S. COMFORT.

Counting Machine.

No. 52,681. Patented Feb. 20, 1866.

Fig: 1.

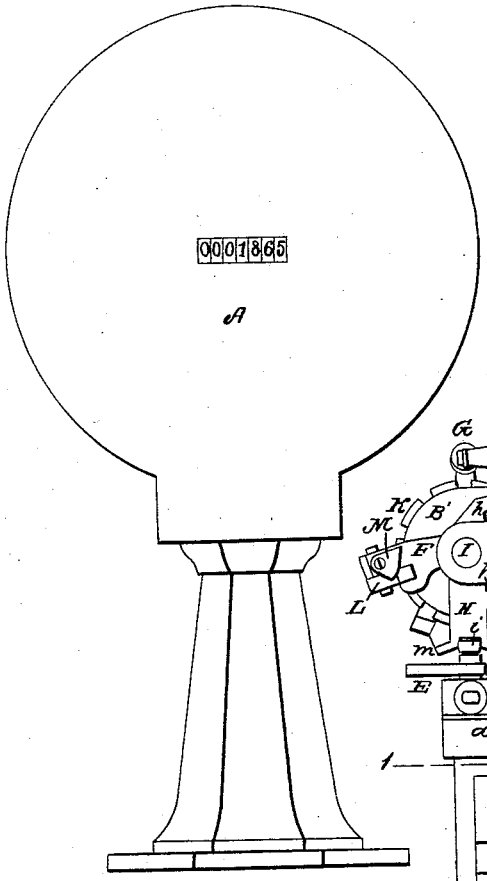

Fig: 4.

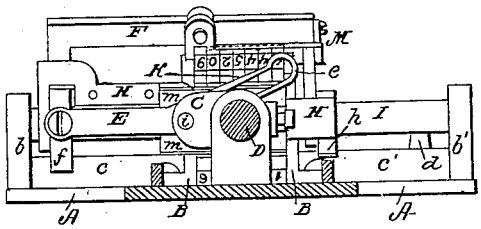

Fig: 3.

Fig: 2.

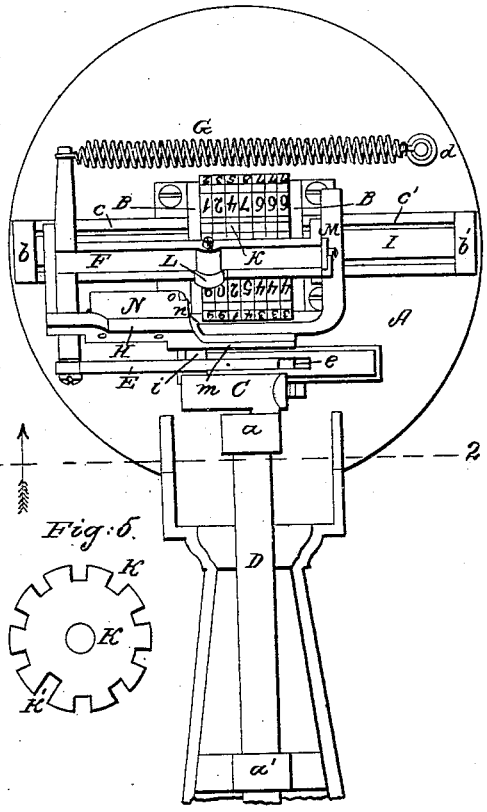

Fig: 5.

Witnesses:

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UNITED STATES PATENT OFFICE.

SAMUEL COMFORT, OF MORRISVILLE, PENNSYLVANIA.

IMPROVEMENT IN COUNTING-MACHINES.

Specification forming part of Letters Patent No. **52,681**, dated February 20, 1866.

To all whom it may concern:

Be it known that I, SAMUEL COMFORT, of Morrisville, in the county of Bucks, in the State of Pennsylvania, have invented certain new and useful Improvements in Counting-Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My improvements consist in peculiar mechanism for imparting the required intermittent motion to the numbering-wheels, in the mode of retaining the wheels at each indicated number, and also in the device for causing the wheels to operate in succession as the numbers pass from units to tens, from tens to hundreds, &c.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

On reference to the drawings which form part of this specification, Figure 1 is a front view of my improved counting-machine. Fig. 2 is a rear view. Fig. 3 is a side view of the same. Fig. 4 is a section of Fig. 2, on the line 1 2, and looking in the direction of the arrow. Fig. 5 is a side view of one of the numbering-wheels.

Similar letters refer to similar parts throughout the several views.

A represents the face-plate, which is supported upon a longitudinally-divided pillar with a flange at the base, by which it is to be secured permanently in its position. The face-plate A is cast with projections *a* and *a'*, for the support of the shaft D, *b* and *b'* to receive the ends of the rod I, and *d* to hold one end of the spiral spring G, also with parallel ways *c* and *c'*, for purposes which will hereinafter be fully described. In the center of the face-plate is an aperture, through which the number indicated by the machine is exposed to view. The plates B and B' are secured to the face-plate, and serve to retain the numbering-wheels K, preventing any lateral movement of the same.

D is a shaft through which motion is communicated to the machine. To the end of the shaft D is secured a crank, C, which is provided with a crank-pin, *i*. The crank-pin *i* passes through the slot in the bar E, the end of it entering the groove *l* in the oscillating frame H. A groove is turned in the crank-pin, which forms a collar on each side of the bar E to prevent any lateral movement of the same. The end of the crank-pin is turned in the form of a zone, in order that it shall continue to fit loosely in the groove *l* throughout the whole movement of the oscillating frame H. The bar E is slotted at one end and fitted to slide loosely upon the crank-pin. At the extreme end of the slot is an enlargement for the purpose of facilitating putting the bar over the collar to its groove in the crank-pin. The other end of the bar E is jointed to the end of a cross-piece of the sliding frame F.

I is a rod or shaft, which is secured at the ends in the projections *b* and *b'*. This rod passes through the plates B and B' and through the numbering-wheels K. The frame F is fitted to slide upon the rod I, and is prevented from turning upon the same by the projections *f f'*, which bear upon the opposides of the ways *c*. At one end of the frame F is a cross-piece, to one end of which is jointed the bar E, and to the other end the spiral spring G, which latter is secured at the other end to the projection *d*. Near the middle of the longitudinal bar of the frame F is jointed a bar, L, the opposite end of which is held in a slot in the frame F by the cam M. The bar L is fitted to slide loosely in a groove formed by a succession of the notches *k k'* on the perimeters of the wheels K, and serves to retain these wheels to prevent them from being turned until, in the operation of the machine, it may become necessary.

The frame H is fitted to clasp the frame F and to slide with it upon the rod I, while at the same time it may turn loosely upon the latter to an extent limited by the lips *h* and *h'*, which come in contact alternately with the sides of the ways *c'* and slide against them. A portion of the longitudinal bar of the frame H is formed with a groove, *l*, with similarly-formed flanges *m* and *m'* on either side of it, which latter are made at such an angle to the radius of the arc which the frame describes in turning upon the rod I that their surfaces will alternately come to a right angle with the surface of the face-plate A when the lips *h* or

h' come in contact with the sides of the ways c'. The groove l is fitted to receive the end of the crank-pin. The surfaces of the flanges m and m' are so fitted in respect to the crank-pin that when either of the projections h or h' come in contact with the ways c' the crank-pin will leave the groove l and slide easily over one of the flanges, m or m', retaining the frame H until, in the continued revolution of the crank-pin, it shall again enter the groove and turn the frame H in the opposite direction. This device, however, does not operate to prevent the frame H from sliding freely upon the rod I in a longitudinal direction. The bar N is secured firmly to the frame H by means of rivets, or otherwise. This bar has a notch, o, at one end, which leaves a projection, n, in length a trifle less than the thickness of one of the wheels K. The width of the projection n is such that it will readily enter the small notches k in the numbering-wheels, while the wider portion will only enter the larger notches, k'. (See Fig. 5.) The numbering-wheels K are fitted to turn loosely upon the shaft or rod I, and are retained laterally by the plates B and B'. These wheels are all made precisely similar to each other, each having nine small notches, k, in its perimeter and one deeper notch, k'. On the surfaces of the wheels, between the notches, the ten digital numbers are arranged in their natural order.

Operation: When the crank C is in the position shown in Figs. 2, 3, and 4 the bar L engages in one of the notches, k or k', in each of the numbering-wheels K, holding them all firmly to prevent their being turned upon their centers so as to alter the arrangement of the figures exhibited at the aperture in the face-plate. At the same time the bar N, which is secured to the frame H, is detached from the numbering-wheels and is free to move with the said frame without communicating any motion to the said wheels. The spiral spring G, contracting, bears the end of the slot in the bar E against the crank-pin i. The crank C and the bar E being on centers, the frames F and H are at the extreme limit of their movement toward the projection b. The end of the crank-pin engages in the groove l in the frame H, which latter has completed one-half of its oscillatory movement. On turning the shaft D in the direction of the arrow, Fig. 4, the crank-pin i in the groove l causes the frame H to turn upon the rod I until the lip h' comes in contact with the ways c'. At this moment the crank-pin leaves the groove l and the end of it passes over the surface of the flange m; but when the shaft D is put in motion, as described, the action of the spring G moves the frame F, which carries the bar L and the frame H, with the bar N, toward the projection b'. By this movement the bar L is withdrawn from the notch in the wheel which indicates numbers of the denomination of units. As the bar L is withdrawn from this wheel the projection n of the bar N enters one of the notches, k or k', in the same. If it should enter one of the smaller notches, k, the bottom of the notch o will bear against the face of the said wheel and stop the farther movement in that direction; but if it should happen to enter one of the larger notches, k', the larger portion of the bar N will pass through the said notch, and the projection n will engage the tens-wheel, and if the notch in the tens-wheel should be a large one also, it will pass on through this and enter the hundreds-wheel, and so on for the whole series; but the wheels being in the positions shown in the drawings, the bar N will only engage in the units-wheel. When the frames F and H have been stopped by the bottom of the notch o bearing against one of the wheels K the crank will continue to revolve, the crank-pin running loosely in the slot in the bar E, the end of it passing freely over the face of the flange m until it re-enters the groove l, carries the frame H upon its axis in the opposite direction, turning with it the wheel or wheels K, which are engaged with the bar N. When the lip h comes in contact with the ways c' the end of the crank-pin i again leaves the groove l and traverses over the surface of the flange m'. At some period of this portion of its movement the crank-pin again comes in contact with the end of the slot in the bar E, moves the frames F and H, withdraws the bar N, and again registers the numbering-wheels K upon the bar L. The crank-pin then re-enters the groove l and completes the movement to the point whence it started. The notches in the numbering-wheels are so arranged in respect to the digital numbers marked upon the same that when the figure 9 (nine) is exhibited by any wheel at the aperture in the face-plate the larger notch k' of that wheel is so situated that the bar N may pass through it and engage the wheel of the next higher denomination. Thus the numbers indicated may pass from units to tens, from tens to hundreds, &c.

I claim and desire to secure by Letters Patent—

1. The combination of a registering-bar, L, or its equivalent, with the numbering-wheels of a machine for indicating or printing numbers, for the purpose of securing the correct alignment of the figures during a portion of the operation of the machine.

2. The combination of the bar L with the bar N, when arranged for joint operation, substantially in the manner described, and for the purposes set forth.

3. The combination of the notches k with the notch k', when arranged in relation to the digital numbers on the numbering-wheels in the manner and for the purposes set forth.

4. The combination of the bar N, having a projection, n, with the numbering-wheels K, having notches k and k', differing in size, for the purposes described.

5. The combination of the oscillating frame H, having a groove, l, and flanges m and m',

with the crank-pin *i*, substantially as described, for the purpose of giving the required intermittent oscillatory motion to the bar N.

6. The combination of the crank C, the frame F, and the slotted bar E, and the spiral spring G, or their equivalents, with the oscillating frame H, when arranged to operate substantially as described, for the purpose of giving the longitudinally-reciprocating motion to the bars L and N.

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Witnesses:

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ANNIE COMFORT.