

June 11, 1963

Z. KADLEC ETAL

3,093,204

ARRESTMENT ARRANGEMENT FOR PRECISION BALANCE

Filed June 27, 1958

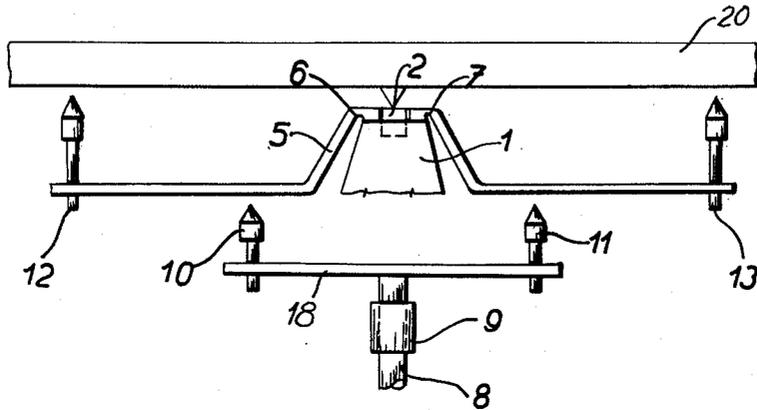


FIG. 1.

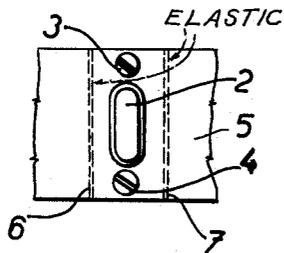


FIG. 2.

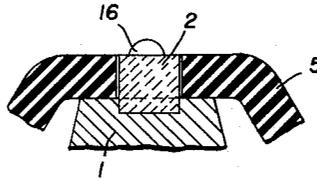


FIG. 4.

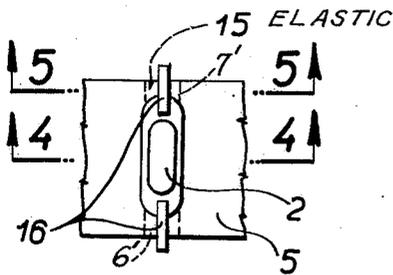


FIG. 3.

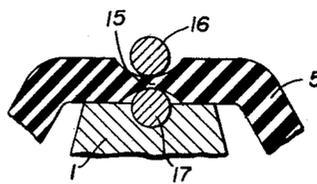


FIG. 5.

INVENTORS
Zdeněk Kadlec, Miloslav Šebeda
BY
Richard Lund 09/4

1

3,093,204

**ARRESTMENT ARRANGEMENT FOR
PRECISION BALANCE**

Zdeněk Kadlec and Miloslav Lebeda, Prague, Czechoslovakia, assignors to Meopta-Praha, narodni podnik, Prague, Czechoslovakia

Filed June 27, 1958, Ser. No. 745,146

Claims priority, application Czechoslovakia Sept. 25, 1957
4 Claims. (Cl. 177-157)

This present invention relates to an arrestment arrangement for a precision balance and the like.

Precision balances are arrested by lifting the center knife edge of the beam from the supporting knife edge bearing. All known types of arresting mechanisms have the common feature that the member of the arresting mechanism directly actuating the beam is movably mounted on a rotatable pivot or in a bearing for sliding movement. In order to secure smooth arresting movement it is necessary to provide the movable mounting with an initial play which increases in operation due to the wear of the components. The center knife edge of the beam comes to rest on a different portion of the corresponding bearing or plane after each release of the arrested beam, with the result that the effective length ratio of the arms of the beam as well as the position of the zero point are changed.

It is an object of the invention to ensure the steadiness of the mutual position of the center knife edge of the beam and of the corresponding bearing, irrespective of the play in the arresting mechanism. This is achieved, according to the invention, by interposing an arresting member between that portion of the arresting mechanism which is movably mounted on the stationary portion of the balance and the beam. The arresting member of the invention is immovably mounted with respect to the center knife edge bearing. This member forms an arresting support which is elastically flexible in its central portion which is adjacent to the pivot of the center knife edge. In practice it is easier to make the arresting support elastically flexible at two points situated as closely as possible to the pivot axis of the center knife edge and symmetrical thereto.

The accompanying drawing shows by way of example two embodiments of the arrestment arrangement according to the invention.

FIG. 1 shows in a diagrammatic elevational view the arrangement of the arresting mechanism,

FIG. 2 is a partial plan view of the apparatus of FIG. 1,

FIG. 3 shows in a plan view a modified arrangement of the central portion of the mechanism,

FIG. 4 is a cross sectional view drawn to enlarged scale along the line 4-4 of FIG. 3, and

FIG. 5 is a cross sectional view drawn to enlarged scale along the line 5-5 of FIG. 3.

As seen in FIGS. 1 and 2, a center knife edge bearing 2 is fixedly mounted on a head 1 of a balance column, not otherwise shown. An elongated arresting member 5 is centrally fastened to the head 1 by screws 3, 4 and is elastically flexible or pivotable at 6 and 7. A lifting rod 8 is mounted on the balance column for vertical sliding movement in a bracket 9 and actuates flexing movements

2

of free end portions of the arresting member 5 by means of adjustable abutments 10, 11 mounted on a horizontal cross beam 18 fastened to the top of the rod 9, said arresting member being adapted to lift a substantially horizontal beam 20 with center knife edge 21 and compensating suspensions (not shown) by means of threadedly adjustable stop members 12, 13 from the operative position illustrated in FIG. 1. The stop members 12, 13 are mounted on the two free ends of the arresting member 5.

FIGS. 3, 4 and 5 show another embodiment of the arresting device. The arresting member 5' has an elastically flexible central portion 15 which is immovably secured to the head 1 by means of divided cylindrical bolts 16, 17 between which the knife edge bearing 2 is fixedly fastened to the head 1. The free end portions of the arresting member 5' pivot about axes 6' and 7'. These axes are spacedly adjacent the pivot axis of the beam 20 and substantially parallel thereto. The pivot axis of the balance beam is defined by the line of engagement of the bearing 2 by the knife edge 21 and lies substantially in the median plane of the bearing 2 transverse to the direction of elongation of the arresting member 5'.

In both embodiments illustrated, play of the lifting rod 8 in the bracket 9 is without effect on the beam. The arresting member may be made of elastic material with portions of reduced cross section where flexibility is desired as at 6 and 7 in FIG. 1. The arresting member may be formed by pressing, extrusion or the like. Conversely, the arresting member may be shaped so as to be flexible throughout the length thereof, and those portions which need not be flexible may be reinforced by suitably profiled reinforcing members. It is further possible to make the arresting member of elastic and inelastic portions rigidly assembled by screws, rivets, by soldering or the like, and in this case the elastic portions will be located in the pivot areas, or a combination of the two aforesaid arrangements may be employed.

We claim:

1. An arrestment arrangement for a precision balance and the like, comprising a support, a bearing fixedly mounted thereon, a balance beam movable in an upward direction from an operative to an arrested position, and vice versa, knife edge means on said balance beam engaging said bearing, when in said operative position, for pivoting support about an axis extending transversely to the elongation of said beam, an elongated arresting member having a center portion fixedly fastened to said support, two opposite free end portions, and at least a single elastically flexible portion permitting simultaneous equidirectional arcuate movements to and from an arresting position of said free end portions about at least a single axis extending transversely to the elongation of said arresting member, abutment means on said free end portions, said abutment means supporting said balance beam when said end portions are moved to said arresting position, and means for actuating said arresting member to cause said arcuate movements of said free end portions.

2. The arrestment arrangement according to claim 1, wherein said single elastically flexible portion of said arresting member is constituted by said center portion thereof.

3. The arrestment arrangement according to claim 1, wherein said arresting member has two elastically flexible

3

portions, each of said flexible portions connecting said center portion and one of said free end portions.

4. In the arrestment arrangement according to claim 1, said actuating means including a bar member reciprocally slidable on said support in vertical directions, and additional abutment means on said bar member adapted to abut against said free end portions and to cause the arcuate movements thereof, and thus to cause said first named abutment means to carry out said movements of said balance beam and to support said balance beam when in said arrested position.

5

10

4

References Cited in the file of this patent

UNITED STATES PATENTS

1,404,426	Becker -----	Jan. 24, 1922
2,404,601	Seyter -----	July 23, 1946
2,584,950	Weckerly -----	Feb. 5, 1952
2,648,534	Mettler et al. -----	Aug. 11, 1953
2,703,707	Sartorius -----	Mar. 8, 1955
2,906,522	Wagner -----	Sept. 29, 1959

FOREIGN PATENTS

819,004	Germany -----	Oct. 29, 1951
---------	---------------	---------------