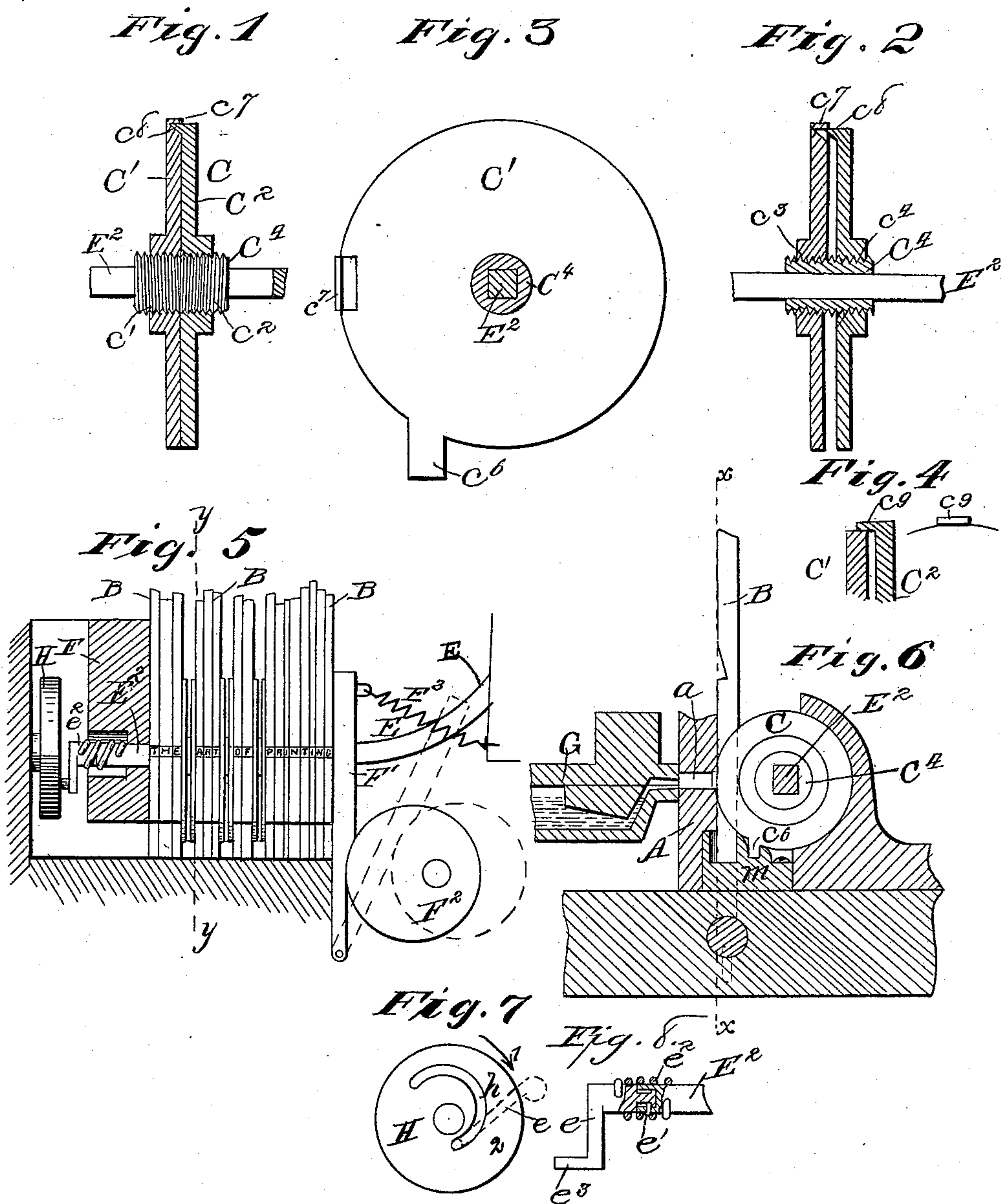


(No Model.)

M. GEORGII.
MEANS FOR JUSTIFYING MATRICES.

No. 472,966.

Patented Apr. 12, 1892.



WITNESSES:

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MEANS FOR JUSTIFYING MATRICES.

SPECIFICATION forming part of Letters Patent No. 472,966, dated April 12, 1892.

Application filed January 20, 1891. Serial No. 378,449. (No model.)

To all whom it may concern:

Be it known that I, MAX GEORGII, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Means for Justifying Matrices, &c., of which the following is a specification.

The present invention relates to compound justifying-spaces and their operating mechanism, whereby a line of matrices, types, or punches set up to form a linotype, line of printed matter, or line of matrix matter may be justified automatically and at one impulse of the machine in which they are employed and similarly released.

The invention consists, essentially, in a compound space, which is shown and described in my application filed January 12, 1891, Serial No. 377,498, as illustrating the generic features of the invention therein claimed, but which is not specifically claimed therein.

In the drawings accompanying this description, Figures 1 and 2 represent horizontal central sections of a compound space embodying my invention in closed and expanded conditions, respectively; Fig. 3, a side elevation of the same; Fig. 4, a detail in sectional plan and side elevation showing a modified arrangement of lips; Fig. 5, a diagrammatic elevation, partly in section, on line $x x$, Fig. 6, showing a justified line of matrices with my improved justifying-spaces; Fig. 6, a vertical section on line $y y$, Fig. 5, showing a line of such matrices in front of the melting-pot of the linotype-casting apparatus; Figs. 7 and 8, detail views.

As shown, my spaces are each in the form of compound expansible spaces C , preferably consisting of two disks C' C^2 , so arranged and mounted as to be carried one by one down an inclined spaceway E and onto a space-shaft E^2 , arranged in line with the matrices forming part of the matrix-bars B , and to be expanded by rocking the shaft E^2 , all as explained in Patents to Rogers, No. 437,139, and Bright, No. 437,141, dated September 23, 1890. (See Fig. 5.)

The means for expanding the spaces C in the present instance consist in an expanding part, preferably consisting of a central hub C^4 , having right and left hand screw-threads c' c^2 , and a squared bore adapted to fit the squared space-shaft E^2 , so that the hub C^4 will

partake of the rocking motion of the said space-shaft. The disks C' and C^2 are interiorly threaded at c^3 and c^4 in opposite directions, respectively, so as to engage the right and left screw-threads c' c^2 , and they are preferably enlarged at these threaded portions for purposes of strength and stability, as shown. The sections or disks C' C^2 are again preferably provided with retaining-toes and with overlapping lips c^7 c^8 for the purpose of closing the space between the sections when the compound space is expanded and preventing the molten metal from entering between the same. One form of these lips I have shown in Figs. 1 and 2 and another form in Fig. 4. In the latter arrangement but one lip c^9 , which may consist of a thin plate of metal attached in any suitable and well-known way to disk C^2 and which overlaps the part of the edge of disk C' which comes in line with the matrices, is shown, and which when the space is expanded in front of the mold keeps the space between the sections C' C^2 at all times closed. The compound spaces are preferably so arranged that lip c^7 or c^9 will project beyond the faces of the matrices when in line and extend into the casting-chamber a of the mold A . (See Fig. 6.) When the matrices and the interposed compound justifying-spaces have been arranged in line, they are held between the fixed clamp F and the movable clamp F' , actuated by any suitable means, such as the cam F^2 , acting against the stress of spring F^3 , which tends to keep the movable clamp F' open and in such a position as indicated in dotted lines, Fig. 5, as to permit the introduction of the matrices and the compound spaces, the spaceway E for which is bent laterally, so as to allow the spaces C to slide into position without interfering with the said clamp F^2 . When the clamp F' has been closed, the space-bar E^2 is rocked by any suitable mechanism, and in rocking it causes the screw-threaded hub C^4 to turn, and thereby cause the interiorly screw-threaded disks or sections C' C^2 to move apart or expand, the said sections being held against rotation by the engagement of their toes c^6 with the guard-grooves m , Fig. 6, as in my former application, Serial No. 377,498, filed January 12, 1891. When the line of matter has thus been clamped and justified and the mold

closed, the molten metal is injected thereinto from the melting-pot G in the usual manner.

I have shown herein a means for rocking the space-shaft E^2 which I consider advantageous, although any other means adapted to yield when the line of matter is justified may be employed. In the present instance the space-rod E^2 has a crank e swiveled in its end and secured from slipping out by a pin e' , entering an annular slot in the swivel of the crank e , as shown. (See Fig. 8.) In order to prevent the crank e from turning with respect to the shaft, except under extraordinary pressure, a strong spring e^2 is coiled about both at their juncture and secured to both. The wrist-pin e^3 of the crank e enters a cam-groove h in a disk H, mounted on a shaft receiving motion from the mechanism of the machine at the proper time.

The operation of this mechanism is obvious. When the cam-disk turns in the direction of the arrow 1, Fig. 7, it turns the crank in the direction of the arrow 2 and with it the space-rod E^2 , causing the compound spaces C to expand, as above explained. When this line has been fully justified—i. e., the space between its clamps F and F' completely filled—the resistance of the space-rod E^2 to further rotation becomes so great that the spring e^2 yields and allows the crank to turn independently of the space-rod until the disk H has completed its movement.

The construction covered in claims 1 and 2 of this specification is shown and described as a modification in my generic application, Serial No. 377,498, filed January 12, 1891, but is not specifically claimed therein.

It is obvious that many modifications might be devised in the application so far described without departing from my invention. Thus it is not necessary that my compound spaces be in the shape of compound disks or that they be held against rotation in the way indi-

cated. The compound justifying-spaces might also be assembled in other ways beside those indicated. Moreover, the mechanism for turning the space-rod might be so arranged as to impart several rotations to the screw-threaded hub C^4 . I do not therefore desire to be limited to the exact construction shown and described; but

What I claim, and desire to secure by Letters Patent, is—

1. A justifying-space consisting of two sections adapted to move laterally, in combination with an expanding part provided with right and left hand screw-threads engaging with corresponding screw-threads on the movable sections, substantially as set forth.

2. A justifying-space consisting of two sections adapted to move laterally or axially, in combination with a central hub having right and left hand screw-threads engaging with corresponding interior screw-threads on the laterally-movable sections, substantially as set forth.

3. In justifying apparatus, a rocking shaft and a series of expansible justifying-spaces mounted thereon, in combination with a yielding crank secured to the rocking shaft and means for turning the yielding crank, substantially as set forth.

4. In justifying apparatus, a rocking shaft and a series of expansible justifying-spaces mounted thereon, in combination with a yielding crank secured to the rocking shaft and an actuating-disk provided with a cam-groove for engaging the yielding crank, substantially as set forth.

In testimony whereof I hereby affix my signature in presence of two witnesses.

MAX GEORGII.

Witnesses:

EDWARD A. MUIR,
D. G. STUART.