M. W. NESMITH.

GRAIN-REGISTER.

No. 186,042. Patented Jan. 9, 1877.

Fig. 1.

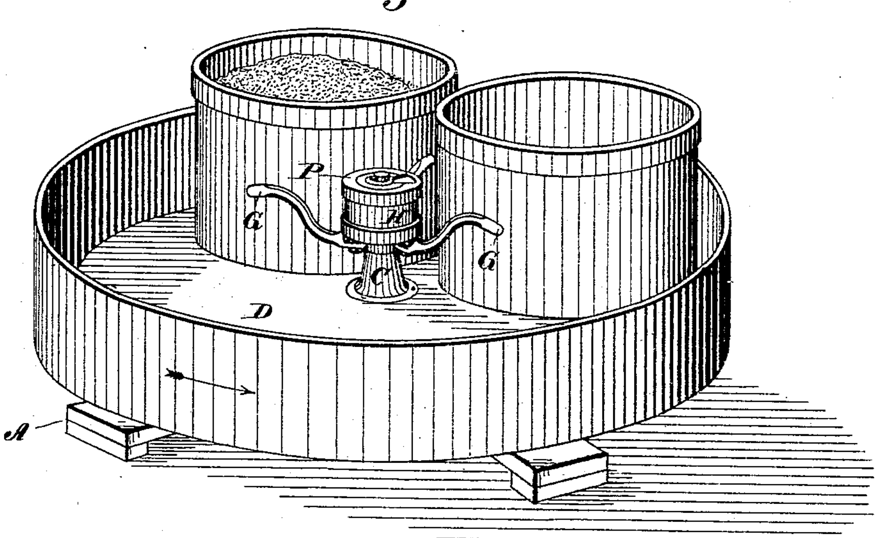
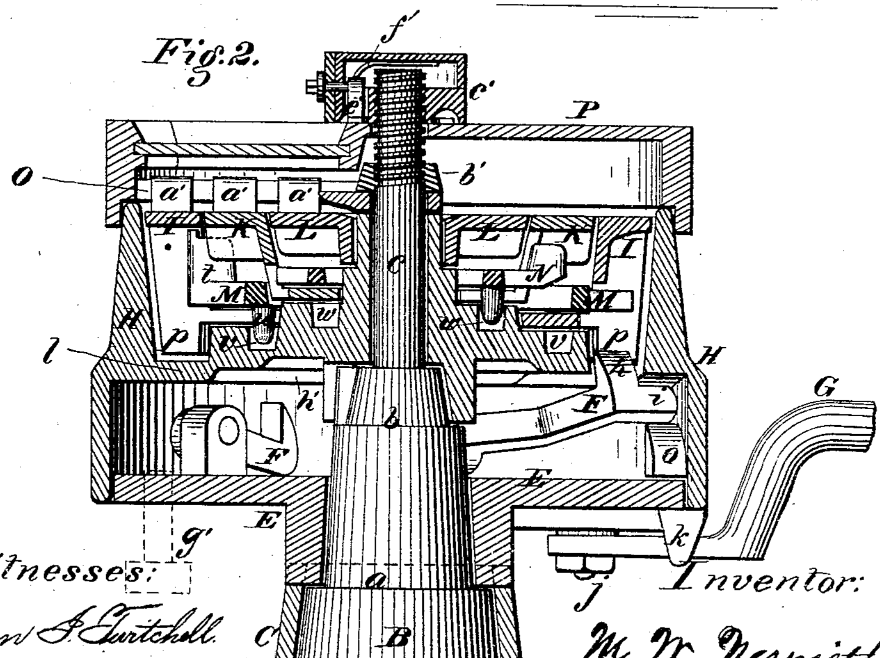


Fig. 2.



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By his attys

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4 Sheets—Sheet 2.

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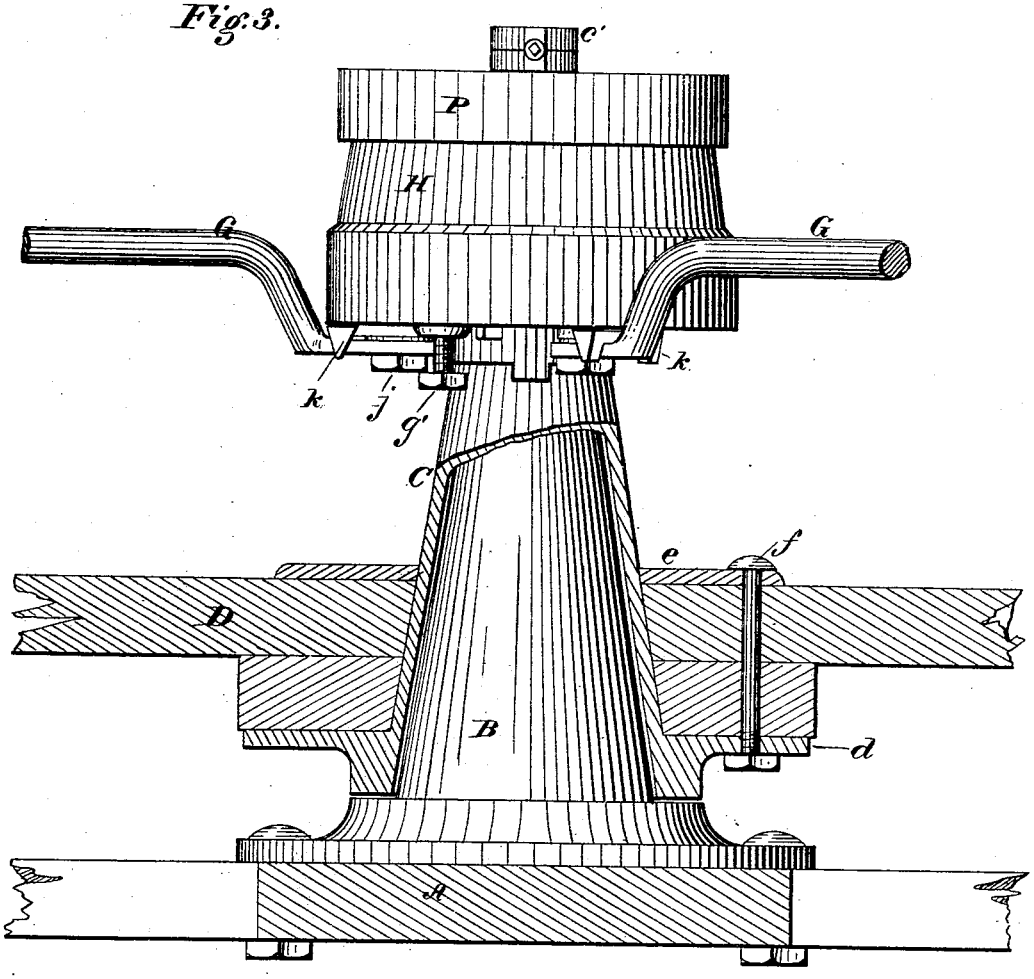
Fig. 3.



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4 Sheets—Sheet 3.

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Fig. 4.

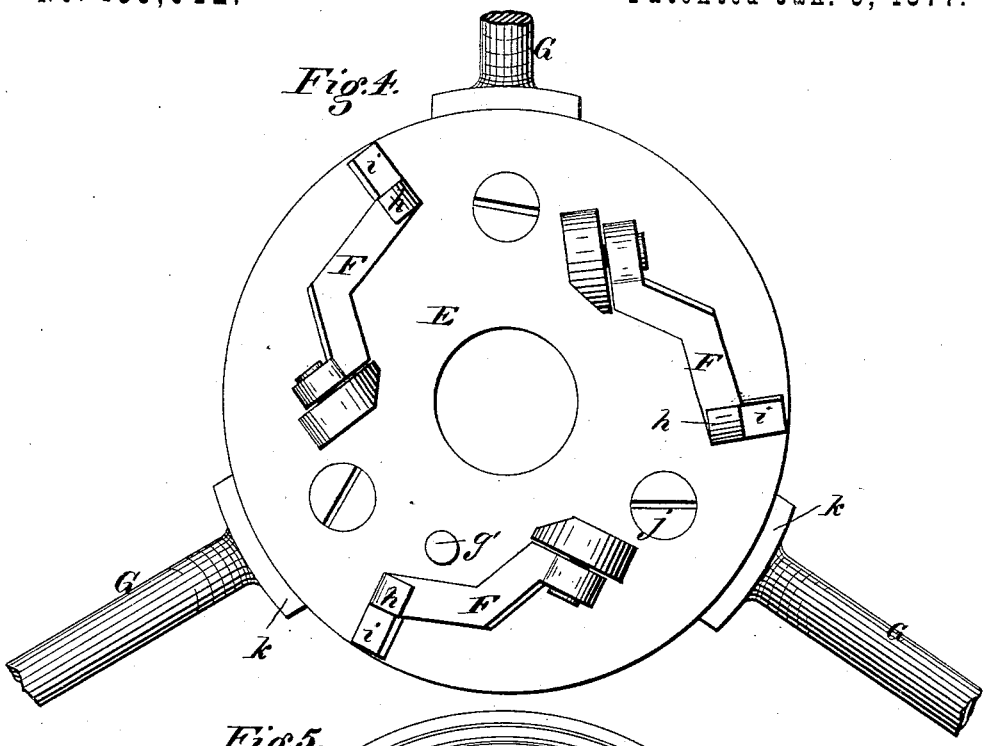

Fig. 5.

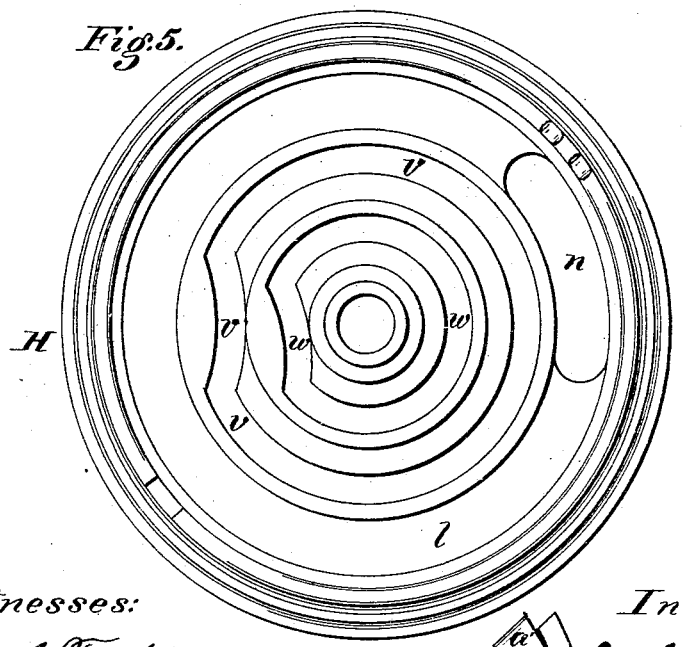

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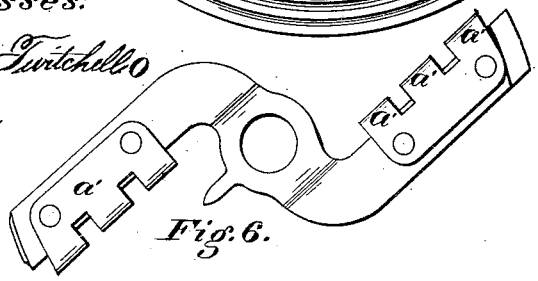
Fig. 6.



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M. W. NESMITH.

GRAIN-REGISTER.

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Fig. 7.

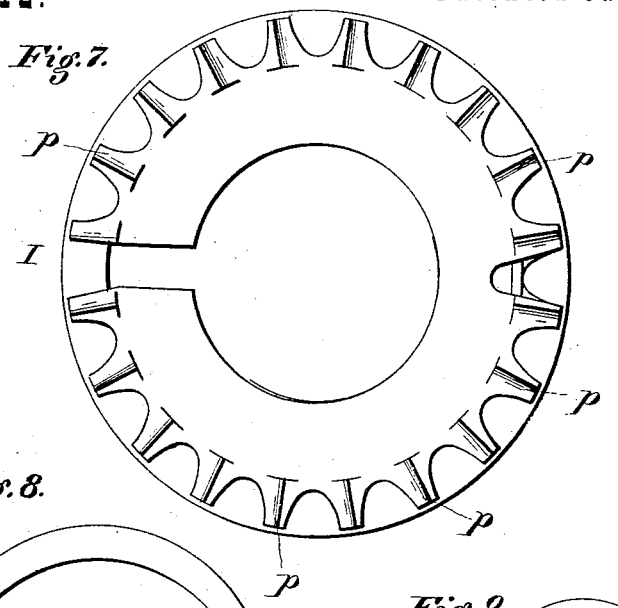


Fig. 8.

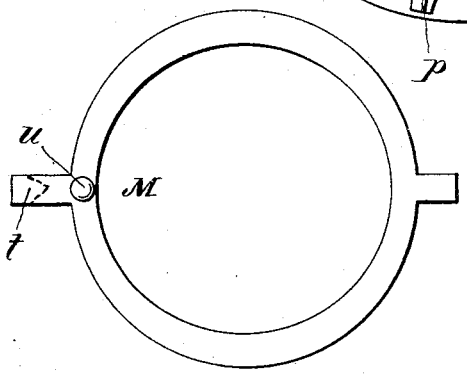


Fig. 9.

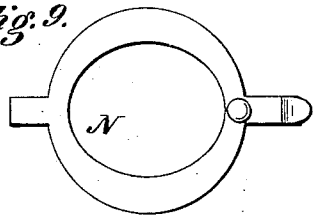


Fig. 10.

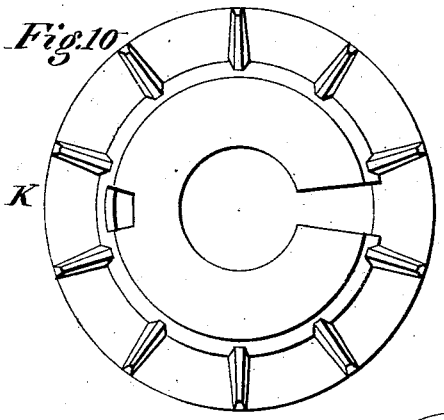


Fig. 11.

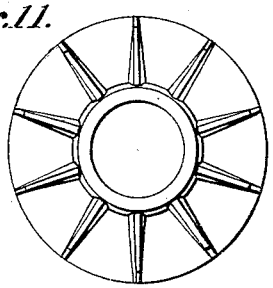
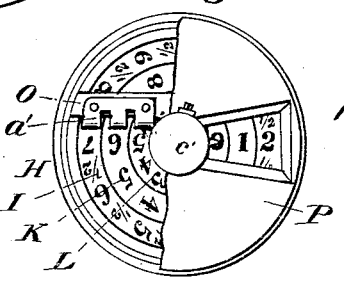


Fig. 12.



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UNITED STATES PATENT OFFICE.

MILTON W. NESMITH, OF METAMORA, ILLINOIS.

IMPROVEMENT IN GRAIN-REGISTERS.

Specification forming part of Letters Patent No. **186,042**, dated January 9, 1877; application filed October 24, 1876.

To all whom it may concern:

Be it known that I, MILTON W. NESMITH, of Metamora, in the county of Woodford and State of Illinois, have invented certain Improvements in Grain-Registers, of which the following is a specification:

My invention relates to that class of registers which are provided with and actuated by a rotary table, which is turned by passing the measures of grain around thereon; and the invention consists in a peculiar manner of constructing and combining the parts, whereby the register is simplified and cheapened, the nature of the pieces used being such that they may be made of cast metal, and that they require no expensive fitting or finishing.

Figure 1 represents a perspective view of my complete register in use; Fig. 2, a vertical central section through the operating parts of the same; Fig. 3, an elevation, partly in section, showing the construction of the base of the device; Figs. 4 to 11, views of various details, hereinafter described; Fig. 12, a top-plan view of the dial or register proper, with one side of the cover broken away to expose the rings on which the figures are formed.

A represents a stationary base, upon which there is firmly secured an upright metal post, B, made of a tapering form, and provided with two circumferential shoulders, *a b*, and with a vertical bolt, *c*, at its upper end, as shown in Figs. 2 and 3. C represents a metal sleeve or thimble, fitting loosely around the post B, and provided near its lower end with an annular flange, *d*, upon which there is bolted a circular horizontal table, D, to receive and carry the measures containing the grain, the measures being placed on the table and carried therewith around the central post. A plate, *e*, is placed upon the table around the post and bolts *f*, passed down through both the plate and table into the flange *d* of the rotating sleeve, as shown, the table being thereby secured firmly to the sleeve and prevented also from warping or springing. E represents a horizontal plate, of a circular form, mounted on the post B, upon the shoulder *a*, and provided with lugs locking into recesses in the upper end of the sleeve C, as shown in Fig. 2, so that the sleeve and the plate rotate together. On the upper face of the plate E, at equal distances apart, there are three dogs, F, each pivoted at one end to a lug on the plate, and provided at the free end with an upwardly-turned hook, *h*, and an outwardly-projecting stud, *i*, as shown in Figs. 2 and 4. G represents three radial arms, secured at equal distances apart to the under side of the plate E, and extending outward above the table D, for the purpose of being acted upon by the measures to insure the rotation of the table as the measures are passed in succession around the post. The arms are secured to the plate by bolts *j*, one through each arm, and are retained in position by lugs *k*, cast on the plate, as shown in Figs. 2, 3, and 4, the ends of the lugs being extended beyond the periphery of the plate to sustain the lower edge of a case or body, H, in which the registering devices proper are mounted. The case H, which is cast complete in one piece, is made of an annular or ring form, with a horizontal plate or division, *l*, across its interior, and is mounted on the upper end of the post B, and locked fast thereto, so that it cannot turn, by means of lugs *m*. In the plate or division *l* there is an opening, *n*, as shown in Figs. 2 and 5, and on the inside of the case H, in line with said opening, there is a fixed cam, *o*, which serves to raise the hooked ends of the dogs F through the opening as they are carried in succession thereunder, as shown in Fig. 2, the three dogs rising in succession at each revolution of the plate. I, K, and L represent three annular dial-plates or rings, arranged one within another, and seated in the case H, which is provided with a separate seat or bearing for each plate, as shown in Fig. 2. (The form of the plates is shown in Figs. 7, 10, and 11.) They are arranged with their upper faces flush with each other, and are provided on said faces with characters to indicate the the amount of grain in bushels, the inner and central plate L having ten characters indicating whole bushels, while each of the others, I and K, has twenty characters, indicating ten whole, and also the intermediate half, bushels.

The outer plate I is made of a cup form, and provided on its under side with as many depending teeth *p* as it has characters on its

face, the teeth being so arranged that they are acted upon by the dogs F, each of which, as it rises through the opening *l*, advances the plate I the space of one tooth.

The plate K, which is also made of a cup shape and seated within the plate I, is in like manner provided with the same number of teeth that it has characters, its teeth *r* being, however, on the periphery instead of on the under side. Within the plate I, between it and the plate K, there is mounted a sliding yoke or dog, M, such as represented in Fig. 8, consisting of a thin flat ring, provided on opposite sides with two radial arms, one of which has its end *t* bent upward to engage in the teeth of the plate K, as shown in Fig. 2. On the under side of the same arm there is a stud, *u*, which enters an annular groove, *v*, formed in the plate *l* of the case H, as shown. As shown in Fig. 5, the groove *v* is curved inward or made eccentric on one side at a single point, which is for the purpose of moving the dog M sidewise and causing its end *t* to engage with the teeth of the plate K, and advance the same the space of one tooth, and then disengage and remain out of contact until it has completed another revolution.

In order to secure and guide the dog or yoke M, and cause its rotation with the plate K, the latter is provided in one side with a radial slot to receive one arm of the dog, and in the opposite side with a hole to receive the other arm, as shown. The central plate L also has the same number of radial teeth that it has characters, and is turned the space of one tooth at each revolution of the plate K by means of a dog, N, similar in construction and arrangement to the dog M, mounted between the plates K L. The lateral movement of the dog N to cause its engagement with the teeth of plate L is effected by means of a special groove, *w*, similar to the groove *v* formed in the case or body H, as shown in Figs. 2 and 5.

On the upper end of the post B, above the dial-plates, there is mounted a rigid cross-bar, O, having on each end a spring-plate, *a'*, having three depending arms which bear on the respective plates and keep them from moving accidentally. This bar is held down in place by a nut, *b'*, applied to the bolt or screw *e*, as shown.

To the top of the case or body H, over the end of the bolt *c*, I secure, by a nut, *c'*, a metal cap-plate or cover, P, provided in one side with a narrow glass-covered opening, *d'*, through which there may be seen a single character on each of the dial-plates, the characters thus exposed indicating the number of bushels registered.

In order to prevent the accidental loosening of the nut *c'*, it is provided with an internal pivoted dog or latch, *e'*, pressed downward by a spring, *f'*, and engaging in notches or teeth, made for the purpose of receiving it, in the top of the cap or cover P. As shown in the drawings, the nut *c'* is divided horizontally into two parts, which are provided in their contiguous faces with seats for the latch *e'*, and secured together by rivets to hold the latch in place. The latch is provided, as shown, with a journal extending out through the side of the nut and provided with a square end, by turning which the latch may be disengaged from the cap P when the nut is to be removed.

In order to prevent the register from being turned backward the cam *o*, by which the dogs F are elevated, is made with a square or vertical rear end, as shown in Fig. 2, which prevents the dogs from passing backward.

For the purpose of preventing the register from being operated accidentally, a thumb-screw, *g'*, is mounted in the plate E, as shown in Fig. 2, so that it may be turned up against the plate *l*, which is provided on its under face with radial ribs *h'* to bear against the screw and hold the plate from moving.

In order to prevent the nut *b'* from being loosened the cover P has a depending flange, which holds the glass in place, arranged to bear against the side of the nut, as shown in Fig. 2, the nut being made hexagonal or square in order that it may be held by the flange.

Operation: The grain to be registered is placed as usual in half-bushel measures, which are placed upon the table D, one between each arm G and the next, and the table passed around toward the right, each measure being replaced as soon as registered by another. As each of the three dogs F passes the cam *o* it rises, and, engaging with the teeth of the plate I, advances the same, so as to expose the next higher character on its face, thereby causing the register to indicate an additional half-bushel registered. When the plate I has made one complete revolution, effected by twenty movements, and the registration of ten bushels, the cam-groove moves the dog laterally and causes it to engage in and advance the plate K, so as to expose its next higher character. When the plate K completes each of its revolutions, the yoke or dog M is moved by the cam, and, engaging with the central plate L, advances it to expose its next character.

It will thus be seen that the outer plate indicates units, the next one tens, and the center one hundreds, and that the apparatus will automatically register in bushels the amount of grain passed around upon the table until a thousand is reached, when the operation will commence anew.

Having thus described my invention, what I claim is—

1. In a grain-register, the combination of a central rigid supporting-standard, B, and a metal sleeve or thimble, C, mounted thereon, and provided with a flange, *d*, sustaining the rotary table D, as shown.

2. The combination of the cast-metal case H, provided with the grooves *v w*, the slotted

concentric dial-plates I K L, seated one within another, and the annular metal dogs M N, arranged between the dials, to operate as shown, whereby the parts are given a positive motion and the use of springs avoided.

3. In combination, with the concentric dials I K L, seated loosely in the case H, the rigid bar O, extending across the upper face of the dials, and provided on its ends with the two sets of spring-arms a', bearing on the faces of the dials, and serving both to hold them to their seats, and to prevent them from being turned accidentally.

4. The combination of the stationary case H, having the fixed cam, the dial-plate I, provided with depending teeth, and the rotary plate E, provided with the pivoted dogs F.

5. The combination of the fixed standard B, having the screw neck or bolt c, with the sleeve C, plate E, body H, bar O, and nut b', as shown, whereby the nut is caused to hold the other parts in position, as shown.

6. In combination with the nut b', the cover P, provided with a flange-bearing thereon, as shown, whereby the nut is prevented from working loose.

7. In a grain-register, the combination of a rigid central post or standard, B, and a stationary metal case, H, sustaining and inclosing the actuating mechanism, the horizontal rotary dials I K L, the sleeve C, and the rotary grain-table D, all mounted concentrically upon and sustained by the post, as shown.

8. In combination with the ribs h', in the case or body H, the screw g', mounted in the rotary operating plate E, for the purpose of preventing the action of the register, when so desired.

MILTON W. NESMITH.

Witnesses:
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