

No. 770,341.

PATENTED SEPT. 20, 1904.

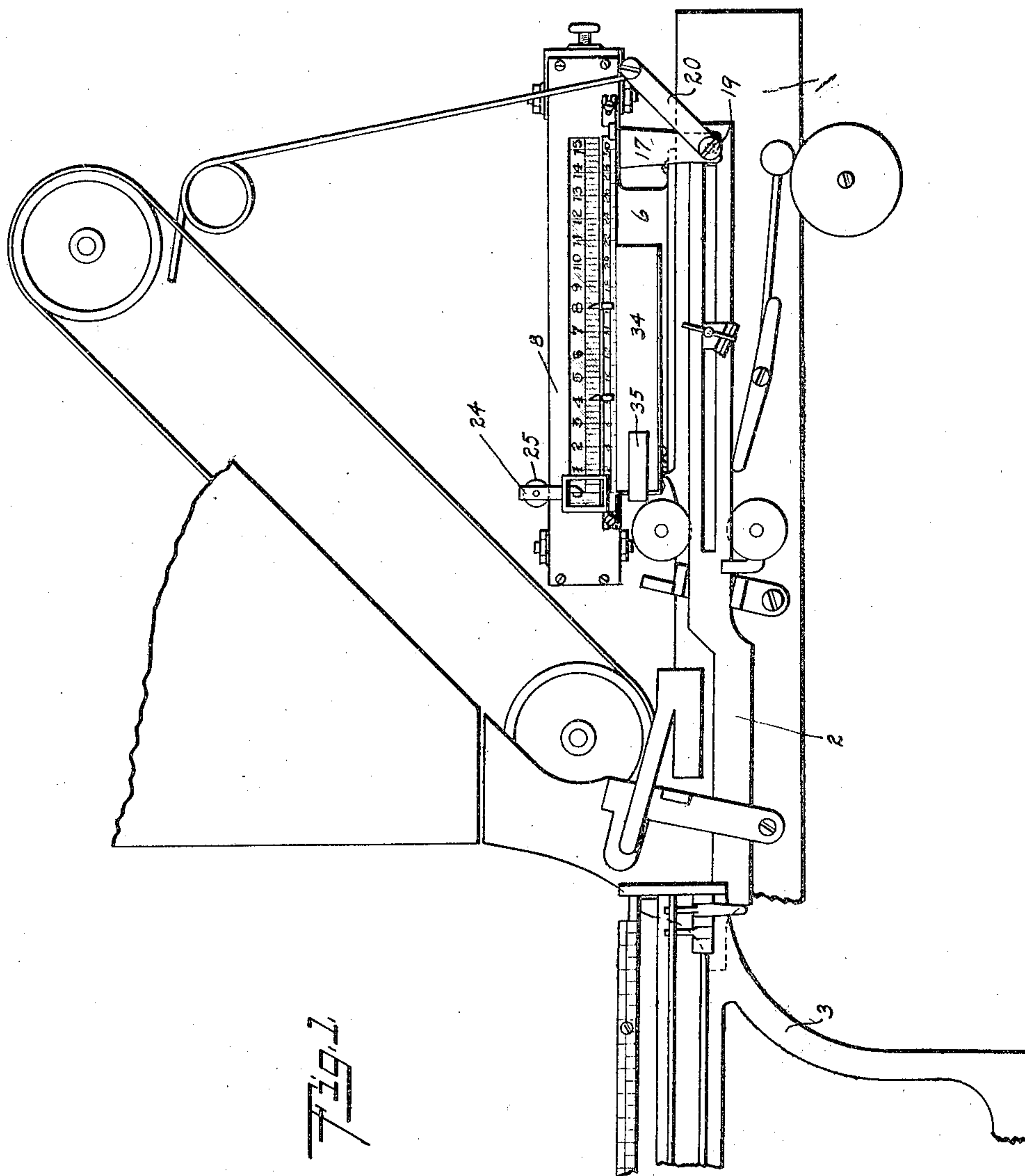
E. T. WATERS.

TABULATING ATTACHMENT FOR LINOTYPE MACHINES.

APPLICATION FILED APR. 5, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:

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D. O. Barnell.
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Edmund T. Waters
INVENTOR.

BY *Howard J. Congill.*
ATTORNEY.

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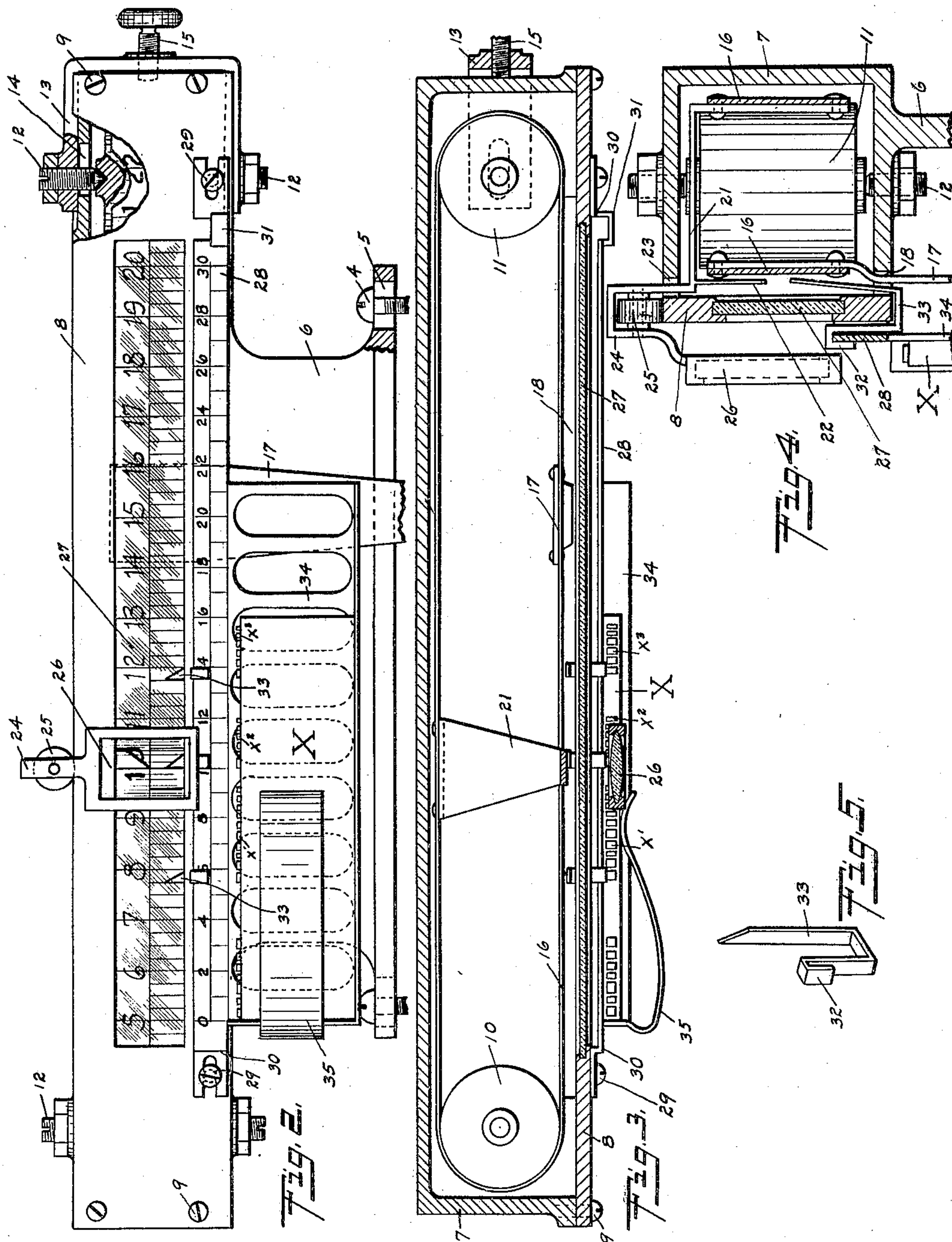
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UNITED STATES PATENT OFFICE.

EDWARD T. WATERS, OF OMAHA, NEBRASKA.

TABULATING ATTACHMENT FOR LINOTYPE-MACHINES.

SPECIFICATION forming part of Letters Patent No. 770,341, dated September 20, 1904.

Application filed April 5, 1904. Serial No. 201,767. (No model.)

To all whom it may concern:

Be it known that I, EDWARD T. WATERS, a citizen of the United States, residing at Omaha, in the county of Douglas and State of Nebraska, have invented certain new and useful Improvements in Tabulating Attachments for Linotype-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to linotype-machines; and it is the object thereof to provide an attachment for machines of this class to facilitate the composition of tabulated matter.

My invention consists in the novel means provided for registering the travel of the assembler-slide of a linotype-machine, for enlarging the apparent movement of said slide, and for the carrying of a cast slug at a position adjacent to the registering mechanism to indicate approximate positions on the lines for placing of ditto-marks and the like.

In the accompanying drawings I have illustrated a mechanism embodying my invention, in which—

Figure 1 is a front elevation of a part of the face-plate of an ordinary linotype-machine having my invention operatively connected therewith. Fig. 2 is an enlarged front elevation of the attachment separate from the machine. Fig. 3 is a sectional plan view of the same. Fig. 4 is a transverse section of the same, and Fig. 5 is a perspective detail of one of the indicating-riders for marking the points of tabulation.

In Fig. 1, 1 represents a portion of the face-plate frame immediately above the keyboard of the machine. The assembler-slide 2 is represented in the position assumed when the assembling-elevator 3 is empty or before any matrices have been dropped into the same.

My attachment is adjustably secured to the frame 1 by the screws 4 passing through the slotted opening 5 in the foot-piece 6, integral with the casing 7 of the attachment. The said casing 7 is rectangular in form, somewhat greater in length than the travel of the as-

sembler-slide, and is open at the front side, a plate 8 being placed over said open side and secured thereto by screws 9.

Within the casing 7 and adjacent to the ends thereof the rollers 10 and 11 are revolubly mounted by means of the pointed screws 12, which enter conical depressions in the ends of the rollers. The screws holding the roller 11 pass through the ends of the yoke 13 and through slots 14 in the casing 7. Through the end of the yoke is passed the screw 15, bearing against the end of the casing, by means of which the position of the roller 11 may be varied to adjust the tension on the graduated endless band 16 passing around the rollers.

A flat bar 17 is riveted to the band 16 at the portion thereof adjacent to the plate 8, and extending downwardly through the slot 18 in the casing 7, terminates in a forked end, which is secured to the assembler-slide 2 by the hinge-screw 19 of the assembler-slide spring-link 20. The pointer-bar 21 is riveted to that portion of the band 16 adjacent to the rear side of casing 7. The said bar extends above and across the space between the front and rear portions of the band 16, and the indicating-point 22 thereon extends down over the face of the front portion of the band, as shown in Figs. 2 and 4. An extension of the bar 21 passes upwardly through the slot 23 in the casing and is bent into a U-shaped portion 24, in which is journaled a small roller resting on top of the plate 8. From the roller 25 one side of the U 24 extends downwardly in front of the plate 8 and supports the magnifying-prism 26.

In the plate 8 is an opening slightly longer than the travel of the assembler-slide and narrower than the width of the graduated band 16. In this opening is placed a plate of glass or other transparent material 27, through which may be seen the graduations on the band. Below the transparent plates 27 is a scale 28, adjustably secured to the plate 8 by the screws 29. Said scale is bent at the points 30, so that a slight space is left between the graduated portion of the scale and the face of the plate 8. At one end of the scale is a U-

shaped outward extension 31, through which the hooked ends 32 of the riders 33 may be passed, and said hooked ends passed over the top edge of the graduated portion of the scale, so as to be supported and slidably carried thereon.

Integral with the scale 28 and coinciding with the left-hand portion of the graduated part of the scale is the slug-carrier 34, over the face of which passes the curved spring 35. The said spring 35 is adapted to engage and hold in position the slug X, as shown in Figs. 2, 3, and 4, and prevent the said slug from tilting forward and falling out of the slug-carrier.

The graduation of the scale 28 (shown in Fig. 2) is adapted to use for linotype-machines setting a line of maximum length of thirty picas, said scale being of natural size and corresponding in length with the travel of the assembler-slide. The band 16 is graduated with the scale twice the length of the scale 28, as represented.

It will be seen that from the manner of attaching the device to the machine the bar 17, and therewith the front side of the band 16, will travel in the same direction and at the same speed as the assembler-slide, while the rear side of the band, carrying the arm 21 and the indicator-point 22, will move in the opposite direction, so that the apparent movement or relative movement of the indicator-point and the scale marked on the band will be twice the actual movement of the assembler-slide.

The magnifying-prism 28 is of double convex form with the axis thereof disposed perpendicularly to the length of the graduated band 16, thus magnifying and increasing the apparent length of the band without increasing the apparent width thereof.

In the composition of tabulated matter the riders 33 are placed on the scale 28, the pointed ends thereof extending up through the slot 18 to a point adjacent to the face of the graduated band, as shown in Fig. 4, and the left-hand edges of the hooked ends 32 indicating on the scale 28 the points of tabulation.

The matrices for forming in the line the characters falling in the first tabulated column are then dropped into the assembling-elevator, thus moving the assembler-slide a distance equal to the combined width of the matrices. Said movement of the assembler-slide being communicated to the graduated band by means of the bar 17, the filled portion of the line is indicated by the position of the point 22 relative to the numbered scale on the graduated band. Should the matrices which have been dropped not be sufficient to fill the line to the second point of tabulation, spaces of suitable width are dropped until the point 22 indicates on the graduated band the

number corresponding to the second point of tabulation, whereupon the second combination of characters are dropped to the assembling-elevator, and so on.

By referring to Fig. 1 it will be seen that when there are no matrices in the assembling-elevator the pointer 22, the left-hand indices of the double-size scale on the band 16, and the left-hand indice of the natural-size scale 28 coincide in position. Now, assuming that matrices are dropped into the assembling-elevators and move the assembler-slide a certain distance—say two picas—to the left, the front side of the band 16 is moved an equal distance to the left, and the pointer 22 is moved an equal distance to the right. Thus the pointer will coincide in position with the number "2" on scale 28, while on account of the movement of the double-size scale to the left the number "2" thereon will also coincide with the pointer and the number "2" on the scale 28. The same being true for any amount of movement of the assembler-slide, it follows that for any position the same may assume the amount of movement thereof will be indicated by the pointer 22 both on the double-size scale on the band 16 and on the natural-size scale 28. For example, in Fig. 2 the device is shown in the position answered when the assembler-slide has moved ten picas to the left, the bar 17 and graduated band having moved therewith and the indicator-point 22 having moved an equal distance to the right. Thus the point 22 will be above the rider set at "10" on the scale 28. In this connection it may be noted that on account of the movement of the indicator-point 22 being from left to right, as printed matter is read, on dropping any matrix into the assembling mechanism the exact position of that matrix in the completed line will be indicated by the said indicator-point on the enlarged scale on the band.

If desired, when starting the column of tabulated matter the slug forming the first line of the column may be cast without reference to the points of tabulation. The said slug may then be placed in the slug-carrier 34 behind the spring 35 and pressed against the stop at the left-hand side of the slug-carrier, the same corresponding with the left-hand indice of the scale 28. The slug so placed is represented at X in Figs. 2, 3, and 4. The riders 33 may then be spaced along the scale 28 to correspond with the first characters of the groups X^1 , X^2 , and X^3 on the slug, as is represented in Figs. 2 and 3. The composition of the succeeding lines is then proceeded with, as before described.

Should it be desired to place in any line ditto-marks for any character group in the preceding line, the position of the ditto-marks may be determined with a sufficient accuracy by estimating with the eye from the slug X

to the scale 28 and reading on the enlarged scale of the band 16 a number corresponding to the number estimated on the natural-sized scale.

5 Now, having described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a tabulating attachment for linotype-machines, a scale connected to and movable
10 with the assembler-slide of the machine, an indicating-pointer adjacent to the scale and movable relative thereto, and connecting means between the scale and indicating-pointer whereby the relative movement thereof will
15 be greater than the travel of the assembler-slide.

2. In a tabulating attachment for linotype-machines, a scale connected to and movable
20 with the assembler-slide of the machine, an indicating-pointer adjacent to the scale and movable relatively thereto, and connecting means between the scale and pointer whereby movement of the scale in one direction will move the pointer in the opposite direction.

25 3. In a device of the class described and in combination with a linotype-machine, an endless band connected to and movable with the assembler-slide of the machine, a scale graduated on said endless band, said scale being
30 of a length equal to twice the travel of the assembler-slide, and an indicating-pointer secured to one side of the band and extending to a position adjacent to the other side of the band, whereby movement of the latter side of
35 the band in one direction will actuate the pointer in the opposite direction.

4. In a device of the class described and in combination with a linotype-machine, an endless band connected to and movable with the
40 assembler-slide of the machine, a scale graduated on the said band, said scale being of a length equal to twice the travel of the slide, rollers over which the band is passed, a casing inclosing the rollers and band, a transparent
45 side in said casing for permitting observation of that portion of the band adjacent thereto,

an indicating-pointer movable adjacent to the observable side of the band, and means whereby movement of said side of the band in one direction will actuate the pointer in
50 the opposite direction.

5. In a tabulating attachment for linotype-machines, an endless band adapted to be connected to and to move with the assembler-slide
55 of the machine, a scale graduated on said band, said scale being of a length greater than the travel of the assembler-slide, an indicating-pointer adjacent to said scale and movable in a direction opposite thereto, a fixed scale carried adjacent to the movable scale, riders
60 carried on said fixed scale and extending to the movable scale, and a slug-carrier adapted to retain a cast slug in proximity to the fixed scale.

6. In a tubulating attachment for linotype-
65 machines, a movable scale connected to and movable with the assembler-slide of the machine, a movable indicating-pointer adjacent to the movable scale, connecting means between said pointer and the movable scale whereby
70 the relative movement of the pointer and scale will be greater than the travel of the assembler-slide, a magnifying-lens carried with the indicating-pointer and through which the pointer and movable scale may be observed,
75 a fixed scale in proximity to the movable scale and pointer, and a slug-carrier adapted to hold a cast slug adjacent to the fixed scale.

7. In a tabulating device for linotype-machines, a graduated scale, a pointer held ad-
80 jacent to said scale, said scale and pointer being relatively movable, and means for connecting the same to the assembler-slide of the machine, whereby any movement of the assembler-slide will be indicated by a relative
85 position of the scale and pointer.

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

EDWARD T. WATERS.

Witnesses:

HOWARD J. COWGILL,
D. O. BARNELL.