

(No Model.)

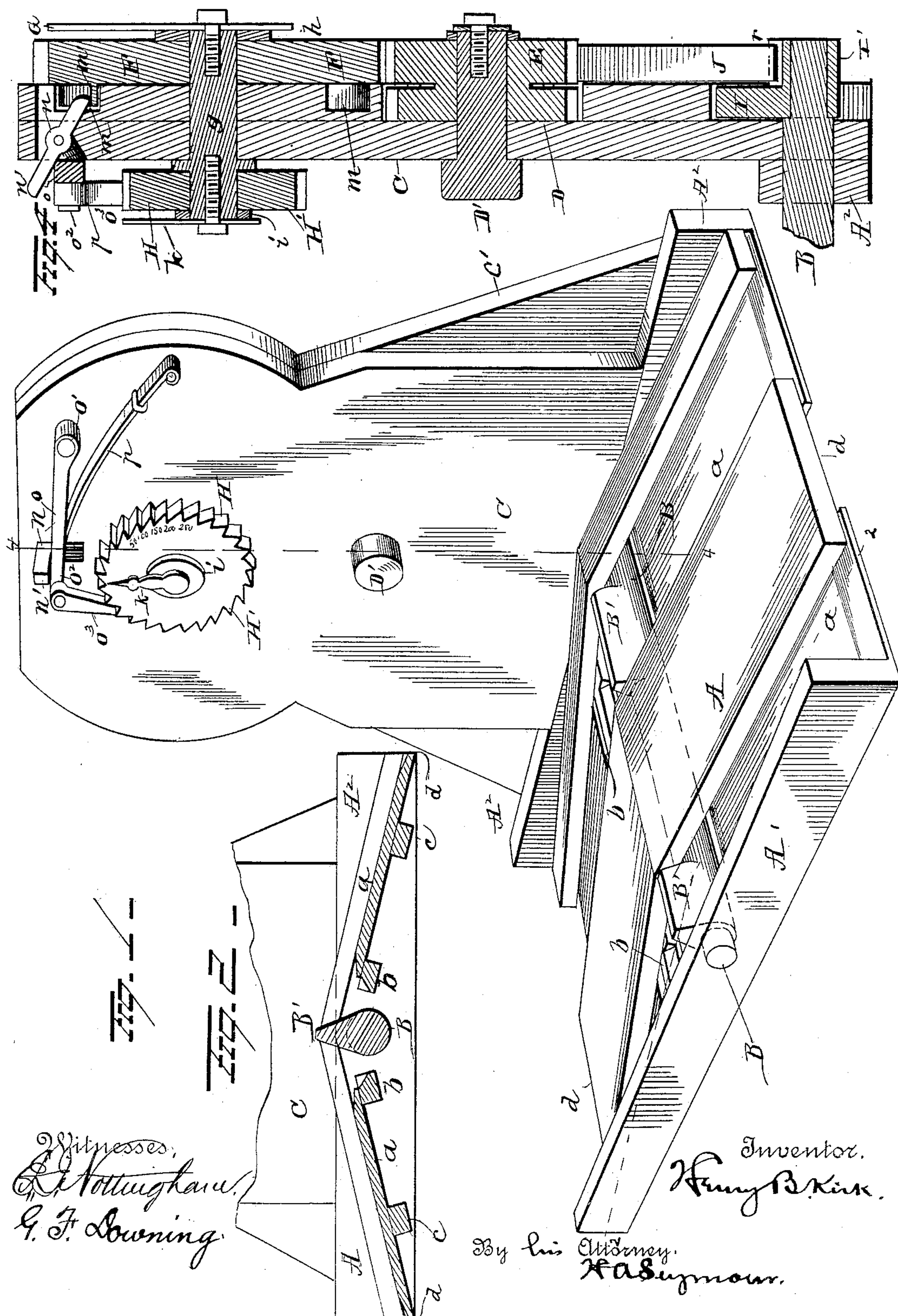
2 Sheets—Sheet 1.

H. B. KIRK.

AUTOMATIC REGISTERING GANG BOARD.

No. 384,370.

Patented June 12, 1888.







# UNITED STATES PATENT OFFICE.

HENRY B. KIRK, OF MOUNT PLEASANT, SOUTH CAROLINA.

## AUTOMATIC REGISTERING GANG-BOARD.

SPECIFICATION forming part of Letters Patent No. 384,370, dated June 12, 1888.

Application filed December 19, 1887. Serial No. 258,266. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY B. KIRK, of Mount Pleasant, in the county of Berkeley and State of South Carolina, have invented certain new and useful Improvements in Automatic Registering Gang-Boards; 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 an improvement in an automatic registering gang-board.

The object of this invention is to provide a means for the accurate registration of the number of trips a loaded cart, truck, or wheelbarrow makes in the handling of freight in bulk and its transportation from one point to another by the passage over a gang-board at each trip of the vehicle used to transfer the goods.

A further object is to construct a portable or permanent gang-board or platform, so that the passage over it of a loaded cart, truck, or wheelbarrow will actuate a registering device and register each load or trip of the vehicle to furnish the gross amount of freight in bulk.

With these objects in view my invention consists in certain features of construction and combinations of parts, that will be hereinafter described, and pointed out in the claims.

Referring to the drawings that make a part of this specification, Figure 1 is a side and front elevation of the gang-board and register-box in perspective. Fig. 2 is a front elevation of the gang-board in section, taken on the line 2 2, Fig. 1. Fig. 3 is a rear elevation. Fig. 4 is an elevation in section of the gang-board and its registering-gear, taken on a line, 4 4, Fig. 1, through the center of length of the rock-shaft which by its partial rotation actuates the registering-gear.

A represents the gang-board, which consists of two side timbers, A' A<sup>2</sup>, held parallel and a proper distance apart by a sufficient number of transverse pieces of wood to produce a substantial rectangular frame, upon which are placed flooring boards or plank *a*. The two parallel cross-timbers *b b* (see Fig. 2) are elevated above the similar cross-timbers, *c c*, which lie near the side edges of the gang-board A. These frame-pieces, that support the flooring-plank *a* by the relative position of

their upper edges, give a pitch or slope from the inner edges of the pieces *b* toward the side edges, *d*, of the gang-board.

Between the parallel cross-timbers *b b* an opening is afforded that extends between the side timbers, A' A<sup>2</sup>, (see Figs. 1 and 2,) and perforations are made through these timbers A' A<sup>2</sup> central between the inner sides of the pieces *b b* for the reception of the journaled ends of the rock-shaft B.

At the rear side of the gang-board A the upright closed box C is affixed to the side of the timber A<sup>2</sup>, so as to maintain said box in an upright position. The box C is constructed of wooden boards or other suitable material, so as to provide a hollow space for the reception of parts of the registering-gear.

The rear side wall, C', of the box C is cut away to afford room for a ratchet-wheel, D, that is loosely supported upon a stud, D', and upon this stud is also loosely mounted a toothed pinion, E, which has its teeth equal in number to the teeth of the ratchet-wheel D, with which it is formed integral, so that a rotative movement of the ratchet-wheel will give a corresponding motion to the toothed pinion E.

In a vertical line above the centers of the wheel D and the pinion E a spur gear-wheel, F, is supported free to rotate on the transverse shaft *g*, which shaft is firmly secured to the side walls of the box C at a proper point to allow the spur-wheel F to mesh its teeth with the pinion E.

The spur gear-wheel F is preferably made to have twice the diametrical size of the pinion E and double the number of teeth of said pinion, and it is of advantage to have the teeth of the upper wheel, F, an even number the sum of which may equal one hundred, or be a factor of such a number. I prefer to furnish twenty-five teeth to the ratchet-wheel D and pinion E; consequently the spur-wheel F has fifty teeth, although this is not imperatively necessary, as the device will operate equally well if the number of teeth are changed from those stated.

Upon the exposed surface of the spur-wheel F a graduated scale is impressed or attached. This will exactly correspond in ordinals to the number of teeth in the wheel F, each numeral or index of the dial being made to align



radially with the tooth it represents, so that the index-hand or pointer G, which is rigidly secured to the outer end of the shaft *g*, will indicate the number of teeth which have passed the point of the hand in any fraction of a revolution of the wheel F on its supporting-stud.

The wheel F is free to move when actuated by the pinion E, and is held from endwise displacement by the washer *h*, against which the hand G is made to press with sufficient force to retain the wheel and yet allow it to rotate readily.

On the opposite end of the shaft *g* a ratchet-wheel, H, is mounted and held in place free to rotate by the washer *i* and the pointer or index-finger *k*. This ratchet-wheel H is cut with any preferred even number of teeth, and the face of the wheel that is exposed to view from the platform of the gang-board A is graduated with ordinal numbers that are arranged to radially correspond to the teeth of the wheel H, forming a dial, H', said numbers being arranged in a manner that will be further explained. The rear wall of the box C is excavated to produce an annular channel, *m*, (shown in full lines in Fig. 4 and in dotted lines in Fig. 3,) and an abutment, *m'*, is located in this channel and attached to the wheel F at a point that will cause it to elevate the engaged end of the pivoted lever *n*, so as to depress the other end, *n'*, of the lever when the wheel F has just completed a revolution and its first numeral or figure, 1, comes opposite the free end of the index-hand G to indicate such a complete rotation of the wheel F.

A horizontal arm, *o*, is pivoted at one of its ends, *o'*, to the front surface of the box C, (see Fig. 2,) and to its other end, *o''*, a ratchet-dog, *o'''*, is pivotally secured, the other end of this dog having an engagement with the ratchet-wheel H. The arm *o* is supported by the upward pressure of the spring *p*, that bears on its under side, and thus holds the engaged end *n'* of the lever *n* up and the opposite end of this vibrating lever depressed until it is brought in contact with the cam *m'* by the revolution of the wheel F.

It will be seen from this construction and arrangement of parts that if the wheel F is given a complete revolution the graduated ratchet-wheel H will be moved one tooth, the graduated dial H', formed integrally with this ratchet-wheel, will be advanced, so as to cause a higher ordinal or indicating-number to come opposite the fixed pointer *k*, and if the wheel F has fifty teeth each tooth of the ratchet-wheel H will represent 50, and the wheel will be graduated to retain a registration of the successive revolutions of the wheel F in an obvious manner.

In order to actuate the gearing that has been described and cause it to register every load that passes over the gang-board A, the rock-shaft B is provided with two upwardly-projecting wings, B', of such a height that the top edges of the wings B' will line with the top

surface of these raised portions of the gang-board A when in their normally-elevated position.

Reference to Figs. 3 and 4 will show that the extended end of the rock-shaft B is furnished with a short arm or cam-toe, I, which is affixed to the shaft B to project from it in line with the wings B' and on the same side of the shaft.

On the extreme end of the shaft B, outside of the cam-toe I, the rocking block I' is secured or formed integrally, the upper edge of this block being notched or cut away to produce two lugs, *r*, which afford abutments against which the ends of the springs J have contact, each spring being of the same strength and such relative adjustment as to exert this pressure equally upon the lugs *r*, so as to hold the wings B' of the shaft B in an upright position.

A lever, L, (shown in dotted lines in Fig. 3,) is pivoted to the side of the box C between its vertical walls, so that its end *s* lies beneath the free end of the cam-toe I, to be rocked downwardly when the shaft B is partly rotated and the cam-toe made to bear forcibly upon this end of the lever L. The opposite end of the lever L is in pivotal engagement with the pawl *u*, (see Fig. 3 in dotted lines,) which engages the ratchet-wheel D with its free upper end that is adapted to bear on the shoulders of the teeth and move the wheel D a distance equal to the length of one tooth for every vibration of the lever L.

The gang-board A may be placed in the door of a warehouse to bridge the space between it and the door of a freight-car, or it may be located at the gate of a coal-yard to permit trucks or carts to be driven over it, and in such a case the contact of the wheels of the truck or cart will depress the wings of the shaft B and cause a positive registering of its passage on the wheel F by the operation of the pawl *u* on the ratchet-wheel D and consequent movement of the pinion E. When the wheel F has completed a revolution, the indicating-index on the ratchet-wheel H will be changed to register this revolution, and in this manner any desired number of trips of a cart or truck or a number of these vehicles for freight handling or other similar purposes may be registered accurately within the maximum capacity of the registering mechanism. If a wheelbarrow is to be used, the wings B' may be joined to form a continuous flange, and the gang-plank A cut away to allow this flange to be vibrated by the weight of the loaded barrow, and thus communicate a rocking motion to the shaft B and attached mechanism, so that the number of loads transferred by a wheelbarrow may be accurately registered by a passage over the gang-board A of the loaded barrow at each trip.

It should be stated that the strength of the springs J, which hold the wings B' of the rock-shaft B in an upright position, should be such that the weight of an empty cart or truck will not be sufficient to depress these wings,



so that the passage of an empty vehicle of this kind will not be registered; and, as the depression of the cam-toe I on the side opposite to the end of the lever L will not depress this lever, and hence will not operate the registering mechanism, it is evident that the return-trip of an empty cart, truck, or wheelbarrow will not be counted or enter into the aggregate number of loaded trips which the mechanism is designed to register for future inspection.

Many slight changes might be made in the form and combination of parts of this device without violating the spirit or exceeding the scope of my invention; hence I do not wish to limit myself to the exact mechanical construction herein shown; but,

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

1. The combination, with a floor and a registering-box secured thereto, of a rock-shaft stepped in the floor, said shaft having a pair of lugs on one end, and springs secured to the registering-box with their free ends in engagement with the lugs on the shaft, whereby the shaft is held in its normal position, substantially as set forth.

2. The combination, with a floor, a registering-box, and a rock-shaft stepped in the floor, said shaft having a cam-toe and a pair of lugs on one end, of springs secured to the box with their free ends in engagement with the lugs, a set of registering-wheels, a lever in position to be operated by the cam-toe on the rock-shaft, and a spring-actuated pawl adapted to be operated by the lever, whereby motion is communicated to the registering-wheels, substantially as set forth.

3. The combination, with a floor, a registering-box, a rock-shaft, this shaft having a cam-toe and lugs on one end, and springs secured to the box with their free ends in engagement with the lugs, whereby the shaft is retained in its normal position, of a set of registering-wheels adapted to turn in the box, said wheels receiving motion from the rock-shaft, one wheel having a cam thereon, a lever to be operated by said cam, a spring actuated arm in position to be abutted by the lever, and a

ratchet-dog pivoted to this arm with one end in engagement with the teeth on one of the registering-wheels, substantially as set forth.

4. The combination, with a floor, a registering-box, and a rock-shaft, the latter having lugs thereon, and springs having engagement with these lugs for holding the shaft in its proper position, of a set of registering-wheels adapted to receive motion from the motion of the shaft, one of these wheels geared to make two revolutions to a single revolution of its adjacent wheels, and a third wheel on the opposite side of the box arranged to move one notch to register every revolution of the large wheel, substantially as set forth.

5. The combination, with a floor and a rock-shaft stepped therein, of a register-box and springs in the latter exerting equal pressure at different points upon the shaft for holding the latter in its proper position, substantially as set forth.

6. The combination, with a floor and a rock-shaft stepped therein, said shaft having lugs thereon, of a register-box, a pair of springs having engagement with said lugs for holding the said shaft in proper position, registering-wheels on each side of the box, and connected pawls and levers for communicating motion from the rock-shaft to the registering wheels, substantially as set forth.

7. The combination, with a floor, a rock-shaft stepped therein, the latter having a pair of lugs thereon, and a registering-box, of a pair of springs in engagement with the lugs for holding the shaft in proper position, registering wheels in both sides of the box loosely mounted on stationary shafts, indicating-hands secured to said shafts, and connected levers and pawls for communicating motion from the rock-shaft to the indicating-wheels, substantially as set forth.

In testimony whereof I have signed this specification, in the presence of two subscribing witnesses, December 3, 1887.

HENRY B. KIRK.

Witnesses:

JOS. PALMER,  
ROBT. J. KIRK.