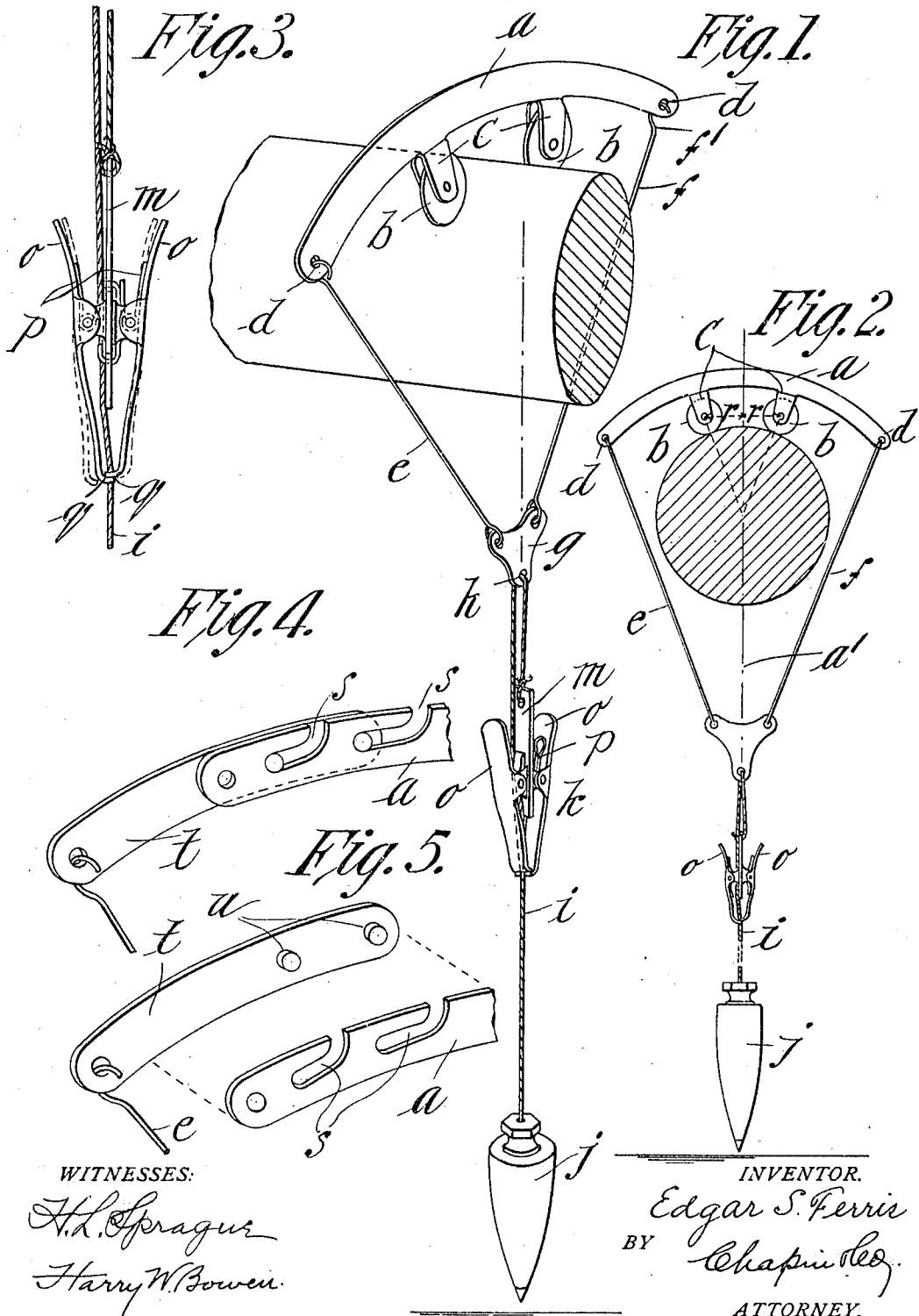


E. S. FERRIS.
SHAFT CENTERING DEVICE.
APPLICATION FILED FEB. 25, 1909.

953,131.

Patented Mar. 29, 1910.



UNITED STATES PATENT OFFICE.

EDGAR S. FERRIS, OF HOLYOKE, MASSACHUSETTS, ASSIGNOR OF ONE-THIRD TO CHARLES HOUSE AND ONE-THIRD TO GEORGE A. WHITTEMORE, BOTH OF HOLYOKE, MASSACHUSETTS.

SHAFT-CENTERING DEVICE.

953,131.

Specification of Letters Patent.

Patented Mar. 29, 1910.

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To all whom it may concern:

Be it known that I, EDGAR S. FERRIS, a citizen of the United States of America, residing at Holyoke, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Shaft-Centering Devices, of which the following is a specification.

This invention relates to improvements in devices for instruments for quickly and accurately finding the center of a line of shafting.

The objects of the invention are: (1) to provide means whereby the center of a line of shafting may be quickly and accurately projected onto the floor below the shafting; (2) to produce a device that can be used and placed on the line of shafting at any longitudinal part of its length, without regard to the diameter of the shafting, or whether various lengths of the same are composed of different diameters; (3) to provide means whereby a plumb-bob can be readily adjusted near the floor or at any convenient height therefrom in the space between the floor and shafting.

In this class of devices as heretofore constructed, it has been the common practice to suspend a plumb-line, by means of a suitable weight, so as to just touch or graze the side of the shafting, and then mark on the floor a point indicating the curved side of the shafting; then caliper the shafting and measure back from the point on the floor a distance equal to the radius of the shaft. These several steps are very slow and more or less inaccurate since errors are very apt to arise in taking the various measurements, and the larger the number of measurements required to be taken, the greater the probability of mistakes in effecting the final result.

Broadly stated, my invention comprises an arc-shaped member having mounted on the inner curved part thereof a pair of anti-friction rollers which are adapted to engage the upper curved surface of the shaft to be centered, and suitably attaching to the arc-shaped member the plumb-bob or weight that can be readily adjusted at or near the floor, whereby the weight of the bob will cause the device to readily come to rest or to a state of equilibrium.

The invention further consists in provid-

ing means for adapting the same to shafts of different diameters.

In the drawings forming part of this application,—Figure 1 is a perspective view showing the manner in which the instrument is used, and illustrating the same, as located on a line of shafting. Fig. 2 is an end view of Fig. 1. Fig. 3 is a detail view of the means for clamping the plumb-bob line, whereby the bob may be quickly suspended at any suitable distance from the floor. Fig. 4 is an attachment whereby the device can be used on shafts of greater diameters, and Fig. 5 is a view of the parts separated that are in Fig. 4 shown connected.

Referring to the drawings in detail, *a* designates the arc-shaped member that is provided on the inner curved portion thereof with a pair of anti-friction rollers *b* of hardened steel for engaging the upper curved surface of the shaft to be centered. These rollers are supported in ears *c* suitably connected to the part *a*, or they may be made integral therewith. The outer ends of the arc-shaped member *a* are provided with apertures or openings *d* to which links *e* and *f* are attached, the link *f* being furnished with a hook-shaped end *f*¹. These links are connected to a triangular shaped plate member *g*, as shown, and looped through the eye *h* of this member *g* is a cord *i* to one end of which is attached the plumb-bob *j*, and to the other end of the cord *i* is attached a clamping device *k* which is composed of a central plate *m* on which are pivotally supported the spring-actuated cord clamping members *o*.

p designates springs located between the plate *m* and the clamping members *o* for normally pressing the in-turned finger ends *q* of the clamping members *o* toward each other, as shown in full lines in Fig. 3, for grasping the cord *i*. The dotted lines in this figure indicate the position of the cord-clamping members *o* when in the non-clamping position, that is when the cord *i* is free to run through the eye *h* in the plate member *g* for raising and lowering the plumb-bob.

The device illustrated in Figs. 1 and 2 clearly indicates how the same is employed in centering a shaft and may be briefly described as follows: The weight of the plumb-bob *j* causes the rollers *b* to move trans-

versely on the upper curved surface of the shaft, that is to say, the rollers will so position themselves in relation to the vertical plane, indicated at a^1 , passing through the axis of the shaft, that they will come to rest or a state of equilibrium on opposite sides of this plane at equal distances therefrom, as indicated in Fig. 2 at r , since the flexible connecting means between the plumb-bob and supporting bar will readily permit the parts to bend relative to each other. It is therefore clear that the lower end of the plumb-bob, where it engages the floor, will accurately project the center line of the shaft to the floor below, and this, without regard to the diameter of the shaft, as clearly shown in Fig. 2. The cord i , if projected upward, will pass through the center of the shaft and bisect the base of the triangle, shown in dotted lines, and designated at r , r . In locating several points on the floor below the line of shafting, it is only necessary to disengage the hook f^1 of the link f from its eye d in the part a , and remove the device from the shafting, when it can readily be replaced by simply rehooking the link, wherever it is desired to locate another point on the floor.

Referring now to Figs. 4 and 5, in which a slight modification of my device is shown: each end of the arm a is provided with two angular-shaped slots s . t designates an extension member having the same curvature as the arm a and in one face thereof are located pins u that are adapted to enter the slots s , as shown in Fig. 4, in the assembled position, the operation of which is readily understood.

It is understood that I do not limit myself to the size and shape of the parts shown, and that any equivalent means of accomplishing the same results is understood to be within the scope of my improvements.

What I claim, is:—

1. In a device for determining the location of the center of a shaft, in combination, an arc-shaped supporting member provided

on its inner curved surface with anti-friction supporting rollers, the opposite ends of the arc-shaped member having attached thereto means for supporting a plumb-bob, said means including a pair of links, and clamping means for adjustably supporting the plumb-bob at different elevations.

2. In a shaft-centering device comprising a suitable member for supporting a plumb-bob, and provided with slots in the end portion thereof, extension members for the plumb-bob supporting member, said members having pins for engaging the slots in the bob-supporting member, and means, including a pair of spring-pressed clamping fingers, for varying the height of the plumb-bob from the floor.

3. In a shaft-centering device, in combination with a plumb-bob supporting member, arcuate in shape, and provided with anti-friction devices on its inner curved edge, flexible connecting means between the arc-shaped member and the plumb-bob, said connections including a pair of links attached to the opposite ends of the plumb-bob supporting member, and an intermediate plate member to which the links and the plumb-bob are connected, and spring-pressed gripping in-turned fingers for engaging the flexible bob-supporting member, as described.

4. A shaft-centering device having in combination with a supporting member for engaging the shaft to be centered, a plumb-bob, means for connecting the same to said member, said means including link members attached to the opposite ends of said shaft-engaging member, a plate to which the link members are attached, connecting means between the plate and bob, and means interposed in the connecting means for varying the position of the bob, substantially as described.

EDGAR S. FERRIS.

Witnesses:

K. I. CLEMONS,
H. W. BOWEN.