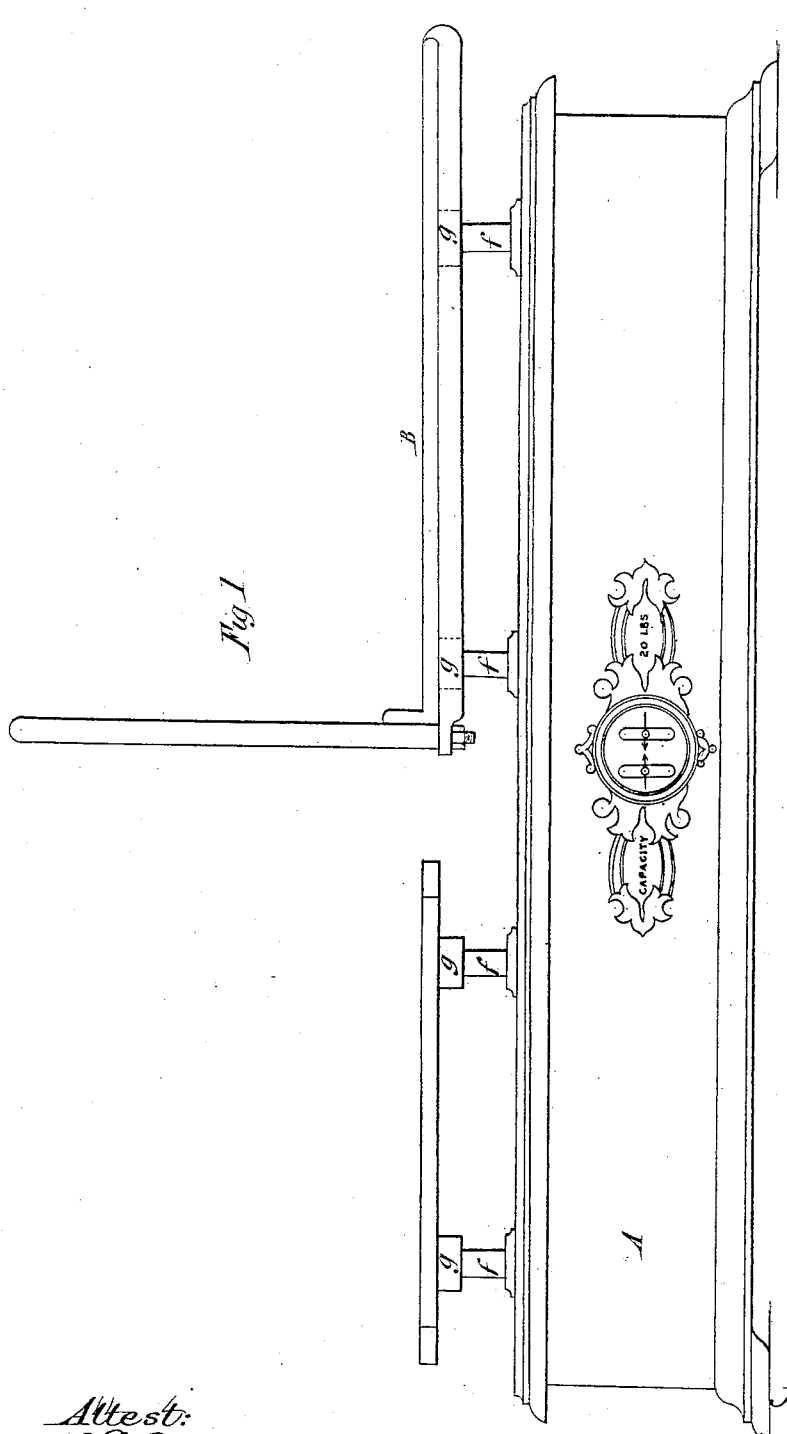
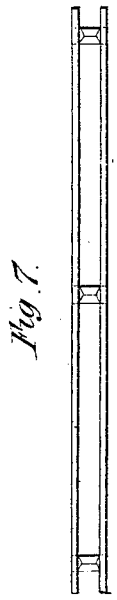
3 Sheets—Sheet 1

J. PARNALL.

PLATFORM SCALES.

No. 193,276. Patented July 17, 1877.





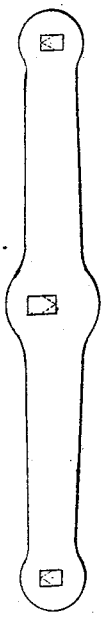


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Fig. 2.

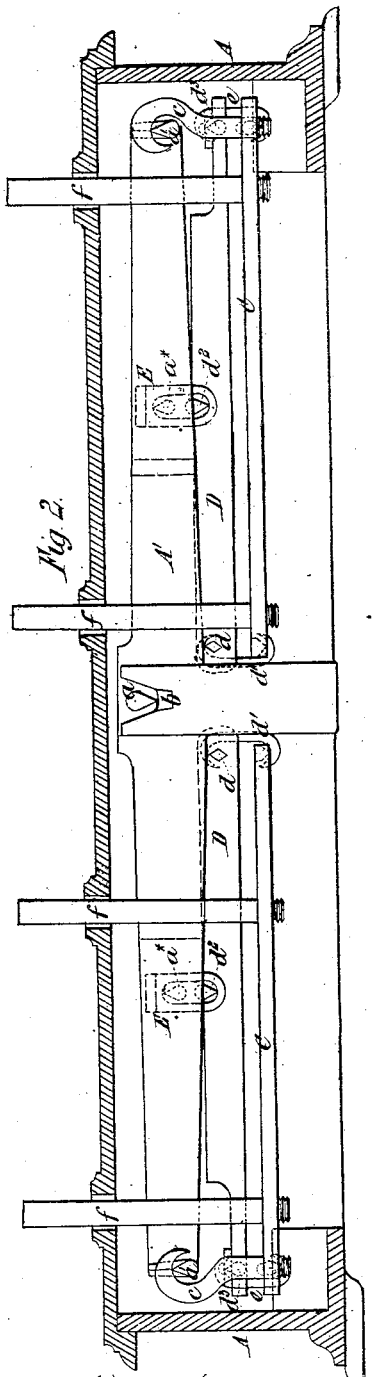
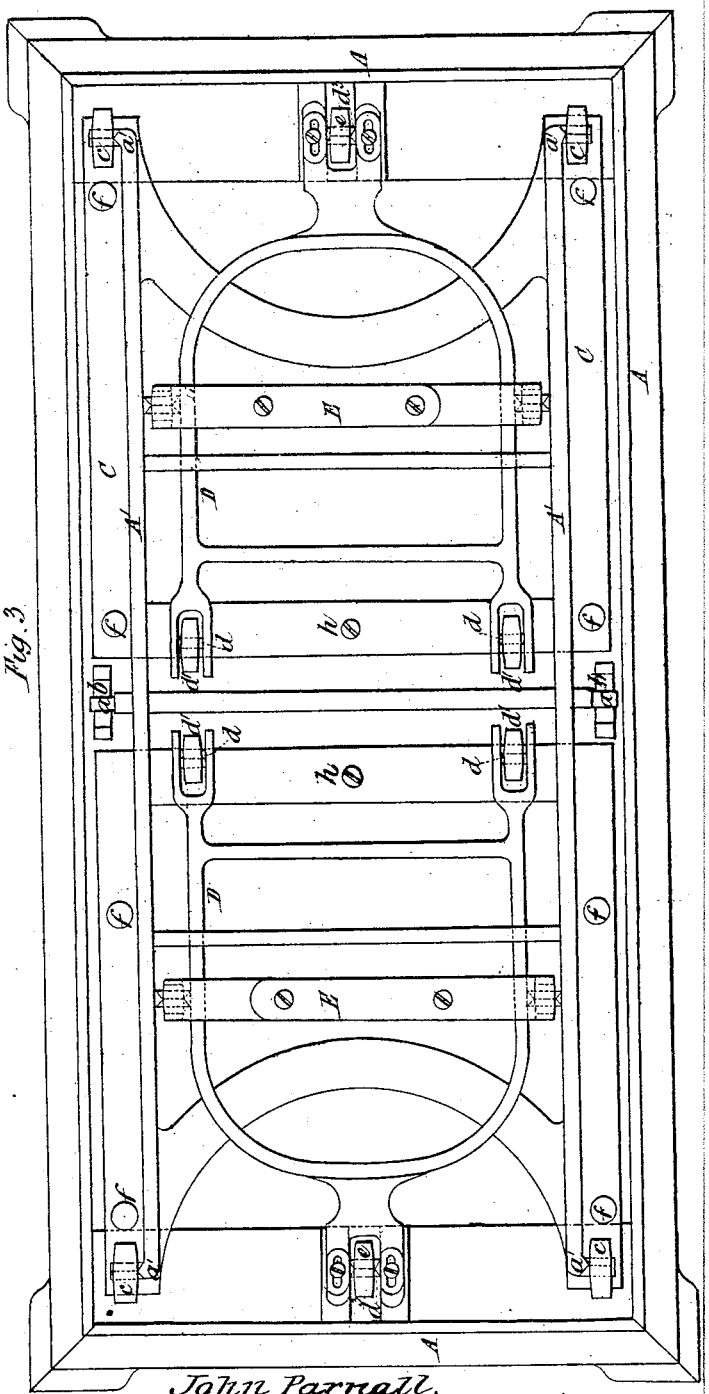


Fig. 3.



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3 Sheets—Sheet 3.

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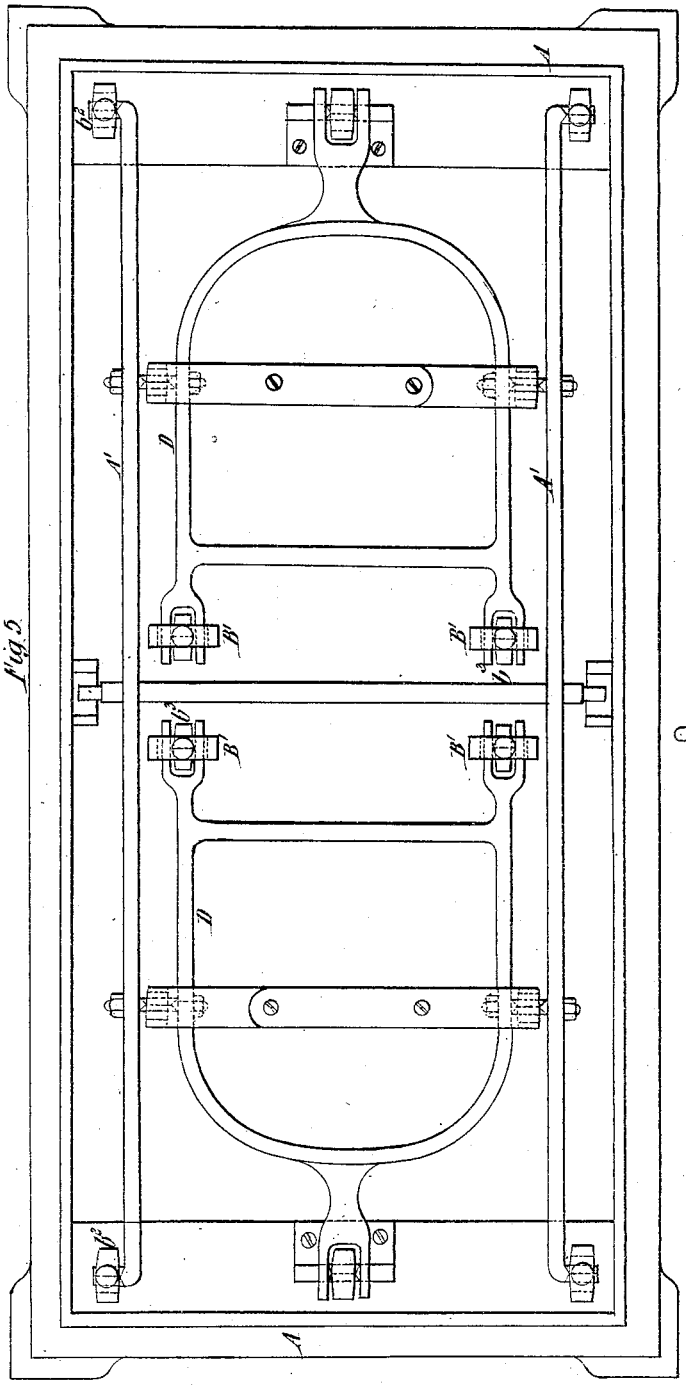

Fig. 5

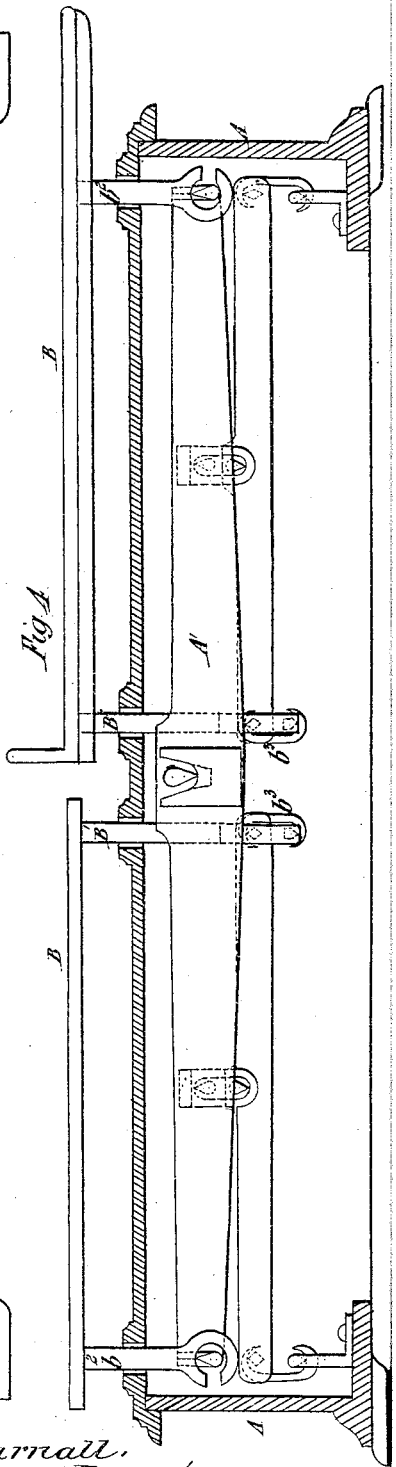

Fig. 4

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UNITED STATES PATENT OFFICE.

JOHN PARNALL, OF BRISTOL, ENGLAND.

IMPROVEMENT IN PLATFORM-SCALES.

Specification forming part of Letters Patent No. **193,276**, dated July 17, 1877; application filed June 21, 1877.

To all whom it may concern:

Be it known that I, JOHN PARNALL, of Bristol, England, scale and weighing-machine maker, have invented new and useful Improvements in Scales or Balances, which improvements are fully set forth in the following specification, reference being had to the accompanying drawings.

My invention relates to improvements in compound-lever balances, in which single compensating-levers with three centers are now used to transfer to the main lever the proportion of the weight which the single levers receive when goods are being weighed by the said balances.

According to this invention I construct double compensating-levers with five centers, and I connect these levers to the main lever at two points with a suitable bearing-piece. Above or below the said levers I apply a cradle or frame, with supports or bearings, to carry the platforms whereon goods are placed to be weighed. One end of this cradle is connected to the main lever by two bearings or hooks, and at the other end I apply two vibrating hooks to connect it to the double compensating-lever. I also extend the said cradle outside the main lever. Instead of the double compensating-lever I use in certain cases two single compensating-levers at each end of the balance, and thereby obtain results similar to those obtained when double compensating-levers are used.

By this construction I obtain an extended bearing-surface and a greater number of bearing-points, so that I am enabled to employ much larger platforms for the reception of the goods than heretofore, while the tendency of the platforms and internal levers to tip or cant when goods are placed on the outer edges or surfaces of the platform is entirely avoided. Back supports can be fitted to the platforms for the goods to lean against.

These improved balances are also steadier in working and less liable to derangement or injury than ordinary balances, and are rendered applicable for weighing a variety of bulky goods and other articles for which such ordinary balances are unsuitable.

In the accompanying drawings, Figure 1 is a front side elevation, Fig. 2 is a sectional elevation, and Fig. 3 is a plan or top view with the cover removed, of an improved shop counter-balance, constructed according to my invention.

The letter A represents the frame of the apparatus, and B the front platform, which is fitted with a back support for the goods to rest against.

A′ represents the main lever, formed on each side with knife-edged centers *a* working upon steel bearings *b*, which are inserted in upright supports attached to the bottom of the frame A. At each end of the main lever I form knife-edged centers *a′*, on which the bearings *c* are hung, the said bearings being connected to the cradle C, under the said lever. D D are the double compensating-levers, formed at their inner ends with knife-edged centers *d*, and connected to the cradle C by vibrating links d^1. At or near the middle of the compensating-levers D knife-edged centers d^2 are formed on each side, to correspond with similar centers a^*, formed in the sides of the main lever. The two levers are connected at this point by a vibrating bearing-bar, E, which is formed at each end with an upper and lower bearing-surface to rest upon the two centers. This bearing-bar E is formed in two parts, held together by two screws. The outer ends of the compensating-levers are provided with a movable knife-edged center-piece, d^3, secured by two screws and capable of being shifted for the purpose of regulating the balance. A similar center-piece is screwed to the frame underneath, and is connected to the center-piece d^3 above by a vibrating link *e*. Four supports, *f*, are fixed in each cradle, and pass upward between the levers and the frame. At their upper ends they fit into sockets *g*, formed on the under side of the supports, and of sufficient depth to prevent the displacement of the platforms. The end bearings *c* and the struts *h* project through the cradle and drop on the frame, to regulate the depth to which the balance descends in working.

Fig. 4 is a sectional elevation, and Fig. 5 is a plan with the cover removed, illustrating a modified construction of the said machine.

In these figures the main and compensating levers are similar to those shown in Fig. 2. Bearings b^2 are fixed to the outer ends of the

platforms B, and work on the end centers of the main lever A′. The inner ends of the platform are supported by slotted bearings B′, into which the ends of the compensating-levers D project, these levers being connected to the bearings B′ by vibrating links b^3, resting on the knife-edged centers of the compensating-levers, and similar centers formed at the lower extremities of the bearings B′.

Fig. 6 is a side view, and Fig. 7 a top view, of an ordinary single compensating-lever used in shop-balances, two of which may be applied at each end of my balance, and connected to the aforesaid main lever and frame. I thereby obtain results similar to those obtained when the double compensating-levers D are used, except that the said double compensating-levers have five centers, whereas these single levers will have six centers.

Various other modifications may be made in the construction of the parts herein described; for instance, the compensating-levers may be formed to work outside the main lever, or may be connected to the main lever by two links suspended from knife-edged centers formed on the upper surface of the bar, uniting the sides of the main lever. A single support may be used to carry the platforms instead of the four supports shown in the above-named figures of the drawings. Pans, of any suitable shape, may be used for the reception of the goods, and the indicators may be fixed on the top of the balance if desired.

I claim as my invention—

1. An improved shop-counter balance, consisting of a main lever, A′, in combination with a series of double compensating-levers D, one arranged at each side of the fulcrum of said lever A′, and each provided with five centers, d d d^2 and d^2 d^3, the whole arranged to operate substantially as set forth.

2. The combination, with the main lever A′, of the single compensating-levers, arranged at each side of its fulcrum, and each having three centers, substantially as and for the purposes specified.

JOHN PARNALL.

Witnesses:
ALFRED H. PHILIPPS,
WM. H. POORHEROE.