Oct. 23, 1928. 1,688,404

R. STARK

LABORATORY APPARATUS

Filed April 29, 1927

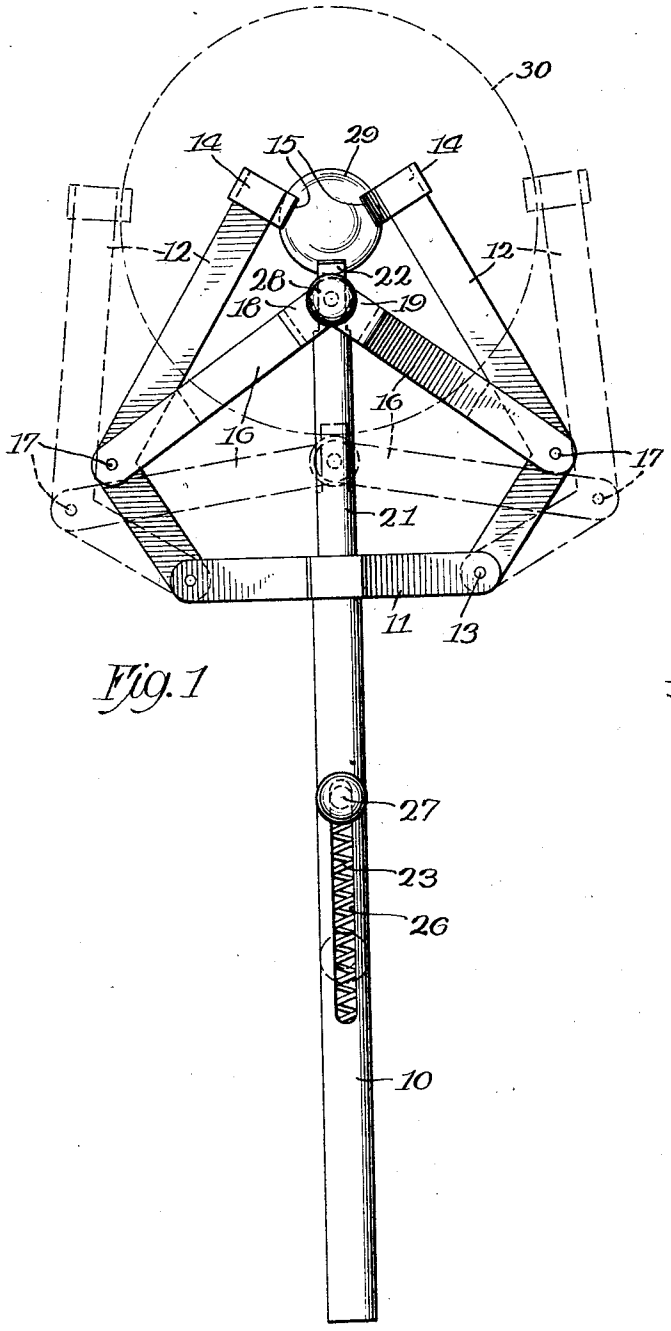


Fig. 1

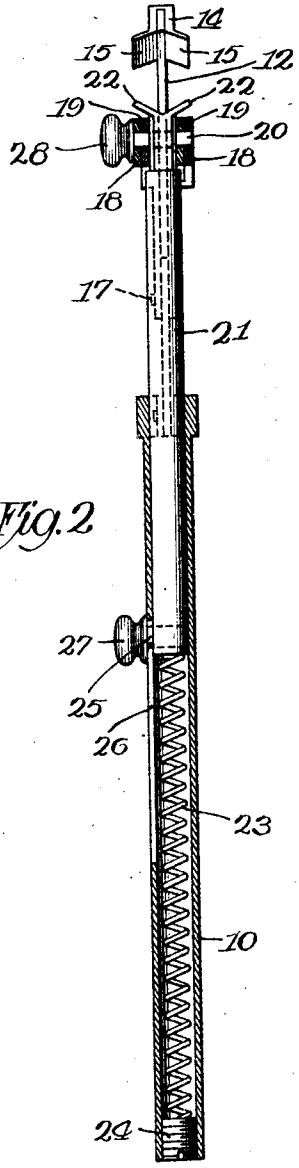


Fig. 2

Inventor:
Rudi Stark
By Gillson, Mann & Cox, Attys

Patented Oct. 23, 1928. 1,688,404

UNITED STATES PATENT OFFICE.

RUDI STARK, OF CHICAGO, ILLINOIS, ASSIGNOR TO CENTRAL SCIENTIFIC COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

LABORATORY APPARATUS.

Application filed April 29, 1927. Serial No. 187,580.

This invention relates to laboratory apparatus and has for its principal object to provide means for holding lenses of assorted sizes, gripping hot objects such as beakers, and for a variety of other similar uses in the laboratory.

A very satisfactory embodiment of the invention is illustrated in the accompanying drawings, in which

Fig. 1 is a side elevation with the parts shown in one position in solid lines and in another position in broken lines, and

Fig. 2 is a longitudinal central section of Fig. 1 taken at right angles to the plane of the paper.

This specific illustration, however, and the correspondingly specific description, are used to make the disclosure clear and are not to be construed as limiting the claims to this particular structure.

The base of the device is a hollow staff 10 which may be mounted on a suitable support, or used as a handle, as occasion makes desirable. At the upper end of the staff there is fixed a cross bar 11, extending equal distances on each side of the staff. A lever 12 (in this instance shown as an L-shaped member) is fulcrumed at each end of the cross bar on a pin 13. Applied to the free end of each lever is a strip of metal 14 bent across the back edge and along the two sides of the lever and the free ends of the strip are spread apart to form diverging gripping fingers 15, as best seen in Fig. 2.

The levers are connected above the cross bar by a toggle composed of two links 16. The outer end of each link is split to receive the corresponding lever and is pivoted to it by a pin 17. The inner end of each link is forked and one branch 18 of each fork is offset somewhat more than the other branch 19, in order that the branches may be brought into the overlapping relation illustrated in Fig. 2, and pivotally connected by the pin 20 to form a knee joint in alignment with the staff 10. The branches 19 are spaced apart a sufficient distance to receive the upper end of a rod 21, which is pivoted to the links by pin 20 and projects above the toggle where it is provided with fingers 22 corresponding to fingers 15 on the levers 12.

Rod 21 is slidably mounted in the staff 10 and a spring 23 compressed between the inner end of the rod 21 and a plug 24 in the bottom of the staff urges the rod upwardly. A pin 25 fixed to the inner end of the rod projects through a slot 26 in the wall of the staff and is provided with a knob 27 which forms a thumb piece by which the rod may be retracted against the resistance of the spring. The pin 20 which forms the pivot of the knee joint is also provided with a knob 28 for the same purpose.

The spring 23 urging the rod upwardly in the drawing bends the toggle and swings the levers inwardly. Retracting the rod straightens the toggle and swings the levers outwardly. As a result, the three gripping devices, or fingers, move simultaneously to grip or to release objects such as lenses indicated by 29 and 30 in Fig. 1. This simultaneous movement also has the advantage, when the device is used for a holder for lenses of assorted sizes, in that without moving the staff the axis of each lens, regardless of its size, coincides with a fixed line. In other words, the gripping devices move simultaneously toward and away from a fixed axis at right angles to the paper in Fig. 1.

The levers 12 in this embodiment are bent to form short arms fulcrumed on the cross bar and long arms carrying the gripping devices, and the toggle is connected to the levers at the bends. This makes it possible to use a relatively short cross bar 11 and makes the device compact and small as compared with the expansion of its grip.

By changing the relative lengths of the arms and links the gripping devices can be given a variety of relations to suit different conditions of use.

I claim as my invention:

1. In a device of the class described, a tubular staff having a lengthwise slot, a cross bar on the upper end of the staff, a pair of levers fulcrumed to the cross bar on opposite sides of the staff, a gripping finger carried by each lever, a toggle connecting the levers above the cross bar and having a knee joint aligned with the staff, a third gripping finger carried by the toggle, a rod slidable in the staff and connected with the toggle, a spring urging the rod out of the staff, and an operating pin for the rod projecting through the slot in the staff.

2. In a device of the class described, a tubular staff, a cross bar on the upper end of the staff, a pair of levers fulcrumed to the cross bar on opposite sides of the staff, a gripping finger carried by each lever, a toggle connect-

ing the levers above the cross bar and having a knee joint aligned with the staff, a third gripping finger carried by the toggle, a rod slidable in the staff and connected with the toggle, and a spring urging the rod out of the staff.

3. In a device of the class described, three gripping fingers movable simultaneously to grip or release an object, a pivoted lever for each of two of the fingers and a toggle for the third finger controlling the pivoted levers.

4. In a device of the class described, three gripping fingers movable simultaneously to grip or release an object, a pivoted lever for each of two of the fingers, a toggle for the third finger controlling the pivoted levers, and yielding means controlling the toggle.

5. In a device of the class described, three gripping fingers movable simultaneously to grip or release an object, a staff, a lever for each of two fingers fulcrumed on the staff, a toggle connecting the levers and having a knee joint aligned with the staff and carrying the third finger and resilient means urging the fingers together.

6. In a device of the class described, a hollow staff, a rod mounted to reciprocate in the staff, a spring urging the rod in one direction, a pair of toggle links pivoted to the rod to form a knee joint, a pair of levers fulcrumed on the staff to swing toward and away from each other, and pivotally connected with the opposite ends of the toggle, a gripping finger on the rod adjacent to the knee joint, and a gripping finger mounted in corresponding positions on each of the levers.

7. In a device of the class described, a pair of levers pivoted to swing toward and away from each other, a gripping finger on each lever, a pair of toggle links pivoted together to form a knee joint and having corresponding ends pivoted to the levers between the fulcra and the fingers, a gripping finger carried by the toggle at the knee joint and means to bend the toggle and thereby move the fingers in unison.

8. In a device of the class described, a staff, a cross-bar carried by the staff, a pair of gripping members pivoted to the cross-bar, a slidable rod carried by the staff and constituting a third gripping member, and gripping fingers carried by each of the said gripping members, said fingers being maintained always equidistant from a fixed axis.

In testimony whereof I affix my signature.

RUDI STARK.