A. B. DAVIS.

Scale Beam.

No. 67,274. Patented July 30, 1867.

FIG. 1

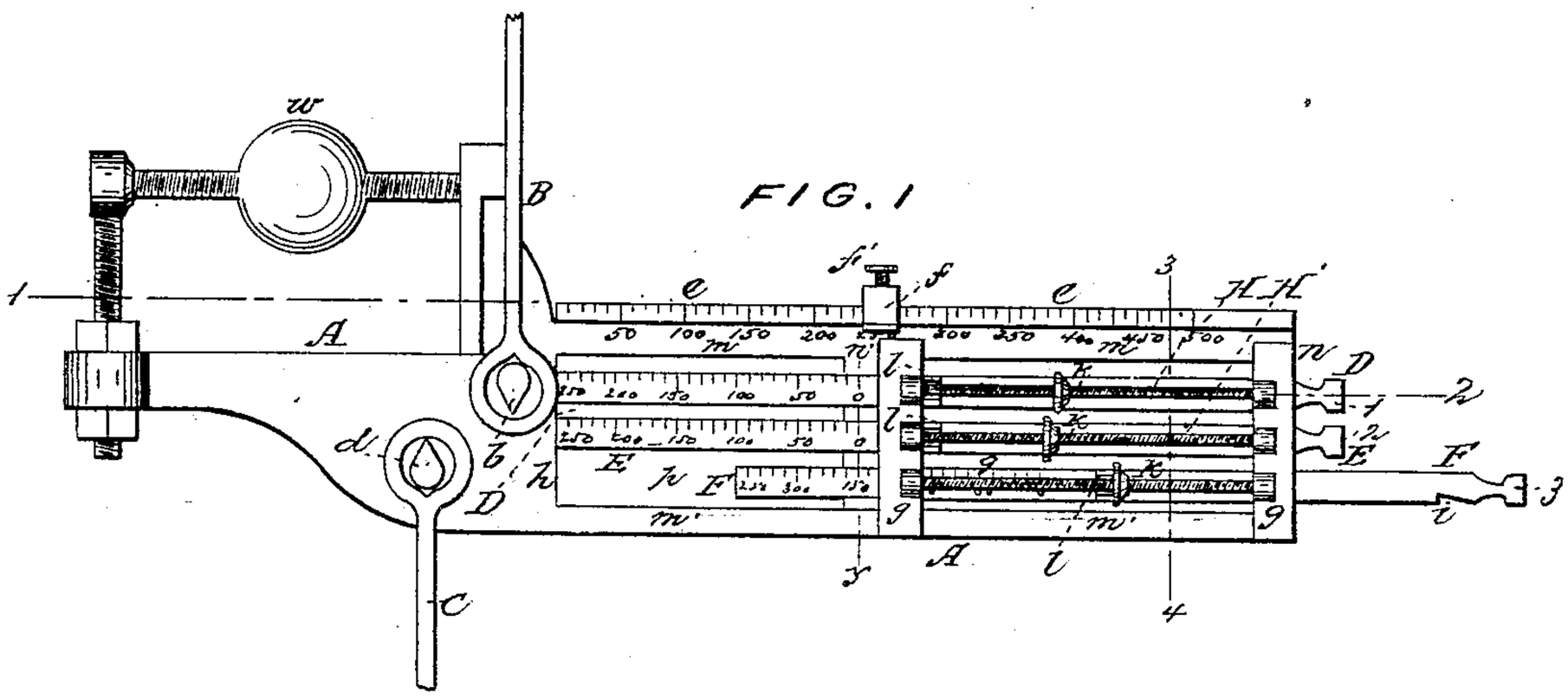


FIG. 2

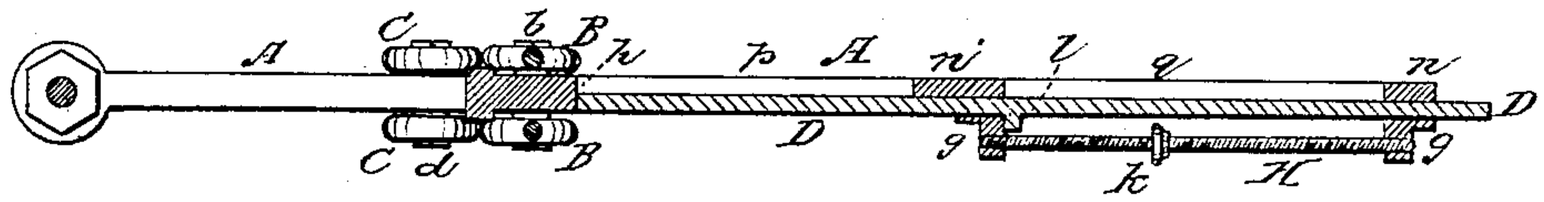


FIG. 3

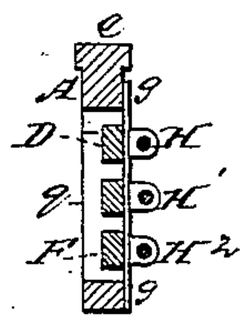
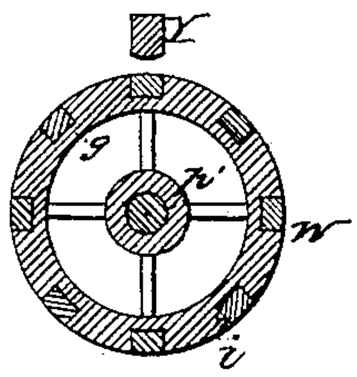


FIG. 4



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Letters Patent No. 67,274, *dated July* 30, 1867.

IMPROVED SCALE-BEAM

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, AUGUSTUS B. DAVIS, of Philadelphia, Pennsylvania, have invented an improved Compound Scale-Beam; and I do hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an improvement in scale-beams having a number of sliding weights or bars; and my improvement consists in combining with each bar or weight a stop rendered adjustable, in the manner described hereinafter or any equivalent to the same.

The object of my invention is to obtain a weighing apparatus by which the desired quantity of different substances to be compounded can be readily and accurately determined without any adjustment or alteration of the beam or its appendages.

In order to enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation, reference being had to the accompanying drawing, which forms a part of this specification, and in which-

Figure 1 is an exterior view of my improved scale-beam.

Figure 2, a sectional plan view on the line 1–2, fig. 1

Figure 3, a transverse section on the line 3–4, fig. 1; and

Figure 4, a diagram illustrating a modification of my invention.

Similar letters refer to similar parts throughout the several views.

The scale-beam A may be contained within a box or casing, or a frame not shown in the drawing, and suspended to the same by the forked clevis B, the two eyes of which fit over knife-edged projections *b b*, one on each side of the beam. A clevis is hung to similar knife-edged projections, *d*, and is connected to the levers of an adjacent platform scale. Extending along the upper edge of the beam A are two projections, *e*, one at each side, the two projections being embraced by a small sliding weight, *f*, which is provided with a set-screw, *f'*, so as to be secured after adjustment. In the present instance the long arm of the beam is made in the form of a light frame composed of two longitudinal bars, *m m'*, connected together by and forming a part of the end vertical bar *n* and intermediate vertical bar *n'*, thus leaving two openings *p* and *q*. The graduated bars or weights D E and F, each of which is provided with a projection, *b*, are arranged to slide longitudinally in recesses formed in the bars *n* and *n'* of the beam A, and are retained in the said recesses by plates *g g* secured to the face of the beam. On the under side, and near the outer end of each of the sliding bars, is a notch forming a shoulder, *i*, which bears against a portion of the beam and prevents the bars from sliding out when they are not in use. Screw-rods H H^1 and H^2 are secured to projections on the plates *g*, one in front of each of the bars D, E, and F, and upon each screw-rod is a nut or stop, *k*, the object of which will be rendered apparent hereafter When the whole of the sliding bars have been moved back so as to be in contact with the edge *h* of the opening *p*, and the weight *f* stands at the zero point of the graduations on one of the ribs *e*, the beam A is accurately balanced.

In using my improved scale-beam the first step to take is to ascertain the tare, or in other words the weight of the barrows or other receptacles in which the material to be weighed is contained. This is done by wheeling the barrow upon the platform and moving the weight *f* on the beam A until the latter is balanced, and if several barrows of different sizes are used their average weight is taken. Suppose, in making a blasting powder, one hundred and thirty pounds of nitre, thirty pounds of charcoal, and forty pounds of sulphur are required. The stop *k* on the upper screw-rod H is moved to such a position that when the bar or weight D is drawn out its projection *b* will strike the said stop when the number 130 of the graduations on the bar is opposite to the zero line *y* of the beam A, (fig. 1.) The stop *k* of the second screw-rod H^1 is shifted so as to arrest the bar E when number 30 of its graduations is opposite to the line *y*, and the third bar F is stopped in a similar manner when it indicates a weight of forty pounds. These adjustments having been made, care should be taken to rebalance the beam, which can be readily done by adjusting the usual weight *w* after the whole of the sliding bars have been moved back. It should be understood that in most cases the beam A will be contained within a box or casing, and that the ends of the bars D, E, and F, marked 1, 2, and 3, respectively, will project through a slot in the end of the case, and be the only visible portions of the weighing apparatus, the adjusting of the stops *k* so as to indicate the proper proportions of the materials to be weighed being the duty

of a responsible person, after which the doors of the casing may be locked so that outside persons cannot tamper with or alter the positions of the stops. If it be necessary to weigh the nitre first, the bar D, known to the attendant as No. 1, is drawn out to its full extent, or until its projection *b* strikes the adjusted stop *k* of the screw-rod H, then the receptacle for receiving the nitre is placed upon the platform and is loaded with the ingredient, the weight of which is thus readily determined. When the sulphur is to be weighed the bar D is pushed in and the second bar drawn out, the material being weighed in the same manner as the nitre, in its correct proportion, and the sulphur is likewise weighed by drawing out its bar F. If, however, it be desired to weigh all the ingredients upon the platform in the same receptacle, and in their proper proportions, the bar D is first drawn out and the nitre weighed; then, without changing the position of the first bar, the bar E is drawn out and charcoal added to the nitre until the beam A is again balanced; and lastly the bar F is drawn out and the sulphur added to the other materials. It will now be seen that the desired weight of any number of different ingredients of a composition can be ascertained by using a corresponding number of sliding bars or weights.

Although I have described my improved scale-beam as being connected with the levers of a platform scale, it will be evident that it may be used as an independent weighing apparatus or compound steel-yard. It will also be evident to those familiar with the construction of weighing apparatus that my improved scale-beam may be modified both as regards form and construction without departing from the main features of my invention; for instance, the beam may be arranged in a position at right angles to that illustrated, the sliding bars or weights being arranged side by side in a horizontal plane, and the two clevises B and C being changed accordingly. Should it be necessary to have a more than usual number of sliding bars, the long arm of the beam may consist of a cylindrical rod, *p'*, (fig. 4,) and above the latter a bar, Y, on which are marked the tare graduations, a light hollow cylinder, W, being so fitted to the bar as to revolve freely thereon, and longitudinal grooves being made in the surface of the cylinder for the reception of the sliding bars or weights. It is not absolutely necessary that the graduations should be made on the bars, as they may be marked on the frame adjacent thereto, or, in the case of the cylinder, on the surface of the same near each bar, the bar in either case having a zero mark.

I claim as my invention, and desire to secure by Letters Patent—

In combination with each bar or weight a stop rendered adjustable in the manner described or any equivalent to the same.

In testimony whereof I have signed my name to this specification in the presence two subscribing witnesses.

A. B. DAVIS.

Witnesses.

JOHN WHITE,

W. J. R. DELANY.