Oct. 16, 1934. C. CHISHOLM 1,976,715

SYSTEM OF PRINTING

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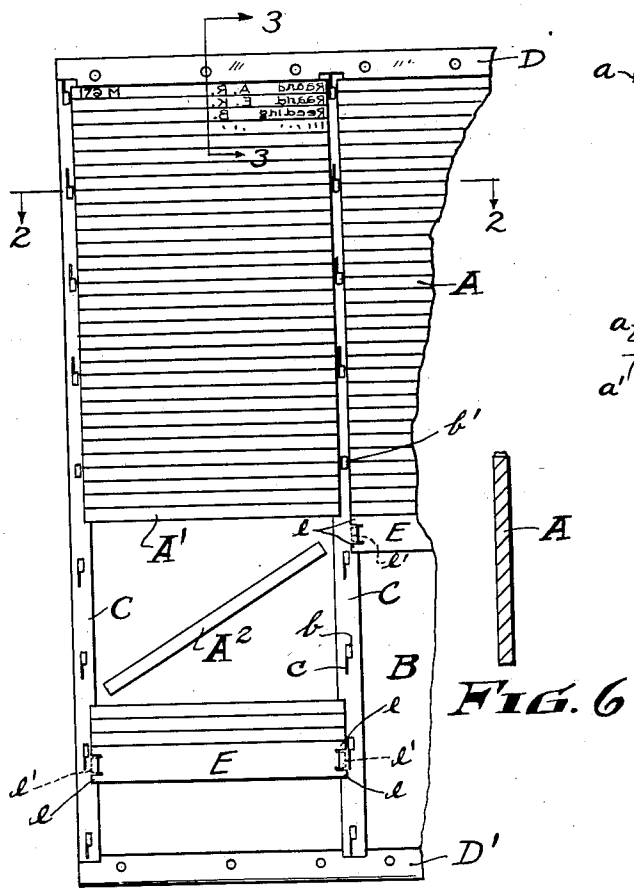


FIG. 1

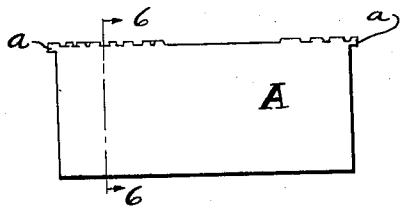


FIG. 4

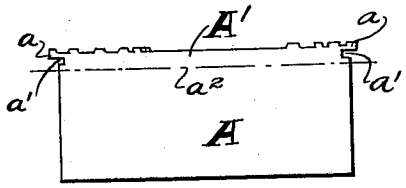


FIG. 5

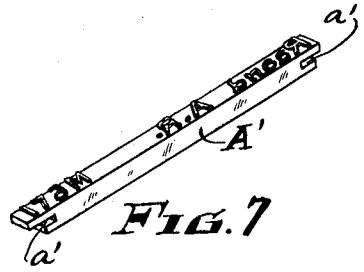


FIG. 7

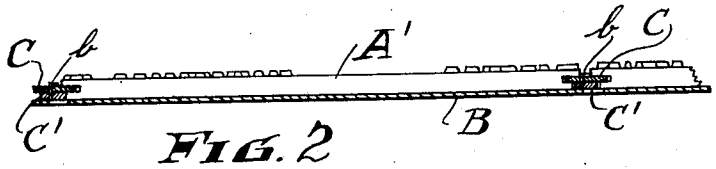


FIG. 2



FIG. 3

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UNITED STATES PATENT OFFICE

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SYSTEM OF PRINTING

Clifton Chisholm, Cleveland, Ohio, assignor to Multigraph Company, Wilmington, Del., a corporation of Delaware

Application December 22, 1930, Serial No. 503,873

5 Claims. (Cl. 101—396)

This invention is concerned with a system of printing, where it is desired to retain the form for subsequent use, either in its original condition or with substitutions, additions or omissions. It is an object of my invention to provide the means for carrying out such system, wherein the printing may be affected by a rotary press and the form stored flatwise, this being effected by making the form flexible so that it may be flat or curved about a printing drum and held thereon.

Another object is to so devise the printing members that they may be produced in an ordinary linotype machine and thereafter, by a very simple operation, converted into a condition suitable for mounting on a flexible galley, which may be stored flat or curved about the drum for printing.

My invention will be apparent from the following description in connection with the drawing illustrating the galley and printing members.

In the drawing, Fig. 1 is a plan partly broken away of a flexible galley carrying a number of my line printing members; Fig. 2 is a transverse section through the galley, that is, lengthwise of the line printing members, as indicated by the line 2—2 on Fig. 1; Fig. 3 is a cross section at right angles to Fig. 2 as indicated by the line 3—3 on Fig. 1; Fig. 4 is a side elevation of a printing slug of ordinary type height as cast by a linotype machine; Fig. 5 is a view of this full height slug after the ends have been grooved, this view indicating the plane of severence for making the low height slug; Fig. 6 is a vertical section through the slug of Figs. 4 and 5, as indicated by the line 6—6 on Fig. 4; Fig. 7 is a perspective of my low height slug formed by cutting off the lower portion of the slug of Fig. 5.

In carrying out my invention, I cast, in a linotype or similar machine, a slug of the character shown in Figs. 4 and 6. This is the ordinary slug, except that the mould at its ends is shortened for a little less than the entire height of the slug, as for instance by filling strips set into the ends of the mould, which strips are slightly shorter than the height of the mould cavity. The mould thus altered leaves the slug with side rabbets in its ends, or, phrased differently, with overhanging lugs *a* at the ends adjacent the top.

The cast slug of Fig. 4 is now grooved at its ends, as shown at *a*1 directly beneath the lugs *a* in Fig. 5, and the lower portion of the slug is cut off on the line indicated at *a*2 slightly below the grooves *a*1. The result of this operation is to produce the slug A1 shown in the upper portion of Fig. 1 and in perspective in Fig. 7 and in side elevation in Fig. 2. This slug has grooves at its end by which it may be retained in the galley. Furthermore, the length of the slug below the grooves is less than above the grooves to allow the printing characters on the face of the slug to overhang the retaining device, as about to be explained.

It is simple and economical to cut the notches *a*1 in the ends of the slug and to sever the slug at the line *a*2 at one operation, this being effected by a gang of saws arranged to engage the slug simultaneously at the opposite ends and along the line *a*2. Accordingly, when the slugs are cast and discharged by the mould, it needs only one operation to make the completed slugs of Fig. 7.

In Figs. 1, 2 and 3, I have shown a flexible galley comprising a base plate B on which there are retaining strips C surmounting narrower filling strips C1. To enable the convenient flexing of the galley, the strips C and C1 are fixedly anchored only at one point and are slidable on each other and on the base. This is effected by suitable tongues *b* (which may be cut-out and turned-up portions of the base plate B) which pass through slots *c* in the strips, but one of which (preferably at the center indicated by *b*1) passes through a hole in the strip of substantially the same size as the tongue. The result is that the strips cannot be displaced but may slide on each other during the flexing of the galley.

The above described mounting of the retaining strips C and C1 on the flexible base is shown, described and claimed in prior application of myself and Peter M. Colquhoun No. 445,501 filed April 18th, 1930, and reference is made to that application for claims on that feature.

I find that a certain width of filler strip C1 is desirable to retain the holding strip C in proper position. Now, it is desirable to have the printing columns closer together than the distance corresponding to the filler strip C1. I effect this by making the slug tongues beneath the end notches *a*1 shorter than the tongues above such notches *a*1. This peculiar end formation which is cheaply effected on a cast slug as heretofore explained, enables the slugs to be mounted in columns on opposite sides of the retaining device with a very little space between the columns, as illustrated in Figs. 1 and 2.

A suitable end stop is desirable at the top of the galley, and I effect this by a cross bar D riveted to the base plate B. I may make this same cross bar a retaining device for the galley on the drum by bending it downwardly and back-

wardly to form a hook, as shown at *d* in Fig. 3. This feature however is covered in a copending application of mine. And end strip D1 similar to the strip D may be employed at the other end of the galley, as illustrated in Fig. 1, enabling either end to be at the top of the columns.

The slugs are mounted on the galley by placing them diagonally, as in the case of the slug A2 in Fig. 1, and then skewing the slugs into position at right angles to the retaining strip, as indicated at A1. This enables the slugs to be very quickly mounted in making up the form. This system of mounting also enables any slug to be quickly removed whenever desired. To that end the form is simply separated, as shown in Fig. 1, and the undesired slug is skewed into diagonal position and removed as illustrated in A2. Fig. 1 shows in the right hand portion, a compact printing form of line slugs A1 held against the end stop D by a follower E, ready for printing. The left hand portion of this figure shows a column separated by drawing down the follower E for the removal or replacement of a slug.

The follower E which normally retains the printing form compacted, is shown as having tongues *e* and *e1* at its ends embracing the edges of the strip C. This feature however is covered in the application No. 445,501 heretofore mentioned.

It will be seen from the description given that the slugs may be very cheaply and rapidly constructed, being simply cast in an ordinary machine and then sawed with a suitable tool. Thereafter they are easily mounted in the flat flexible galley shown. The galleys with their assembled forms may be stored in any suitable cabinet and whenever desired, the selected galley may be wrapped around a drum and printing effected therefrom. If this wrapping action separates the lines, they are readily compacted by shoving up the follower E to tighten the form, the frictional engagement of the follower with the galley slats holding the form compact.

After printing the form is removed from the press and flattened, the slugs and followers sliding slightly lengthwise of the column, as may be required. The galley with its form may be retained for subsequent use, and, if alterations additions or subtractions are to be made, they can be readily effected while the form is flat, and thereafter the revised form is ready for mounting on the drum for printing.

I claim:—

1. As a new article of manufacture, a printing slug comprising a low height narrow solid member having a single line of printing characters on its face and having grooves in its opposite ends, the body of the slug being longer above the grooves than below them.

2. The combination with a flexible galley having a backing plate and retaining strips mounted thereon, of a series of line slugs resting on the backing strip and held by the retaining strips, each line slug being a solid member having grooves in its opposite ends, the body of the slug above the groove being longer than below it.

3. The combination, with a flexible galley having a base and filler strips surmounted by wider retaining strips slidably held on the base, of line slugs having grooves in their ends and body portions which are of less length below the groves than above them.

4. An apparatus for printing, comprising low-height solid integral cast slugs, each having a single line of characters and having projections at its ends, and a flexible galley comprising a backing plate and longitudinal overhanging strips which overlie the end projections of the slugs, whereby a form is produced which may be bent about a drum for printing.

5. An apparatus for printing, comprising a set of solid slugs having a single line of characters and formed with overhanging lugs at their ends adjacent the printing face, grooves in the ends of the slugs, the slugs being longer above the grooves than below them, and a flexible galley which has overhanging retaining strips occupying the grooves and narrower supporting strips beneath the retaining strips.

CLIFTON CHISHOLM.