Nov. 17, 1931. J. M. GOODNOW 1,831,857

ADJUSTABLE SHAFT HANGER

Filed June 5, 1928

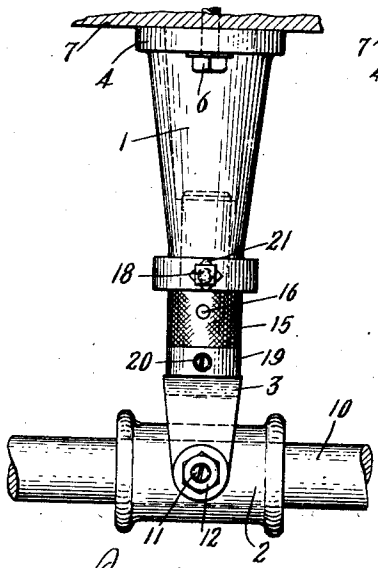


Fig. 1

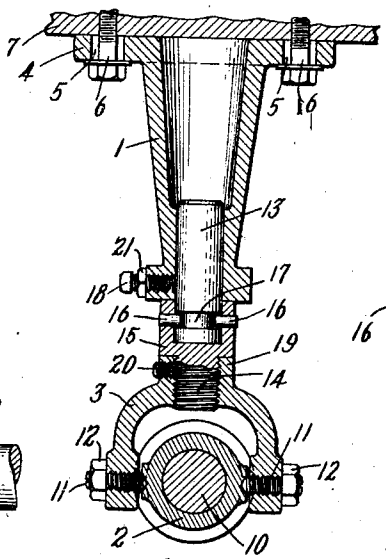


Fig. 2

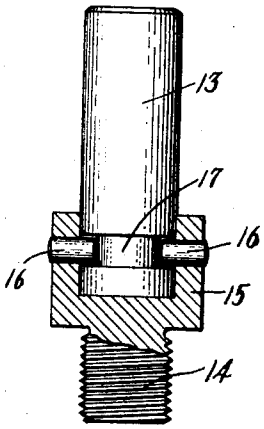


Fig. 3

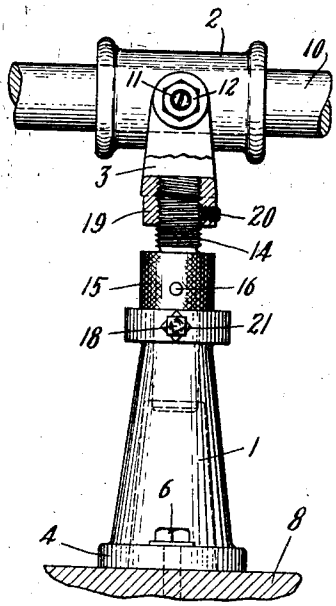


Fig. 4

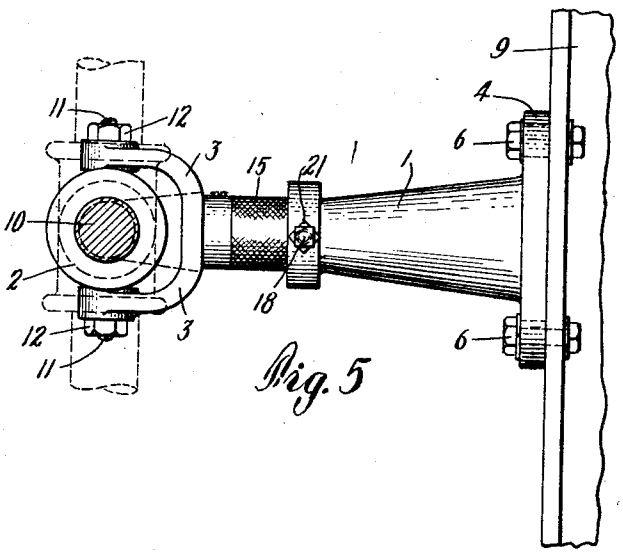


Fig. 5

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UNITED STATES PATENT OFFICE

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ADJUSTABLE SHAFT HANGER

Application filed June 5, 1928. Serial No. 283,001.

The present invention relates to hangers for power transmitting line shafting, and its object is to provide means for both rough and fine adjustment of the shaft bearing element of such a hanger, to the end that all the bearings supporting a long shaft, or line of shafting, may be accurately alined with one another so as to take equal shares of the load and avoid deflection of the shaft at any supported point. The invention consists in the principles and details of a hanger having the capacities above mentioned, as explained in the following specification with reference to a specific embodiment, shown in the accompanying drawings.

Fig. 1 of the drawings shows a hanger embodying this invention, illustrated in side elevation as arranged to suspend a shaft from an overhead support;

Fig. 2 is a longitudinal cross section of the hanger shown in Fig. 1;

Fig. 3 is a view on a larger scale, partly in elevation and partly in section, of part of the adjusting means with which the hanger is equipped;

Fig. 4 is a view showing the hanger, mainly in elevation but partially in section, so applied as to hold the shaft above an underneath support;

Fig. 5 is an elevation showing the hanger applied to a wall or other upright and adapted either to support a horizontal or inclined shaft, or to position a vertical shaft.

Like reference characters designate the same parts wherever they occur in all the figures.

As is apparent from the drawings, the same hanger is adapted to support or guide a shaft when placed in a variety of positions, as when suspended from an overhead support, mounted upright on the floor or other underneath support, or projecting from a wall or other upright support. Hence the term "hanger" does not import any limitation in the location or mode of use of the device. The hanger comprises a part 1, which may be called a base, pedestal or post, a bearing or sleeve 2, a fork 3 having arms which embrace the bearing 2, and adjustable connecting means, later described, between the above mentioned parts.

The base or post 1 is provided with lugs 4 or an equivalent flange, having slots 5 to admit bolts 6 by which the hanger may be secured to the support shown in a fragmentary way at 7 in Figs. 1 and 2, 8 in Fig. 4, and 9 in Fig. 5. As the slots 5 are longer or wider than the shanks of the attaching bolts, they permit a range of adjustment of the whole hanger wider than the limits of error in locating and setting the bolts. That is, while it is extremely difficult and practically impossible to place hanger attachments such as the bolts 6 with the accuracy required in the location of a shaft bearing to prevent binding, it is easily possible to place them with an error less than the range of adjustment permitted by the slots 5. In case the slots are wider in only one dimension than the attaching bolts, the hanger base is placed with the wider dimensions of the slots in a line transverse to the direction of the shaft, as shown in Fig. 2, but holes wider in all dimensions than the bolt shanks may be provided in place of slots, thus permitting of adjustment of the base in all directions in one plane. A section of shafting supported by the hanger is shown at 10 in the drawings.

The fork 3 is connected with the bearing 2 by means of alined screws 11 threaded through the arms of the fork and having cone pointed ends entering complemental sockets in the opposite sides of the bearing; thus not only supporting the bearing but permitting it to swivel about the axis of the screws so as to accommodate a shaft inclined to the length of the hanger. These connecting screws may be adjusted endwise to shift the bearing laterally, thus giving a fine and accurate adjustment supplementing the rough or coarse adjustment which is afforded by the movement of the entire hanger with respect to the attaching bolts. Lock nuts 12 are placed on the pivot screws 11 to secure them after adjustment.

The connecting means between the base 1 and fork 3 consists of a stem 13 and a screw 14 having a head 15 which is formed with a socket to receive the end of the stem, in alinement with the screw, and carries coupling pins 16 passing through the walls of the head

and entering a groove 17 in the side of the stem. Thus the connector comprises a stem or shank with a swiveled screw threaded extremity. The shank is passed into the bore, or a socket, in the outer end of the base, wherein it has a sliding fit and is secured by a set screw 18 or other suitable fastening means; while the screw or threaded extremity 14 is passed into the threaded bore or passageway through the hub part 19 of the fork. This connector provides means for both coarse and fine adjustment of the shaft bearing lengthwise of the hanger. By loosening the set screw 18 the shank 13 may be moved bodily inward or outward for a rough adjustment, and then by rotating the head 15 the fork may be raised or lowered by minute and accurate distances. Disarrangement of an adjustment once effected is prevented by a set screw 20 in the side of the fork hub which bears on the screw 14, preferably through a soft metal pad which conforms to the threads of the screw. Not only does the swivel connection between the shank 13 and screw head 15 permit the screw to be turned for the last mentioned adjustment, but it also permits the bearing to be turned appropriately to a shaft which extends otherwise than at right angles to the common plane of the securing bolts. In order to secure the set screw 18 against displacement it is provided with a lock nut 21. If necessary to prevent the shank 13 from jarring out of its adjustment, two or more of the set screws 18 may be provided and the shank 13 may be grooved or indented to receive the ends of the set screws and so make a positive lock.

It will be apparent that the adjusting means hereinbefore described permit adjustment of the shaft bearing in any direction transversely of the line of shafting, not only through a relatively wide distance, but also with micrometrical accuracy, while the swiveled mounting of both fork and bearing provides a universal swivel permitting the bearing to adjust itself to an inclination of the shaft in any plane. Thus all the bearings, where three or more are provided to support the same shaft, may be so accurately alined with one another as to eliminate all deflection and binding of the shaft.

What I claim and desire to secure by Letters Patent is:

1. A shaft hanger comprising in combination a base, a shank mounted adjustably in said base to be protruded more or less therefrom, said shank having a swiveled threaded extremity, and a shaft bearing connected with said extremity and adapted to be shifted with a fine adjustment by rotary movement thereof.

2. A shaft hanger comprising a base, a shaft bearing, a fork having arms embracing said bearing, alined endwise-adjustable pivots in the arms of said fork engaging the bearing at opposite sides of the latter, and a screw in threaded engagement with the central part of the fork on an axis transverse to that of the before mentioned pivots, having swiveled connection with the base.

3. A shaft hanger comprising a base, a stem mounted in the base with provision for lengthwise sliding adjustment, means for securing said stem non-rotatably in different adjustments, a screw in alinement and swiveled connection with the stem, and a shaft bearing coupled with said screw for adjustment longitudinally thereof by rotation of the screw.

4. A shaft hanger comprising a base, a shank having a longitudinal sliding engagement with said base, means for securing said shank to the base in longitudinal adjustments thereof, a yoke, a connector in threaded adjustable engagement with said yoke and in swiveled connection with said shank, and a shaft bearing having pivotal engagement with and between the arms of said yoke on an axis transverse to the line of adjustment of said shank.

5. A shaft hanger comprising a base having a longitudinal guideway, a shank slidably adjustable endwise in said guideway, means for securing said shank in different positions of longitudinal adjustment, a connector swiveled to said shank for angular movement relatively thereto about an axis extending in the same direction as the movement thereof, a yoke in threaded engagment with said connector on the same axis, whereby swiveling movement of the connector serves to adjust the yoke in the same directions as the movement of the shank, means for locking the connector and yoke in adjusted positions, and a shaft bearing between the arms of said yoke in pivotal connection therewith to turn about an axis transverse to the first named axis.

In testimony whereof I have affixed my signature.

JOHN M. GOODNOW.