

(No Model.)

A. W. HANIGAN.  
SPACER FOR LINE CASTING MACHINES.

No. 541,353.

Patented June 18, 1895.

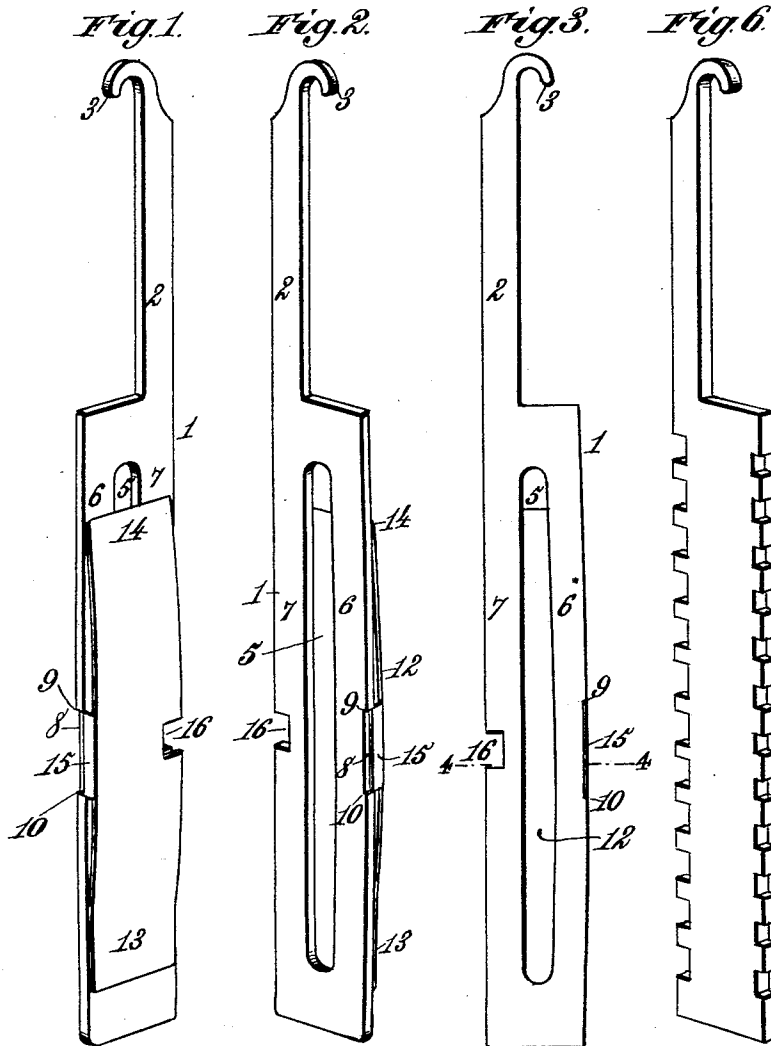


Fig. 4.

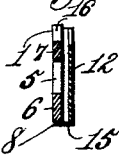
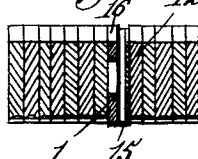


Fig. 5.



Witnesses.

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# UNITED STATES PATENT OFFICE.

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## SPACER FOR LINE-CASTING MACHINES.

SPECIFICATION forming part of Letters Patent No. 541,353, dated June 18, 1895.

Application filed November 30, 1894. Serial No. 530,401. (No model.)

*To all whom it may concern:*

Be it known that I, ADAM W. HANIGAN, a citizen of the United States, residing at Baltimore, Maryland, have invented new and useful Improvements in Spacers for Line-Casting Machines, of which the following is a specification.

This invention has for its object to avoid the use of wedges for expanding space-bars, and the employment of the usual wedge-operating mechanism in line-casting machines; and to provide new and improved compressible space-bars which can be mechanically manipulated by the same mechanism as the matrix-bars in the Monoline casting machine, disclosed by Letters Patent No. 506,198, issued October 3, 1893, to W. S. Scudder, assignor to the Monoline Composing Company.

The invention also has for its object to provide a novel construction of space-bar, whereby the front edge thereof is yielding or elastic and normally stands slightly in advance of the front edges of the matrix-bars, and is pressed back by the mold to effect a fluid-tight closure of the latter between the matrix-bars, compensate for any existing inaccuracies in the matrix-bars, or in the line of assembled matrices, and prevent leakage during the casting operation.

The invention consists essentially in a spacer comprising a body having a front edge projected or sprung forward to normally stand or extend slightly in advance of the front edges of the matrix-bars, or matrices, and a spring secured to the spacer-bar or body and having a lip to extend across a part of the said forwardly sprung front edge, so that the mold, when moved forward, presses the lip tightly against the spacer-bar or body while the latter projects sufficiently ahead of the face of the line to constantly stand close to the lip and render it possible to compensate for any irregularities in the bodies of the matrix-bars, or the bodies of the spacers, and thus secure a perfect fluid tight closure of the mold between the matrices to effectually prevent leakage.

The invention also consists in certain other features of construction and combination or

arrangement of parts hereinafter described and claimed.

The improved spacer is composed of a longitudinally slotted bar or body, the front edge portion of which is sprung forward and contains a transverse recess to receive a lateral lip carried by a leaf-spring, which is secured at one end to the spacer-bar or body, and is free or unattached at the opposite end, so that a compressible spacer is provided wherein the front edge portion is susceptible of yielding when the mold is moved against the matrix-bars and spacers to cast a type-bar or slug.

The invention is illustrated by the accompanying drawings, in which—

Figure 1 is a perspective view of a space-bar constructed in accordance with my invention. Fig. 2 is a similar view looking at the side opposite that shown in Fig. 1. Fig. 3 is a side elevation to clearly illustrate the manner in which the front edge of the space-bar or body is sprung or projected forward to normally stand slightly in advance of the front edges of the matrix-bars or matrices. Fig. 4 is a sectional view taken on the line 4 4, Fig. 3. Fig. 5 is a sectional view of several matrix-bars, showing one of my spacers between two of the matrix-bars; and Fig. 6 is a perspective view of a Scudder or Monoline matrix-bar.

In order to enable those skilled in the art to make and use my invention, I will now describe the same in detail, referring to the drawings, wherein—

The numeral 1 indicates the spacer-bar or body, which is composed of a piece or strip of metal having a shank 2 provided at its extremity with a hook 3 designed to engage the distributor wires of the Monoline casting machine.

The space-bar or body is provided with a longitudinal slot 5 which divides the body portion into two members 6 and 7. The member 6 constitutes the front edge of the space-bar or body, and this member is sprung forward, or is formed in the arc of a circle of great diameter, so that the central portion of the edge will normally stand slightly in advance of the matrix-bars, or the line of as-

sembled matrices, but is susceptible of yielding rearward. The rearward yielding of the front edge is rendered possible by the longitudinal slot 5, separating the member 6 from the member 7.

The yielding or elastic member 6 is provided centrally between its end portions with a transverse recess 8 of comparatively small depth, thereby forming shoulders 9 and 10.

The spacer is rendered laterally compressible through the medium of a flat or leaf-spring 12, rigidly and permanently secured at one extremity, as at 13, to the lower end of the space-bar or body. The opposite end, 14, of the flat or leaf-spring is disconnected from the space-bar or body, and consequently is susceptible of moving longitudinally to a very limited extent. The flat or leaf-spring is slightly arched longitudinally, so that it normally projects laterally from the space-bar, and can be forced toward the space-bar or body to compress the spacer when a line of assembled matrices is compressed lengthwise by any ordinary mechanism employed to compress the lines, so that they will all be of exact or uniform length. The front edge of the flat or leaf-spring is formed or provided centrally between its extremities with a lateral lip 15, of a width, length, and thickness co-extensive with the recess 8 in the front edge of the yielding or elastic member 6 of the space-bar or body. The rear edges of the space-bar or body, and of the flat or leaf-spring are provided with a notch, as at 16, to engage the aligning bar of the Monoline casting machine.

In line casting machines wherein elastic compressible spacers are employed it is important to provide means whereby the spacers will be efficient and practicable in the varying positions they necessarily assume and be susceptible of compensating for any existing inaccuracies in the matrix-bars, or in the assembled line of matrices. These results are accomplished by providing the lipped spring and constructing the metallic front edge of the spacer-bar or body so that it normally stands slightly in advance of the front edges of the matrix-bars, or in advance of the matrices, and is adapted to yield when the mold is moved against the lipped spring to press the latter and the front edge back flush with the front edges of the matrix-bars. By this mode of operation I am enabled to compensate for inaccuracies, and at the same time obtain a perfect fluid-tight closure of the mold between the matrices.

As is well known, a spacer or space-bar is used for justifying composed lines of type, and the present device is particularly designed for that character of line casting machines, wherein matrix-bars having female dies or matrices, representing characters, are assembled in a line in juxtaposition to a mold supplied with molten type-metal, so that when

the type-metal is injected into the mold a type-high printing bar is cast which bears at its edge cameo characters corresponding to the dies or matrices.

In line casting machines, such as above referred to, the matrix-bars or matrices, and the space-bars or spacers are released from a magazine through the medium of finger-key mechanism; and to produce lines of type of equal or uniform length, the spacing is changed after the line of matrix-bars or matrices is assembled or composed. The changing of the spacing is effected by compressing the line in the direction of its length, and in this operation the spacers are compressed and the lips of the flat or leaf-springs are moved transversely across the front edges of the space-bars or bodies. When the mold moves against the lips, the latter are pressed back tightly against the front edges of the space-bars or bodies, and as these front edges are susceptible of yielding a perfect fluid-tight closure is effected, and I am enabled to compensate for any inaccuracies existing in the matrix-bars, or in the line of assembled matrices.

The new and improved spacer herein described is susceptible of being passed into and through the magazine identically with the matrix-bars employed in the Monoline casting machine above referred to.

The spring secured rigidly and permanently at one end only, and having a lip movable in the recess in the front edge of the spacer-bar or body, provides a uniform front edge to the spacer, and by springing the front edge of the spacer-bar or body slightly forward, and causing the mold to press the lip against such front edge, a perfect closure is made between the mold and the lip of the spring. This is very important, because in compressible spacers the parts must, under every condition, make a fluid-tight closure of the mold between matrices, and I have discovered that unless the body of the spacer is sprung or projected slightly forward, as explained, some lines of matrices are set that permit leakage during the casting operation. As before stated when the mold is moved forward against my improved spacer, the mold presses the lip against the spacer-body, and the forwardly sprung front edge of the spacer-body being yielding or elastic compensates for irregularities in the bodies of the matrix-bars or matrices, and in the bodies of the spacers themselves. It is difficult to make a compressible spring-spacer so accurate in size as to conform to all its positions, and to compensate for inaccuracies in the matrices, or in the assembled line of matrices. My invention, however, accomplishes this result and effectually compensates for inaccuracies incident to line-casting machines.

In Fig. 5 I show in section several matrix-bars, and one of my improved spacers in po-

sition; and in Fig. 6 I show a perspective view of one of the matrix-bars, which are known as the Scudder or Monoline matrix-bars.

5 Having thus described my invention, what I claim is—

10 1. A spacer for a line-casting machine, having a longitudinally slotted body portion, and a yielding front edge which is pressed back by the mold in the casting operation, substantially as described.

15 2. A spacer for a line-casting machine, having a yielding front edge sprung forward to normally stand slightly in advance of the front edges of the matrix-bars, or matrices, substantially as and for the purposes described.

20 3. A spacer for a line-casting machine, consisting of a spacer-bar or body having its front edge sprung forward to normally stand slightly in advance of the front edges of the matrix-bars, or matrices, and a spring secured to the spacer-bar or body and having a lip to extend across a part of the said forwardly sprung front edge, substantially as and for the purposes described.

25 4. A spacer for a line-casting machine, consisting of a spacer-bar or body having a yielding front edge sprung forward to normally

stand slightly in advance of the front edges of the matrices and provided with a transverse recess, and a leaf-spring secured at one end to the spacer-bar or body, unattached at the opposite end and having a lip arranged to move in the said recess when the spacer is compressed, substantially as and for the purposes described. 30 35

5. A space-bar for a line-casting machine, consisting of a longitudinally slotted space-bar or body having a yielding front edge sprung forward to normally stand slightly in advance of the front edges of the matrices and provided with a transverse recess, and a leaf-spring secured at one extremity to the spacer-body, unattached at the opposite extremity and having a lip adapted to move in the said recess when the spacer is compressed, substantially as and for the purposes described. 40 45

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses. 50

ADAM W. HANIGAN.

Witnesses:

E. H. BRANEN,  
W. S. SCUDDER.