(No Model.) 3 Sheets—Sheet 1.

W. S. SCUDDER.

SPACE BAR FOR LINE CASTING MACHINES.

No. 494,899. Patented Apr. 4, 1893.

Fig. 1.

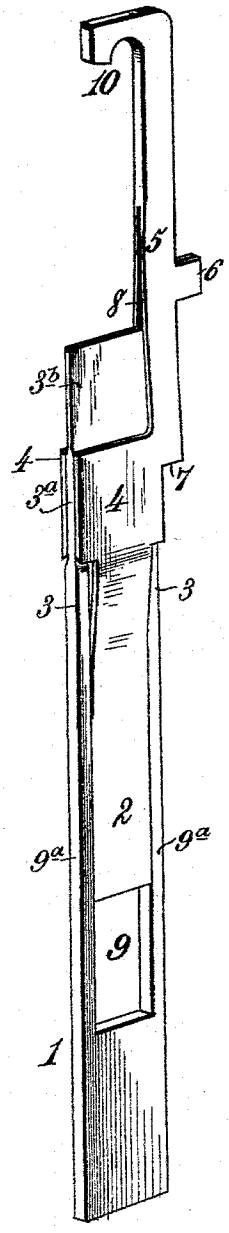


Fig. 2.

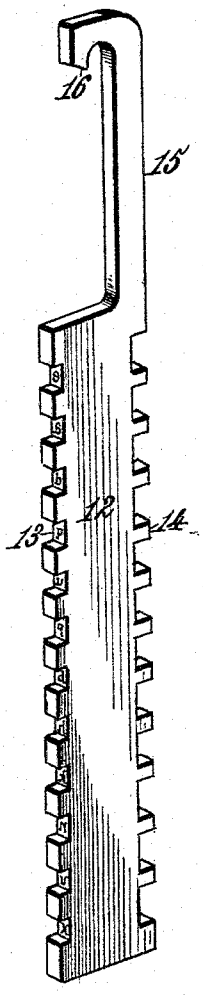


Fig. 3.

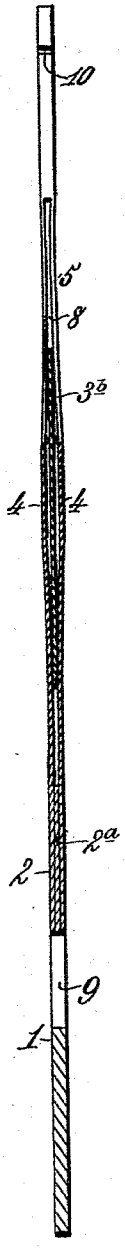


Fig. 4.

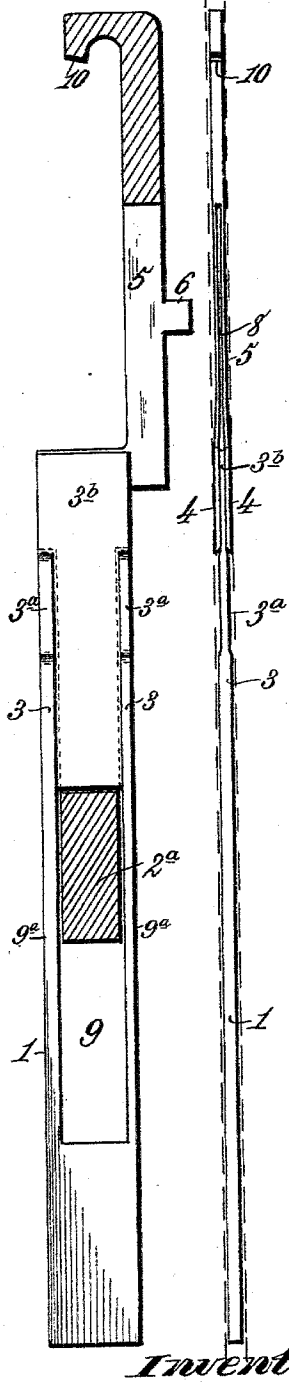
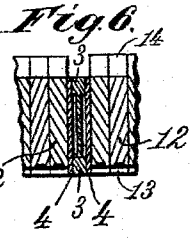


Fig. 5.

Fig. 6.



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(No Model.) 3 Sheets—Sheet 2.

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SPACE BAR FOR LINE CASTING MACHINES.

No. 494,899. Patented Apr. 4, 1893.

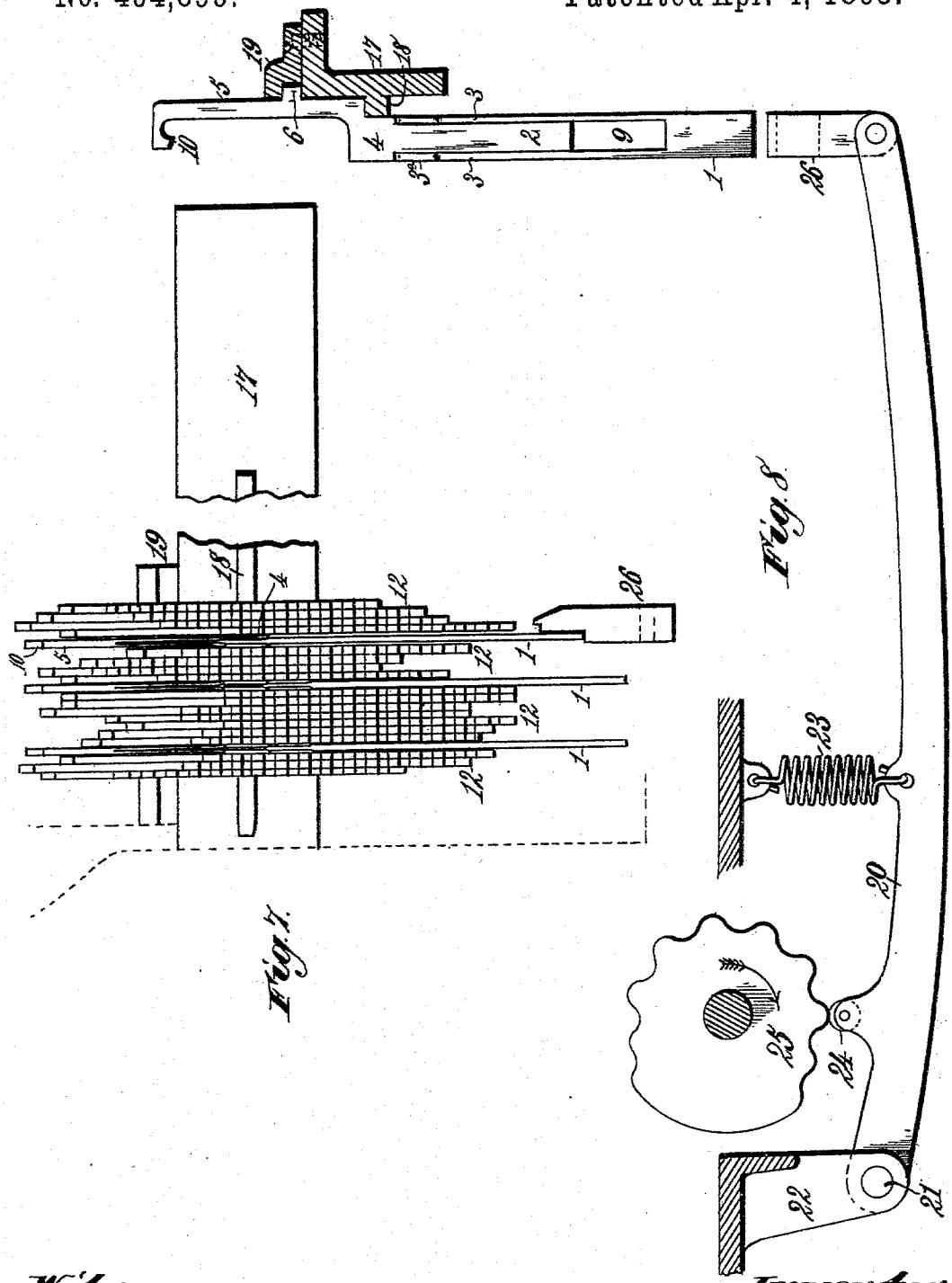

Fig. 8.

Fig. 7.

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(No Model.) 3 Sheets—Sheet 3.

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SPACE BAR FOR LINE CASTING MACHINES.

No. 494,899. Patented Apr. 4, 1893.

Fig. 9.

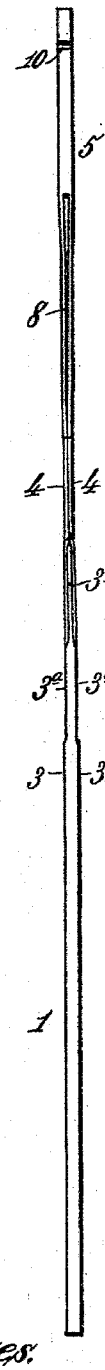


Fig. 10.

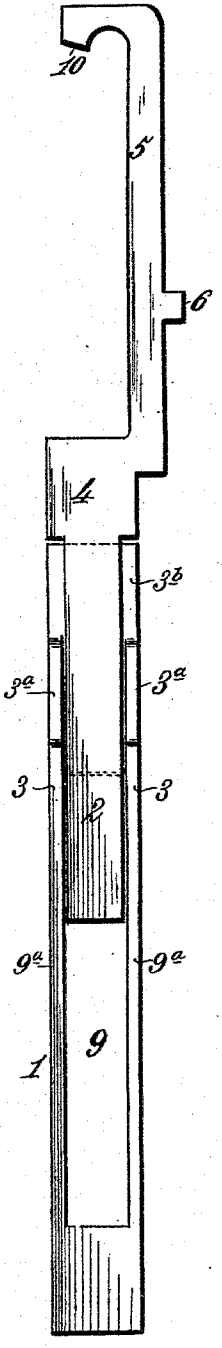


Fig. 11.

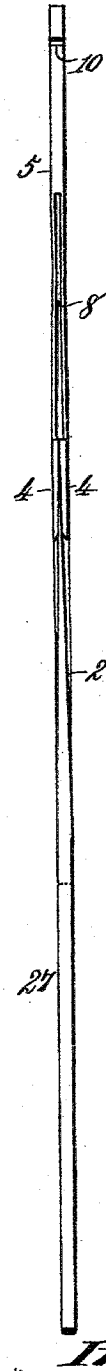
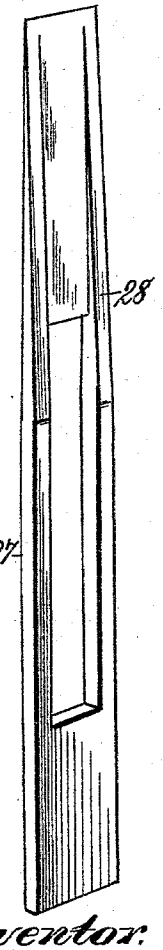


Fig. 12.



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UNITED STATES PATENT OFFICE.

WILBUR S. SCUDDER, OF BROOKLYN, NEW YORK.

SPACE-BAR FOR LINE-CASTING MACHINES.

SPECIFICATION forming part of Letters Patent No. 494,899, dated April 4, 1893.

Application filed November 3, 1892. Serial No. 450,838. (No model.)

To all whom it may concern:

Be it known that I, WILBUR STEPHEN SCUDDER, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Space-Bars for Line-Casting Machines, of which the following is a specification.

This invention relates to appliances or means for justifying composed lines of type, more particularly that class of machines for making type-bars wherein female dies or matrices representing the required characters are assembled in a line in proximity to a mold supplied with molten metal for the purpose of casting or producing a bar having on its edge the characters represented by the female dies or matrices. In machines involving this principle of operation the matrices are selected and released from a magazine through the medium of suitable mechanism controlled by the keys of a key-board and are arranged in the order of their selection on an assembling support in juxtaposition to the mold. To produce lines of type of equal length the spacing is changed after the line of matrices is assembled or composed and ordinarily this is effected by wedge-shaped or stepped spacer bars adjusted lengthwise between the matrices to expand the line and thereby justify the same. The frequent lengthwise movements of the spacer-bars in superficial contact with the sides of the matrices is objectionable and to avoid this sliding contact, and to provide a new and improved spacer, is one of the main objects of the present invention.

The invention also has for its object to provide a novel spacer which by lateral expansion will effect a positive adjustment of the matrices and which is susceptible of variation as regards its thickness to meet the conditions required so that the word-spaces may be formed after the line is set up, or formed partly during the assembling of the matrices and subsequently varied to suit the requirements of each particular case.

The invention also has for its object to provide a novel spacer which may be set at the minimum number of points of space during the assemblage of the matrices and adjusted by lateral expansion as the end of the line of matrices is nearly reached to increase the spaces to the maximum, or to a point between maximum and minimum for the purpose of effecting the justification in a simple, expeditious and efficient manner.

The invention also has for its object to provide a new and improved spacer which is susceptible of being handled or manipulated mechanically by the mechanism employed to assemble and distribute the matrices.

To accomplish all these objects my invention consists in the features of construction and the combination or arrangement of devices hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1, is a perspective view of a spacer constructed in accordance with my invention. Fig. 2, is a perspective view of one of the matrices. Fig. 3, is a longitudinal sectional view of the spacer. Fig. 4, is a similar view in a plane at right angles to the plane of section of Fig. 3. Fig. 5, is an edge view showing the spacer in its normal or contracted position. Fig. 6, is a detail sectional view showing the spacer arranged between matrices and expanded. Fig. 7, is a detail elevation showing a portion of a line of matrices with several of the spacers in position and one of them expanded. Fig. 8, is a detail sectional view showing mechanism typical of that which can be employed for operating the expander section of the spacer. Fig. 9, is an edge view of a spacer showing a modification of the invention. Fig. 10, is a side elevation of the same. Fig. 11, is an edge view of a spacer showing another modification; and Fig. 12, is a detail perspective view of the expander employed in the construction exhibited by Fig. 11.

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 it will be observed that the spacer is composed essentially of two sections 1 and 2, one of which is designed to remain stationary between two adjacent matrices, while the other one is susceptible of adjustment or movement to expand the stationary section, which latter comprises a pair of approximately parallel elastic members or cheek pieces 4, formed integral with or other-

wise provided between a shank portion 2 and an upper terminal or end portion 5 having a lateral supporting lug 6. The two parts composing the shank portion 2 are designed to be rigidly connected by a filling piece or block 2^a to which the cheek pieces are secured by riveting, brazing, or otherwise after the adjustable expander section 1 has been properly introduced between the elastic members or cheek pieces. The expander section 1 is constructed with a rectilinear slot or opening 9 having parallel edges bearing against the edges of the shank portion 2 and the upper end portion of this expander section is formed integral or otherwise provided with marginal ribs 3 and 3^a, formed as stepped portions which successively increase in thickness for the purpose of more or less expanding or spreading the elastic members or cheek pieces 4 when the expander section is adjusted or moved in the proper direction. The number of steps of the longitudinal marginal ribs 3 and 3^a which successively increase in thickness, may be varied according to requirements, but as here illustrated I have provided two steps or successively increasing expanding portions of the marginal ribs 3 and 3^a. The elastic members or cheek pieces are connected together at their ends and constantly tend to come together by their inherent elasticity and when the expander section 1 is adjusted or moved so that the thin extremity 3^b lies directly between the cheek pieces 4, the spacer, Fig. 1, occupies the least space as regards its thickness. The elastic members or cheek pieces may, however, be gradually expanded or spread apart for justifying purposes by adjusting or moving the expander section 1 lengthwise in the proper direction to place the stepped or expanding portion of the ribs 3^a directly between the cheek pieces to secure what may be termed the first expansion and subsequently the thickness of the spacer can be increased by adjusting or moving the stepped or expanding portion of the ribs 3 between the cheek pieces. In all adjustments of the expander section the cheek pieces remain parallel, or substantially so and therefore the line of matrices is accurately and nicely adjusted or justified without danger of moving any matrix out of true perpendicular position. By uniformly expanding the two cheek pieces of the expansible section through the medium of an interposed expander of suitable construction, I entirely avoid wearing or damaging the matrices incident to sliding a spacer in contact with the sides of the matrices, and further I render the operation more easy by materially reducing friction.

The rectilinear slot or opening 9 produces parallel side-bars 9^a which lie outside the edges of the shank portion 2, and the steps, or successively expanding portions are in the form of the narrow marginal ribs 3 and 3^a, by which frictional contacting surfaces with the elastic members of cheek pieces 4, are reduced, and the ribs have no direct contact with the inner surfaces of those elastic portions of the shank 2 which are below the cheek pieces 4. This construction materially reduces friction and enables the cheek pieces or bearings to be expanded without expanding to the same degree or extent those portions of the elastic shank below the parallel cheek pieces or bearings.

In the construction shown and described, the two elastic members or cheek pieces are united at their upper end portions, above the expander, to the arm-like portion 5, and at their lower end portions to the shank portions 2, these shank portions being connected by the filling block 2^a or otherwise, through the slot 9 in the expander section 1. By this means the strength, durability and efficiency of the spacer are materially increased and the elastic members or cheek-pieces are caused to more positively and accurately return to their normal position when the expander is moved for the contraction of the spacer. The connection of the elastic members or cheek pieces above and below, as explained, also provides for their more accurate separation in parallel or substantially parallel planes, and this renders the spacer practicable in casting perfect type bars from molten metal.

The matrices 12 are preferably of the construction wherein one edge is provided with a series of intaglio characters as at 13, and the opposite edge with a series of projections 14, while the shank 15 is formed or constructed with a hook 16, for supporting the matrix while being distributed. This construction is the same or similar to that described in my separate application for patent now pending and therefore further explanation is not deemed essential.

The upper end portions 5 of the spacers are also provided with hooks 10 by which they are susceptible of being handled mechanically and withdrawn from and returned to the magazine by mechanism the same as, or not specially distinct from that employed to withdraw, assemble and distribute the matrices.

The elastic portions of the expansible section are separated by a slot 8 above the cheek pieces 4, to accommodate the upper end portion of the expander portion and to secure the desired elasticity of the parts.

In the construction described and illustrated in Figs. 1, 3, 4, 5, 7 and 8, the spacer is capable of two distinct expansions, first by the stepped or expanding portions 3^a and second by the ribs 3, whereby a word-space, or other space may be formed in part during the assembling of the matrices and subsequently varied to suit the conditions or requirements of each particular case. Where the end portion 3^b of the expander cannot be adjusted or moved below the cheek pieces 4, the contraction of the spacer is somewhat limited, but this limitation may be avoided by construct-

ing the expander section 1 in such manner that it can be adjusted or moved lengthwise to such extent that the end portion 3^b can be withdrawn from between the cheek pieces, as in the modification Figs. 9 and 10, thereby permitting the cheek pieces 4 to spring or come together so that the contraction of the spacer is only limited by the thickness of the metal or material composing the cheek pieces. In this construction the end portion 3^b serves for the initial expansion and consequently the spacer is susceptible of three distinct adjustments or expansions.

In all the constructions thus far specifically described the cheek pieces are designed to have parallel inner and outer surfaces and to be expanded or separated in parallel lines by the successively thickened or expanding portions of the marginal ribs 3 and 3^a, which may have parallel faces. In the modifications Figs. 11 and 12, however, the outer surfaces of the cheek pieces may be parallel and the inner surfaces inclined relatively to each other so that they will co-operate with the tapering or wedge-shaped ribs or expanding portions 28 of an expander section 27, for spreading or expanding the cheek pieces in substantially parallel lines.

The spacer affords positive adjustment of the matrices assembled in a line and its thickness is susceptible of considerable variation to meet all the conditions required whether the word-spaces or other spaces be formed after the line is set up, or partly during the assembling of the matrices and partly after the line has been composed.

During the assemblage of the matrices the spacer may be set at the minimum thickness and be subsequently adjusted by lateral expansion as the end of the line of matrices is reached for the purpose of increasing the spacer to its maximum thickness, or to a point between maximum and minimum. The particular manner of using the spacer may, however, be varied according to circumstances and whether it is expanded wholly or partially before or after the line is completely composed is not material.

The supporting lug 6 on the upper end portion 5 of the expansible section is particularly designed to engage the assembling support or bar of a machine for producing type bars. The construction of the assembling support or bar may be largely varied, but for the purpose of illustrating a suitable construction for supporting the matrices and the spacers and for adjusting the expander sections of the spacers, I have included Figs. 7 and 8 in the drawings. In these figures the numeral 17 indicates the assembling support or bar having an attached cap plate or flange 19, for the purpose of forming a groove into which the lugs 6 project. The support or bar 17 may also be provided with a lateral rib 18 against which shoulders on the matrices and spacers may bear.

The expander section 1 may be raised to laterally expand the expansible members or cheek pieces by any suitable contrivances, but as typical of one mechanism which may be employed for this purpose, I exhibit in Fig. 8 a lever 20 fulcrumed at one end to a supporting bracket 22 by a pivot 21, and having at its opposite end an arm 26 which lies directly beneath the lower end of the expander section 1 of a spacer. The lever 20 is acted upon by a spring 23, or other mechanism or appliance, for the purpose of lifting it and thereby causing the arm 26 to move the expander section 1 in an upward direction. The lever 20 is provided with a friction roller 24 in proximity to its pivot 21 and with this friction roller is adapted to engage a cam 25 having alternating cam projections and depressions, so that when one of the projections bears against the friction roller the end of the lever carrying the arm 26 is depressed and when the friction roller enters one of the depressions the spring 23 operates to lift the lever.

A more detailed description of the lever and cam mechanism is not deemed essential in that it is fully explaained in my pending application hereinbefore alluded to.

Having thus described my invention, what I claim is—

1. A spacer, consisting of laterally expansible members or cheek-pieces, and an adjustable expander section having longitudinal, marginal, expanding ribs located between the said members or cheek pieces and constructed to separate the latter in approximately parallel planes, substantially as described.

2. A spacer, consisting of an elastic, laterally expansible section comprising approximately parallel members or cheek pieces, and an expander provided with projecting, longitudinal ribs having a series of expanding portions which operate to separate the members or cheek pieces in approximately parallel planes, substantially as described.

3. A spacer, consisting of an expanding section, and laterally expansible members or cheek pieces united at their upper and lower end portions and between which united upper and lower end portions the expanding parts of the expander are located, substantially as described.

4. A spacer, consisting of a longitudinally slotted expander section having marginal ribs, and a section composed of elastic members or cheek-pieces and a shank portion with longitudinal parallel edges located between and bearing against the longitudinal parallel edges of the slot in the expander section, substantially as described.

5. A spacer, consisting of an expander section having a longitudinal slot, parallel side bars and expanding portions above the longitudinal slot, and elastic members or cheek-pieces having a shank portion provided with longitudinal outer edges bearing against in-

ner edges of the parallel side bars and connected through the longitudinal slot of the expander section at a point below the expanding portions thereof, substantially as described.

6. A spacer, consisting of laterally expansible members or cheek-pieces, and an expander section provided with longitudinal, marginal expanding ribs projecting from the body of the expander section and interposed between the laterally expansible members or cheek-pieces, substantially as described.

7. A spacer, consisting of a longitudinally slotted expander section having marginal ribs formed as stepped portions between which the body of said section is reduced in thickness, and a pair of connected, laterally expansible members or cheek-pieces against which the marginal ribs operate to more or less expand said members or cheek-pieces, substantially as described.

8. A spacer, consisting of laterally expansible members or cheek-pieces connected together at their upper and lower end portions and provided at the upper end portion with means whereby they are rendered susceptible of mechanical manipulation in assembling and distributing, and an expander section having its expanding portions located between the laterally expansible members or cheek-pieces, substantially as described.

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

WILBUR S. SCUDDER.

Witnesses:
ALBERT H. NORRIS,
GEO. W. REA.