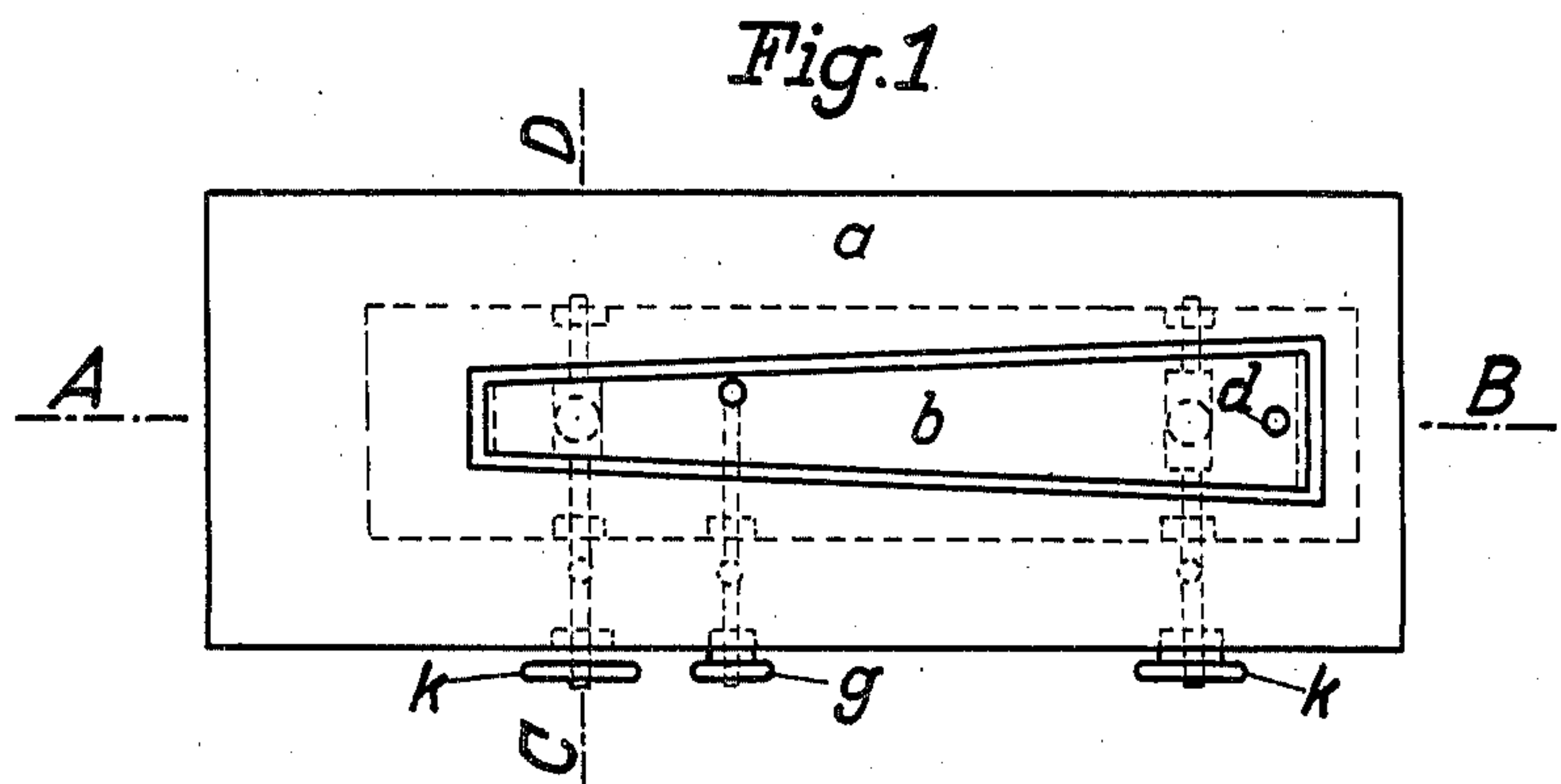
G. HEINRICH

2,184,218

DEVICE FOR ELIMINATING DIFFERENCES IN REGISTER

Filed Feb. 8, 1939

2 Sheets-Sheet 1



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DEVICE FOR ELIMINATING DIFFERENCES IN REGISTER

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2 Sheets-Sheet 2

Fig. 7

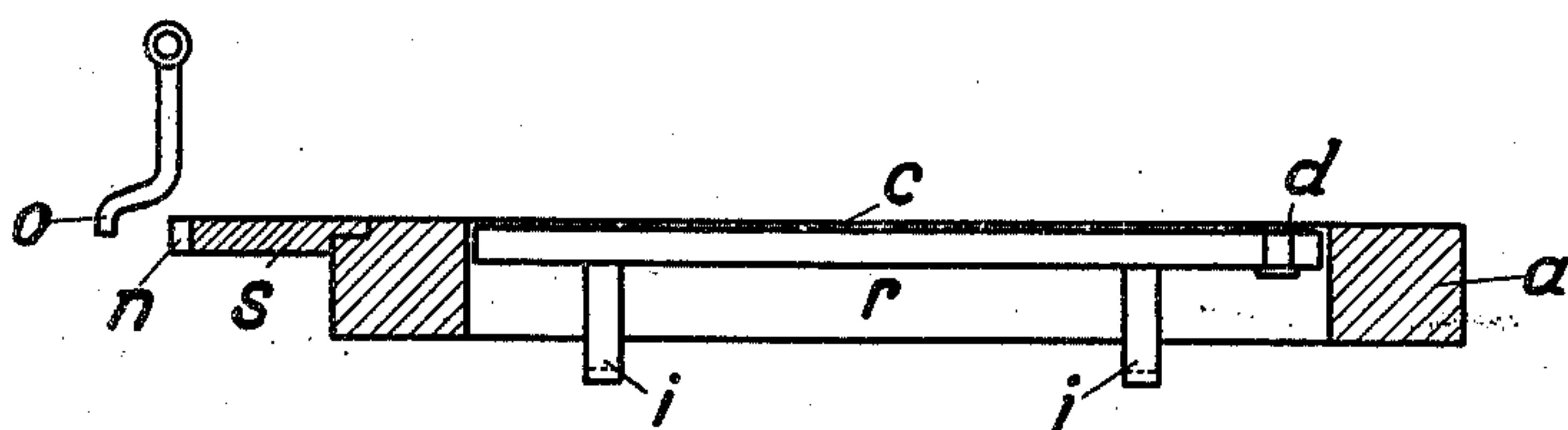
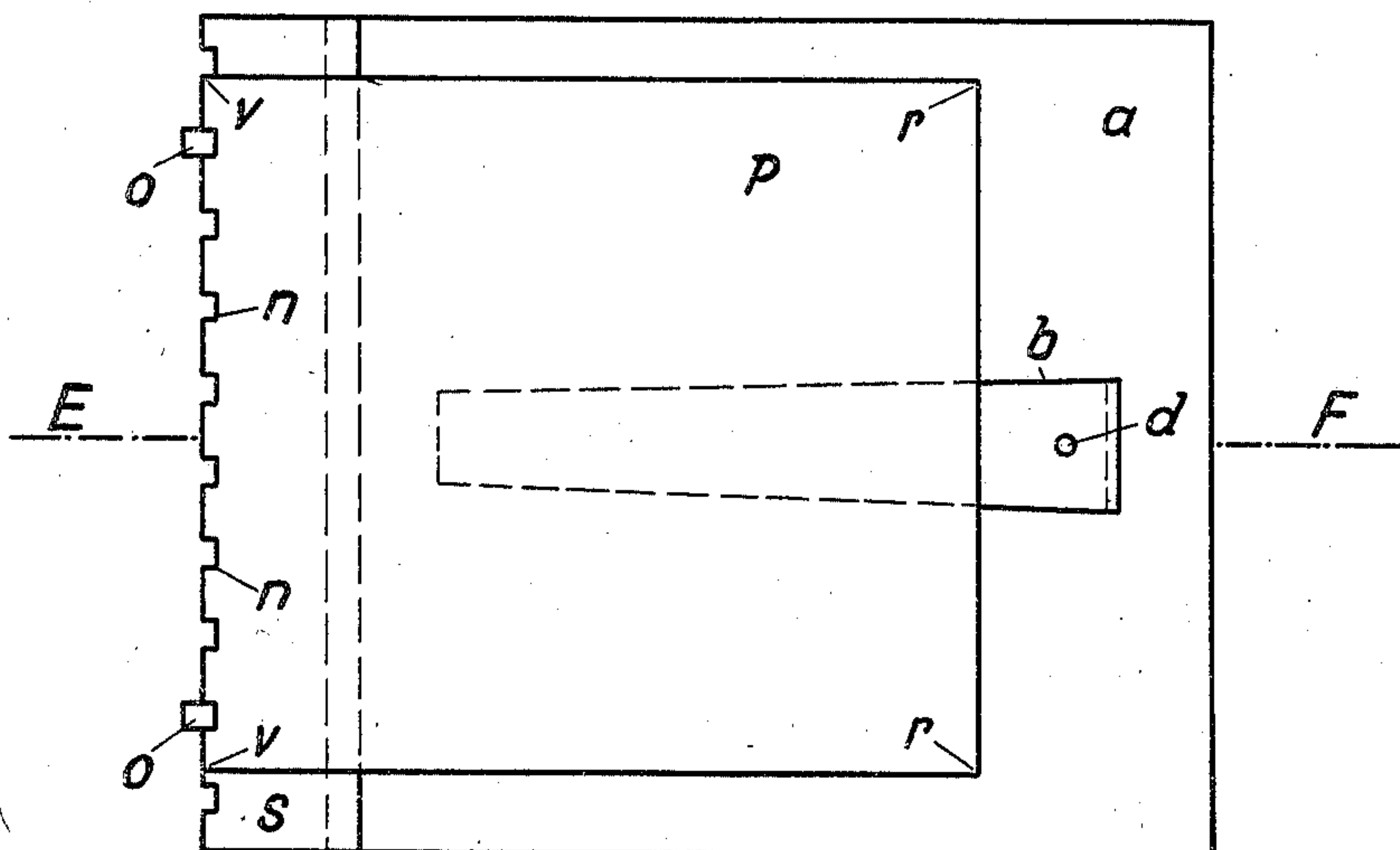


Fig. 8

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## UNITED STATES PATENT OFFICE

2,184,218

DEVICE FOR ELIMINATING DIFFERENCES  
IN REGISTERGerhard Heinrich, Hainsberg, Saxony, Germany,  
assignor to Georg Spiess, Leipzig, GermanyApplication February 8, 1939, Serial No. 255,328  
In Germany July 12, 1937

4 Claims. (Cl. 271—59)

This invention relates to a device for eliminating differences in register in the feeders of printing machines.

It is generally known that a printed sheet, for instance in color printing, changes its dimensions after each impression due to the moisture absorbed by the color with the result that the successively printed colors owing to the travel of the paper do not register exactly and the effect produced is not satisfactory. The same condition occurs when the humidity of the air of the working room varies according to changes in temperature.

It has been proposed to overcome these troubles by the installation of drying and air conditioning plants which serve for compensating the differences in register occurring after each printing operation by drying.

According to the invention, these differences are eliminated in a simple manner on the feed table of the machine by providing the table with a fanlike tongue or gage vertically and laterally adjustable relative to the surface of the table and having its point and broad side curved downwardly and vertically adjustably disposed at two places, said tongue or gage being adjustable in such manner that the lateral edges of a sheet lifted by it, and lying on it and on the surface of the table can be brought into perfect register with the lay-marks.

The invention is illustrated by way of example in the accompanying drawings, in which

Figure 1 is a plan of the device according to the invention;

Fig. 2, a longitudinal section on the line 2—2, of Fig. 1;

Fig. 3, a cross section on the line 3—3, of Fig. 1;

Figs. 4 and 5 are, respectively, a plan and an elevation of the tongue or gage lifted out of the table;

Fig. 6 is a cross section on the line 6—6, of Fig. 1;

Figs. 7 and 8 show the arrangement of the device with respect to the front-marks of the feed table, Fig. 7 being a plan and Fig. 8 a section on the line 8—8, of Fig. 7.

The table *a* of the sheet feeding apparatus possesses a clearance for the reception of a metal tongue *b* which serves for compensating differences in register and to which a weak metal plate *c* of similar shape is rotatably secured at *d*, as indicated in Figs. 2, 4 and 5.

The plate *c* is preferably slightly arched at both broad sides and covers the tongue *b* to prevent hooking of the sheet.

In order to keep the point of the plate *c* from being lifted off from the tongue *b* the plate is provided with a locking pin *e* which is guided in a slot *f* of the tongue *b* and can be adjusted by means of an articulated rod and a wheel *g*, as shown in Figs. 5 and 6.

The plate *c* rotatably disposed on the tongue *b* at *d* serves for widening the narrow side of the tongue when required by being displaced and thus compensating any difference in the register of a sheet.

The tongue *b* and the plate *c* are arranged in a clearance *h* of the table *a*, which is of similar shape and covered on the underside of the table by a plate *m* secured to the table. The tongue *b* is attached to supports *i* positioned in guides *n* of the plate *m* and vertically adjustable relative to the table. For this purpose the supports *i*, Figs. 2, 3, 4, have a wedge surface at their lower end, which rests on wedges *l*, Fig. 3, adjustable by a wheel *k*.

The wedge *l* is displaceably arranged on the plate *m*, which forms the bottom of the clearance *h* and is secured to the table *a*, and is moved to and fro by the adjusting wheel *k* so that the tongue *b* is raised or lowered relative to the table *a*.

The tongue *b* together with its support *i* can be removed from the table *a* and the plate *m*.

The arrangement of the device with respect to the gages or lay-marks of the feed table is shown in Figs. 7 and 8.

A metal plate *s* forming the front end of the feed table *a* is provided in known manner with the notches *n* and the lay-marks *o*.

By means of the tongue *b* provided on the table *a* and fitted with a metal plate *c* the sheet *p* lying flat on the table *a* can be more or less lifted according to the difference in register to be eliminated.

When the adjustable plate *c* is fully swung out and thereby a supporting face having the same width at both ends is provided for the sheet *p* and if the tongue *b* is raised, the width of the sheet *p* is reduced on both sides.

This shortening of the sheet, depending on the vertical adjustment of the tongue *b*, may amount to approximately 3 mm. at a width of 1 m. without producing a visible crease.

When the metal plate *c* is fully returned to be in absolute register with the tongue *b* and the broad side (on the right in Fig. 1) of the latter is lifted, the width of the right-hand portion of the sheet *p* will be reduced and the front left corners *v* thereof taken back at the gripper. On



the other hand, if the narrow portion of the tongue *b* on the left facing the gripper is lifted, the left portion of the sheet will be shortened and the corners *r* will be taken back.

- 5 Further possibilities of eliminating differences in register are provided by the various adjustments of the swingable metal plate *c* and the vertical adjustment of the tongue *b*.

After adjustment of the device according to 10 the invention the sheet *p* does not lie flat any more on the table *a*, but minute curvatures thereof are formed between the grippers and the corners of the sheet at the gripper edge are either taken back or advanced so that during rotation of 15 the impression cylinder, owing to the counter-pressure produced by the transmission of the impression, the sheet is pushed together in places.

The use of the device is facilitated by the absorption of moisture by the paper during printing 20 so that the paper becomes less resistant and increases its flexibility.

The working operation of the lay-marks is not varied or interfered with when the device according to the invention is applied.

25 I claim:

1. A device for eliminating differences in register in feeders of printing machines, characterized in that in the feeding table provided with lay-marks, a fanlike tongue vertically and laterally adjustable relative to the surface of 5 the table is arranged and can be so adjusted that a central portion of the sheet is lifted by the tongue and the edges of the sheet remain on the table, whereby the edges will move inward an amount sufficient to bring them back into proper 10 registry relative to the lay-marks.

2. A device according to claim 1, in which the tongue carries a metal plate of similar form rotatably arranged thereon and a locking pin adjusted by a wheel relative to the tongue secures the 15 plate against being lifted off from the tongue.

3. A device according to claim 1, in which guides operated by means of an adjusting wheel and wedges serve for vertically adjusting the tongue relative to the table. 20

4. A device according to claim 1, in which the tongue carries a metal plate of similar form rotatably arranged thereon and covering the tongue on the broad sides thereof.

GERHARD HEINRICH. 25