R. R. SPEARS.

TIMING DEVICE.

APPLICATION FILED FEB. 28, 1913.

1,124,543.

Patented Jan. 12, 1915.

Fig. 1.

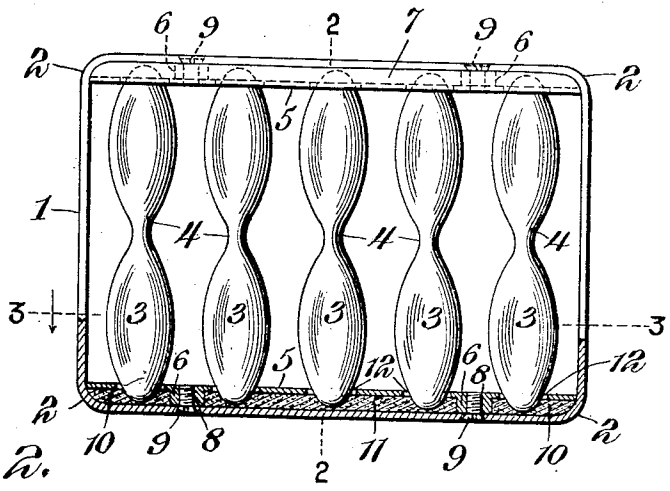


Fig. 2.

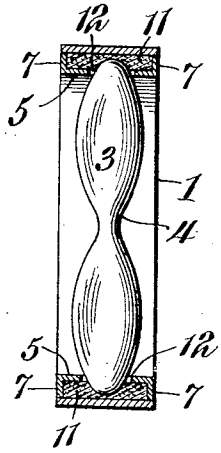


Fig. 3.

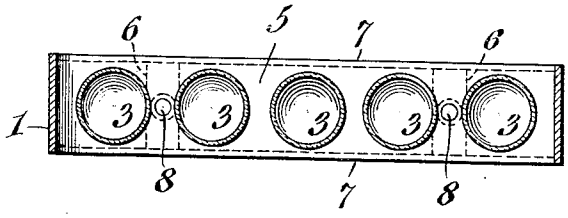
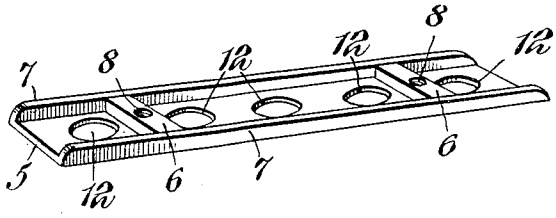


Fig. 4.



WITNESSES

Howard D. Orr.

F. T. Chapman.

R. R. Spears, INVENTOR,

BY E. G. Siggers.

ATTORNEY

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

RALPH R. SPEARS, OF WHEELING, WEST VIRGINIA.

TIMING DEVICE.

1,124,543. Specification of Letters Patent. Patented Jan. 12, 1915.

Application filed February 28, 1913. Serial No. 751,382.

To all whom it may concern:

Be it known that I, RALPH R. SPEARS, a citizen of the United States, residing at Wheeling, in the county of Ohio and State of West Virginia, have invented a new and useful Timing Device, of which the following is a specification.

This invention has reference to improvements in timing devices and is designed to provide a multiple timing means by which operations requiring different lengths of time for their accomplishment may be performed and if during the performance of the operation there be an interruption such interruption will not affect the proper timing.

In accordance with the present invention there is provided a suitable frame or support in which two or more devices commonly known as minute or hour glasses are mounted in such a manner that all the glasses may be inverted simultaneously while the different glasses or timing devices are arranged to each run out in a different length of time from the others. Moreover, the structure is arranged so that should there occur an interruption in the performance of the operation or operations, the timing structure may be placed in an inoperative or inert position to be again set in operation when desired.

The invention will be best understood from a consideration of the following detailed description, taken in connection with the accompanying drawings forming a part of this specification, with the further understanding that while the drawings show a practical form of the invention, the latter is not confined to any strict conformity with the showing of the drawings but may be changed and modified so long as such changes and modifications mark no material departure from the salient features of the invention.

In the drawings:—Figure 1 is an elevation with parts in section of a timing device embodying the present invention. Fig. 2 is a section on the line 2—2 of Fig. 1, with the timing glass shown indicated in elevation. Fig. 3 is a cross section of the device on the line 3—3 of Fig. 1. Fig. 4 is a perspective view of one of the seating members of the carrying frame.

Referring to the drawings, there is shown a frame 1 which may be of generally rectangular form with rounded corners 2, although this particular feature is not obligatory. The frame 1 is of sufficient length and height and also of sufficient thickness to accommodate timing devices 3 of the ordinary minute and hour type of sand glasses, that is, they comprise two terminal bulbs with a contracted connecting neck 4 through which there is produced a passage of minute diameter, so that a quantity of mobile sand or like material lodged in one terminal portion will readily flow through the minute passage without clogging and by gravity into the other terminal portion when the latter is lowermost, the parts being so proportioned that the sand will completely flow from the upper into the lower compartment within a certain determined time. In the drawings five such timing glasses are shown, but the invention is not limited to any particular number, except that it is desirable that there should be a plurality of such glasses each differing from the others as to the time taken for the material to flow from one end of the glass to the other. The five glasses may be considered as timed respectively from one to five minutes, or any other appropriate time may be chosen for the particular operations to be performed.

Within those portions of the frame 1 designed to receive the ends of the timing glasses and to thereby hold the latter, so that the greater portion of the glasses are exposed to view, there are lodged channel strips 5 with the channel portion directed toward the inner face of the corresponding side of the frame 1 and at appropriate points these channel strips have blocks 6 fast thereto, while it is the side edges of the channel strips that are turned at an angle to the body portions thereof, as indicated at 7, to produce the channel, these side flanges 7 stiffening the strips 5 and the blocks 6 are each provided with a perforation 8 which may be threaded for the reception of a screw 9 passed through and engaging the corresponding side of the frame 1, thus securing the channel strips firmly in place. Within the channel strips, and confined between them and the corresponding inner faces of the frame 1 are pads 10, 11 of some such suitable material as felt, more than one pad being necessary by the division of the interior of each channel strip by the blocks 6. The channel strips 5 have perforations or passages 12 through them for the corresponding ends of the timing glasses 3 and the felt pads may be suitably shaped to re-

ceive the ends of the glasses and thereby hold them within the passages 12 without actual contact therewith, so that no injury may come to the glass timing devices 3 under the exigencies of handling. The channel strips 5 render the corresponding sides of the frame 1 particularly rigid, while the ends of the glasses 3 have cushioned seats in these channel strips and are held by the cushioning seats against contact with metal which may be the material of which the frame and channel strips are made.

The thickness of the frame 1 which is freely open in the direction of its thickness, is such as to permit the frame to be laid flat upon a supporting surface without bringing the glasses 3 into contact with such surface, thereby protecting these glasses from injury in the event of the frame being laid flat.

Assuming that the timing material is all located at the corresponding ends of the glasses, then the timing may be started by so placing the frame 1 that the empty ends of the timing glasses are lowermost, whereupon the sand or other material at once begins to gravitate from the then upper full ends of the glasses into the then lower empty ends of the glasses, and such operations as are to be performed may begin, the first operation stopping, say, when the first glass has flowed out in, say, one minute, and the second operation continuing until the second glass has flowed out in say, two minutes, and so on throughout the series, thus permitting the accurate timing of the operations without recourse to an ordinary time piece which would not give such accurate visible indication of the different times as could be observed from the device of the present invention, for in the latter case the timing devices are large and easily observed and are sensibly accurate to within a very small fraction of the time. Should the operation be interrupted for any reason the timing device may be laid upon its side, thus stopping its action, and when the operation is resumed the timing device may be set up upright in the same position as before when the timing will continue from the point where it was interrupted.

As an example of a use to which the present invention may be put, it will be found useful in keeping track on the part of a subscriber or user of a telephone of the time consumed in long distance conversations or other time limited conversations. By starting the timer when the conversation begins it becomes an easy matter to gage the conversation to within the regular provisional time or if such time be overrun, the full additional time for which charge is made may be taken advantage of before cutting off. Again, if there be delay by reason of bad connection or some interruption in the telephone line, then the instrument may be laid upon its side until the connection is again made good, whereupon the instrument may be started running again. In this respect the instrument is fully equal to a stop watch.

Experience has shown that if a sand glass be supported in a manner permitting a sudden jar lengthwise of the glass, such a jar will quite frequently cause the sand to stop running, so that there is no certainty that the device will accurately indicate time. However, by cushioning the sand glass at the ends in a manner to prevent lengthwise jars of the glass should it be placed upon a support in a manner to produce some shock, the absence of any sudden jar, so far as the sand glass is concerned, wholly prevents the clogging of the small passage through which the sand travels and the device becomes thoroughly reliable for the purpose intended. The cushioning means must be yieldable lengthwise of the sand glass so as to absorb all shocks, and in the structure shown in the drawings the ends of the sand glass are more or less embedded in the cushioning means, of which felt may be taken as a suitable material. The holding strips for the cushioning material has the passages 12 sufficiently larger than the corresponding extremities of the sand glasses, so that there is no contact between the supporting means and the sand glasses except through the cushioning means at the opposite ends of the sand glasses, such cushioning means yielding sufficiently in a direction lengthwise of the glasses to prevent any sudden jar to the glasses due to sudden impact of the supporting frame with a relatively rigid support.

What is claimed is:—

1. A timing device comprising a plurality of elongated timing members, a surrounding supporting frame therefor open at opposite sides, and elastic clamping means between the frame and opposite ends of the timing members, said elastic means being yieldable in the direction of the length of the timing members and positioned to engage the end portions only of the latter to hold said timing members in the supporting frame.

2. A timing device comprising a plurality of timing said glasses, a surrounding supporting frame therefor open at opposite sides, and clamping members for the opposite ends of the glasses carried by the frame and including cushioning means between the frame and respective ends of the glasses, said cushioning means being yieldable in the direction of the length of the glasses.

3. A timing device comprising a frame having oppositely disposed channel members each with a series of passages therethrough, cushioning means confined between the channel members and the corresponding portions of the frame and exposed at the passages, and a series of gravity timing

glasses mounted in the frame with the extremities extending through the passages in the channel members and engaging the cushioning means confined therein, said cushioning means being yieldable in the direction of the length of the glasses.

4. A timing device comprising a frame having oppositely disposed channel members each with a series of passages therethrough, cushioning means confined between the channel members and the corresponding portions of the frame and exposed at the passages, and a series of gravity timing glasses mounted in the frame with the ends extending through the passages in the channel members and engaging the cushioning means confined therein, the cushioning means being yieldable in the direction of the length of the timing glasses and each timing glass being arranged to run out in a different time from the others.

5. A timing device comprising a frame having oppositely disposed channel members each with a series of passages therethrough, cushioning means confined between the channel members and the corresponding portions of the frame, and a series of gravity timing glasses mounted in the frame with the ends extending through the passages in the channel members and engaging the cushioning means confined therein, the cushioning means being yieldable in the direction of the length of the timing glasses and each channel member being provided with spaced blocks within its channel for the reception of fastening means for securing the channel member to the frame.

6. A timing device provided with an elongated timing member, a support therefor, and cushioning means between the extremities of the timing member and the corresponding portion of the support, said cushioning means being yieldable in the direction of the length of the timing member and constituting the sole direct support therefor.

7. A timing device provided with a plurality of elongated sand glasses, a support in which the opposite extremities only of the sand glasses are lodged, and cushioning means between the said extremities of the timing members and the corresponding portions of the supporting device and yieldable in the direction of the length of the sand glasses, said cushioning means constituting the sole direct support for the timing members.

8. A timing device comprising a plurality of elongated sand glasses, and a surrounding supporting frame therefor freely open on opposite sides and provided with cushioning means interposed between the respective extremities of the timing devices and the adjacent portions of the frame, said cushioning means seating the ends of the glasses and forming the sole direct support for said glasses and yieldable in the direction of the length of the sand glasses to absorb shocks.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

RALPH R. SPEARS.

Witnesses:
M. E. MURRIN,
L. M. CARROLL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents Washington, D. C."