

(No Model.)

2 Sheets—Sheet 1.

W. S. AUCHINCLOSS.

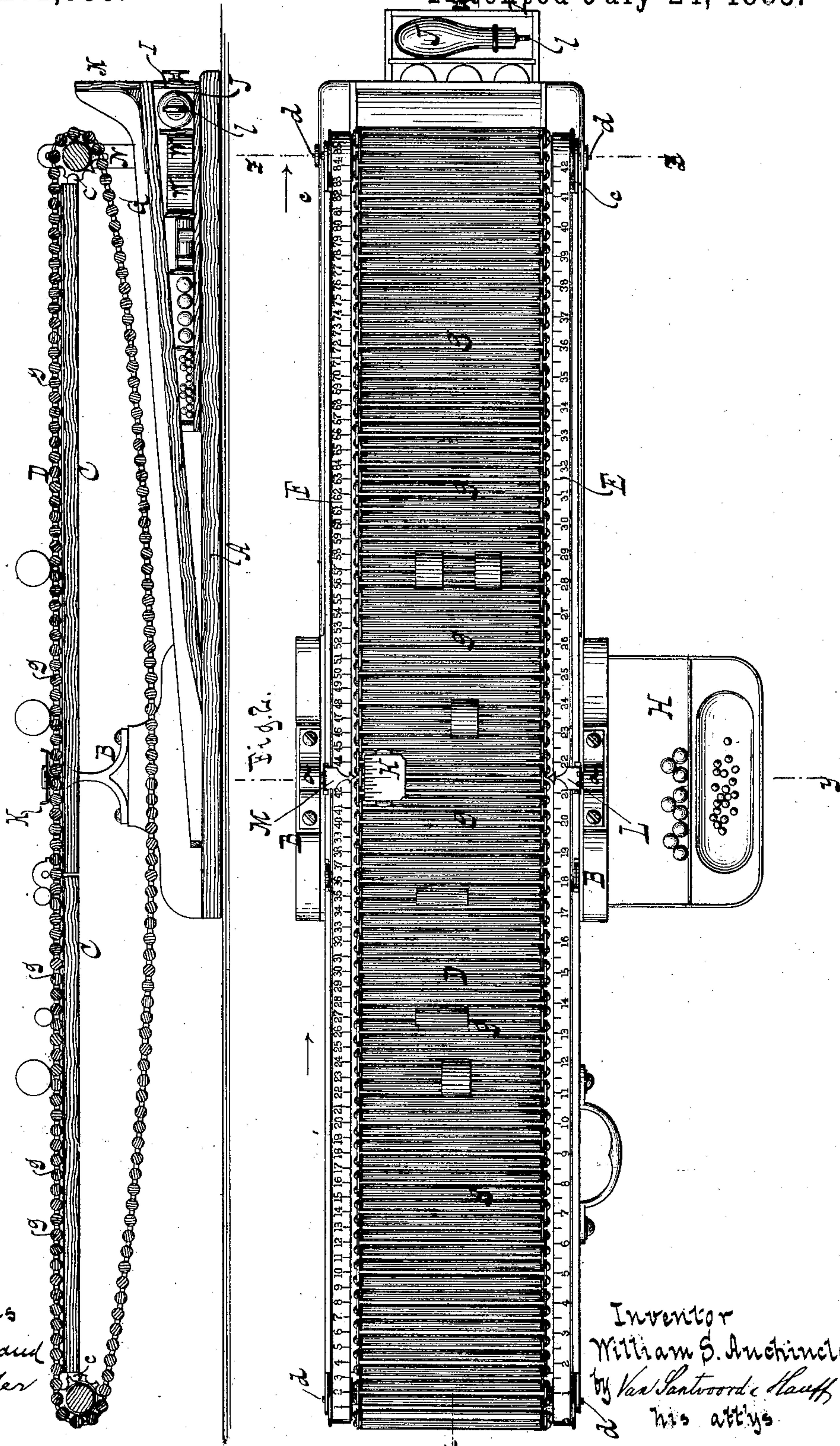
AVERAGING MACHINE.

No. 281,953.

Patented July 24, 1883.

Fig. 1.

Witnesses
Otto Aufeland
Wm. Miller



Inventor
William S. Auchincloss
by Van Santvoord & Hauff
his attys

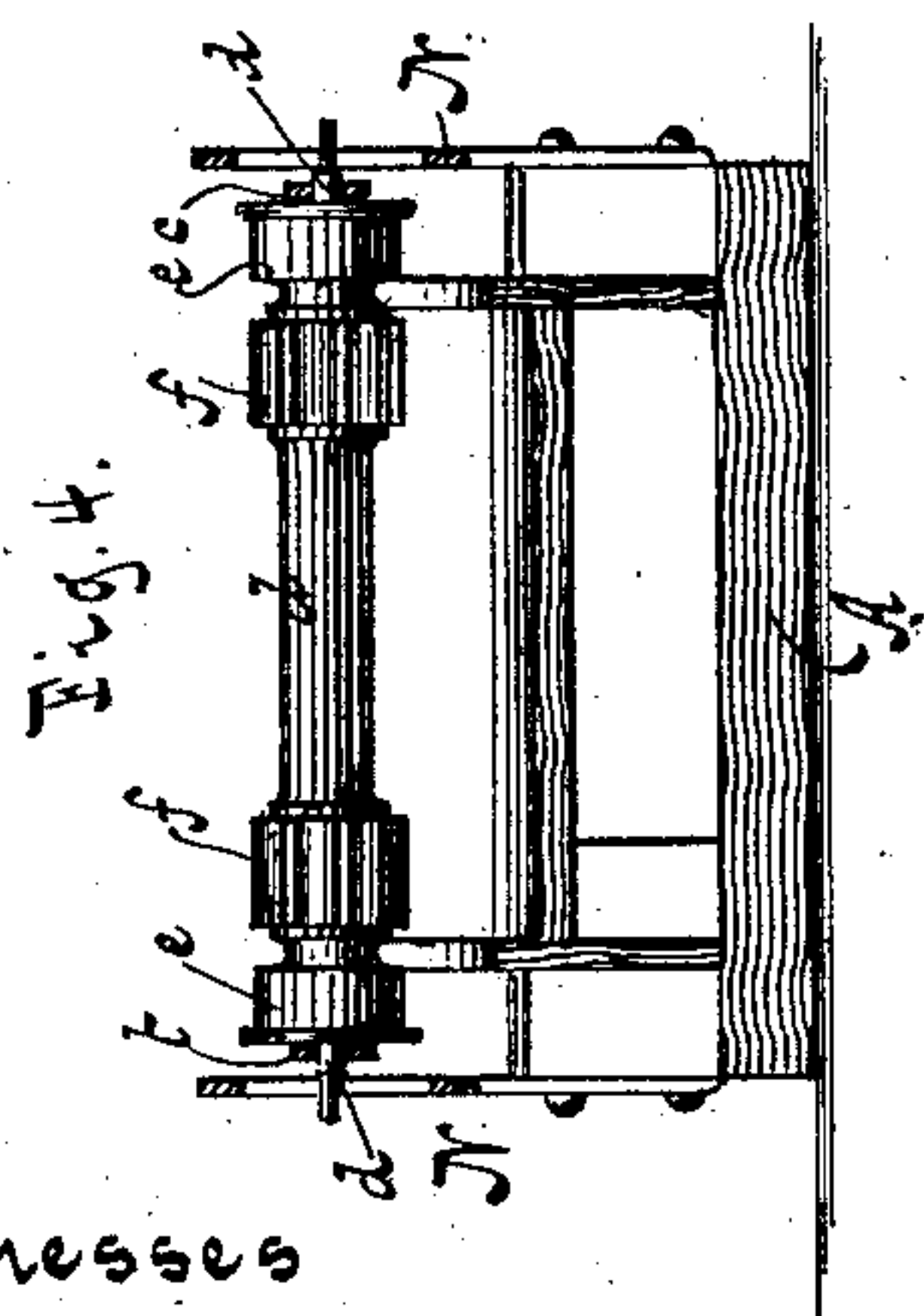
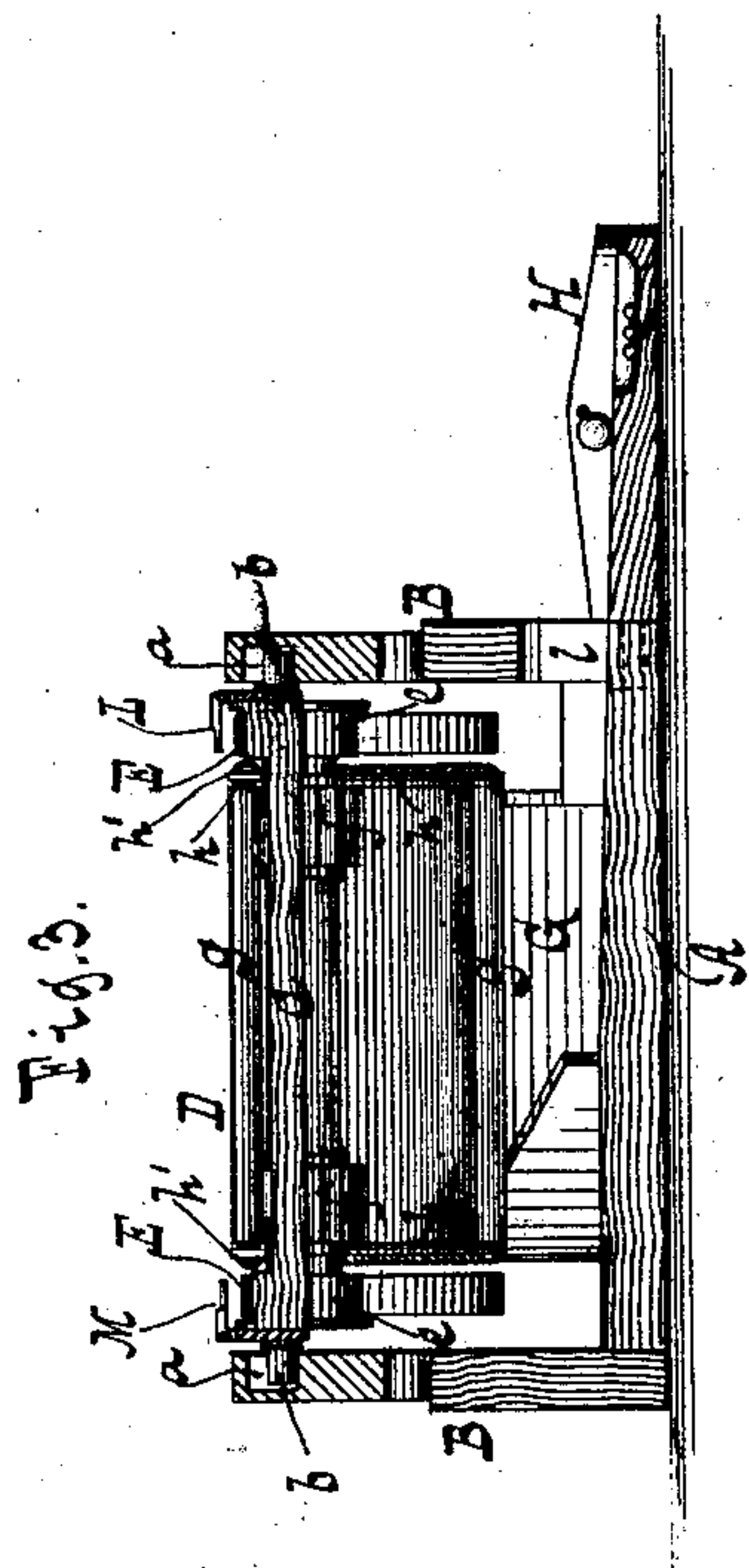
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2 Sheets—Sheet 2.

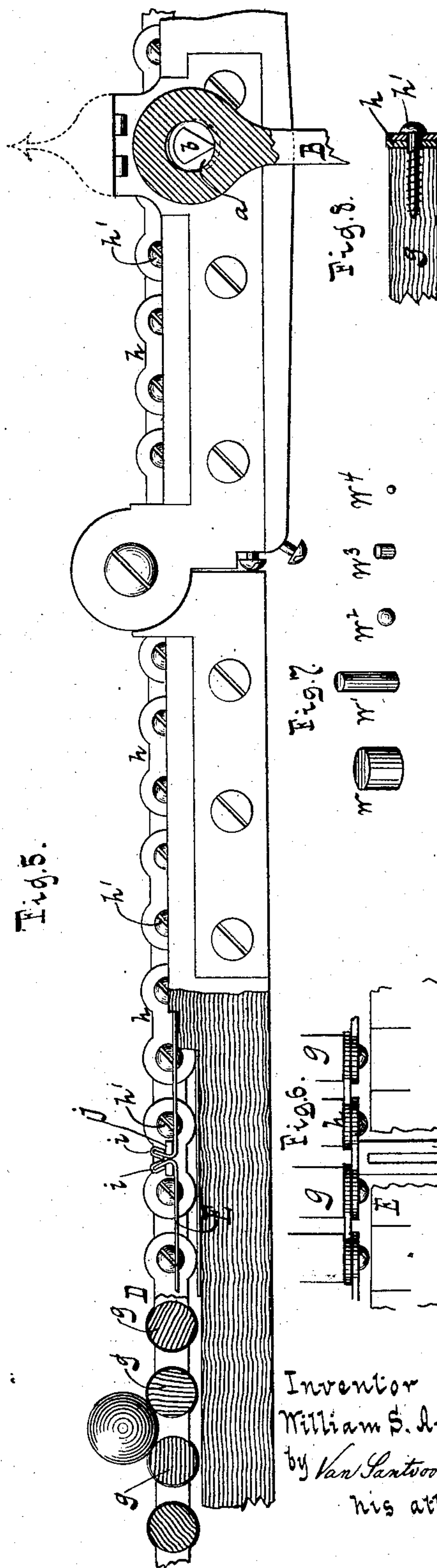
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Witnesses
Otto Kufel and
William Miller



Inventor
William S. Auchincloss
by Van Santwoorde Hauff
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UNITED STATES PATENT OFFICE.

WILLIAM S. AUCHINCLOSS, OF PHILADELPHIA, PENNSYLVANIA.

AVERAGING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 281,953, dated July 24, 1883.

Application filed June 14, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. AUCHINCLOSS, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Averaging-Machines, of which the following is a specification.

This invention relates to an improvement in that class of machines for which Letters Patent have been granted to me May 2, 1882, No. 257,430. In the machine described in this patent the platform, when moved in a horizontal direction in relation to its bearings, is counter-balanced by sliding weights, which are caused to move automatically in a direction contrary to that in which the platform is moved. In my new machine, which forms the subject-matter of this present application, I use an endless self-balancing platform so constructed and mounted in relation to its bearings that when the machine is operated the influence of the weight of the platform is wholly eliminated. The peculiar and novel construction of this machine is pointed out in the following specification and illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section in the plane $x x$, Fig. 2. Fig. 2 is a plan or top view. Fig. 3 is a transverse vertical section in the plane $y y$, Fig. 2. Fig. 4 is a similar section in the plane $z z$, Fig. 2. Fig. 5 is a partial side elevation on a larger scale than the previous figures. Fig. 6 is a plan of one of the chain-links. Fig. 7 is an elevation of the representative weights. Fig. 8 is a sectional plan of a portion of the platform.

Similar letters indicate corresponding parts.

In the drawings, the letter A designates the base-plate, from the central portion of which rise two standards, B B, and in the upper portions of these standards are formed boxes $a a$, which support the knife-edge bearings $b b$ of a table, C. On the opposite ends of this table are secured brackets $c c$, Figs. 2 and 4, which form the bearings for shafts $d d$, on each of which are mounted two plain rollers, $e e$, and two grooved rollers, $f f$, Fig. 4. The rollers $f f$ support the endless self-balancing platform D, and the plain rollers $e e$ support the endless tapes E F, one on each side of the platform, as shown in Figs. 2 and 3.

In the example shown in the drawings the platform D is composed of a series of rollers, $g g g$, and of two chains, $h h$, each composed of a series of links, which are fastened together by screw-pivots h' . The inner ends of these pivots are made in the form of screws, and they engage with the rollers $g g$, which are all made of uniform length, so that they retain the chains at a uniform distance apart throughout their entire length. In constructing this platform it is indispensable that all like parts used in its construction shall be of uniform size and weight, so that when the platform is stretched round the grooved rollers $f f$ it does not disturb the balance of the table C. By referring to Fig. 2 it will be seen that the upper or working portion of the platform rests upon the table C, while beneath said table sufficient room is provided for the slack of the platform, so that said platform can be revolved round and round the table without obstruction, and at the same time the platform may be so revolved without disturbing the balance of the table.

The construction of the platform, as above described, has certain advantages which will be presently pointed out; but I do not want to be restricted to this precise construction, since such may be changed without deviating from my invention.

The tapes E F are fastened to the chains $h h$, and they are marked with suitable scales. For the purpose of securing the tapes in the required position I provide their ends with metallic tips $i i$, Fig. 5, and from two of the chain-links project slotted arms j , Figs. 5 and 6, the slots in these arms serving to receive the ends of the tapes, which are retained therein by the metallic tips i , Fig. 5. The slotted arms j project from opposite sides of the platform, and they are in such a position in relation to the knife-edge bearings of the table C that they balance each other whatever the position of the platform may be.

By referring to Fig. 2 it will be seen that the scale on the tape E is twice as large as that on the tape F. For instance, if the distance from one figure to the next on tape F is a little in excess of the diameter of one roller, the distance from one figure to the next on tape E is a little in excess of the diameter of two rollers; but it is obvious that the scales may be modi-

fied, and I provide tapes with various scales, so as to be prepared for the various problems to be solved by my machine.

The principal advantage of the endless platform, constructed of rollers as above described, is that, since the rollers are free to revolve, such platform, even if loaded, can be moved with comparative ease over the table C; and, furthermore, the interstices between the adjoining rollers form, so to speak, grooves, into which the representative weights can be placed, and which retain said weights in the required position.

The representative weights W W' W^2 W^3 W^4 , which I generally use in my machine, are shown in Fig. 7. The weight W represents 1,000; the weight W' , 500; W^2 , 100; W^3 , 50; and W^4 , 10; and the weights W , W' , and W^3 are made in the form of cylinders, while the weights W^2 and W^4 are made in the form of globes. Beneath one end of the table C is an inclined chute, G , from the outer end of which rises an abutment, k , Fig. 1, while its inner end communicates through an aperture, l , with a receptacle, H . Beneath the outer end of the chute G is a drawer, I , in which the weights and other devices—such as a handle, J , Fig. 2—may be placed. In the handle J is secured a flat tip, l , which may be inserted between two of the rollers of the platform D , so that by means of said handle the platform can be conveniently moved or revolved.

K is a vernier for reading off fractions of the scales marked on the tapes E F . From each of the standards B B projects an index, L or M , the index L pointing on the scale of the tape E , while the index M points on the scale of the tape F . From one end of the base A rise two standards, N , provided with slots to engage with the ends of one of the shafts d , Fig. 8, so as to limit the oscillating motion of the platform D .

The following examples will illustrate the operation of my machine:

Question.—What is the average price of the following quantities of cotton: 1,000 bales at $6\frac{2}{4}$ pence; 500 bales at $6\frac{2}{4}$ pence; 500 bales at $6\frac{2}{4}$ pence; 1,000 bales at $6\frac{2}{4}$ pence; 2,000 bales at $6\frac{2}{4}$ pence?

Place a 1,000-weight in 23-groove, 500-weight in 27-groove, 500-weight in 35-groove, 1,000-weight in 47-groove, 2,000-weight in 57-groove, as indicated by scale on tape F ; move the platform until it will balance, and the index M will point to “43,” showing that the average price of the cotton is $6\frac{2}{4}$ pence.

Question.—What is the cost of one pound of a mixture of five ingredients: 1,000 pounds, worth 23 cents; 500 pounds, worth 27 cents; 500 pounds, worth 35 cents; 1,000 pounds, worth 47 cents; 2,000 pounds, worth 57 cents?

The weights are again arranged as above, and when the platform is moved so that it balances the index M points to “43,” which is the price of one pound of the mixture.

In cases where it is desirable to read off fractions of a cent or pound or other unit rep-

resented at the time being by the scales on the tapes E F , the vernier K is applied as shown in Fig. 2.

The average due-date of any commercial account may be found by aid of the averaging-machine, as follows: Place the weights representing the debits in grooves representing the days on which purchases were made and move the endless band until the platform is in balance. The reading of the index will be the average due-date of the debits. Then remove all the weights from the platform without disturbing the endless band. From these take such weights as will represent the moneys paid on account and distribute them in the grooves representing the days on which those payments were made. One side or the other of the platform will sink under this load. Finally, pour the contents of your left hand (equal to the unpaid money) upon the platform and play seesaw with the amount that has been paid. Whichever groove holds the unpaid amount, when it balances the money paid, will be the representative of the day on which the balance of the account will fall due, and from which interest must be computed in the ordinary manner.

Question.—What is the average due-date of the balance of the following account?

Nov. 3, to mdse.....	\$312 75	Dec. 19, by cash.....	\$620 30
" 7, " ".....	440 00	Jan. 2, " ".....	180 00
" 21, " ".....	280 50	" 22, " ".....	341 25
" 29, " ".....	534 00		
Dec. 11, " ".....	260 00		\$1,141 55
" 15, " ".....	175 80		
" 27, " ".....	530 00		
" 31, " ".....	149 20		
Jan. 6, " ".....	860 00		
" 14, " ".....	183 00	Balance.....	2,803 70
" 28, " ".....	220 00		
	\$3,945 25		\$3,945 25

After placing weights representing the debits in grooves representing the respective days on which purchases were made, and moving the endless band until the platform is in balance, the index will mark “December 14” as the average due-date of the debits. Lift off all the weights and place on the respective credits. Finally, pour the remaining weights (equal to the unpaid money) on the platform and roll them over the same until they balance the credits. They will lodge in the December 7th groove, which is the average due-date from which interest on the balance (\$2,803.70) must be computed.

The table C is made in two sections, which are united by hinge-joints m , (see Figs. 1, 2, and 5,) so that said table, together with the platform, can be folded in order to reduce the length of the machine for the purpose of transportation or storage.

From the foregoing description it will be seen that the principal feature of my present invention is the endless self-balancing platform, and it will be readily understood that this platform can be made in the form of a plain endless apron, on which the required scale or scales might be indicated by lines or

otherwise, and on which semi-cylindrical strips are fastened, to facilitate the adjustment of the representative weights; but in this case the table C would have to be provided with
5 rollers in order to facilitate the movement of the platform over said table.

It must also be remarked that the representative weights can be changed and multiplied as the occasion may require.

10 What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the endless self-balancing platform with the knife-edge-supported table, substantially as and for the purpose herein shown and described.
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2. The combination, substantially as hereinbefore described, with the knife-edge-supported table, of rollers and an endless platform stretched over said rollers.

3. The combination, substantially as hereinbefore described, with the knife-edge-supported table, of two shafts, each carrying two grooved rollers and two plain rollers, the endless platform, composed of a series of rollers and of two chains stretched over the grooved
25 rollers, and one or more tapes, which are provided with scales, connected to the chains and stretched over the plain rollers.

In testimony whereof I have hereunto set my hand and seal in the presence of two
30 scribing witnesses.

WILLIAM S. AUCHINCLOSS. [l. s.]

Witnesses:

JOS. WM. BATES,
JOHN W. WHITE.