

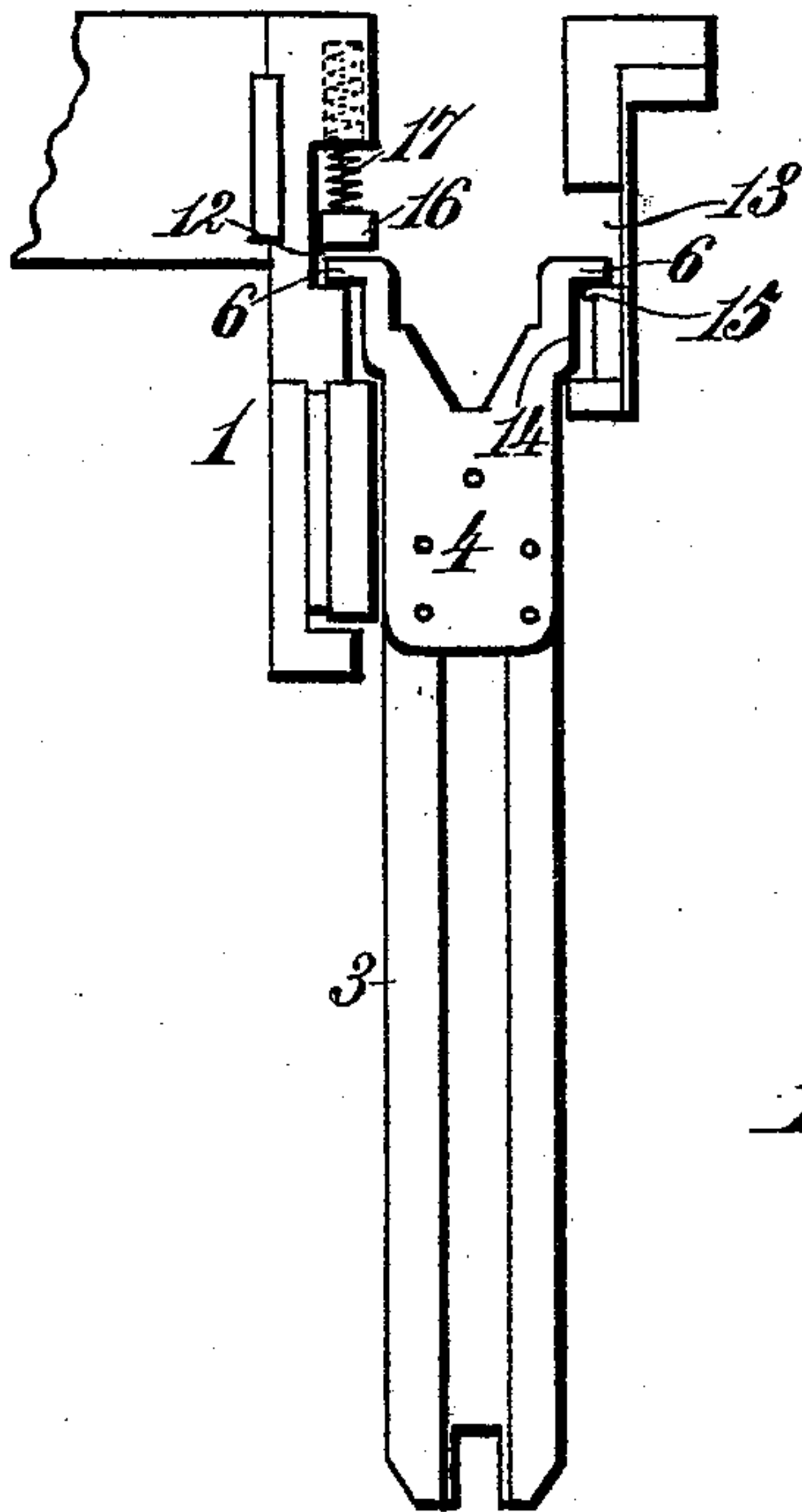
(No Model.)

C. SKATULLA.  
MACHINE FOR PRODUCING CAST TYPE BARS.

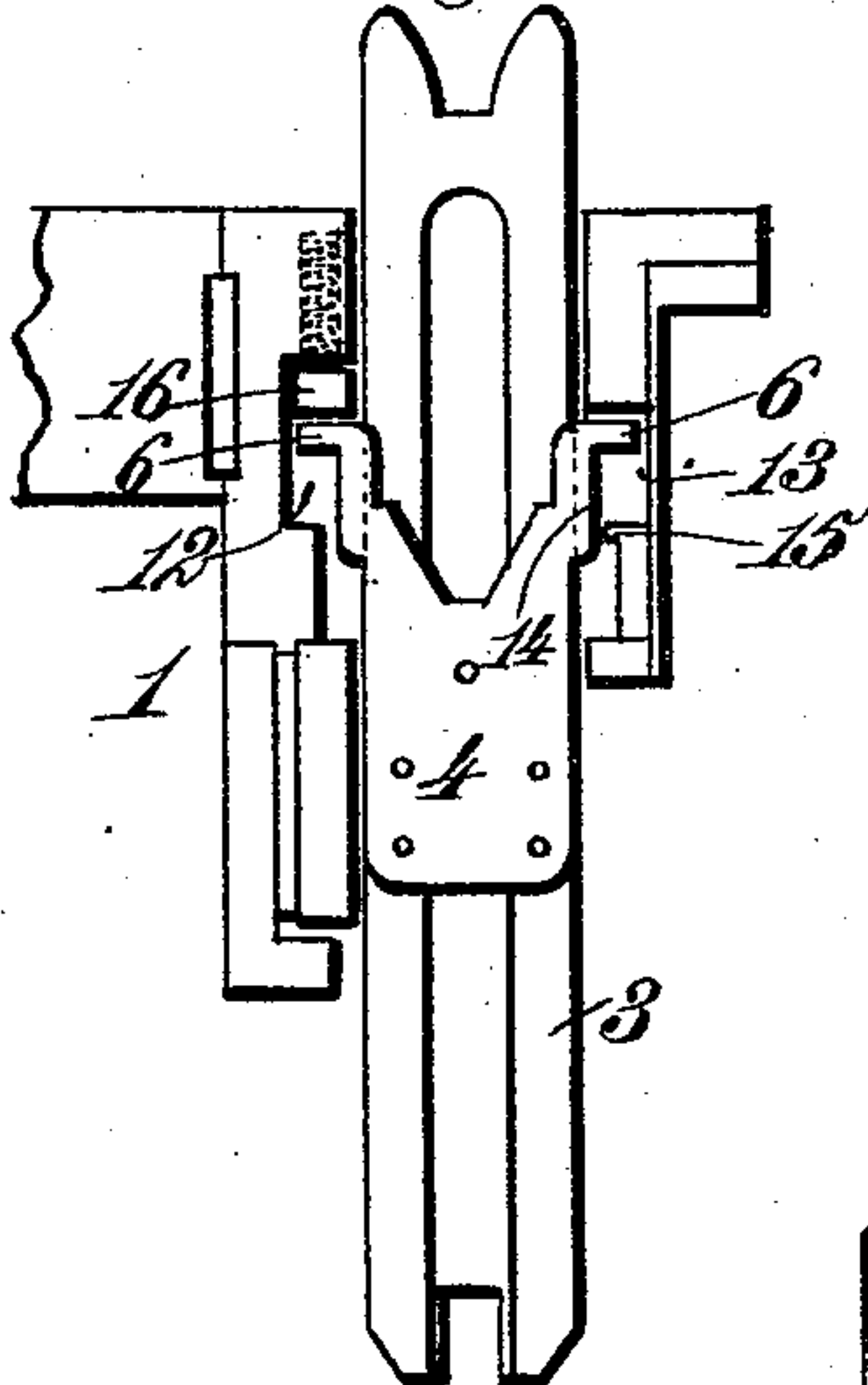
No. 529,205.

Patented Nov. 13, 1894.

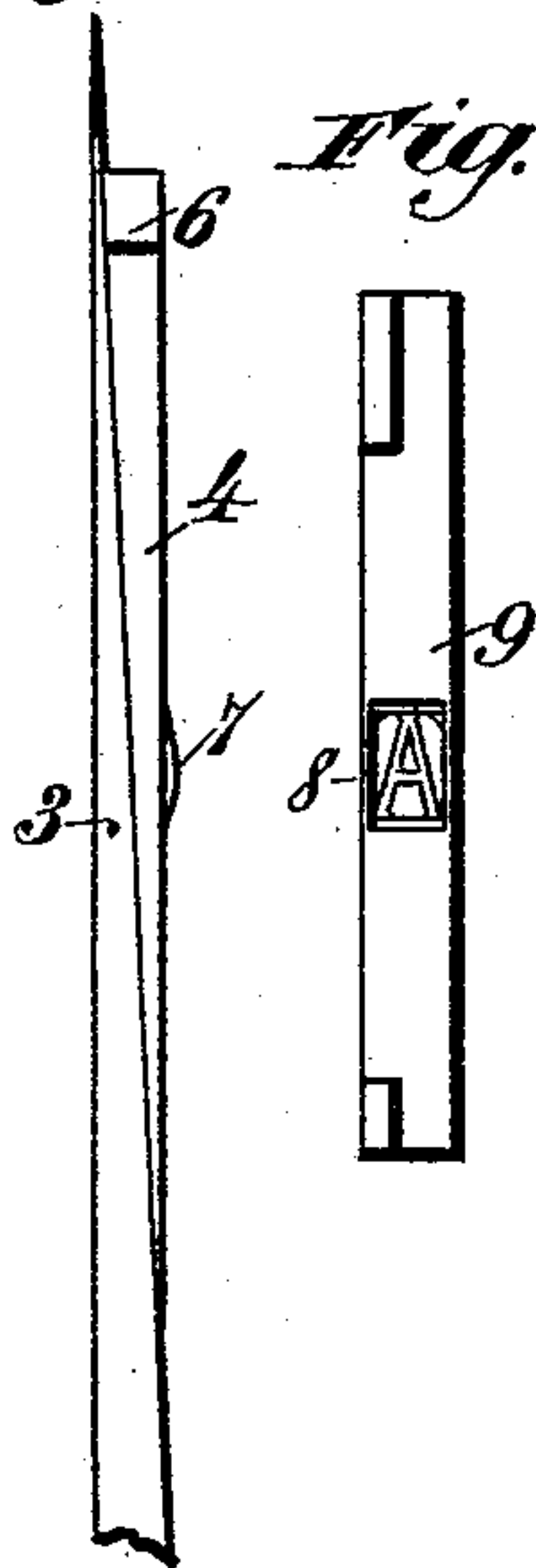
*Fig. 1.*



*Fig. 2.*



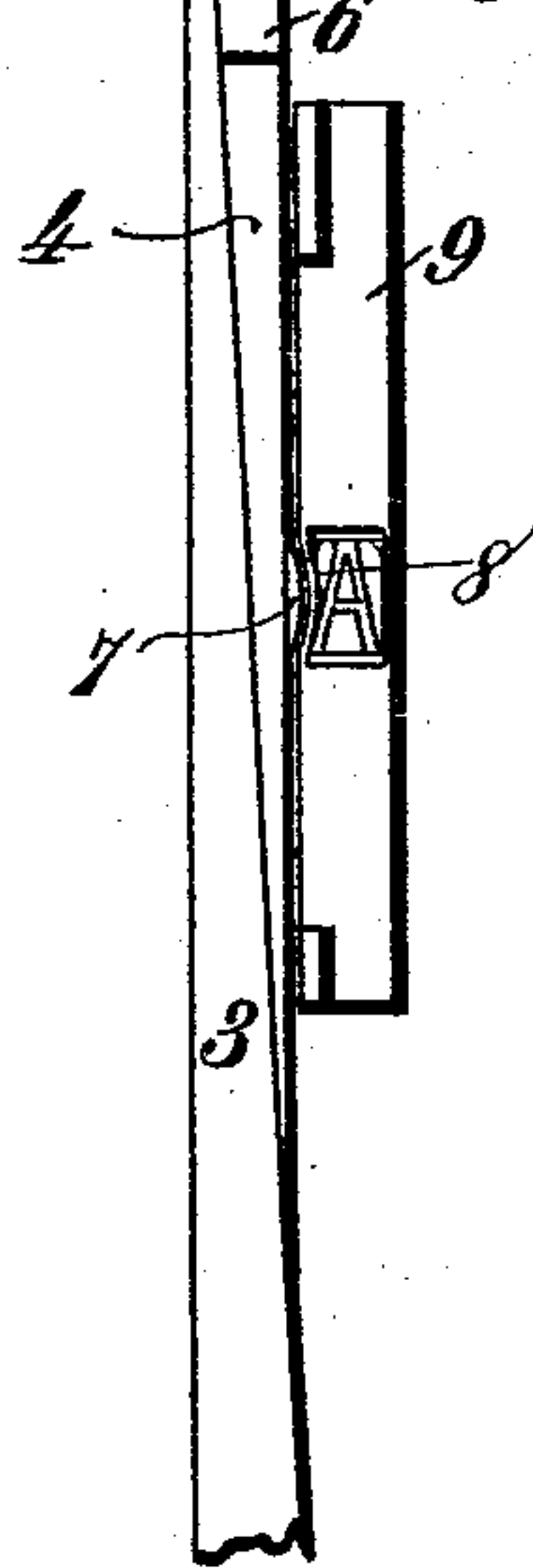
*Fig. 5.*



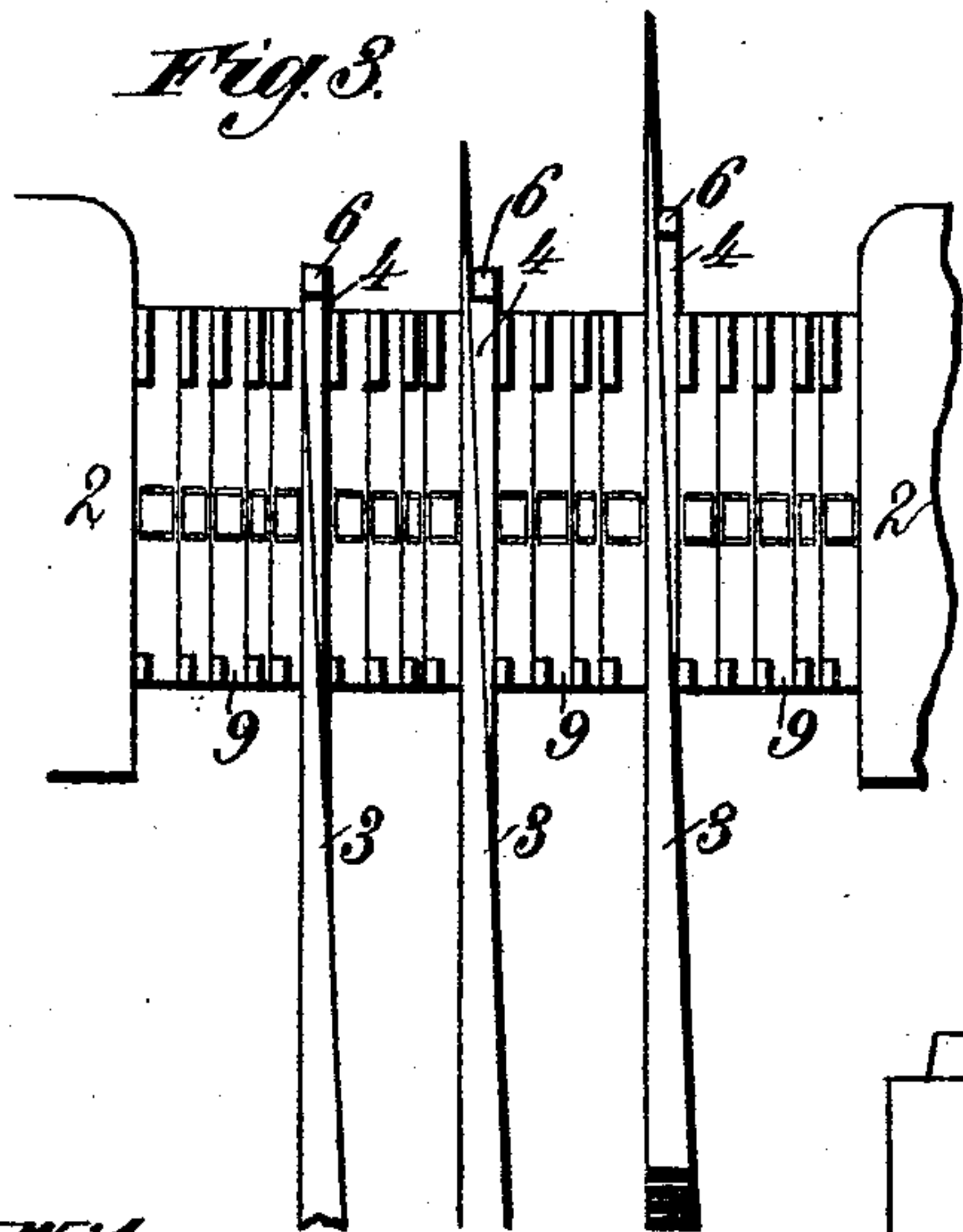
*Fig. 4.*



*Fig. 6.*



*Fig. 3.*



*Fig. 7.*



Witnesses.

*Edw. Smith.*

*Dennis Dumb.*

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*Colistin Skatulla.*  
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# UNITED STATES PATENT OFFICE.

CÖLLESTIN SKATULLA, OF BROOKLYN, NEW YORK, ASSIGNOR OF ONE-HALF  
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## MACHINE FOR PRODUCING CAST TYPE-BARS.

SPECIFICATION forming part of Letters Patent No. 529,205, dated November 13, 1894.

Application filed June 16, 1894. Serial No. 514,787. (No model.)

*To all whom it may concern:*

Be it known that I, CÖLLESTIN SKATULLA, 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 Machines for Producing Cast Type-Bars, &c., of which the following is a specification.

The invention relates to the well known class of machines for producing type-bars, or lines of words or characters, wherein interchangeable matrices and space-bars are released by finger-key mechanism from the cells or channels of a magazine and assembled in orderly arrangement in an assembling or composing block from which the line is shifted into a vertically movable transfer yoke or frame and lowered into proper relation to a mold into which type-metal is injected to cast the type-bar, or the line of words or characters. The space-bars are each composed of a main wedge-plate and a secondary wedge-plate inseparably but slidably connected with the main wedge-plate and having its upper or thickest end provided with lateral sustaining lugs or shoulders adapted to engage with grooves or ribs in the transfer yoke or frame, so that after the aligned matrices are clamped in position, and prior to the casting operation, the main wedge-plates, of the space-bars can be forced or driven lengthwise to obtain the proper spaces between their matrices.

In machines of the character alluded to a serious objection exists, in that matter printed from the cast type-bar frequently exhibits burrs, or lines of demarkation, or fine lines, between more or less of the letters or characters, which is prejudicial to the appearance of the printed matter, and prevents the high perfection desirable in the art of printing. The cause of the burrs or lines referred to resides in the fact that the secondary wedge-plates of the space-bars remain immovable or stationary during the justifying operation, and the type-metal injected into the mold comes in contact with the secondary wedge-plates at certain points and gradually accumulates thereupon in the form of small lumps or protuberances, which, in the frequent operation of the space-bars are forced against

the walls at the sides of the characters or letters of the matrices. These walls are extremely thin—sometimes only a thousandth part of an inch in thickness—and they are more or less crushed or pressed inward by the lumps or protuberances formed by the type-metal accumulating on the edges of the secondary wedge-plates, until finally cavities are formed in the walls, which eventually admit small portions of the type-metal which accumulates, as before stated, on the secondary wedge-plates, with the result that the cast-type bar presents thin metal lines or projections approximately the same height as the letters or characters. In printing from the cast type-bar the lines or projections produce burrs, or lines of demarkation, or fine lines, between the letters, thereby materially detracting from the appearance of the printed matter, and preventing the production of finely executed work.

In operating machines of the class referred to, the attendants are instructed to daily remove all traces of metal from the space-bars and grease the same with oil or similar material, which is not only troublesome, but laborious and of little real value, and prevents the matrices from being kept perfectly clean and free from oil, as they should be. Furthermore the greasy or oily matter is vaporized by the hot type-metal, and the vapor enters the letters or characters of the matrices, and so affects them that they, as well as the print therefrom are dimmed.

It has been proposed to prevent the crushing or pressing in of the walls at the sides of the characters or letters of the matrices by increasing the thickness of the latter, but this is objectionable for many reasons, chiefly because the thickened matrices occupy too much space. I have discovered that the objections stated are entirely avoided by the provision of means whereby the secondary wedge-plates are caused to slide in contact with the matrices in a manner similar to the sliding movements of the main wedge-plates during the justifying operation, when the aligned matrices lie in the yoke or frame in proper relation to the mold. By this means the secondary wedge-plates are, by frictional



contact with the matrices, maintained in a perfectly clean and smooth condition, and the type-metal, which tends to adhere to the secondary wedge-slides, is effectually prevented from adhering, so that the liability of crushing or pressing in the walls at the sides of the characters or letters of the matrices is entirely avoided, and the cleaning and greasing of the space-bars is rendered unnecessary, thereby enabling perfect work to be produced, and enabling the cast type-bars to produce printed matter entirely free from burrs, or lines of demarkation, or fine lines between the printed letters or characters, while at the same time largely contributing to the life of the matrices.

The invention consists, essentially, in the combination with a yoke or frame in which aligned matrices are suspended and sustained in juxtaposition to a mold, and space-bars each composed of a main plate and a secondary plate having devices to suspend it from the yoke or frame, of means whereby the secondary plates of the space-bars move in sliding contact with the sides of the matrices when the main plates of the space-bars are forced or moved between the matrices to justify the line.

The invention also consists in the combination with a yoke or frame in which aligned matrices are suspended and sustained in juxtaposition to a mold, and space-bars each composed of a main wedge-plate and a secondary wedge-plate slidably connected with the main wedge-plate and having sustaining lugs or shoulders, of a yielding abutment or rail against which the secondary wedge-plates bear, and by which said secondary wedge-plates are adapted to move or yield in sliding contact with the matrices when the main wedge-plates are operated to justify the aligned matrices.

The invention also consists in certain other features and combinations or arrangements of parts hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a detail sectional view of a portion of the yoke or frame in which the aligned matrices are suspended or sustained in juxtaposition to a mold, the space-bars being represented in their lowest positions prior to justifying or spacing the matrices. Fig. 2 is a similar view, showing the space-bars raised or moved to justify the line. Fig. 3 is a detail side elevation of the composed line looking at the characters or letters of the matrices, and showing the usual clamps or vise-jaws by which the line of matrices is confined in position in the yoke or frame. Fig. 4 is a detail enlarged edge view of a matrix to show the thin walls at the sides of the character or letter. Fig. 5 is a detail enlarged edge view of a space-bar having thereupon a lump or projection formed by accumulated type-metal. Fig. 6 is a detail enlarged edge view, showing the manner in which the lump or

projection formed by the accumulated type-metal crushes or presses in the thin wall of the matrix; and Fig. 7 is a detail view on an enlarged scale of a type-bar produced from matrices having their thin walls crushed or pressed in, as hereinbefore alluded to, and showing the solid metal lines or projections which produce the burrs or fine lines between the printed letters or characters.

In order to enable my invention to be clearly understood by those skilled in the art I do not deem it necessary to illustrate the entire machine, and therefore have only shown such parts as I believe will clearly exhibit the improvement I have made.

In the drawings the numeral 1 indicates the ordinary yoke or frame in which the line of assembled or composed matrices, with the space-bars at the proper points, are carried or moved into juxtaposition to the usual mold for producing a cast-type bar, or a line of words or characters, by injecting type-metal into one side of the mold while the opposite side thereof is closed by the matrices, as is well known in machines of the character to which my invention relates.

In the practical use of the machine, the matrices and the space-bars are released from the cells or channels of a magazine through the medium of finger-key mechanism, and are assembled in a composing block, and then shifted into the yoke or frame 1, which is lowered or moved into proper relation to the mold. The line of matrices is clamped by the usual vise-jaws 2, Fig. 3, and then the space-bars are acted upon to obtain the required spaces between the end of one word and the beginning of another.

The space-bars are each composed of a main tapered or wedge-plate 3, and a short secondary wedge-plate 4 inseparably connected with the main wedge-plate by a suitable sliding connection, and provided at its upper or thickest end with sustaining lugs or shoulders 6, adapted to engage and be sustained by the ribbed and grooved or recessed portion of the yoke or frame.

In the usual line, or type-bar casting machine, the two oppositely projecting lugs or shoulders 6 of each secondary wedge-plate engage parts of the yoke or frame, in such manner that the secondary wedge-plates are held immovable or stationary when the main wedge-plates are forced or driven between the matrices to justify the line. It will be obvious, therefore, that the edge portions of the secondary wedge-plates, exposed to the type-metal during the repeated casting operations, remain the same at all times, and consequently the adhering type-metal accumulates as a lump or projection, as at 7, Figs. 5 and 6, which in time crushes or presses in the thin wall 8 at the side of the character or letter of the matrix 9, with the result that a cavity is formed which becomes enlarged and admits type-metal. In consequence of this the cast type-bar, or line of characters or words, is formed



with thin metal lines, as at 10, Fig. 7, between the type characters or letters. These thin metal lines produce burrs, or lines of demarkation, or very fine lines, between the characters or letters of the printed matter, which mar or destroy the appearance thereof. This serious objection I avoid without increasing the thickness of the matrices by providing suitable means whereby the secondary wedge-plates are adapted to yield on the final thrust of the main wedge-plates and slide in contact with the matrices much the same as the main wedge-plates, thereby rubbing off any type-metal that may have been deposited on the secondary wedge-plates during a previous casting operation. As shown in the accompanying drawings I attain the desired result by constructing the yoke or frame 1, at its opposite sides, with longitudinal chambers, grooves, or recesses 12 and 13 of sufficient depth and height to enable the sustaining lugs or shoulders 6, of the secondary wedge-plates 4, to move vertically, so that the secondary wedge-plates can slide in contact with the sides of the matrices.

The edges 14 of the secondary wedge-plates, in proximity to the lugs or shoulders 6, are so constructed that they can move past the longitudinal shoulders or ribs 15, which serve as stops to prevent displacement or vertical movement of the matrices during the justifying operation. The construction is such that when the main wedge-plates are forced or driven lengthwise between the matrices, the secondary wedge-plates are also caused to move in the same direction, and these frequently repeated movements of the secondary wedge-plates entirely free them from all adhering type-metal, and the entire space-bar is cleaned during the operation of the machine, so that greasing or oiling of the space-bars is unnecessary.

It is advisable that the sliding movements of the secondary wedge-plates 4 should not occur on the initial upward movement of the main wedge-plates 3, as this would interfere with or prevent the necessary and proper pressure of the secondary wedge-plates against the matrices. For this reason I increase the height of the chamber, groove, or recess 12 and arrange in the upper portion thereof a yielding abutment, preferably made in the form of a bar or rail 16, against which bears the sustaining lug or shoulder 6 at one edge of each secondary wedge-plate. The bar or rail 16 is constantly pressed downward by a suitable spring 17, one or more, and the arrangement is such that on the initial upward movements of the main wedge-plates the movements of the secondary wedge-plates are temporarily resisted by the spring-pressed bar or rail, in such manner that the secondary wedge-plates become attached, as it were, by friction to the main wedge-plates, so that on the second or final thrust of the latter, the resistance offered by the spring-pressed bar or rail is overcome by the upward pressure

of the secondary wedge-plates, and the latter are, by frictional contact with the main wedge-plates, driven upward by the latter. The distance which the secondary wedge-plates travel should not be too great. It is sufficient if they move about three-sixteenths of an inch. The sliding action of the secondary wedge-plates not only removes all type-metal therefrom, but obtains the very useful results of entirely preventing crushing or pressing in of the thin walls at the sides of the characters or letters of the matrices, thereby materially increasing the life of the same, and enabling attractive clean printing to be obtained.

The matrices ordinarily used in this class of line-casting machines are provided with shoulders at their upper and lower ends, and the shoulders at their upper ends lie in the groove below the shoulders or ribs 15. As before stated, the shoulders or ribs 15 serve as stops to prevent vertical adjustment of the matrices during the justifying operation.

My invention avoids the labor of daily scraping the type-bars to remove any metal therefrom, keeps the secondary or small wedge-plates clean without the use of oil or black lead, and prevents burrs appearing in the printed matter.

The mechanical appliances or construction of parts for attaining the result set forth can be widely varied without affecting the spirit of my invention, and therefore

I claim—

1. The combination with a yoke or frame in which aligned matrices are sustained, and space-bars each composed of a main plate and a secondary plate having devices to support it in the yoke or frame, of means whereby the secondary plates of the space-bars move in sliding contact with the sides of the matrices when the main-plates of the space-bars are forced or moved between the matrices to justify the line, substantially as described.

2. The combination with a yoke or frame in which aligned matrices are suspended and sustained in juxtaposition to a mold, and space-bars each composed of a main-plate and a secondary plate having devices to suspend it from the yoke or frame, of means whereby the secondary plates of the space-bars move in sliding contact with the sides of the matrices when the main plates of the space-bars are forced or driven upward between the matrices to justify the line, substantially as described.

3. The combination with a yoke or frame in which aligned matrices are suspended and sustained in juxtaposition to a mold, and space-bars each composed of a main plate and a secondary-plate having sustaining lugs or shoulders to suspend it from the yoke or frame, of means whereby the secondary-plates of the space-bars move in sliding contact with the sides of the matrices when the main-plates of the space-bars are forced or driven upward between the matrices to justify the line, substantially as described.



4. The combination with a yoke or frame  
in which aligned matrices are supported, and  
space-bars each composed of a main-plate and  
a secondary-plate having devices to support  
5 it in the yoke or frame, of a yielding abutment  
against which the secondary wedge-plates  
bear and by which said secondary wedge-  
plates are adapted to move or yield in slid-  
ing contact with the matrices when the main  
10 wedge-plates are operated to justify the line,  
substantially as described.

5. The combination with a yoke or frame  
in which aligned matrices are suspended, and  
space-bars each composed of a main-plate and  
15 a secondary-plate having sustaining lugs or

shoulders to suspend it from the yoke or  
frame, of a yielding abutment against which  
some of the sustaining lugs or shoulders bear  
and by which said secondary wedge-plates  
are adapted to move or yield in sliding con- 20  
tact with the matrices when the main wedge-  
plates are operated to justify the line, sub-  
stantially as described.

In testimony whereof I have hereunto set  
my hand and affixed my seal in presence of 25  
two subscribing witnesses.

CÖLLESTIN SKATULLA. [L. S.]

Witnesses:

HERMAN RIDDER,

CLEMENS HUNEWINKELL.