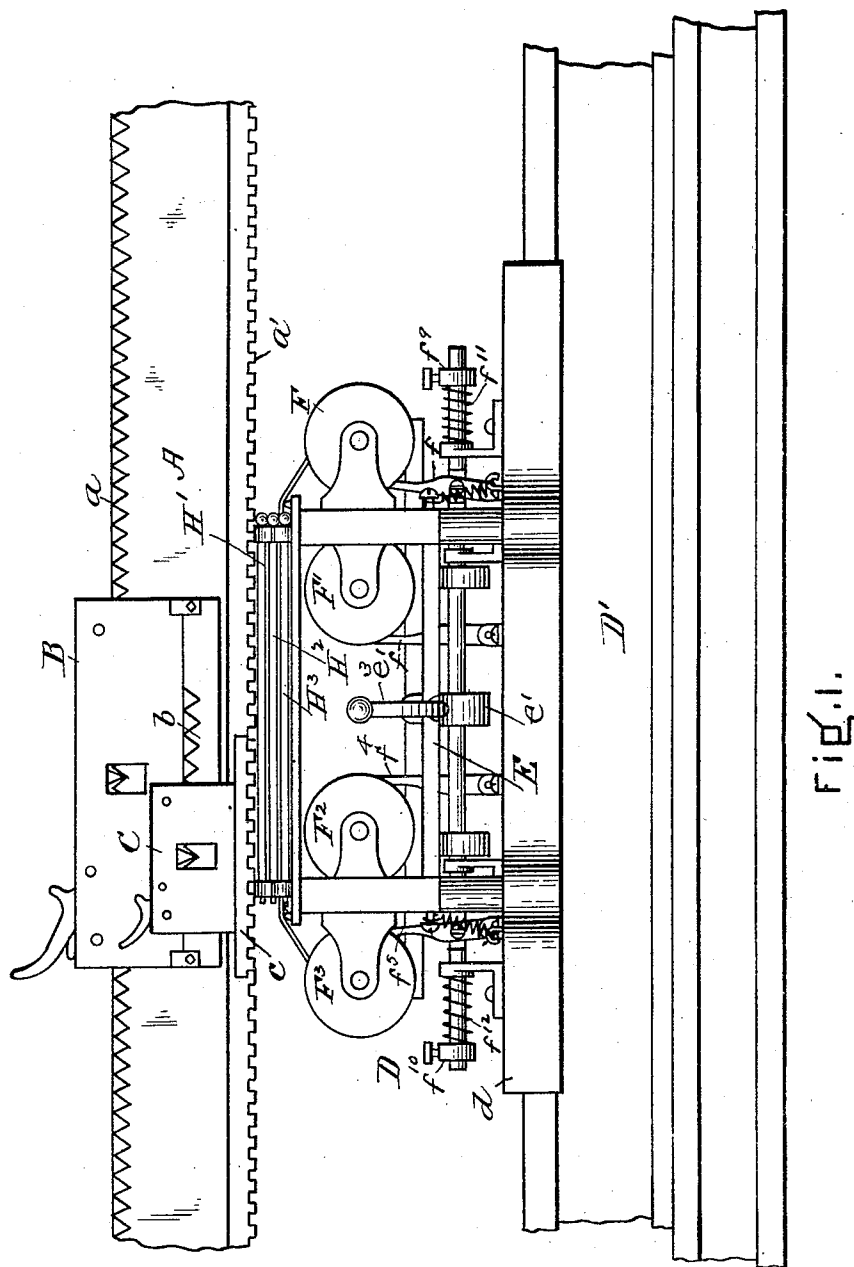


J. CAMPBELL.
SELF REGISTERING SCALE.

No. 558,630.

Patented Apr. 21, 1896.



WITNESSES

J. W. Dolan
E. L. Ford

INVENTOR

J. Campbell
by his Attys
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(No Model.)

4 Sheets—Sheet 2.

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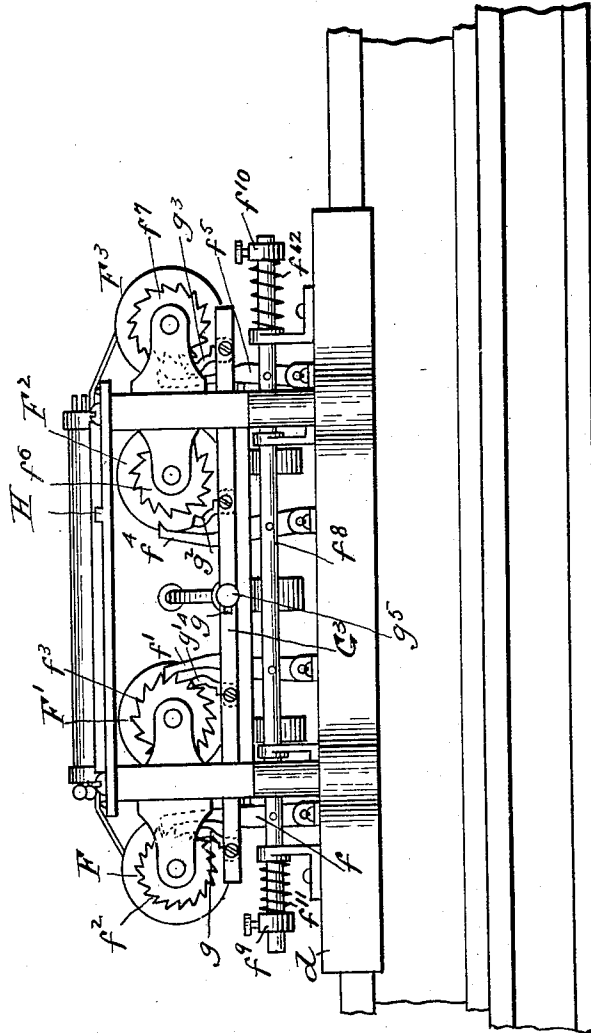


FIG. 2.

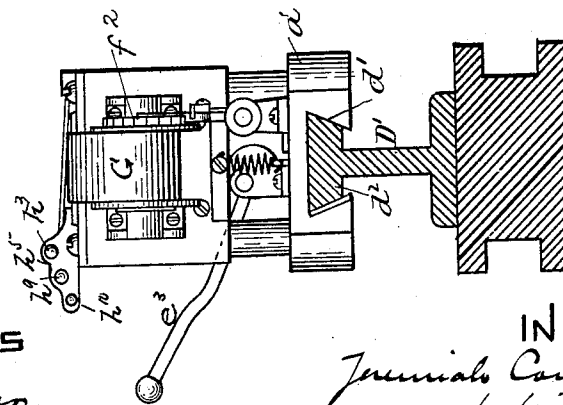


FIG. 3.

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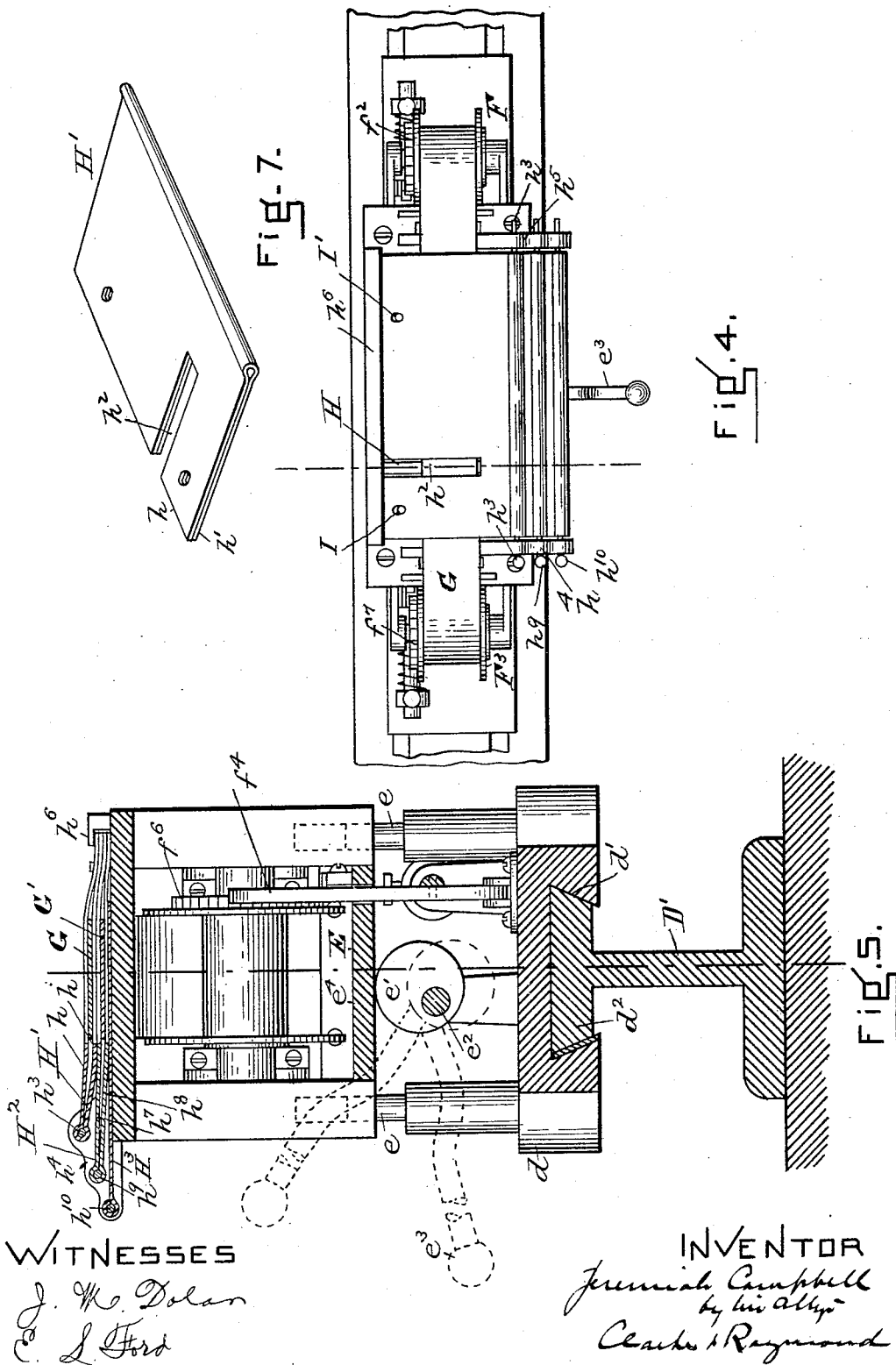
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4 Sheets—Sheet 4.

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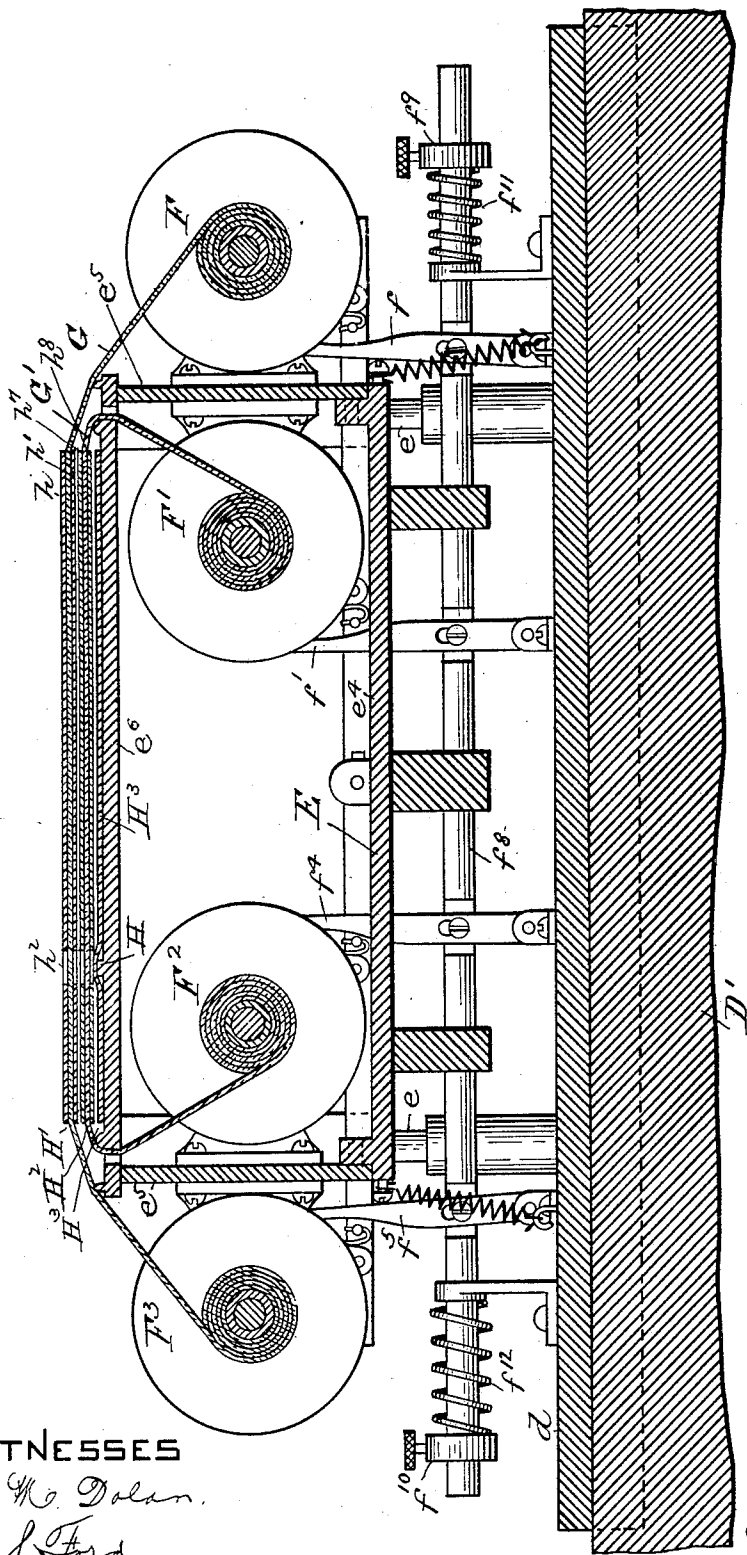


Fig. 6.

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UNITED STATES PATENT OFFICE.

JEREMIAH CAMPBELL, OF CHELSEA, MASSACHUSETTS.

SELF-REGISTERING SCALE.

SPECIFICATION forming part of Letters Patent No. 558,630, dated April 21, 1896.

Application filed June 13, 1895. Serial No. 552,651. (No model.)

To all whom it may concern:

Be it known that I, JEREMIAH CAMPBELL, a citizen of the United States, residing at Chelsea, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Self-Registering Scales, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification in explaining its nature.

The invention is an improvement upon that described in my application for Letters Patent of the United States, filed January 19, 1895, Serial No. 535,480; and it relates especially to the apparatus for registering or printing, preferably in duplicate, the weight as indicated by the printing-characters of the scale-beam and balances.

Referring to the drawings, Figure 1 is a view in elevation of a portion of the scale-beam, the counterpoises thereon and of the printing apparatus and of a portion of the support for the same. Fig. 2 is a view in rear elevation of the printing apparatus and its support. Fig. 3 is a view in vertical section through the support for the printing apparatus and in end elevation of the said apparatus. Fig. 4 is a view in plan of the said apparatus and of its support. Fig. 5 is a view in cross vertical section, enlarged, upon the dotted line of Fig. 4. Fig. 6 is a view in longitudinal vertical section, enlarged, upon the dotted line of Fig. 5. Fig. 7 is a view in perspective of one of the separators hereinafter referred to removed from the machine.

It will be understood that in general the invention follows that of my said application in that the scale-beam and the counterpoises are constructed and operated substantially as therein described, and in that the printing apparatus is adapted to be moved horizontally lengthwise the scale-beam upon a support below it as a whole and a section of it to be lifted vertically toward the scale-beam and counterpoises in making a record of the weight. The printing apparatus varies from that shown and described in said application in respect to the devices for operating the inking and carbon ribbons, and also in respect to the means for receiving, holding, and presenting the cards upon which the weight is

printed or recorded and also in respect to the relation which the inking and carbon ribbons bear to these last-named devices.

In the drawings, A represents the main scale-beam. It has the notched top *a* and the line of printing characters or figures *a'* on its lower edge.

B is the main counterpoise adapted to be moved lengthwise the beam and carrying the counterpoise C, which is itself movable upon the notched beam *b* of the main counterpoise and carries upon its under side, on a level with the line *a'* of figures or indicating-characters, a line *c* of figures or indicating-characters, it being understood that the two lines *a'* and *c* of indicating characters or figures coöperate together as specified in my said application.

D is the printing apparatus. It is mounted upon a slide *d*, preferably having a dovetail slideway *d'* to fit the dovetail top *d''* of a stationary support D', the support extending lengthwise the scale-beam and the slide being movable thereon. The slide carries a table or bed E, which is vertically movable upon the posts or supports *e* by means of a cam *e'*, pivoted at *e''* and having the operating lever or arm *e'''*. This table supports the printing apparatus, and the vertical movement thus provided it enables the printing devices to be moved toward and from the scale-beam and counterpoises. The table is in the nature of an open frame having a bottom plate *e¹*, end sections or plates *e²*, and a top plate *e³*, (see Fig. 6,) and there is secured by brackets to each end plate the rolls F F' and F² F³, respectively, of which the rolls F F³ constitute an operating pair and the rolls F' F² an operating pair, and each pair serves to operate an inking or carbon or similar ribbon. The rolls F F³ operate the ribbon G and the rolls F' F² the ribbon G', and each roll acts successively as a winding-roll and a feed-roll, according as it is turned. The apparatus of my application had similar rolls, but they were not as positively operated, and my present invention varies in this respect from that of the application by making the inner rolls of the same size as the outer and by using rigid pawls for the feed movement instead of spring-pawls which have a drag to

them and by mounting the stiff pawls upon a yielding bar, and by also providing stop-pawls mounted upon an adjustable bar for alternate action with the rolls at each end of the table.

It will be understood that one of each pair of rolls is simultaneously operated, and preferably at the same end of the table, and in Fig. 2 I have shown the rolls $F F'$ as being positively operated to receive the inking-ribbons from the rolls $F^2 F^3$. Consequently they are positively rotated, while the rolls $F^2 F^3$ are free to give off. $f f'$ are the rigid pawls for operating the rolls $F F'$ through their respective ratchet-wheels $f^2 f^3$. They are represented in Fig. 2 as in engagement with these ratchets, while the rigid pawls $f^4 f^5$, for operating the rolls $F^2 F^3$ when they serve as feed-pawls, are shown as out of engagement with the ratchet-wheels $f^6 f^7$, respectively. The feed-pawls $f f' f^4 f^5$ are attached by pivots to a slide-rod f^8 , and the said pawls are pivoted at their lower ends to lugs carried by the slide. The rod f^8 is also carried by the slide, so that neither the pawls nor the rod have vertical movements. The rod f^8 , however, is made horizontally adjustable and yielding. The adjustment is obtained by means of the collars or their equivalents and screws $f^9 f^{10}$ upon the ends of the rod, and by setting or changing the relation of these collars or screws lengthwise the rod the pawls are caused to be moved from operative relation with the rolls $F F'$ to operative relation with the rolls $F^2 F^3$, and vice versa. The yielding effect is obtained by interposing between these adjusting devices at the ends of the rods and the brackets which support the rod the springs $f^{11} f^{12}$, respectively, and one of which of course is always more compressed than the other and overbalances the other and serves to hold the pawls in engagement with their respective ratchets with a yielding pressure. While these pawls have less drag upon the ratchet-wheels than the pawls of the former construction it is as a rule desirable to use in addition thereto stop-pawls for preventing backward rotation upon the upward movement of the rolls, and $g g'$ represent these stop-pawls, which operate, respectively, with the ratchet-wheels $f^2 f^3 f^6 f^7$, and they are pivoted to the adjustable bar G^3 and are so arranged that upon the movement of the bar in one direction one pair is brought into operative relation to the ratchet-wheels of the rolls $F F'$ and upon the movement of the bar in the opposite direction the other pair is brought into operative relation with the ratchet-wheels $f^6 f^7$ of the rolls $F^2 F^3$. The bar G^3 is supported by the table and moves vertically with it, and it has a slot g^4 at its center and a set-screw g^5 , (which extends through the slot,) by means of which it is given longitudinal adjustment and locked at the end of its movement in either direction.

To separate the inking-ribbons, provide suitable support for the slips upon which the

records of the weights are made, and to permit of the quick and easy feeding of the same, I employ in connection with the upper plate e^2 of the table a raised section or platen H (see Figs. 2 and 4) and the separating devices $H' H^2 H^3$. The devices $H' H^2$ are alike, excepting that the device H^2 is wider than the device H' and extends in front of it. (See Fig. 5.) They each comprise a thin sheet of brass or other ductile metal or suitable material folded at the center of its length to form two leaves or sections (which in the separator H' are lettered $h h'$) of the same width and in each of which is formed a long recess or slot h^2 in line with the platen H . They are preferably of the width greater than that of the card or slip upon which the printing is done, and the section H' is fastened in place by the rod h^3 , which extends between the two leaves at their folded end and is supported at each end by buckets $h^4 h^5$ carried by the table, the rod serving to locate the forward end of the separator, while the rear ends of the two leaves which form it extend under the overlapping ledge h^6 . (See Figs. 4 and 5.) Between the two leaves of this separating-section H' the upper ribbon G extends. The separating-section H^2 is similarly constructed and held, it having the leaves $h' h^8$, and it being supported by the rod h^9 and its leaves having a recess corresponding to the recess h^2 of the upper separating-section and its rear ends being held under the ledge h^6 and the ribbon G' , extending between its two leaves.

The separating-section H^3 comprises a single leaf. It is wider than the section H^2 . It is supported at its front end by the rod h^{10} in advance of and below the rod h^9 , and it has a recess corresponding to the recess h^2 of the section H' , and its end extends under the downhold or ledge h^6 , and it acts as a support for one of the slips or cards upon which the record is printed, the said slip or card being inserted between the separator H^2 and the under leaf of the separator H^2 , the separator H^3 extending sufficiently far beyond the front edge of the separator H^2 as to provide a rest, entrance, and guide for a card or slip. The upper leaf of the separator H^2 also acts as a support for another card or slip, and the extension of the section H^2 in front of the section H' provides a suitable rest and entrance for the slip, it being understood that the upper slip is held when in position for printing between the leaf h' of the separator-section H' and the leaf h' of the separating-section H^2 , while the lower card or slip is held between the leaf h^8 of the separator-section H^2 and the separator-section H^3 , and there may be used as gages, in fixing the extent of the backward or inward movement of these cards or slips, the gage-pins $I I'$. (See Fig. 4.) It will be seen that these separators are secured to the table to be easily removable in case it should be desired to substitute others or to clean them. It will also be seen that their arrangement in relation to each other is such as

to afford easy and desirable means for placing the slips or cards and separating them, and as they are made of very thin metal and of a ductile character they readily yield to permit the platen to press the slips or cards and ribbons against the printing-characters upon the scale-beam and counterpoise in making the recording-impression.

In some instances either of the printing-ribbons G G' may have substituted for it a recording ribbon or strip of paper upon which the weight to be recorded or registered will be printed and which will be wound by the devices winding the inking-ribbon—that is, the apparatus is in all respects like that described, excepting for one of the inking-ribbons the paper or similar recording ribbon or strip is used, and this may be employed alone or in connection with one or both slips or cards, so that there may be one impression of the weight upon the continuous strip alone or upon the strip and upon one or two independent cards or slips. This manner of employing the invention is very useful in connection with certain lines of weighing, and especially the weighing of loaded cars, where it is desirable to weigh them and record the weight automatically with no loss of time.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a recording apparatus of the character specified, the combination of a slide, a table mounted upon the slide, having a vertical movement in relation thereto, feed-rolls carried by said table and vertically movable therewith and adapted to be alternately used for receiving or delivering the inking or equivalent ribbon or ribbons, ratchet-wheels on said rolls, active and inactive feed-pawls mounted upon the slide to coöperate with the ratchet-wheels as specified, a rod with which said feed-pawls are connected, springs mounted upon said rod and devices for varying the tension of the springs whereby they may be caused to vary the direction of their pressure, active and inactive stop-pawls to engage said ratchet-wheels and an adjustable bar carried by the table upon which said stop-

pawls are mounted and by which they are moved, all as and for the purposes described.

2. In a recording apparatus of the character specified, the combination with the printing or recording characters of a vertically-movable table having a platen H and the separators H', H², H³, as and for the purposes described.

3. The combination in a recording apparatus of the character specified of the table E, an inking or equivalent ribbon and a platen mounted upon the table with a separating device comprising the leaves h, h' between which the ribbon extends and which has a recess in line with the platen and an additional leaf or support below the first-named leaves, the front edge of which extends in front of the front edge of the leaves h, h', as and for the purposes described.

4. In a recording apparatus of the character specified, the combination of the platen H, and the separators H', H², H³, or two of them comprising a number of leaves detachably secured at both ends to the table and in combination with one or more inking or equivalent ribbons, as and for the purpose specified.

5. In a recording apparatus of the character specified, in combination with one or more ribbons, the platen H, and the printing-characters, and means for moving the table and printing-characters relatively to each other, of one or more double-leafed separators and a single-leafed separator secured to the table or bed having recesses in line with the platen and arranged at their outer ends to form entrances which shall be out of line with each other, as and for the purposes described.

6. In a recording apparatus of the character specified, the combination of the printing and separating apparatus comprising the vertically-movable table, the platen H, the inking ribbon or ribbons, and the printing-characters, of the separators H, H², H³ formed as specified and the stops I, I', substantially as described.

JEREMIAH CAMPBELL.

In presence of—

J. M. DOLAN,

H. W. MUIRHEAD.