# H. F. Snyder,

## Shaft Hanger.

No. 86,186. Patented Jan. 26, 1869.

Fig: 1.

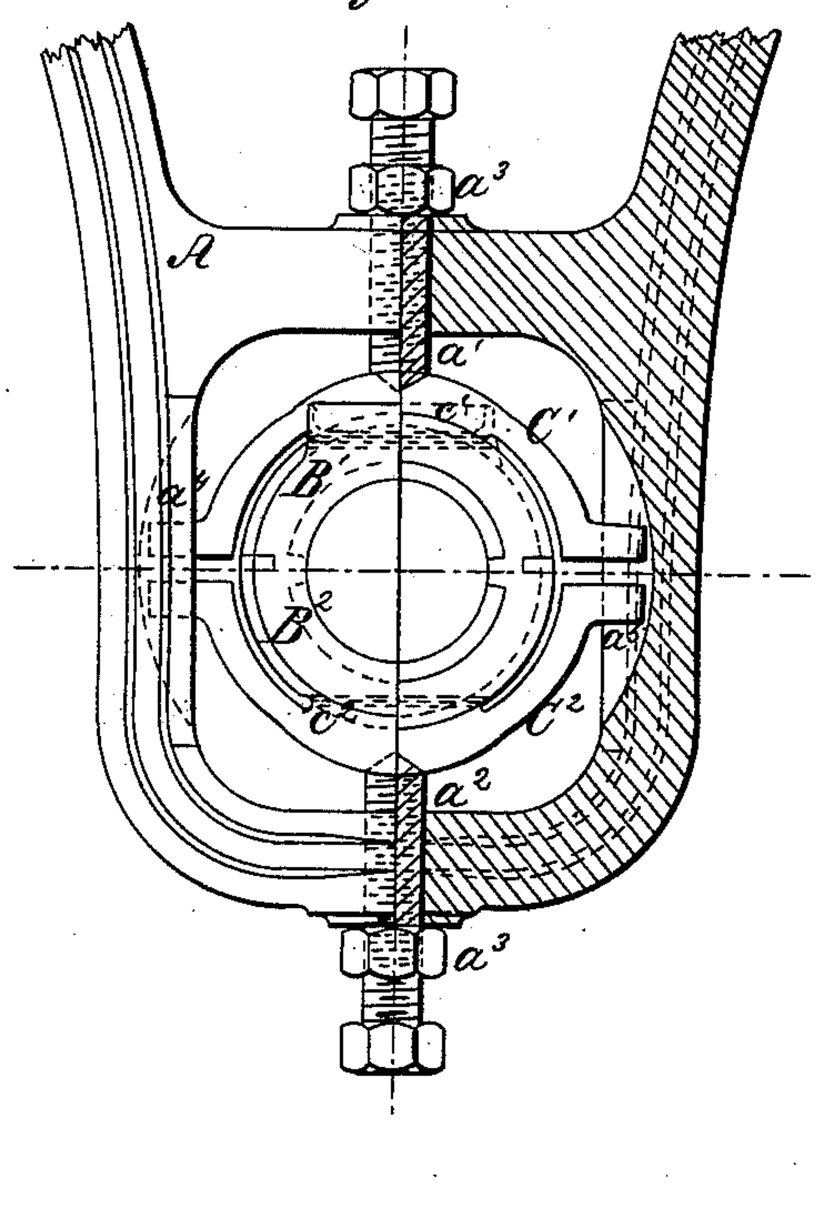



Fig: 2.

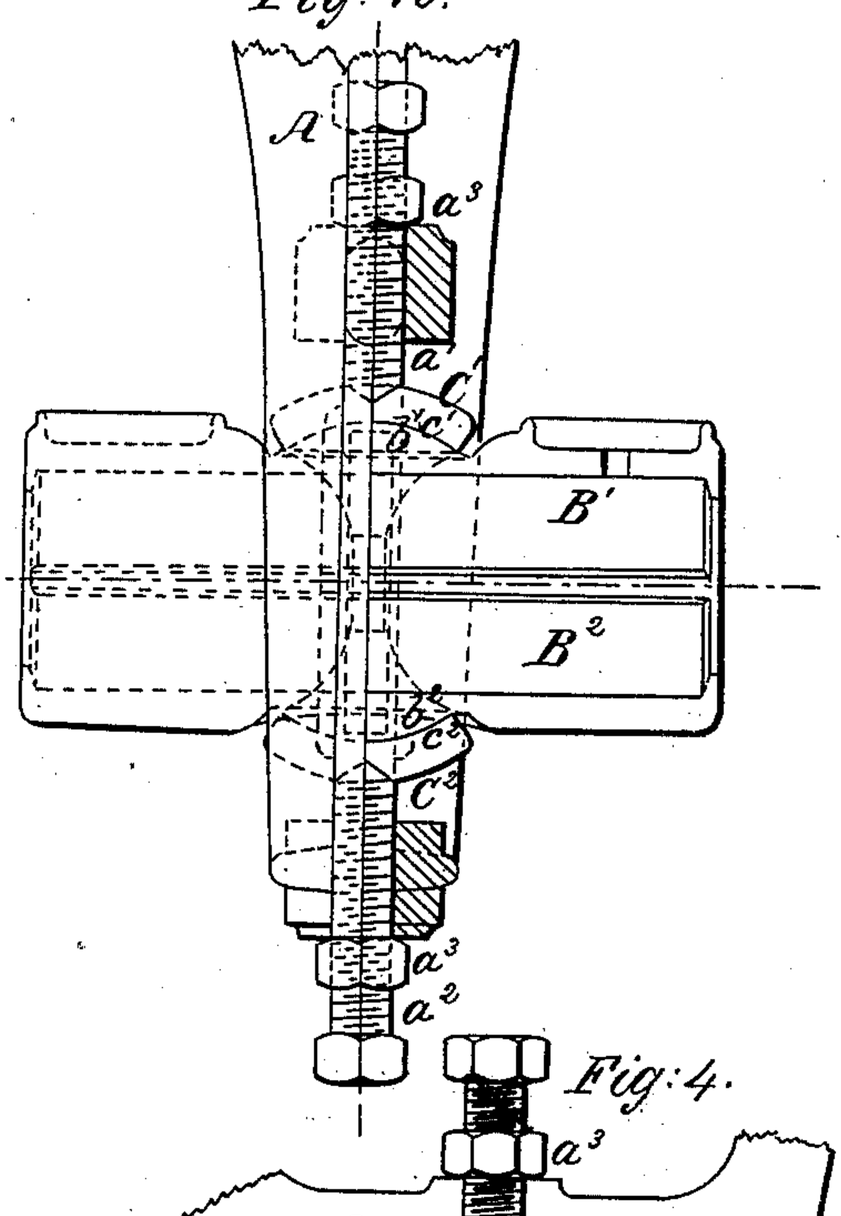



Fig: 3.

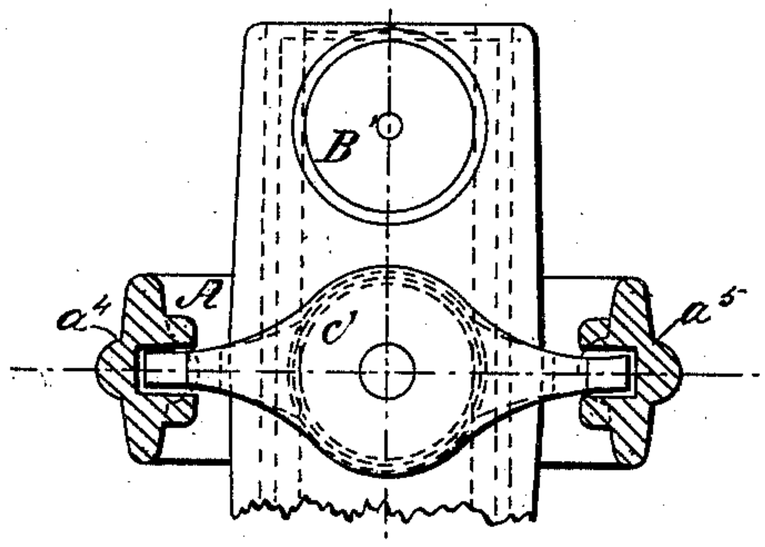
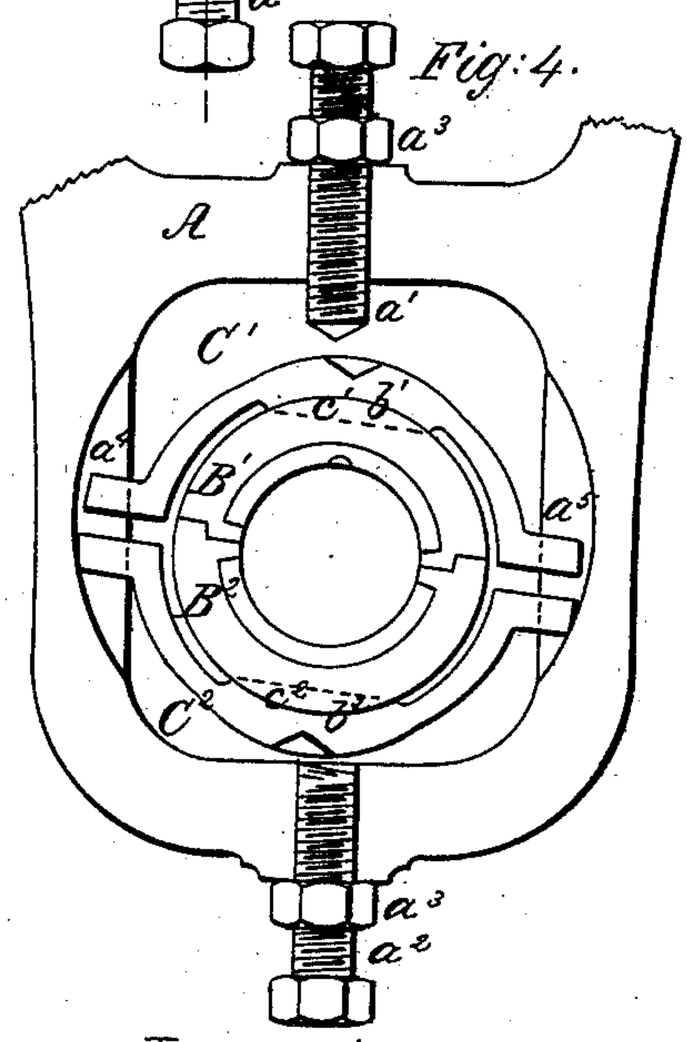



Fig: 4.

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*Letters Patent No.* 86,186, *dated January* 26, 1869.

## IMPROVEMENT IN HANGER FOR SHAFTING.

The Schedule referred to in these Letters Patent and making part of the same.

*To all whom it may concern:*

Be it known that I, HENRY F. SNYDER, of Williamsport, in the county of Lycoming, and State of Pennsylvania, have invented certain new and useful Improvements in Hangers for Shafting; and I do hereby declare that the following is a full and exact description thereof.

My hanger holds the shaft so that it is delicately adjustable vertically, and is allowed to play or swivel in all directions, to allow for slight crooks in the shafting, while it is guarded against falling or moving far out of position, in case of the fracture of the delicate adjusting-parts.

I will first describe what I consider the best means of carrying out my invention, and will afterward designate the points which I believe to be new.

The accompanying drawings form a part of this specification.

Figure 1 is an end view and vertical central section, the left side being an elevation and the right side a section;

Figure 2 is a corresponding side or edge view, the left side being a side elevation, and the right side a vertical section in the plane of the axis of the shaft;

Figure 3 is a horizontal section of the body of the hanger, and a plan view of the movable parts enclosed therein; and

Figure 4 is an end view, showing the condition when the supporting-screws fail.

Similar letters of reference indicate like parts in all the figures.

Tints are employed merely to aid in distinguishing parts, and do not necessarily imply differences of material.

The material of the whole may be iron, with a lining of Babbit metal upon the interior of the boxes.

The figures represent the novel parts, with so much of the ordinary parts as is necessary to indicate their relation thereto.

A is the body of the hanger, and

$a^1$ $a^2$ are pointed screws, adjustable in the body of the hanger, and held firmly in position by jam-nuts $a^3$. These screws and jam-nuts allow the adjustment of the boxes vertically, with the delicacy due to the most approved hangers known.

$B^1$ $B^2$ are boxes, matched together as represented. They may be of any length desired, and provided with any approved provision for lubrication.

I have represented simply two cups or cavities to receive the oil, with a simple hole for conducting it down near each end.

Portions $b^1$ $b^2$ are accurately finished in a spherical form, the spherical surface $b^1$ being in the centre of the top of the part $B^1$, and the spherical surface $b^2$ being in the centre of the bottom of the part $B^2$.

$C^1$ $C^2$ are castings, which perform very important functions. The two loosely enclose the boxes $B^1$ $B^2$ as represented, fitting tightly thereto only upon the spherical surfaces, before described. At all other points they stand off a quarter of an inch or other small distance; that is to say, there is an internal projection, $c^1$, on the part $C^1$, and an internal projection, $c^2$, on the part $C^2$, which projections are concave, and adapted to fit exactly against the corresponding spherical surfaces $b^1$ $b^2$.

These parts, $C^1$ $C^2$, are also finished with conical cavities, to receive the points of the screws $a^1$ $a^2$, and their ends extend out and are received in grooves, $a^4$ $a^5$, on the inner surfaces of the body A.

I give these grooves the form represented; that is to say, I make these grooves of considerable depth at the level of the centre of the shaft, and diminishing in depth above and below that level. They are adapted to receive and loosely enclose the corresponding projecting ends of the parts $C^1$ $C^2$, and to allow them to move therein to a limited extent, and these cavities are sufficiently deep, and sufficiently strongly enclosed, and the projecting ends of the parts $C^1$ $C^2$ are sufficiently strong and long, so that, while they are of little effect so long as the screws $a^1$ $a^2$ perform their functions properly, they will receive and support the entire weight of the shafting, and of all the dependent parts, in case the screws $a^1$ $a^2$ should break or fail.

In case of a failure of these screws, the boxes with the enclosed shaft will fall, or go out of line; but it can thus move only to a very short distance before its motion will be arrested by the firm contact of the ends of the parts $C^1$ $C^2$ against the bottoms or walls of the grooves $a^4$ $a^5$.

In the use of my invention, the hanger is secured to an overhead-beam, or other suitable part, by screw-bolts, or otherwise, as usual.

The shaft, being accurately fitted into the lubricated boxes $B^1$ $B^2$, is lined up to the proper level by the screws $a^1$ $a^2$, being readjusted by these screws whenever any part of the building settles so as to require such adjustment.

In case the shaft is not absolutely straight, the boxes $B^1$ $B^2$ will wabble a little with each revolution of the shaft. The side motion in such cases is effected by the turning of the parts $C^1$ $C^2$ on the points of the screws $a^1$ $a^2$, the grooves $a^4$ $a^5$ being sufficiently wide to allow of this motion; and the wabbling motion, in the vertical plane, is allowed for by the slipping of the spherical surfaces within each other; that is to say, the spherical surface $b^1$ slides backward and forward to a small extent within the corresponding concave $c^1$, and the spherical surface $b^2$ slides backward and forward within the corresponding concave $c^2$.

These spherical surfaces may also accommodate the horizontal motion, or a part of it, in case it becomes too great to be allowed for by the play within the grooves $a^4$ $a^5$, but under ordinary circumstances this will not be necessary.

All the parts work as usual, except in the contingency of a failure of the screws. In such case, the shaft simply falls or rises, according as the strain of the belts, gearing, or other forces shall determine, to a small extent. After it has fallen or risen bodily, to a small extent, its further motion is arrested by the pinching of the ends of the parts $C^1$ $C^2$ within the grooves $a^4$ $a^5$, and the shaft will now stand and perform in its new position, with some success, until the attention of the millwright, or other person in charge, is directed thereto, and the alignment is again properly adjusted.

I am aware that swivelling-boxes have been long known, and are much approved, and that means for delicately adjusting the same have been before devised. But serious accidents have occurred in connection with delicately-adjustable boxes, from the breakage or other failure of some of the necessarily light parts employed. My hanger effectually insures against any serious disaster to the machinery or the workmen, in case of the failure of the screws, while it allows all the refinement of accurate adjustment which can be required in any business or in any situation.

I esteem it an advantage of some importance, in practice, that my construction not only holds the boxes and the contained shaft after the adjusting-screws $a^1$ $a^2$ are broken, but, by reason of the spherical surfaces necessarily presented between the boxes and the parts $C^1$ $C^2$, allows the boxes to swivel in their fallen position, and thus tends greatly to avoid breaking under the strain to which the parts are subjected.

Having now fully described my invention,

What I claim as my improvement in shafting-hangers, and desire to secure by Letters Patent, is as follows:

I claim the castings $C^1$ $C^2$, held in position within the grooves in the frame, or their equivalents, in connection with the boxes $B^1$ $B^2$, arranged as represented, so as to turn in the manner of a universal joint, substantially as herein set forth.

HENRY F. SNYDER.

Witnesses:

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