(No Model.) 2 Sheets—Sheet 1.

DE WITT C. CUMINGS.

COUNTER SHAFT.

No. 299,915. Patented June 3, 1884.

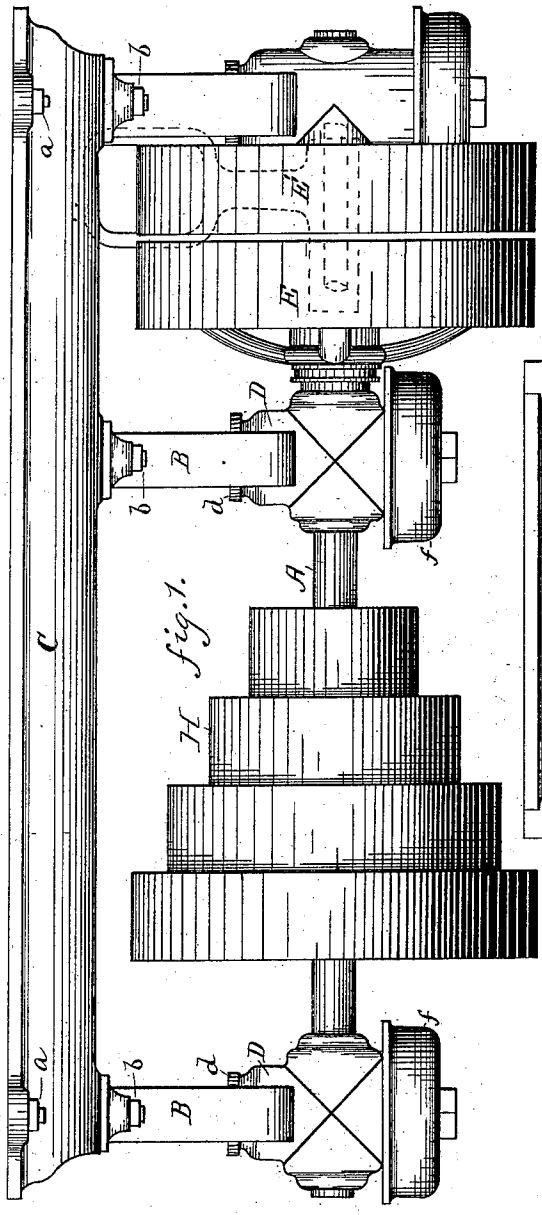


fig. 1.

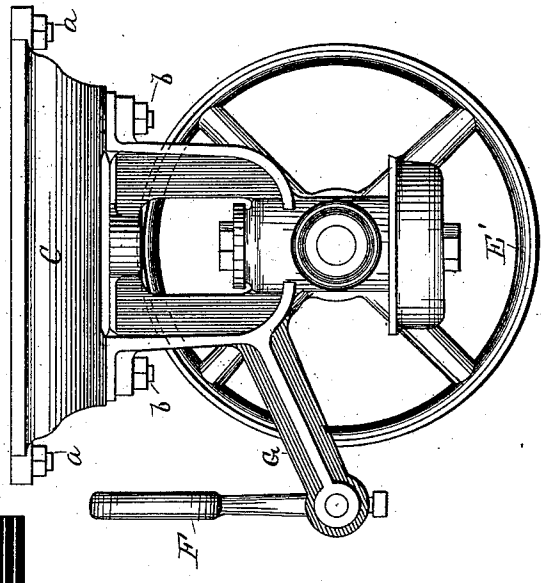


fig. 2.

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Edw. W. Byrn

INVENTOR:

De Witt C. Cumings

BY Munn & Co

ATTORNEYS.

N. PETERS. Photo-Lithographer. Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

DE WITT C. CUMINGS.

COUNTER SHAFT.

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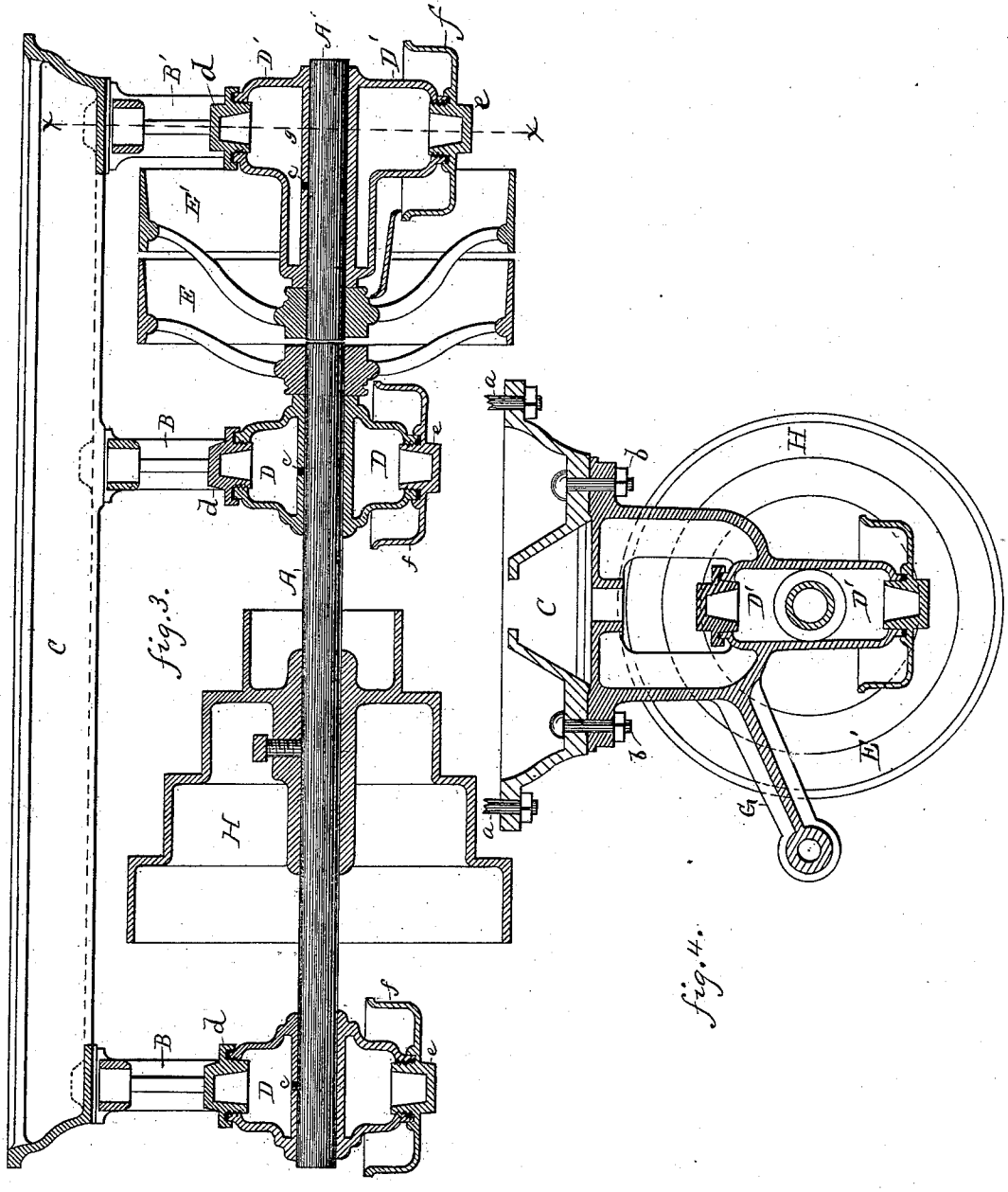


fig. 3.

fig. 4.

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UNITED STATES PATENT OFFICE.

DE WITT CLINTON CUMINGS, OF CARTHAGE, NEW YORK.

COUNTER-SHAFT.

SPECIFICATION forming part of Letters Patent No. 299,915, dated June 3, 1884.

Application filed July 20, 1883. (No model.)

To all whom it may concern:

Be it known that I, DE WITT C. CUMINGS, of Carthage, in the county of Jefferson and State of New York, have invented a new and useful Improvement in Counter-Shafts; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side, and Fig. 2 an end, elevation of the improvement. Fig. 3 is a longitudinal, and Fig. 4 a transverse, section of the same through line *x x*.

My invention covers certain improvements in counter-shafts, designed to secure a perfect and permanent alignment of the shaft in its bearings, to do away with the ordinary loose pulley, and to provide means for the better lubrication of the bearings. To these ends my improvements comprehend an independent short shaft arranged in line with the counter-shaft and bearing a pulley arranged side by side with the driving-pulley, and having an offsetting periphery; and also, further, in bearings made with chambers for containing lubricant for the automatic lubrication of the bearing, all as hereinafter fully described.

In the drawings, A represents a counter-shaft, which is hung in bearings in the hangers B B.

C is a metal plate or casting similar to a bed-plate, only it is inverted and fastened by bolts *a a* to the joists of the shop. The lower face of this plate is dressed true, and to it is secured the hangers by bolts *b b*. In explaining the function of this plate C, I would state that where the hangers are fastened to the wooden joists influences of heat and moisture will, by contraction and expansion of the wood, cause the bearings to get out of true. The plate C, it will be seen, extends the full length of the counter-shaft, and when said plate is firmly bolted to the joists and the hangers fastened thereto in true position the bearings always maintain their position and are always true, thus avoiding the cramping and wearing of the shaft, and avoiding the expenditure of much time and trouble in rectifying this difficulty.

The hangers B are cast with hollow air-tight chambers D, surrounding the bearings for the shaft, and from this chamber to the inner periphery of the bearing there is a hole, *c*, which allows oil to pass to the interior, to effect the automatic lubrication of the bearings. To accomplish this it is necessary to supply the chamber with oil to a point above the level of the orifice *c*. These chambers are provided at the top with tightly-fitting screw-plugs *d*, through which oil is poured into the chambers, and are provided at their lower ends with screw-threaded discharge-plugs *e*, having drip-cups *f* attached thereto, and which discharge-plugs may be removed to clean out sediment, &c.

Upon the end of the counter-shaft A is fixed the driving-pulley E, and just beside it is its loose or idle companion pulley E′. This pulley E′, instead of revolving loosely on the same shaft with the drive-pulley, is fixed upon a short shaft, A′, arranged in line with A, and having a long bearing, *g*, in the hollow chamber D′ of its hanger B′, which chamber is fitted, like the others, for automatic lubrication. Now, when the counter-shaft is to be relieved of its work, the belt-shifter F, sliding on a rod carried by arm G, is made to slip the belt from the driving-pulley E to the idle-pulley E′, which is then rotated by the belt, and is not open to the objections attending an ordinary loose pulley, for the reason that its shaft A′ has an extended bearing and large surface for lubrication. To make the pull of the band on this pulley E′ come about the middle of the shaft A′, the radial arms of the pulley E′ are offset to one side, as shown, and the periphery of the pulley E is offset in a similar manner, in order to place the edge of the pulley in close juxtaposition to E′, so that the belt may readily pass from the former to the latter, or vice versa. This offsetting of the periphery of pulley E from the radial arms has an important value, for it makes the pull of the belt wear the bearings uniformly with the bearings of the counter-shaft, whereas if the pull of the belt were out of the plane of the bearing it would wear quickly out of registration with the driving-pulley and involve trouble in shifting the belt. In making use of this feature I do not confine myself to its application in a counter-shaft, but may use it in elevator mechanism, or in any other connection where a driving and loose pulley are arranged side by side.

From the counter-shaft A motion is impart-

ed to the working machinery by the usual cone-pulley, H, and belt.

Having thus described my invention, what I claim as new is—

1. A pulley having its periphery offset laterally from the plane of its hub, but within the plane of its rotary central bearing, combined with a counter-shaft, and arranged rigidly upon an independent shaft in line with the counter-shaft, substantially as shown and described.

2. The hangers B, having cast therewith bearings for the shaft and an air-tight oil-chamber about the same, as and for the purpose described.

3. The hangers B, formed with bearings and an air-tight oil-chamber about the same, in combination with the filling-plug *d* and the discharge-plug *e*, having drip-cup *f*, as and for the purpose described.

4. The combination, with a shaft and its driving-pulley, of an independent shaft arranged concentrically in line therewith, and an idle-pulley fixed on said independent shaft side by side with the driving-pulley, as set forth.

5. The combination, with a driving-shaft and the independent short shaft arranged in line therewith and having a long bearing, as described, of the two pulleys E and E′, fixed, respectively, upon the adjacent ends of said shafts, and having their arms bent or offset, so as to bring the periphery of the idle-pulley E in the plane of its bearing, as and for the purpose described.

DE WITT CLINTON CUMINGS.

Witnesses:

ALBERT ALLEN,

MELVIN F. CRONK.