

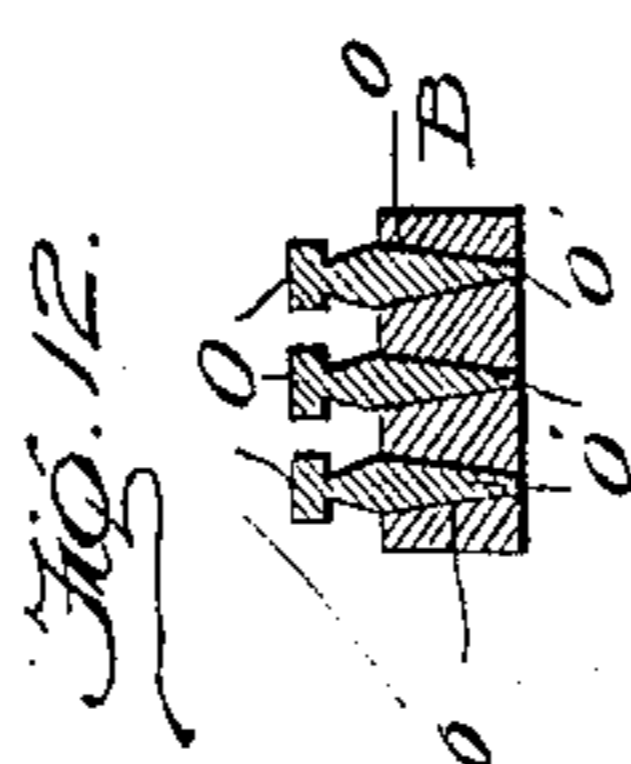
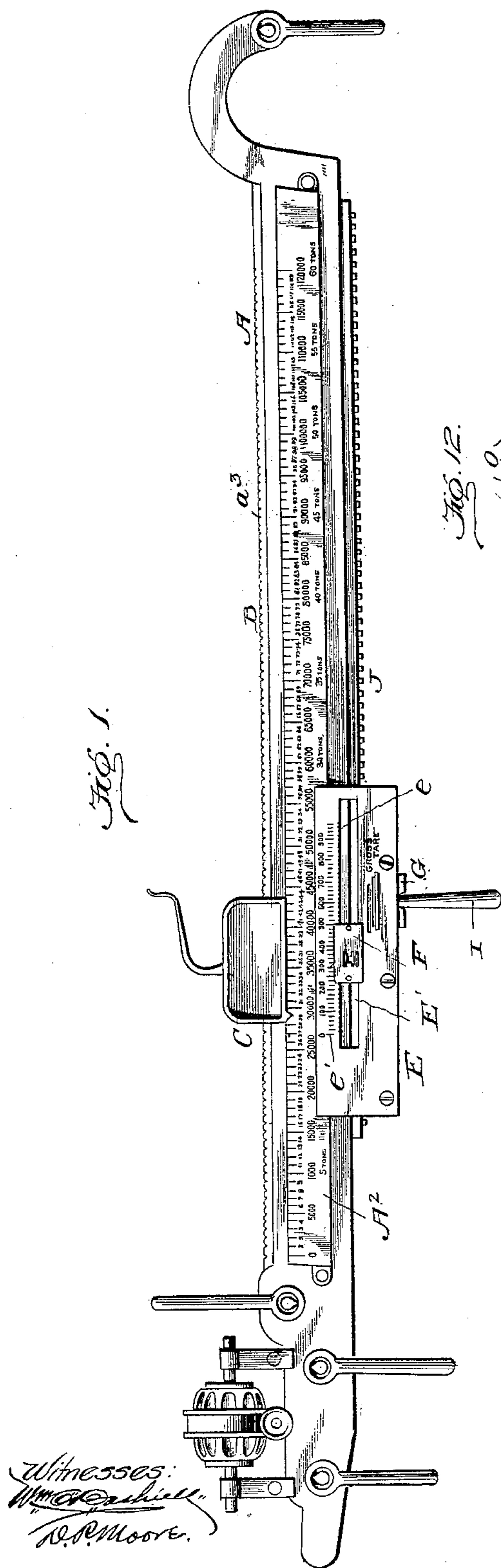
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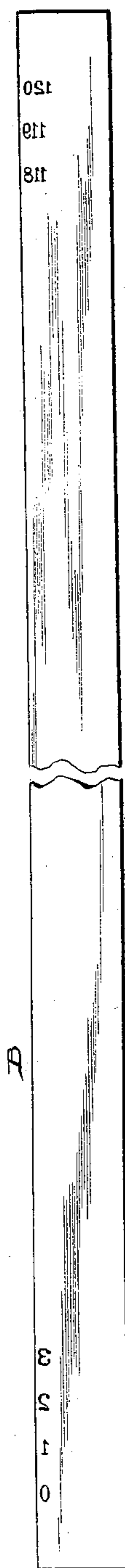
S. T. BRALEY.  
RECORDING WEIGH BEAM FOR SCALES.

No. 593,320.

Patented Nov. 9, 1897.



*Fig. 10*



*Fig. 11.*



Witnesses:  
*Wm. C. Ashby*  
*R. P. Moore*

Inventor—  
*Samuel T. Braley,*  
By—*C. A. Watton* Atty.

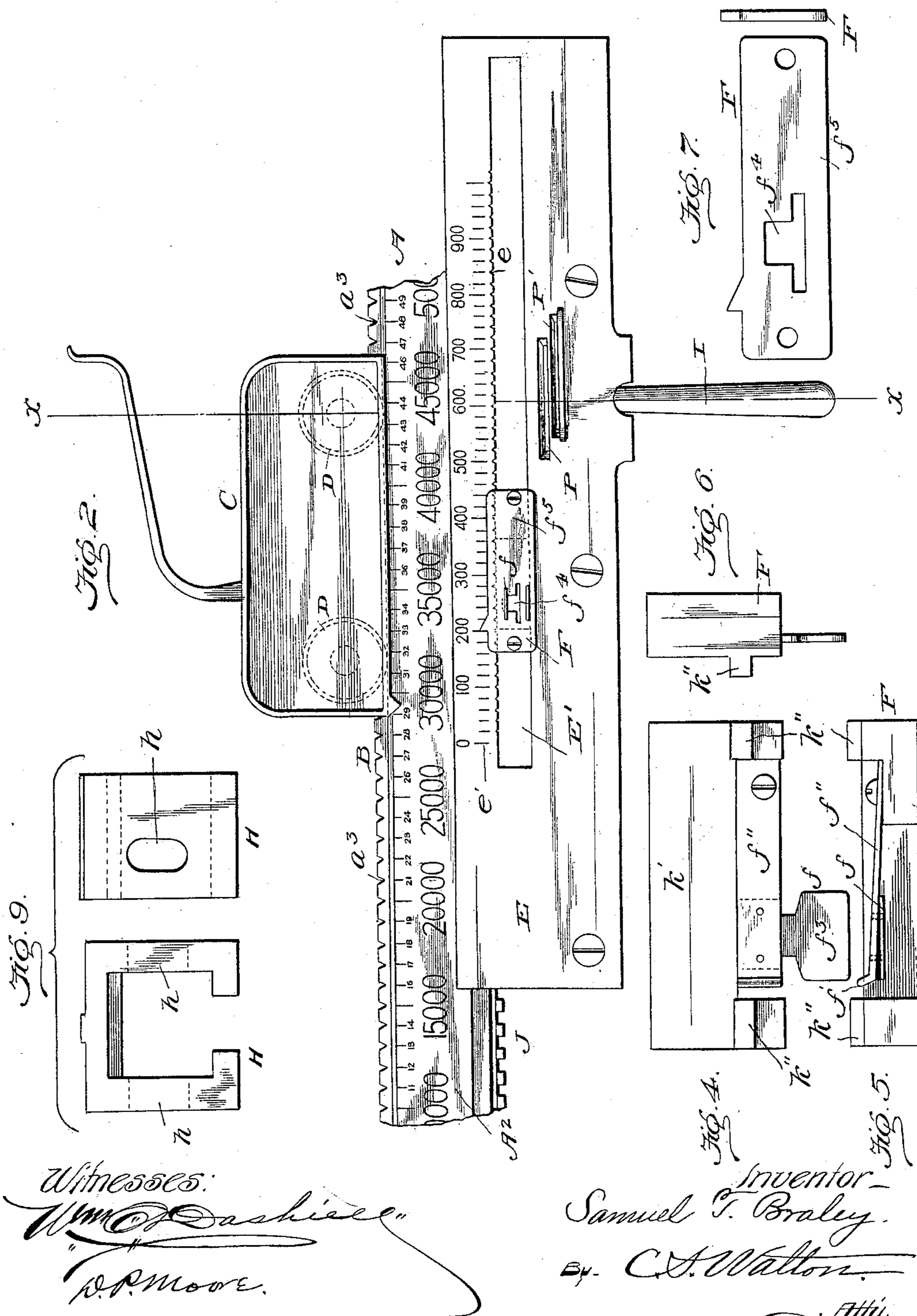
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5 Sheets—Sheet 2.

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5 Sheets—Sheet 3.

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Patented Nov. 9, 1897.



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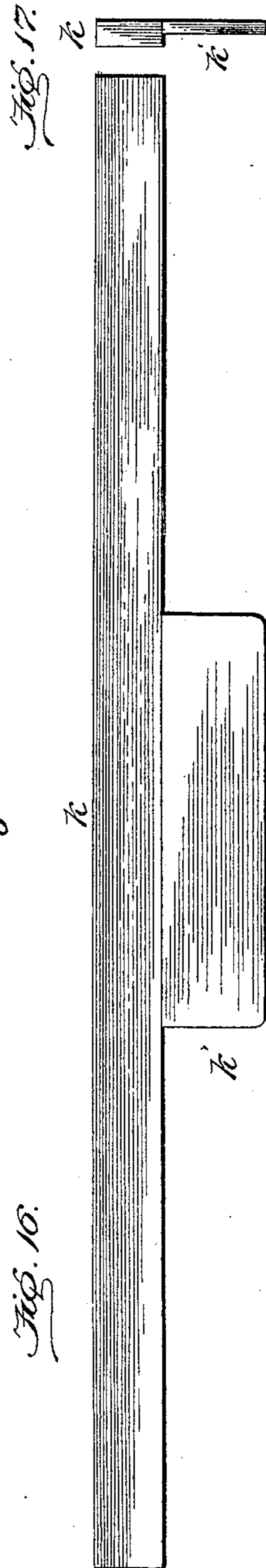
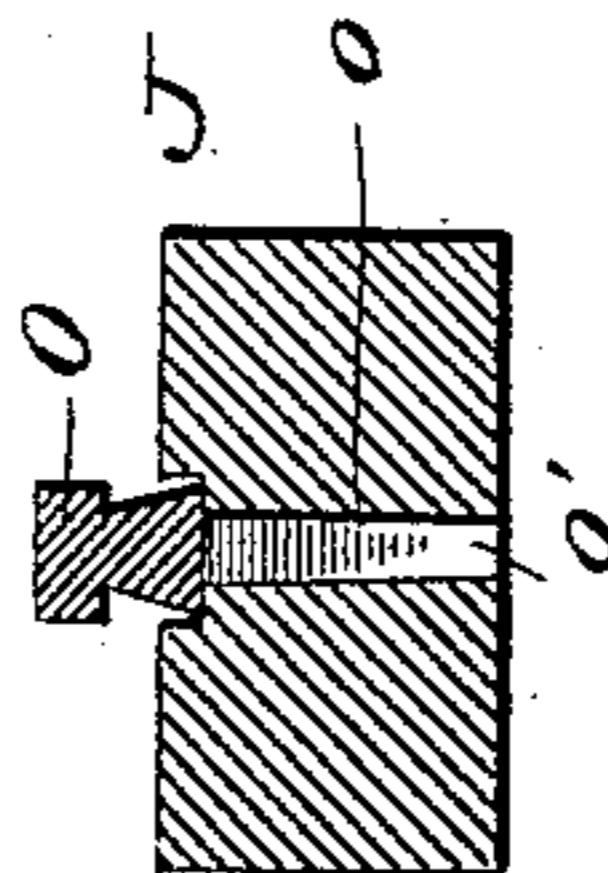
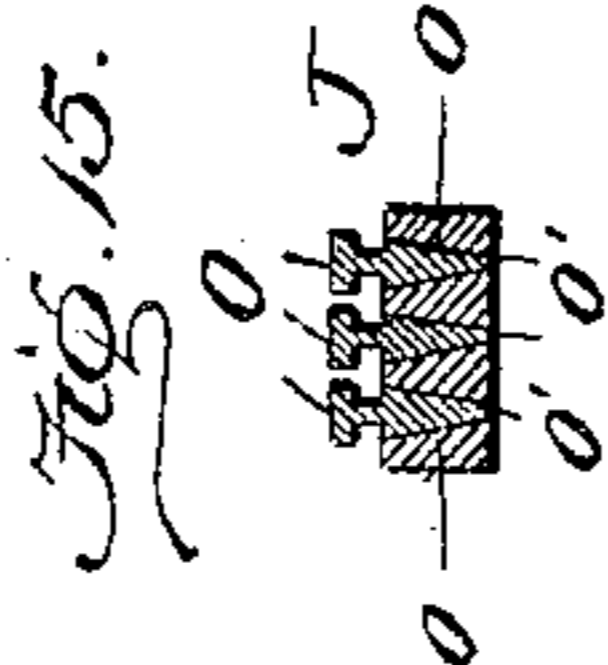
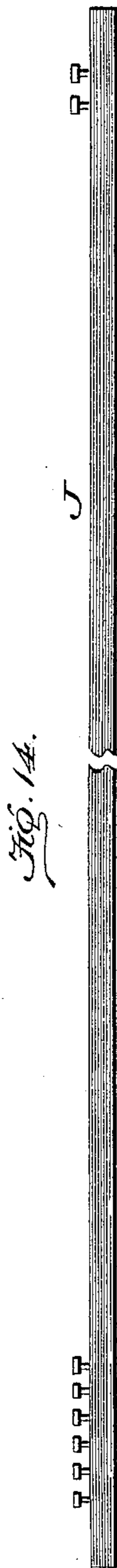
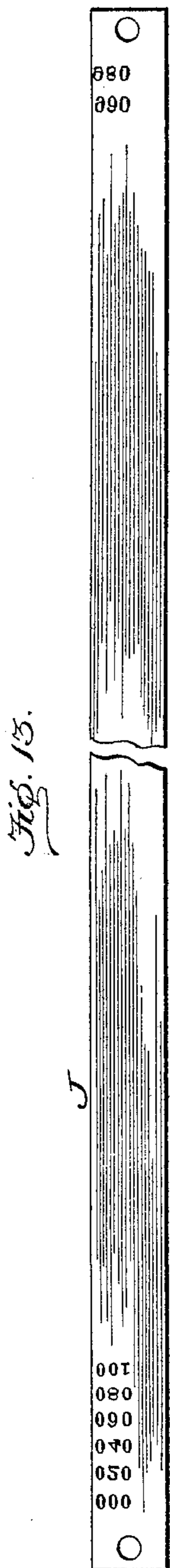
(No Model.)

5 Sheets—Sheet 4.

S. T. BRALEY.  
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No. 593,320.

Patented Nov. 9, 1897.



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(No Model.)

5 Sheets—Sheet 5.

S. T. BRALEY.  
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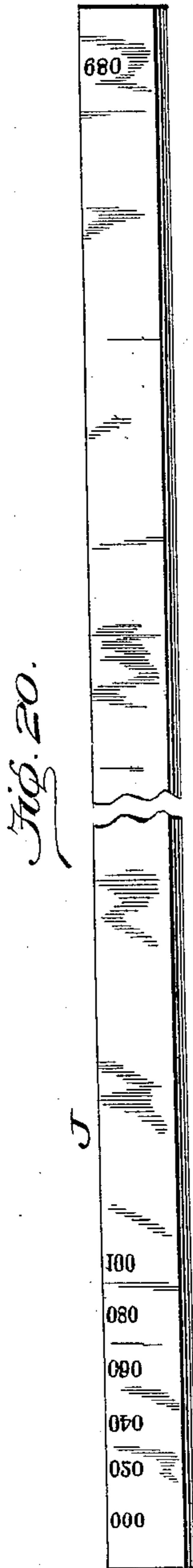
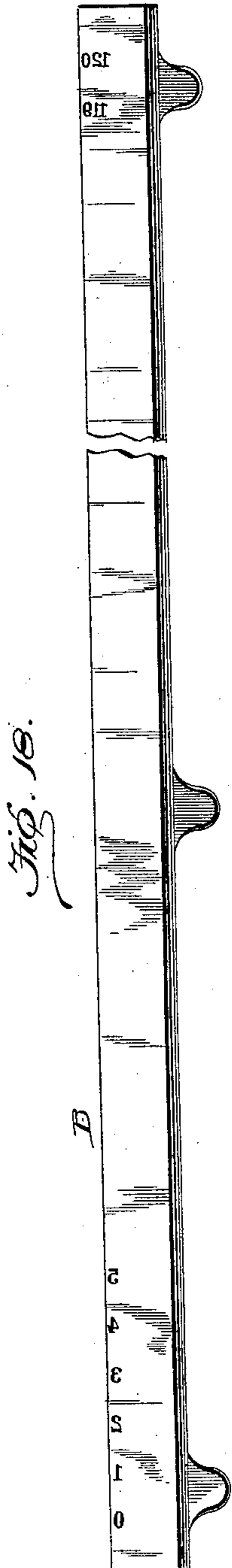


Fig. 22.

Date.....	(ORIGINAL) Car No.....	Initials.....	Material in Car.....
n.....	Gross.....	n'.....	Tare.....
n'.....	Net.....	Grade.....	

Witnesses:  
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*W. P. Moore*

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# UNITED STATES PATENT OFFICE.

SAMUEL T. BRALEY, OF RUTLAND, VERMONT, ASSIGNOR TO THE HOWE SCALE COMPANY OF 1886, OF SAME PLACE.

## RECORDING WEIGH-BEAM FOR SCALES.

SPECIFICATION forming part of Letters Patent No. 593,320, dated November 9, 1897.

Application filed March 13, 1896. Serial No. 583,086. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL T. BRALEY, a citizen of the United States, residing at Rutland, in the county of Rutland and State of Vermont, have invented certain new and useful Improvements in Recording Weigh-Beams for Scales; 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 improvements in recording weigh-beams of that class in which the record impression is taken from figures on the under side of the weigh-beam itself; and the primary object of my invention is to simplify the construction and arrangement of parts, whereby the cost of manufacture of said device is materially reduced.

A further object of the invention is to provide a novel form of the poise or rider which will exhibit and disclose all of the indication or division marks and numerals, both those on the weigh-beam and those on the auxiliary bar, at a convenient place on the face of the rider or poise, whereby they may be seen at a glance by the weighmaster without relying entirely on the registering device for the weight, or, in other words, the recording-beam of my invention may be used independently of the recording mechanism the same as an ordinary scale-beam.

One of the leading features of my invention consists in the novel construction of the main or primary poise or rider in a manner to carry an auxiliary smaller poise, the smaller poise being combined or associated with a type-bar which is movable or adjustable therewith, and which type-bar is arranged close to a removable type-surface on the main beam itself and in a manner to be braced and reinforced by said main beam against the pressure of the recording device, whereby the movable type-bar for the auxiliary poise is prevented from bending out of shape by the backing afforded by the main beam.

My invention further consists in the novel construction of the auxiliary poise and the means for locking the same on the face of the main poise and in the novel construction and

arrangement of parts constituting the impression or stamp table for recording gross and tare weights; and the invention finally consists in the novel construction and arrangement of parts which will be hereinafter fully described and claimed.

To enable others to understand my invention, I have illustrated the preferred embodiment thereof in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is an elevation of my recording scale-beam. Fig. 2 is an elevation on an enlarged scale, the ends of the main beam being broken away on both sides of the graduated face-plate. Fig. 3 is a vertical transverse sectional view on the plane indicated by the dotted line *xx* of Fig. 2. Figs. 4, 5, 6, and 7 are detail views of the smaller auxiliary poise detached from the graduated face-plate, Fig. 4 being a plan, Fig. 5 a side view, Fig. 6 an end view, and Fig. 7 a side view, of the face-plate. Fig. 8 is a detail view of one set of rollers and their arbor or spindle provided for supporting the main poise on the main beam. Fig. 9 is a detail illustrating the vertically-movable impression or stamp table in end and side view. Fig. 9<sup>a</sup> is a detail of a guide-block and handle. Figs. 10, 11, and 12 are views in plan, side elevation, and transverse section of the removable type-bar with removable type adapted for use in connection with the main beam. Figs. 13, 14, and 15 are a plan, side elevation, and a transverse section, respectively, of the removable type-bar with removable type for use in connection with the slidable auxiliary poise; and Fig. 15<sup>a</sup> is a view similar to Fig. 15, slightly enlarged. Figs. 16 and 17 are a plan and end view showing the plate or bar by which the type-bar for the small poise is fastened to said poise. Figs. 18 and 19 are a plan and cross-section, respectively, of the type-bar with cast bronze type for the main beam. Figs. 20 and 21 are similar views, in plan and cross-section, respectively, of the type-bar with cast bronze type for use in connection with the auxiliary poise. Fig. 22 is a plan view of a duplicate ticket on which the gross and tare weights of a car may be impressed.

Like letters of reference denote corresponding parts in all the figures of the drawings, referring to which—

A designates the main beam of the scale, which, as regards its general form and mode of hanging the same in a scale, is constructed and arranged as ordinary beams; but my improved scale-beam is specially constructed for use in connection with the poise or rider, as will be described. The upper edge or part of this main scale-beam is wrought or shaped to produce the vertical flange  $a$ , the way or track  $a'$ , and the horizontally-extending flange, provided with the tapered or ridged way or track  $a''$ , the two ways or tracks  $a'$  and  $a''$  being arranged on opposite sides of the vertical flange  $a$ . (See Fig. 3.) This vertical flange  $a$  is provided in its upper edge with the usual notches  $a^3$ , (see Fig. 1,) in which notches may be seated one end of a spring locking contrivance to hold the main poise in a fixed position at any desired point on the main beam A. These ways or tracks  $a'$   $a''$  run the entire length of the notched portion of the main beam, and they are true and parallel with relation to the lower edge or face of the beam A. This lower edge or face of the beam A is widened considerably, (see Fig. 2,) and on this lower edge or face of the main beam is secured or affixed a longitudinal type-bar B, which is arranged midway, or thereabout, between the sides or edges of the beam and which extends the full length of the notched portion of the beam. As shown by the detail views of the type-bar, (numbered 10, 11, and 12 or 18 and 19,) this type-bar has offsets or lugs on one side thereof for the passage of the devices which attach the type-bar removably to the lower face or side of the beam A, while the other edge or side of the type-bar is smooth and straight. The type-bar is arranged on and removably fastened to the beam with its outer edge or side next to the front of the beam, and the surface of the beam left uncovered by the type-bar B and the straight smooth side of the type-bar itself forms a way or guide (indicated at  $b$ ) for the reception of the slidable type-bar connected with the small auxiliary poise, as will be hereinafter described.

On the front side of the beam A is a scale or graduated plate  $A^2$ , which is integral with or rigidly attached in a suitable way to said beam, and this plate is arranged in an inclined or angular position with relation to the beam by which it is carried, in order that it may stand off from the beam and expose its graduations or indicator-marks and the characters or numerals thereon to better advantage for observation by the weighmaster.

C indicates the main poise or rider which is constructed to partially embrace the main beam, or to inclose it on three of its sides, and yet expose the graduated plate  $A^2$  to view. This main poise or rider C is chambered from end to end thereof, and in its front side is an observation-slot  $c$ , through which is exposed

the graduated plate  $A^2$ . The main poise or rider C partially overhangs the beam, incloses its rear side, and extends beneath its bottom, as shown by Fig. 2, and the back part of this poise has on its inner face a bearing-flange which rides against the widened lower end or foot of the beam A (see Fig. 2) to prevent the poise from having any swaying motion on the beam. This poise C is sustained on the beam by a novel form of truck which insures free travel of the poise on the beam and prevents the poise from having any tendency to sway thereon, and this truck consists of the arbors or shafts  $d$   $d'$ , which are supported or journaled in the upper part of the chambered poise, and the four wheels or rollers D D', which are mounted on the arbors or spindles and are adapted to travel on the ways  $a'$   $a''$  of the beam A. The rollers D D are smooth rollers arranged at the front side of the poise in positions to travel in the way or track  $a'$ , while the rollers or wheels D' D' have grooved treads and are arranged at the rear side of the poise in positions to travel on the tapered or ridged track  $a''$ . It will be seen that the poise is supported by its rollers to have traveling contact with the two ways or tracks on opposite sides of the central notched flange  $a$  of the beam, so that the poise is free to travel without contact with or interference from the notched flange or edge of the beam, and at the same time the form and arrangement of the rollers or wheels of the truck and the lateral or sidewise bearing between the rear side of the poise and the foot of the beam tend to counteract any sidewise play of the poise on the beam.

To the front side of the main poise is rigidly fastened, as by the screws shown in Fig. 2, a face-plate E, the length of which exceeds the length of the carriage or poise proper, C, and which extends upwardly from the lower edge of the poise C for a suitable distance until the upper edge of the face-plate extends across or overlaps the lower free edge of the offstanding or inclined graduated face-plate  $A^2$ . (See Figs. 2 and 3.) In this face-plate E, which is carried by and movable with the main poise C, is formed a longitudinal slot E of suitable length, the lower wall of which slot E is left smooth and plain to furnish a bearing for the auxiliary smaller poise F, while the upper edge of said slot E' is notched or serrated, as at  $e$ . On this face-plate E, above the slot E' therein, is inscribed the auxiliary scale  $e'$ , the indicating-characters of which are in line with the notches or serrations  $e$  in the upper edge of the slot E'.

In the example of the beam shown in the accompanying drawings I have illustrated a beam designed for service in a scale of sixty tons capacity for weighing railway-cars either when loaded or empty, and the recording devices and type-bars are arranged to inscribe the approximate gross and tare weights on a suitable form of ticket, one example of which is illustrated by Fig. 22. In a beam for a

scale of this capacity the main beam A is graduated to indicate the weight in thousands and tens of thousands of pounds, while the auxiliary scale  $e'$  on the face-plate E is graduated to indicate the weight in twentieths of the hundreds pounds. For example, the beam A will indicate the total weight in thousands up to and including one hundred and twenty thousand pounds, while the scale  $e'$  will indicate the fractional weight in twentieths up to nine hundred pounds or one thousand pounds. Of course the relative indications of the scales on the beam A and the face-plate may be changed or varied as may be desired. The beam A proper is simply notched on its upper edge  $a$ , and the graduations and characters are inscribed on the angular plate  $A^2$  corresponding to the notches in the edge  $a$ , while the face-plate E has the notches in the upper side of the slot  $E'$  and the graduations on the exposed face of said plate in the manner shown and described.

The auxiliary small poise F is fitted to slide in the longitudinal slot  $E'$  of the face-plate, whereby this poise F is carried by the face-plate E, which in turn is movable with the poise C in its travel on the beam A. The body or main part of the auxiliary poise F rests on the smooth straight lower edge of the slot  $E'$ , so that the poise F may move smoothly and easily in the slot, and said body of the poise F is recessed or chambered to accommodate the latch  $f$ , which has a beak or tongue  $f'$  and is carried by spring  $f''$ . The latch  $f$  is riveted or otherwise fastened to its carrying-spring, which is of the leaf-spring variety, and the end of this spring is riveted or attached to the body of the poise F. This spring has a tendency to lift the latch  $f$  and force its beak or tongue  $f'$  into one of the notches  $e$  in the upper edge of the slot  $E'$  in the face-plate, and to enable the latch to be released for the purpose of moving the poise F easily in the slot  $E'$  the latch  $f$  has a laterally-extending thumb-piece  $f^3$ , which extends through an angular or enlarged slot  $f^4$  provided in the face-plate  $f^5$  of the poise F. This face-plate  $f^5$  for the poise F is attached to the poise-body by means of screws or other suitable fastenings, and through the enlarged slot  $f^4$  of said face-plate  $f^5$  protrudes the thumb-piece  $f^3$ , so that ready access may be had to the latch  $f$  for the purpose of depressing the latch to release its tongue  $f'$  from the notches  $e$ , whereby the poise may be released and moved to the desired position within the slot  $E'$  opposite to any indication on the scale  $e'$ .

At a suitable place in the length of the main poise C is provided a vertical guide-block G, which is fitted in a suitable vertical recess or aperture provided in the bottom or lower side of the poise C to receive this guide-block. This guide-block G is shown in Figs. 2 and 9<sup>a</sup> as having a vertical aperture  $g$ , the vertical walls or faces of which constitute guides for the vertical ends of a stamp or impression table H, the latter being

fitted in the vertical aperture  $g$  to engage with the guides provided therein, whereby the stamp or impression table H is capable of and limited to vertical reciprocating movement or play in the guide-block G, which is fastened to the poise C by means of screws (indicated by dotted lines in Fig. 2) or by other suitable fastenings. The stamp or impression table H is of the form shown by Fig. 9 of the drawings, from an inspection of which it appears that the table has a flat horizontal top surface, the vertical parallel walls or sides which depend from said top surface, and the inwardly-extending flanges at the lower edges of the sides. This form of construction provides a table which is open from end to end thereof and at the lower side of the same, and in the walls of this table is provided the slots or openings  $h$ . The open construction of stamp-table is fitted in the vertical aperture  $g$  of the guide-block, with its closed top surface facing the beam A and with its open lower side substantially flush with the lower face of the guide-block, and this table is held in place by means of the pin or arbor  $i$ , which passes through the slots or openings  $h$  in the sides of the table and is suitably supported in the guide-block. This pin or arbor furnishes the fulcrum for an operating-handle I, the cam-formed head  $i'$  of which is fitted on the bolt or arbor  $i$  in a manner to impinge against the closed top side of the stamp or impression table, and the shank of this operating-handle passes and protrudes through the opening in the lower side of the stamp or impression table H. This operating-handle I is hung on the bolt or arbor  $i$  and passes through the stamp-table in a manner to permit the operating-handle to swing in a plane at right angles to the length of the beam A, and by moving this handle in one direction the head  $i'$  operates to lift the stamp or impression table and the card or ticket thereon toward the type-faces on the beam, so that the type will indent or impress the figures on the ticket or card denoting the weight.

The type-bar B is removably attached to the lower side of the beam A on a line midway thereof and immediately over the impression or stamp table H. As has been explained, this type-bar B is removably attached to the beam for the purpose of permitting the bar B to be detached and replaced by other type-bars having new type-surfaces for indicating other standards of weight. The figures of this type-bar B are arranged in lines transversely across the lower face, and these figures correspond to the figures inscribed on the graduated plate  $A^2$  of the beam A.

The small auxiliary poise F also carries a type-bar J, which is movable therewith in its back-and-forth travel in the slot  $E'$  of the face-plate E, and from the fact that this bar J is associated with the small auxiliary poise and the further fact that it is inscribed with numerals denoting fractions of the weight in-

5 designated by the main beam A and the type-bar B on said beam A, I will hereinafter designate the type-bar J as the "auxiliary" or "supplemental" type-bar for the purpose of readily distinguishing the bar J from the bar B. This type-bar J is arranged to bear against the lower face or way *b* of the beam A and the straight smooth side of the type-bar B, (see Fig. 2,) and it is thus disposed closely adjacent to or in actual contact with the type-bar B and also arranged over the stamp or impression table H, the width of the impression-table H being equal to the combined width of the type-bars B J in order that the stamp or impression table may properly force the card or ticket against the type-faces on the two bars B J. This auxiliary type-bar J is fastened in a suitable way to a horizontal plate *k*, which has an offset *k'*, that is fitted and secured rigidly to the shouldered rear side *k''* of the body of the small auxiliary poise F, and this plate *k* extends across or spans the space between the face-plate E and the front of the beam A, whereby the type-bar J is arranged below the front side or in the way *b* of the beam A and is properly attached to the small poise F. The object of this construction is to provide a solid backing to the auxiliary type-bar to resist the pressure of the stamp or impression table H when the record is impressed or imprinted on the card or ticket. The bar J itself cannot be made of sufficient strength to resist this pressure from the stamping-table, because it must weigh a fixed amount in relation to the weight of the main poise and to its travel; but by the described construction and arrangement of parts all danger of springing the bar J out of alinement is avoided, and a clear impression of its figures is obtained on the ticket or card at the same time that the impression is taken from the type-bar B on the main beam A.

45 While my invention contemplates the use of a type-bar removably attached to the main beam and to the auxiliary poise, broadly, yet I have also adopted a novel construction of the type-bar by which any one of the type thereon may be replaced at will when said type or types become broken or injured to such an extent as to impair the efficiency of the same.

In the embodiment of my invention shown by Figs. 18 and 19 the type-bar B is shown as provided with rigid type which are cast integral with the type-bar, and in Figs. 20 and 21 a type-bar with cast integral type is shown for use in connection with the auxiliary poise F. I prefer to make the type-bars with their integral type of cast-bronze because of the durability and wearing properties of the material named; but other materials may be used in the fabrication of such type-bars with integral type, as may be desired.

65 In Figs. 10, 11, and 12 I have illustrated one form of the type-bar B for the main beam A as constructed with removable type, and in

Figs. 13, 14, and 15 a similarly-constructed type-bar for use on the auxiliary poise F is shown. In each construction shown by the series of figures the bar B or J is provided with a plurality of sockets *o*, in each of which is fitted the tapered shank *o'*, which is integral with the type O. The tapered shank of the removable type is fitted tightly in the socket *o* and the metal is closed around the head of the type, thus securely fastening the type in the bar to hold the same rigidly in place, but at the same time this type O may be readily and quickly removed when the face of the type becomes worn or damaged to such an extent as to impair the efficiency of the type.

It will thus be seen that my invention contemplates the employment of type-bars which are removably attached to the beam and the small poise to enable either type-bar to be removed and replaced when the standard of weight is changed or when the type-bar is damaged, and a further novelty contemplated by my invention consists in the employment of removable type seated in the removable type bar or bars for the main beam or auxiliary poise, or both.

In Fig. 22 of the drawings the ticket N is shown as consisting of two members or halves, one of which is inscribed "Original" and the other "Duplicate," and each section has the blank spaces *nn'*, opposite one of which spaces *n* the gross weight is to be impressed, while opposite the other space *n'* is to be impressed the tare weight of the cars. To enable my recording weigh-beam to be used in connection with a ticket of the form shown, I have provided the face-plate with the two slots P P', one of which, P', is located below and to one side of the other slot P, as clearly shown by the elevation Fig. 2 of the drawings. When the ticket is inserted through the upper slot P, the ticket is presented to the type-faces on the two bars B J to have the figures thereon impressed in the blank space *n* to denote the weight of the car and its load. After the car has been emptied and run back on the scale and weighed the ticket is again inserted into the weigh-beam, but this time in the lower slot P', whereby the ticket is presented to the type-faces on the two bars B J to have the impression taken in the space *n'* on the ticket, thereby denoting the tare weight of the car. It will be observed that the two slots P P' are separated by an intervening bridge-bar *p*, which is integral with or rigidly secured to the face-plate of the main poise.

This being the construction of my recording weigh-beam the operation thereof may be described briefly as follows: The poise on the main beam is run or moved to the nearest "1000" notch on the main beam to balance the load on the scale, and then the auxiliary poise F is moved in the slot E' of the face-plate E until the exact balance is obtained. By this adjustment of the auxiliary poise the type-bar J is adjusted to bring the figures

thereon in line with the figures on the type-bar B, rigidly attached to the main beam, thus indicating the correct weight. The card or ticket N is now inserted in the slot P and the handle I is pulled toward the operator, thereby lifting the stamp or impression table and with it the card or ticket, whereby the latter is pressed against the aligned type on the two bars B J for the main beam and the auxiliary poise. The tare weight is obtained in a similar way by weighing the car after it is unloaded and by inserting the ticket in the slot P', and the gross and tare weights are thus impressed side by side or one below the other on the ticket or card.

I am aware that changes in the form and proportion of parts and in the details of construction of the devices herein shown and described as the preferred embodiment of my invention may be made by a skilled mechanic without departing from the principle or sacrificing the advantages of my invention, and I therefore reserve the right to make such modifications and alterations as fairly fall within the scope of my invention.

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

1. The combination of a recording weigh-beam carrying a type-surface, which beam is provided with a way or guide, a main poise, an auxiliary poise, a type-bar movable with the auxiliary poise adjustable and securable within the main poise and fitted to move in the way or guide on the main beam, and a suitable impression mechanism operating opposite to the two type-surfaces for the main beam and the auxiliary poise, substantially as and for the purposes described.

2. The combination of a recording weigh-beam having a removable type-surface, a main poise, an auxiliary poise, a suitable recording mechanism carried by the main poise, and a type-bar movable with the auxiliary poise and adjustably securable in the main poise and arranged to be backed or reinforced by the main beam against the pressure of the recording mechanism, substantially as and for the purposes described.

3. The combination of a recording weigh-beam provided on its upper edge with a series of notches, and with duplex tracks or ways, a main poise, and trucks fitted to said duplex tracks or ways and connected with the main poise to support the same on the beam and permit the poise to travel freely thereon without contact with the notched part of said weigh-beam, an adjustable auxiliary poise within the main poise, sliding in a guideway on the main beam, a removable type-surface secured to the under side of the beam, and mechanism attached to said main poise for taking impressions from said type-surface, substantially as and for the purposes described.

4. The combination with a recording weigh-beam, and a main poise fitted thereon, of a

face-plate carried by the main beam and having the longitudinal slot E', the lower face or edge of which is smooth and its upper edge is notched, an auxiliary poise fitted in the slot E' to ride on the smooth edge thereof and carrying a latch to engage with the notched edge of the slot, type-bars on the main beam and the auxiliary poise, and an impression or stamp table, substantially as and for the purposes described.

5. The combination with a recording weigh-beam having the type-surface on its lower side, a main poise, a face-plate carried by the main poise and having the notched slot E', an auxiliary poise fitted in the slot E' of said face-plate, a spring-pressed latch mounted within the auxiliary poise and normally held in engagement with the notched edge of said slot E', a movable type-bar rigid with the auxiliary poise, and an impression-table, substantially as and for the purposes described.

6. The combination with a recording-beam of a guideway thereon, a main poise and an auxiliary poise adjustably secured to the beam, reinforced by and moving in said guideway, a slotted face-plate carried by the main poise, mechanism projecting through said face-plate to operate the auxiliary poise and to limit the play of the same, said face-plate having slots therein for the insertion of and printing on tickets the gross and tare weights of a load, removably-secured type on said beam and on the auxiliary poise, impression mechanism carried on said main poise, opposite the type-surfaces and below said slots, and means to operate the same, substantially as described and set forth.

7. The combination of a recording weigh-beam, a guideway thereon, a main poise, an auxiliary poise carried by the main poise and reinforced by and adjustable in said guideway, suitable recording mechanism on the main poise, a removable type-surface on the auxiliary poise, a series of removable numerals on the main and auxiliary poises, one set being arranged to designate a decimal part of the other and both together the load weighed, graduations on the main beam and on the main poise corresponding to said numerals, readily visible to the operator, indicator-points on the main beam and auxiliary poises, a face-plate on the main poise having slots in the face thereof, marked "Gross" and "Tare," for the insertion of and printing on tickets the gross and tare weights respectively of a load, the whole being so arranged that the weights indicated by the indicator-points on said graduations will correspond to the weights impressed or printed by said recording mechanism on said tickets, substantially as described and set forth.

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

SAMUEL T. BRALEY.

Witnesses:

CARL B. HINSMAN,  
RUSH P. BARRETT.