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J. S. BANCROFT.  
DIE CASE EQUIPMENT FOR TYPE MACHINES.

APPLICATION FILED AUG. 4, 1904.

Fig. 1.

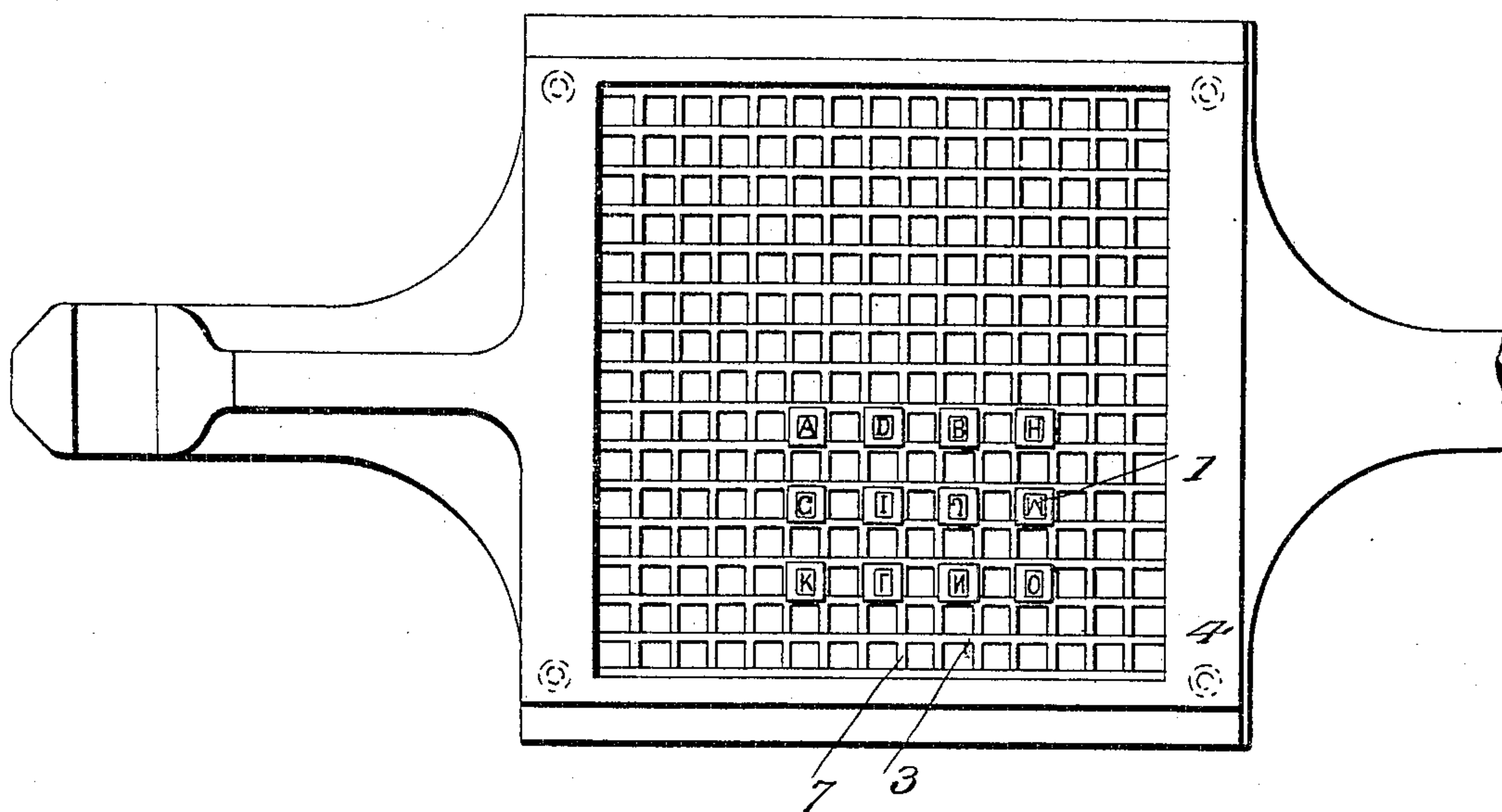


Fig. 2.

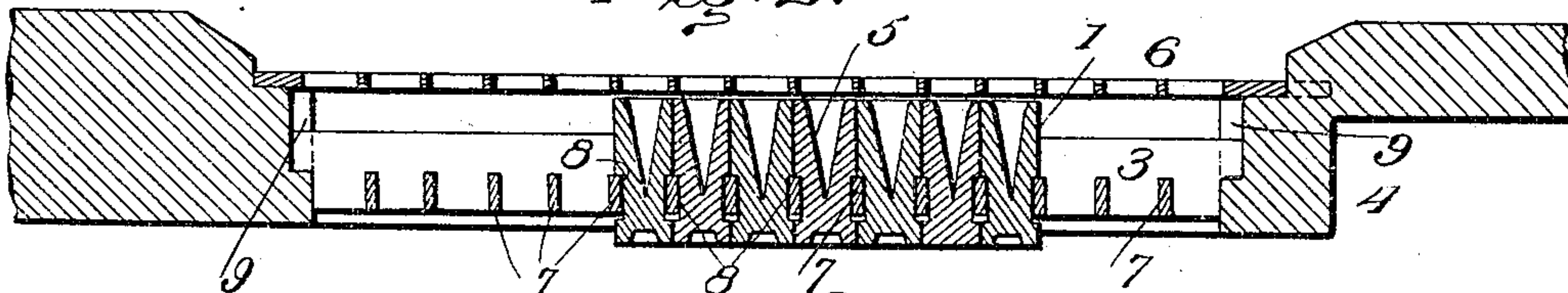


Fig. 3.

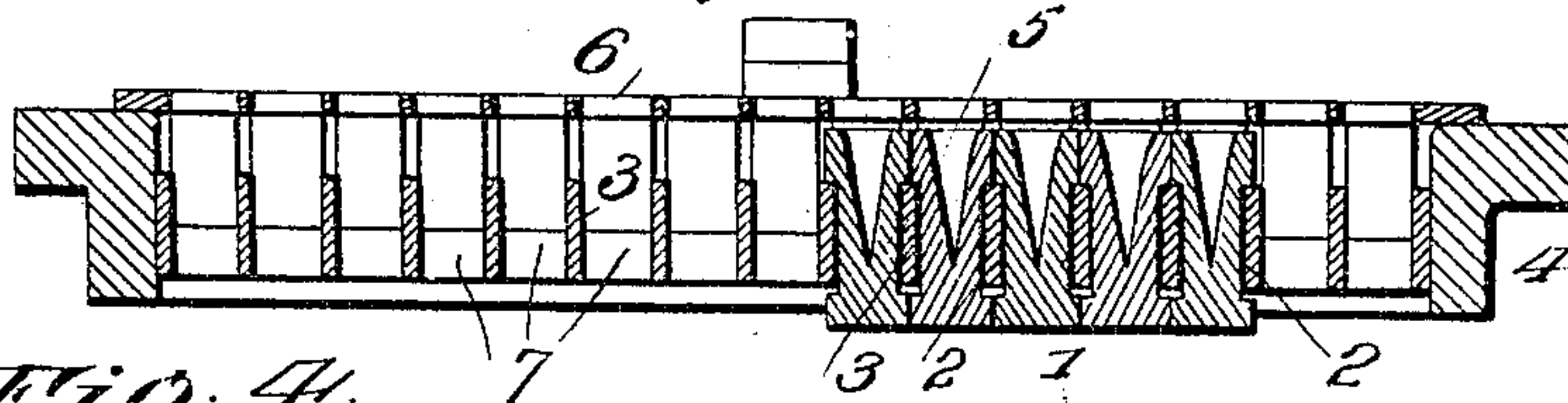


Fig. 4.

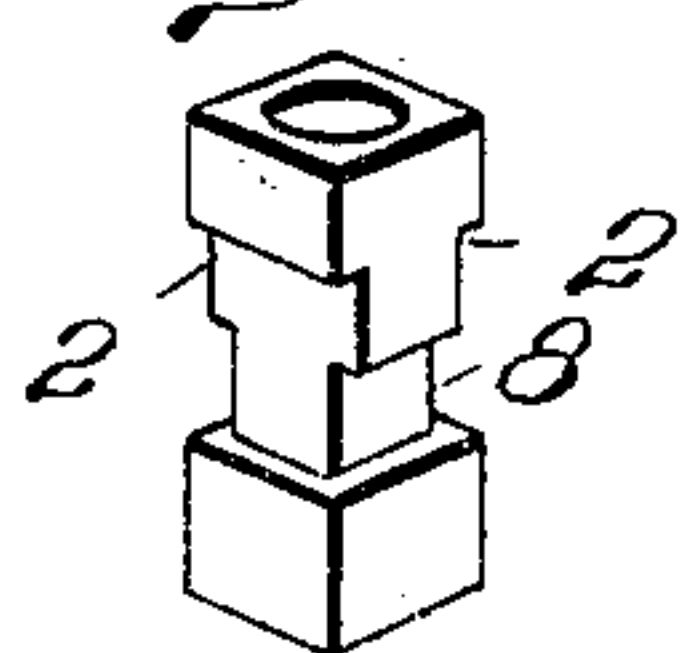
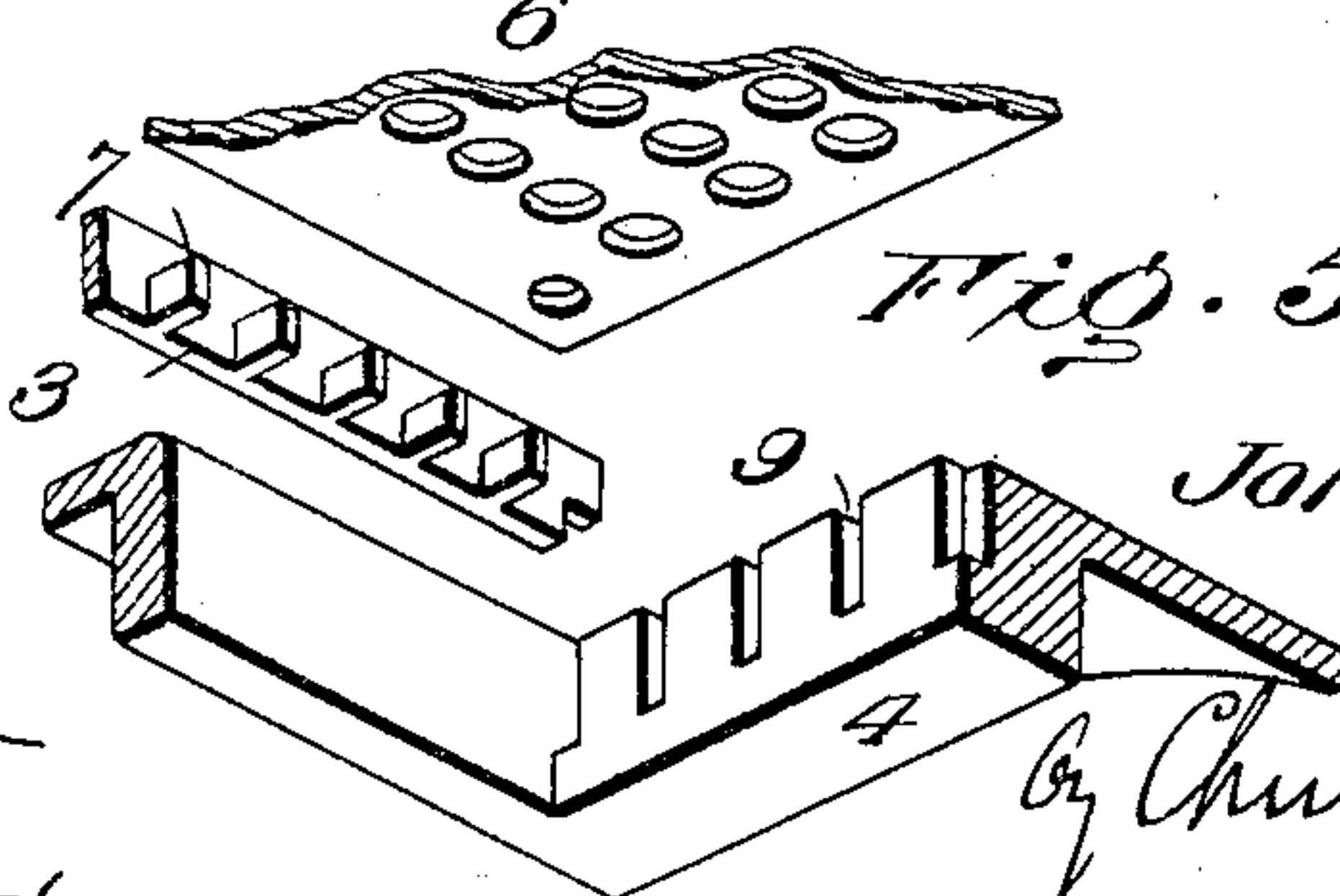


Fig. 5.



Witnesses

*for* *James*  
*Thomas Durant*

Inventor

*John S. Bancroft*

*by* *Chas. Church*  
*his Attorneys*



# UNITED STATES PATENT OFFICE.

JOHN SELLERS BANCROFT, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO LANSTON MONOTYPE MACHINE COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF VIRGINIA.

## DIE-CASE EQUIPMENT FOR TYPE-MACHINES.

SPECIFICATION forming part of Letters Patent No. 784,245, dated March 7, 1905.

Application filed August 4, 1904. Serial No. 219,516.

*To all whom it may concern:*

Be it known that I, JOHN SELLERS BANCROFT, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Die-Case Equipment for Type-Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the figures of reference marked thereon.

This invention relates to the die or matrix carrier for type-casting and composing-machines illustrated in Patents Nos. 625,998 and 633,088, and more specifically to the form of die-case equipment illustrated in Patent No. 725,653, wherein the separate matrices are supported in rows upon parallel suspension-bars engaging seats in opposite sides of the matrices in order to permit the centering-cavity to be extended below the point of suspension to insure longitudinal alinement of the matrix and centering-plunger.

As heretofore constructed the individual matrices comprising each row were held from rotation or twisting partially by the engagement of the supporting-bars and partially by contact between the sides of adjacent matrix-blocks, and they were supported against lateral displacement in one direction by the suspension-bars located between adjacent rows and in a transverse direction by the side walls of the die-case frame.

It is found in practice that notwithstanding the very limited degree of independent motion permitted the matrix-blocks in the die-case it is sufficient in the course of time and under normal conditions of use to effect a material reduction in the lateral dimensions of the matrix-blocks, due to the gradual wearing away of the surfaces in contact, and this before any serious impairment of the matrix or casting end. This wear shortens the life and seriously impairs the efficiency of the die-case by the removal or weakening of the restraints upon axial rotation and lateral dis-

placement, and its effect is most marked in relation to the displacement in a direction parallel with the rows of matrices, where the position of each matrix-block is determined by that of its neighbor, and the displacement occasioned by wear is not that of the proximate surfaces of adjacent blocks alone, but the sum of the wear on all the blocks intermediate the one selected and the side of the die-case frame.

The practical effect is to impair the registry between the die-case-centering mechanism and the centering-plunger, so that when the die-case is brought to position to present a given matrix opposite the mold its centering-cavity will stand considerably to one side of the axis of the centering-plunger, sometimes so far to one side that the plunger will not enter the centering-cavity, but will engage the end of the matrix-block, and this notwithstanding the presence of the guard-plate of Patent No. 745,800, and even when the displacement is in a lesser degree the centering-plunger, by repeatedly engaging one side of the centering-cavity, will soon distort or wear the latter to such an extent as to prevent accurate centering and at the same time favor the twisting of the matrix-block.

The object of the present invention is to remedy these and other defects in the die-case equipment without in any degree depreciating or interfering with its other valuable qualities, to which end the invention consists in equipping the suspension-bars with a series of lateral projections adapted to enter recesses or grooves in the proximate sides of the matrix-blocks composing a row, and thus form rigid abutments to limit the motion of the individual matrix-blocks upon the suspension-bars, and in minor features of construction and arrangement of parts herein-after fully described, the novel features being pointed out in the appended claims.

In the accompanying drawings, illustrating a preferred form of embodiment of the invention, Figure 1 is a bottom plan view of the die-case equipped with a limited number



of matrix-blocks. Fig. 2 is a longitudinal vertical section showing a partial row of matrix-blocks in position. Fig. 3 is a transverse vertical section. Fig. 4 is a perspective view of the new form of matrix-block. Fig. 5 is a perspective view of a section of the die-case frame, one of the suspension-bars, and the guard-plate, these several parts being shown detached and separated..

The same numerals designate corresponding parts in the several figures.

In its general features and mode of operation the die-case with which the present improvements are shown associated is that of Patent No. 725,653 with the guard-plate of Patent No. 745,800 applied thereto.

The matrix-blocks 1, grooved on opposite sides, as at 2, are suspended between parallel bars 3, secured at opposite ends in the die-case frame 4.

Each matrix-block is provided at one end with a matrix-cavity or a blank face (for quads and spaces) and at its opposite end with a conical centering-cavity 5, extending below the upper edges of the suspension-bars 3.

The guard-plate 6 is secured to the upper face of the die-case, and the centering mechanism operates through the die-case to bring any matrix-block into alinement with the conical centering-plunger, (not shown,) so that when the latter enters and is seated in the centering-cavity 5 it will bring it accurately to final position and hold it firmly upon the mold while the cast is being made.

Heretofore plain suspension rods or bars inserted through openings in the sides of the frame have been employed for suspending and securing the matrix-blocks in rows; but this was found to be objectionable for several reasons other than those pertaining to displacement incident to wear. Thus it was required that each row should be fully equipped or filled out with matrix-blocks whether or not all were required for casting purposes, and the matrix-blocks had to be assembled in the die-case frame prior to the insertion of the suspension-rods. Now according to the present improvements each suspension-bar is formed or provided with a series of lateral projections or fingers 7, preferably of a length adapted to bridge the space between adjacent suspension-bars and spaced to correspond with the intervals between the matrix-blocks of the row. These fingers or projections 7 serve as side bearings for positioning the matrix-blocks in a direction at right angles to that performed by the suspension-bars, so that the amount of displacement incident to wear will only equal that of the surface in contact with the side bearing instead of the aggregate of all the matrix-blocks between the one selected and the side of the die-case frame.

To permit the matrix-blocks of the row to

stand close together, and thus preserve the established relation existing between the die-case and its centering mechanism, the matrix blocks are grooved, as at 8, for the accommodation or the projections or fingers 7, the groove in each face or side being approximately one-half the thickness of the finger or projection, and in order to preserve a wide bearing for the suspension-bars upon the sides of the matrix-blocks—that is, a bearing the full width of the matrix block and one best adapted to prevent twisting—the fingers or projections 7 are preferably made of less depth than the suspension-bars and the grooves 8 narrower than grooves 2.

The ends of the suspension-bars are received in slots or bearings 9, formed in or attached to the opposite side bars of the die-case frame, said bearings opening upward or toward the guard-plate 6, the latter by its engagement with the matrix-blocks serving to retain said blocks as well as the bars in position.

In setting up or assembling the die-case the matrix-blocks for each row are inserted between the fingers or projections 7 of a suspension-bar; but it is not required that the row should be filled, owing to the fact that the individual matrix-blocks find supporting-surfaces on all sides. The several suspension-bars thus equipped are associated together in the proper order and the whole is then inserted into the die-case frame and the guard-plate secured thereto. If it is desired to replace any matrix-block or renew the equipment, the suspension-bars and matrix-blocks are removed from the frame, when any one or more rows can be withdrawn and the desired change made without disturbing the balance.

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

1. A die-case for type-casting machines such as described, the same comprising a supporting-frame, and a plurality of detachable suspension-bars in parallel relation, each of said bars being provided with a longitudinal series of lateral projections or fingers.

2. A die-case such as described, consisting of a supporting-frame; a plurality of detachable suspension-bars, in parallel relation, each provided with a longitudinal series of lateral projections or arms separating the space between adjacent bars into compartments; and matrix-blocks adapted to occupy said compartments, provided with shoulders engaging the suspension-bars and held to position by said bars and projections or fingers.

3. A die-case equipment such as described comprising the following elements, to wit: a supporting-frame; a plurality of suspension-bars detachably mounted upon said frame in parallel relation and each provided with a longitudinal series of lateral projections or arms forming, in conjunction with the adjacent



bar, a series of compartments; and a series of matrix-blocks, occupying said compartments and each grooved circumferentially to receive the suspension-bars and projections forming the walls of its compartment.

4. A die-case equipment such as described comprising the following elements, in combination, to wit: a supporting-frame; a plurality of independent suspension-bars each provided with lateral projections or arms forming a longitudinal series of open compartments, said bars being detachably supported in parallel relation upon the frame; and a plurality of matrix-blocks supported within said compartments and overlapping the walls thereof, to form suspension-shoulders and permit contact between the proximate faces of adjacent blocks.

5. A die-case equipment such as described containing the following elements, in combination, to wit: a supporting-frame provided with a series of open bearings in opposite walls thereof; a series of suspension-bars each provided with a longitudinal series of lateral projections or arms forming in conjunction with the next adjacent bar a series of closed compartments for the reception of matrix-blocks, said bars occupying the bearings in the frame; matrix-blocks, one or more, supported in said compartments and interlocked with the suspension-bars thereof; and a guard-plate attached to the frame in position to engage the matrix block or blocks to retain the latter in position.

6. In a die-case equipment such as described the combination with the supporting-frame and the suspension-bars detachably mounted thereon and each provided with a longitudinal series of lateral projections or arms forming, in conjunction with the adjacent bar, a series of compartments, of matrix-

blocks, one or more, having side grooves or recesses for the reception of the suspension-bars and projections forming the walls of the compartments.

7. In a die-case equipment such as described the combination with the supporting-frame of a plurality of suspension-bars detachably mounted upon said frame in parallel relation and each furnished with lateral projections or arms of less depth than the bars.

8. In a die-case equipment such as described the combination with the supporting-frame and the suspension-bars detachably mounted thereon and provided with lateral projections or arms of less depth than the bars, of a matrix-block, one or more, provided with two sets of grooves of different widths, one for the reception of the suspension-bars and the other for the lateral projections or arms forming the partitions.

9. A matrix-block for type-machines such as described provided with a quadrilateral body portion and a circumferential groove therein.

10. A matrix-block for type-machines such as described grooved circumferentially to form a quadrangular section of less area than the body.

11. A matrix-block for type-machines such as described provided with a quadrilateral body portion, grooved circumferentially in planes parallel with the sides, the grooves on two diametrically opposite sides being wider than those on the remaining sides.

JOHN SELLERS BANCROFT.

Witnesses:

MORTIMER A. JONES,  
W. BANCROFT.