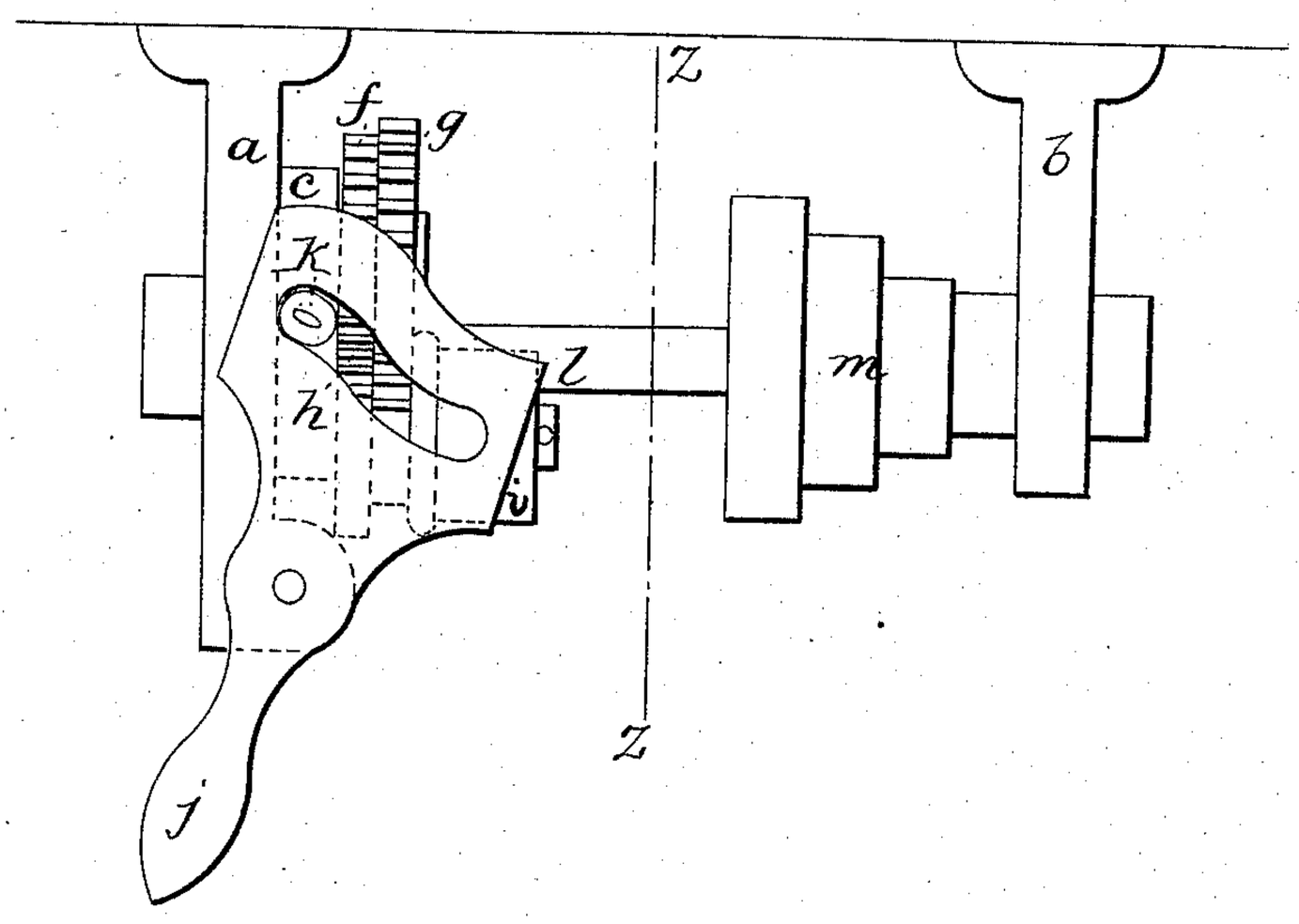
W. Fitzgerald,

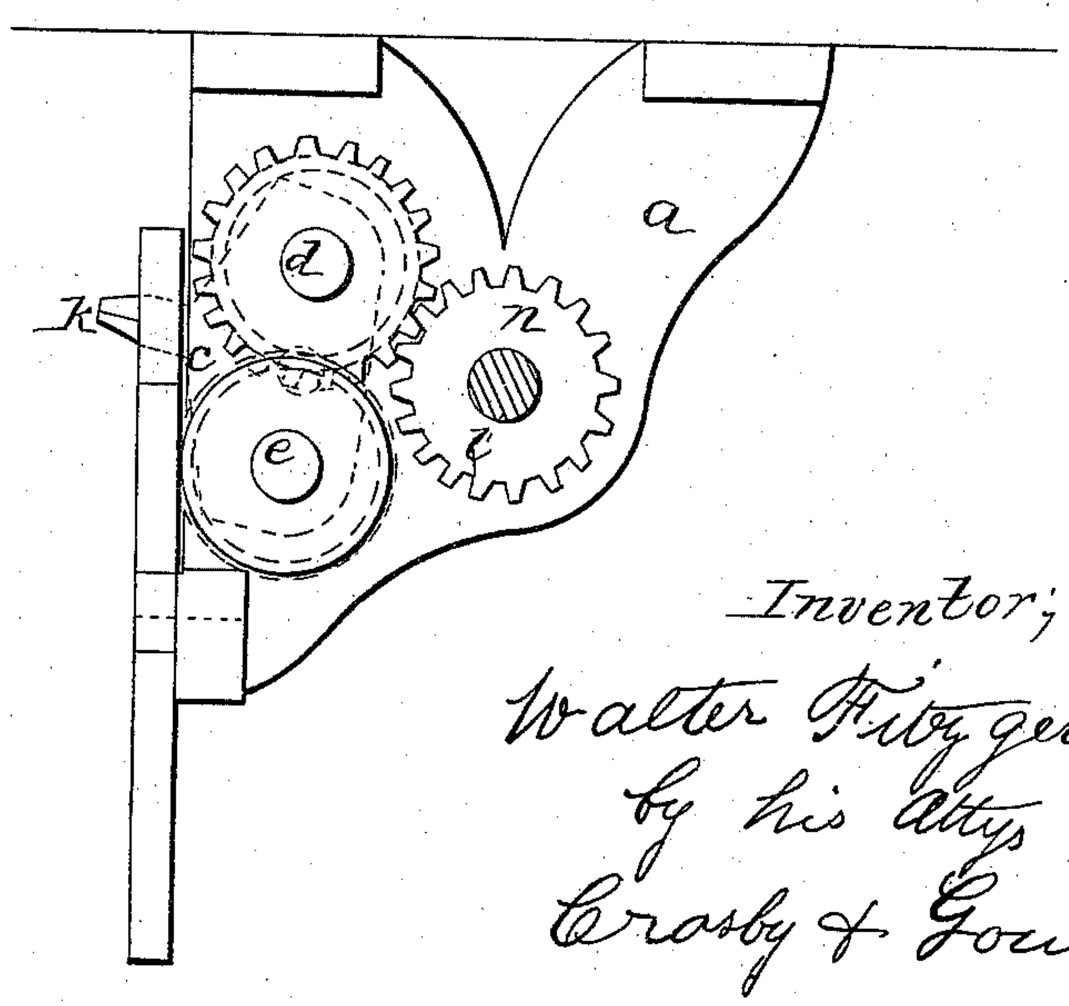
Lathe Gearing

No 54,519. Patented May 8, 1866.

Fig; 1.



Fig; 2.



Witnesses;
S. B. Kidder
M. W. Frothingham

Inventor;
Walter Fitzgerald
by his Attys
Crosby & Gould

UNITED STATES PATENT OFFICE.

WALTER FITZGERALD, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN GEARING FOR LATHES, &c.

Specification forming part of Letters Patent No. **54,519**, dated May 8, 1866.

To all whom it may concern:

Be it known that I, WALTER FITZGERALD, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improved Driving and Reversing Gearing for Lathes, &c.; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

It is well known to practical mechanicians that the rotation of the spindle in lathe-head stocks and some other machinists' tools is required to be in opposite directions, and also that the reverse or backward rotation is generally required to be at a greater rate of speed than the forward rotation, the backward rotation being generally for the purpose of returning the operating-tool to its starting-place.

The apparatus usually employed for the purpose of giving said reverse rotations and at different rates of speed is commonly known by the general term of "overhead reversing-gear," which embraces two belts, one open and the other crossed, and driving two loose pulleys on a shaft, which has thereon the cone or other pulley which drives the machine beneath, and a plain or a conical clutch arranged so that it must turn with the shaft but can be slid in either direction to engage with either of the loose pulleys.

By my invention I dispense with one of the belts, thereby saving the cost of it and its two pulleys, and by substitution of a simple arrangement in lieu of the clutch-coupling before named I accomplish in a better and cheaper manner all that was before effected by the complex and expensive apparatus before alluded to.

Of the drawings, Figure 1 shows, in front elevation, my improved driving and reversing gear, and Fig. 2 shows the same in section on the line *z z*, Fig. 1, and in end elevation beyond.

The hangers are marked *a* and *b*, and to the hanger *a* is pivoted the rocking piece *c*, this carrying the studs *d* and *e*, the stud *d* having thereon the large and small spur-wheels *f* and *g*, and the stud *e* having thereon the spur-wheel *h* and pulley *i*.

To the hanger *a* is pivoted the shipper-lever *j*, this having in the upper end thereof a cam-shaped slot, which embraces a pin, *k*, fixed in the rocker *c*, the function of the cam-slot being to shift the rocking-piece *c*, and to hold it in position when shifted.

The shaft *l* runs in bearings in the hangers *a* and *b*, and has fixed thereon the cone-pulley *m*, over which the belt runs which drives the lathe or other machine below, and on said shaft is fixed the spur-wheel *n*.

The spur-wheels *n*, *h*, and *f* are of uniform size; but the spur-wheel *g* is larger than the others, and will, when the shipper is in the position seen in Fig. 1, be meshed into the wheel *n*, in which condition of things the rotation of shaft *l* will be in the same direction with the rotation of the pulley *i*, but will rotate at greater speed than does the pulley *i*, as will be readily seen.

When the shipper *j* is in the reverse position to that shown in Fig. 1, then the wheels *n* and *g* will be out of contact, but the wheels *n* and *h* will be meshed together, and as these are of uniform size, and have no intermediates between them, it will be obvious that the shaft *l* will be turned in the direction opposite to that in which the pulley *i* is moving, and that the pulley *i* and shaft *l* will make the same number of turns per minute.

Having described the old construction, on which my invention is an improvement, and the detail of combination and arrangement of my invention, it will now be understood that my invention consists in combining with the hangers, shaft, and pulley thereon of an overhead gearing the rocking piece *c*, with the studs, spur-wheels, and pulley thereon, the cam-slotted shipper *j*, and the spur-wheel *n*.

I claim—

The overhead driving and reversing gearing, constructed and operating substantially as described.

WALTER FITZGERALD.

Witnesses:

J. B. CROSBY,

F. GOULD.