

R. L. HASSELL.
Scale-Weights.

No. 220,975.

Patented Oct. 28, 1879.

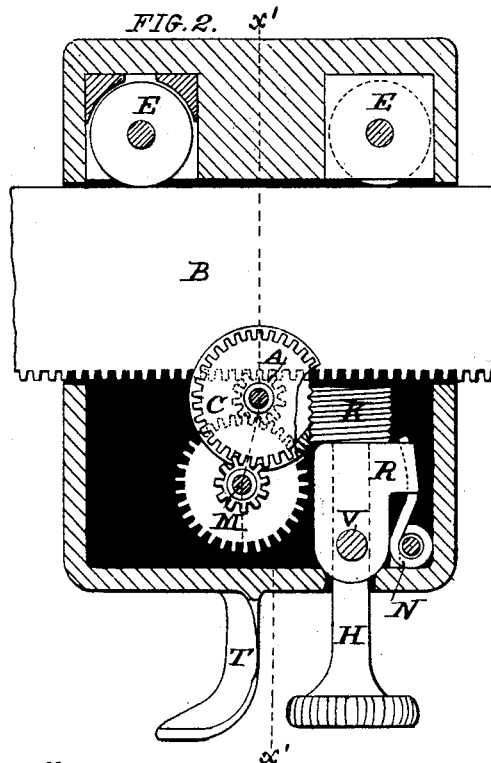
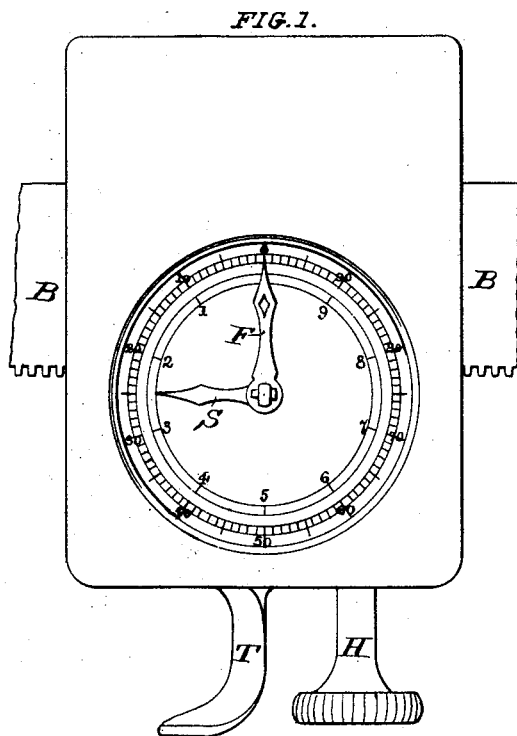
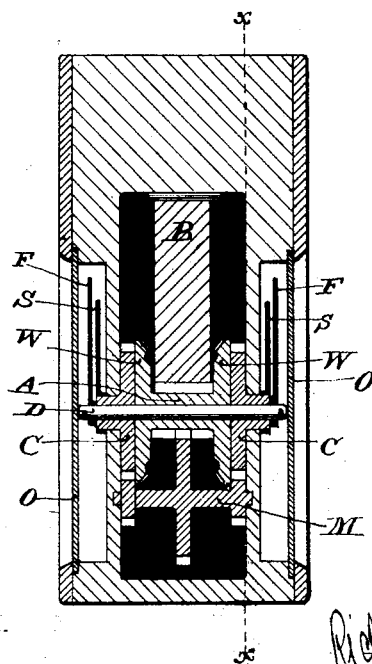


FIG. 3.



ATTEST:

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UNITED STATES PATENT OFFICE.

RICHARD L. HASSELL, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN SCALE-WEIGHTS.

Specification forming part of Letters Patent No. **220,975**, dated October 28, 1879; application filed May 29, 1879.

To all whom it may concern:

Be it known that I, RICHARD LITTELL HASSELL, of the city of Chicago, county of Cook, State of Illinois, have invented certain Improvements in Scale-Beams, of which the following is a specification.

My invention can be applied to any size and variety of scale; and it has for its objects, first, the production of a scale-beam of ordinary length, yet possessing a large indicating capacity without the necessity of using detachable or separate weights; second, the production of a scale-beam in which the graduations and figures usually placed on the beam itself are placed on dials on the movable poise, where they can be more effectively protected from dirt, grease, and the action of the atmosphere, and consequently prevented from becoming obliterated or indistinct; and, third, the production of a scale-beam having a movable poise not liable to become accidentally shifted by sudden knocks or jarring, yet capable of being rapidly moved from one end to the other of the beam, or an infinitesimal distance on the same, as required.

The invention consists in providing a scale-beam with a movable poise containing and carrying a system of gear-wheels having pointers or indicating-hands attached, which revolve before graduated and figured dials on the movable poise, by which arrangement the indicating-hand is made to travel a great distance compared to the distance the poise itself travels or the length of the beam; and my invention also consists in providing a scale-beam with a mechanical device, hereinafter described, by which the poise is prevented from being accidentally shifted on the beam, and by which it can be accurately moved infinitesimal distances on the same when required.

The following is a description of what I consider the best means of carrying out my invention.

In the accompanying drawings, which form a part of this specification, like letters of reference refer to like parts in the different figures.

Figure 1 is a side elevation or external face view of my improved poise and beam-bar. Fig. 2 is a longitudinal section at line X X, showing the interior of the poise with the face-

plate and dial removed. Fig. 3 is a cross-section at line X' X'.

B, Figs. 1 and 2, is the bar of an ordinary scale-beam, in which the knife-edges, loops, balancing-ball, and other well-known facilities for adapting it to a scale are not shown. It differs, however, from the bar of an ordinary scale-beam in having gear-teeth on the edge. The pinion A, Fig. 2, which meshes with these teeth, is fastened to the shaft D, Fig. 3, and on each end of said shaft is fastened the long hand F, which I will call the "fast-moving hand" to distinguish it from the short or slow-moving hand S, which is fastened to and revolves with the gear C. Said gear C is fitted to turn freely on the shaft D, and revolves at a different speed from the shaft. This different speed is obtained by means of the gear-wheels on the lower shaft, M, which are fastened to said shaft, and mesh with the pinion A and the gears C C in the manner shown.

W W are worm-wheels, which are fastened to shaft D and revolve with it. K, Fig. 2, is the screw or worm fitting these wheels. The shaft of K passes through the sleeve R, and has fastened to its lower part the handle or head H, by which the worm can be turned. Shoulders formed by the handle H butting against the lower part of sleeve R, and by the screw itself resting on the upper part, prevent K moving vertically, but permit its shaft to revolve in the sleeve R, and the said sleeve has projecting studs or bearings V, on which it can oscillate in the direction of the length of the beam.

The worm K is kept firmly pressed to its place by the spring N, and in this position locks the gearing and prevents the poise from moving on the beam. The weight of the poise rests on the rollers E E, which have their bearings in boxes capable of being adjusted vertically in such a manner that the teeth of the pinion A are brought in close contact with the teeth on the beam B. As the use of the rollers E E is merely to diminish friction and allow the poise to run easily on the beam, they may be dispensed with in light poises where the friction is inconsiderable.

I am aware that there is nothing novel in applying rollers to the movable poise of a scale-beam to diminish friction. It is important that

the teeth of the pinion A should accurately fit the teeth in the beam, so that backlash is avoided, and for this purpose it may in some cases be desirable to mount the bearings of the gearing on springs, so that the pinion A will be pressed in close contact with the teeth in the beam.

The operation of the device is as follows: When it is desired to ascertain the weight of an object placed on the platform of the scale, the operator grasps the poise by the thumb-piece T and the handle H, pressing H toward T, thus throwing the worm K out of gear and unlocking the poise, which is then moved along the beam until its proper position on the same is approximately found. The handle H is then released, the spring presses the worm back to its place, and the device is locked. Then, by turning the worm K by the head H, the poise is slowly moved along the beam until the exact point is found where it will balance the weight on the platform. It is evident that the act of moving the poise along the beam causes the pointers F and S to revolve, and supposing the weight of the poise and the graduations, &c., to be properly adjusted to the scale, the correct weight of the object on the platform will be indicated by the pointers on the dial. Of course, the larger units—such as tens, thousands, tons, as the case may be—will be indicated by the slow-moving hand, and pounds, ounces, &c., by the fast-moving hand.

In cases where it is not objectionable to have the larger units marked on the beam, the slow-moving hand and the mechanism for driving it will be dispensed with, and by this means the gearing greatly simplified. Where both pointers are used it is evident that their relative rates of rotation will be determined by the diameters and the number of the gear-wheels in the system. Of course, when desired, the size and weight of the running poise may be diminished by using detachable weights on the counterpoise suspended from the free end of the beam, as usual.

It will be seen that by making the pointer revolve before dials on the face of the poise, instead of the arrangement now in use, of having the pointer fast to the poise, and traveling

in a simple longitudinal line along the figures and graduating-marks on the face of the beam, I greatly increase the distance or the length of the line over which the said pointer travels, and am, therefore, able to increase the weight of the running poise without crowding the graduations; and this advantage can be increased to any extent by enlarging the dial, varying the diameter of, or increasing the number of, the gear-wheels in the system.

I do not limit myself to the exact details of construction set forth, as they may be varied without departing from the spirit of my invention. Any well-known mechanical substitute for toothed gearing may be used for the purpose of converting the longitudinal motion of the movable poise into the rotary motion of the pointers, or the arrangement of the pointers and dials above described may be reversed—that is, the pointers may be fast to the movable poise and the graduated dials made to revolve. An advantage of this arrangement would be that the glass plates O O, which are used to cover the dials from dust, &c., could be of greatly-diminished size, as it would only be necessary to see a small part of the dial at a time—namely, the part that came opposite the pointer.

What I claim is—

1. In combination with a scale-beam, a movable poise containing and carrying a system of gear-wheels and pointers and dials, substantially as described.

2. In combination with a scale-beam and movable poise, the system of gearing, substantially as described, and the hands F and S, so arranged that the act of moving the poise along the beam causes the said hands to revolve at different rates of speed.

3. In combination with a scale-beam and movable poise, the combined locking and moving device, consisting of the worm-wheels W W, the worm K, sleeve R, spring N, handle H, and thumb-piece T, substantially as and for the purpose described.

RICHARD LITTELL HASSELL.

Witnesses:

WILLIAM E. MORGAN,
HENRY BARTELL.