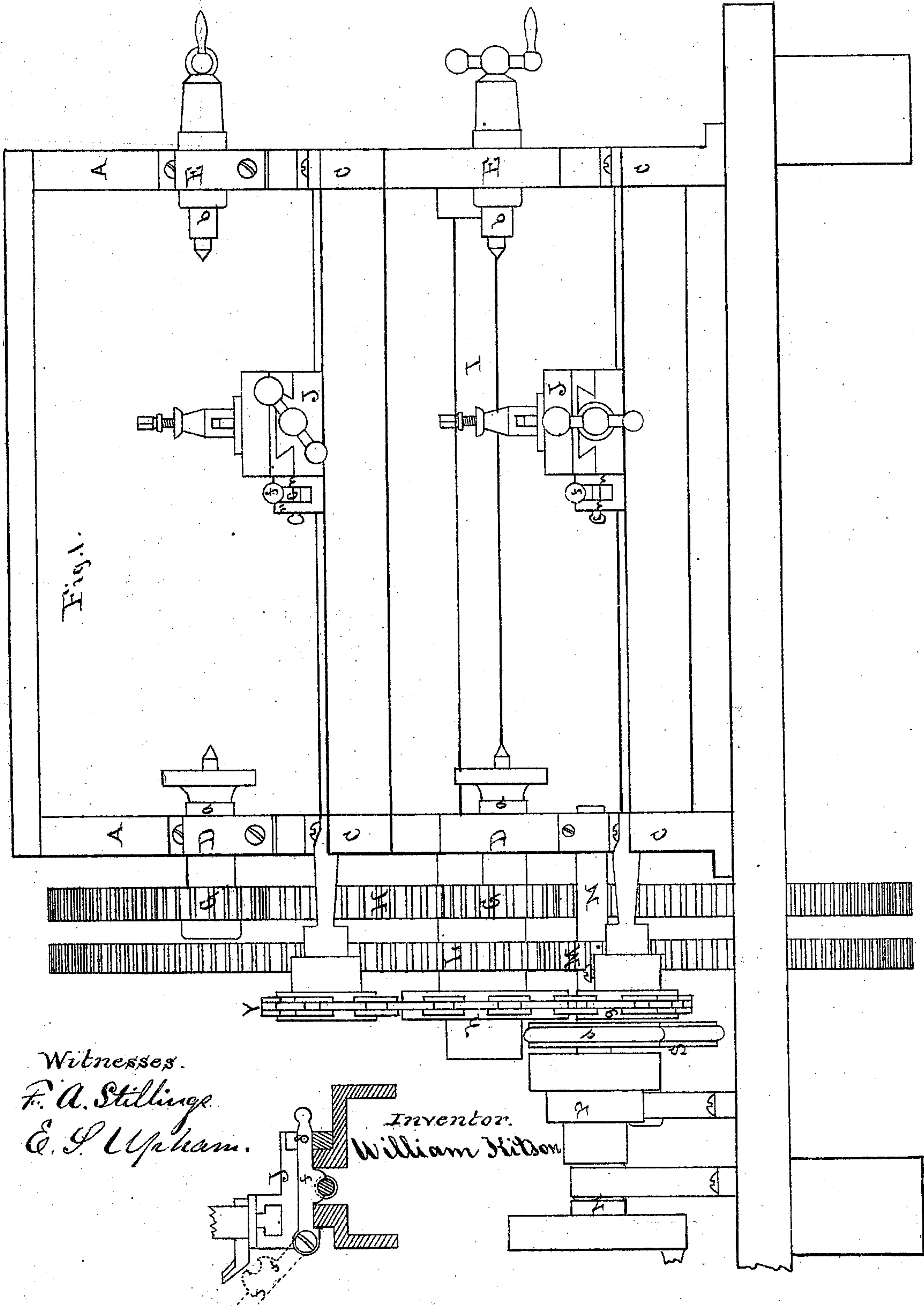


WILLIAM KITSON.

Improvement in Metal Turning.

No. 122,769.

Patented Jan. 16, 1872.



Witnesses.

F. A. Stillings.

E. J. Upham.

Inventor.

William Kitson.

(100.)

WILLIAM KITSON.

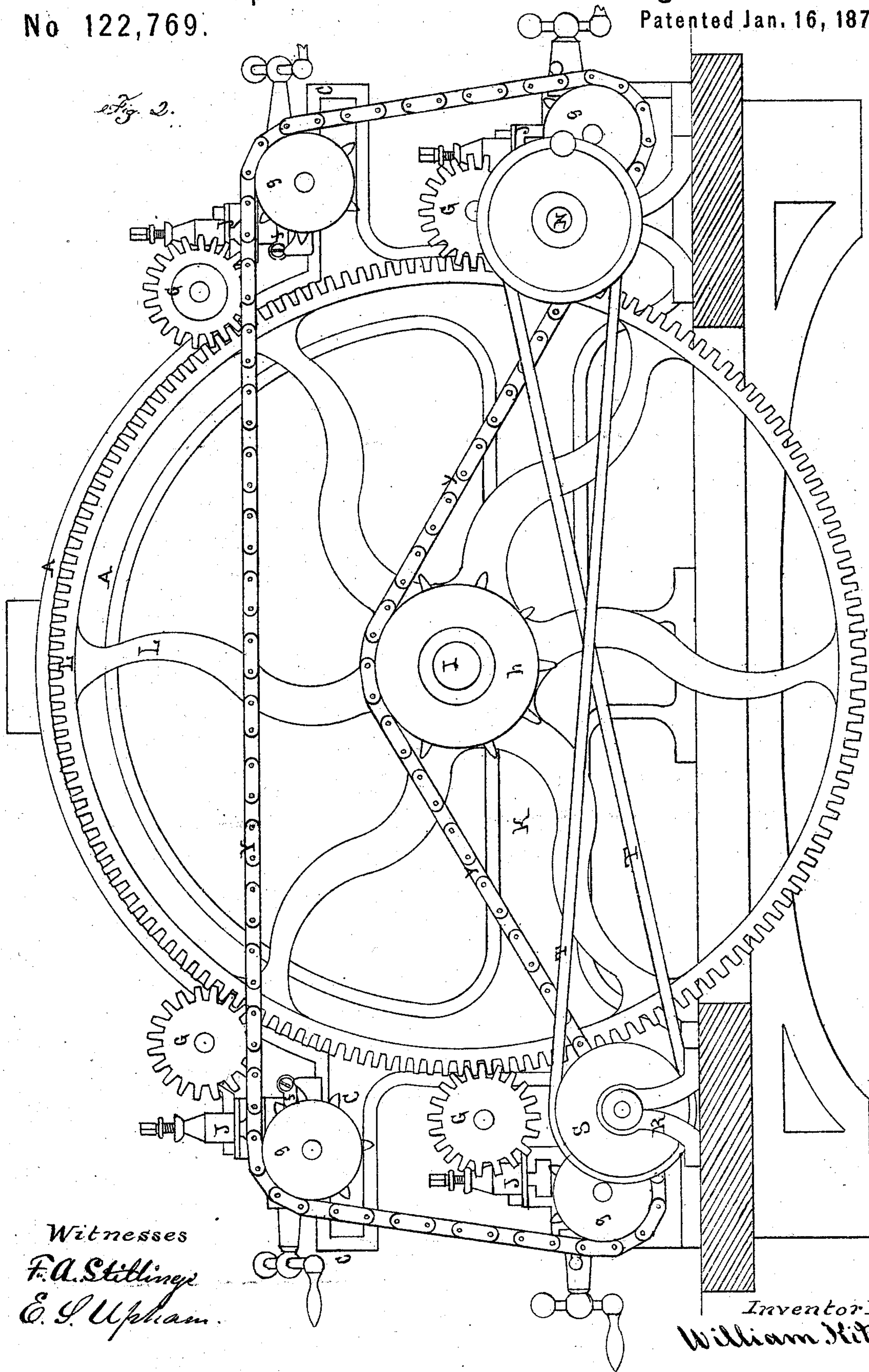
4 Sheets--Sheet 2.

Improvement in Metal Turning.

No 122,769.

Patented Jan. 16, 1872.

Fig. 2.



Witnesses

F. A. Stillinger

E. J. Upham

Inventor

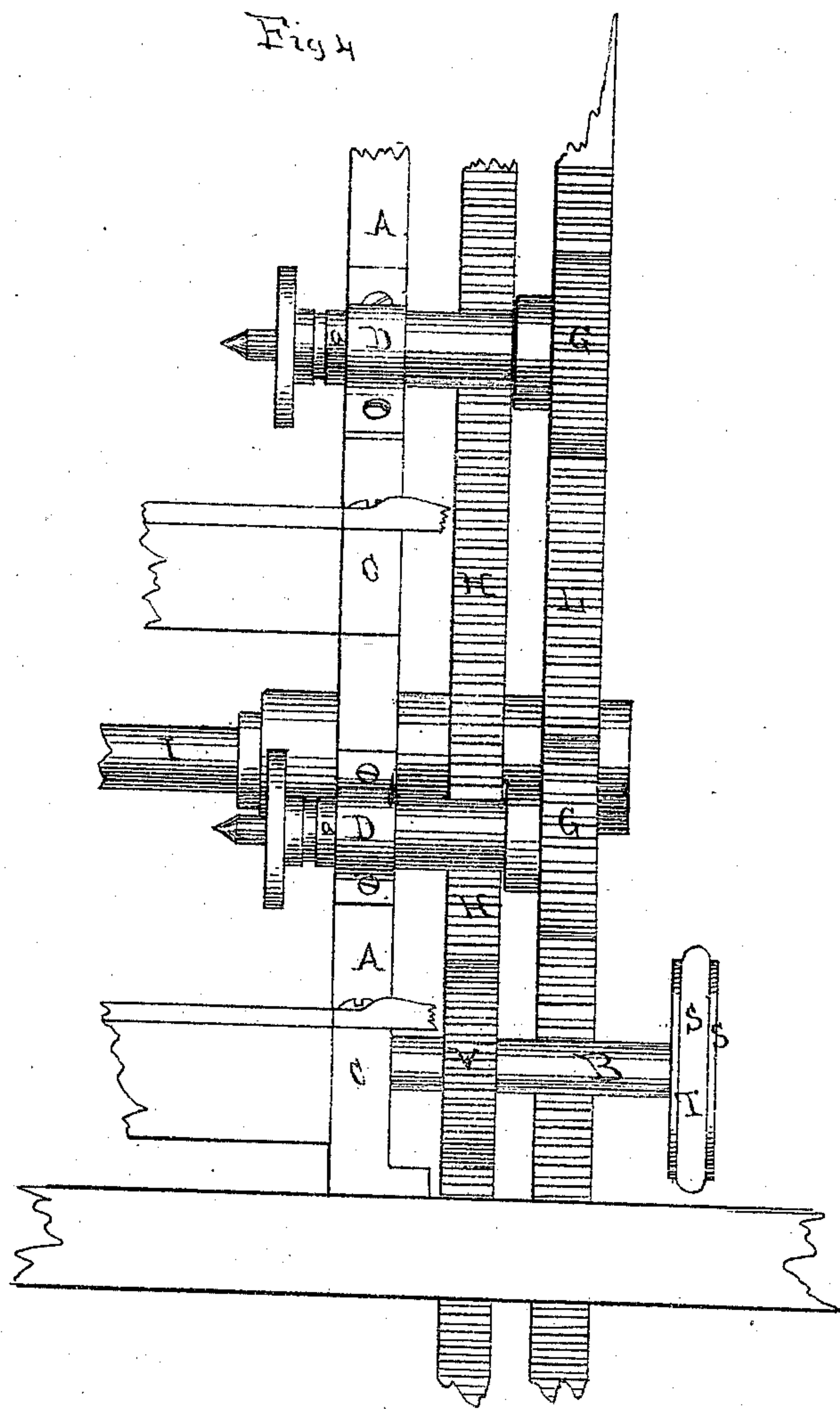
William Kitson

WILLIAM KITSON.

Improvement in Metal Turning.

No. 122,769.

Patented Jan. 16, 1872.



Witnesses.

F. A. Stillings
E. J. Upham.

Inventor.

William Kitson

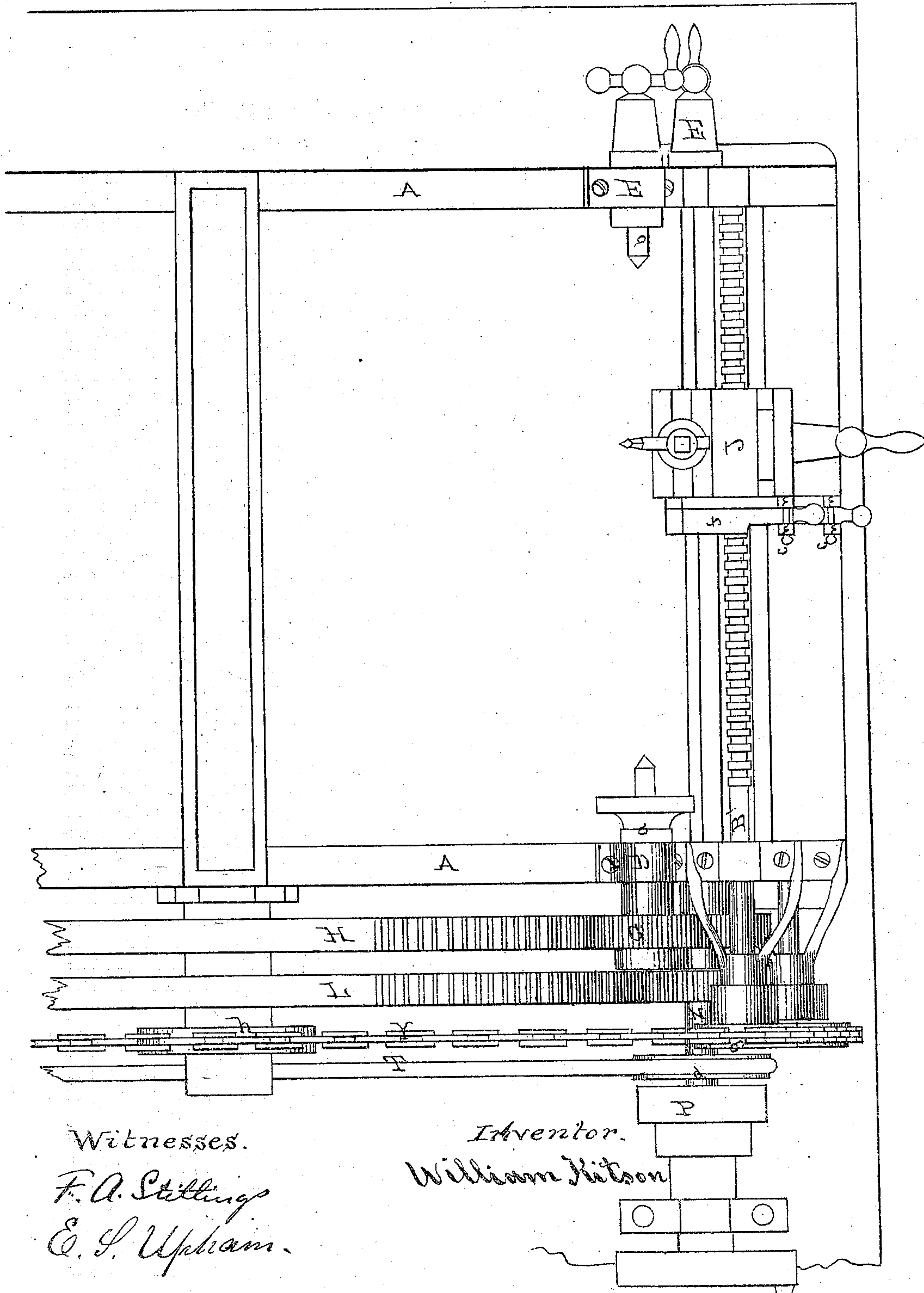
WILLIAM KITSON.

Improvement in Metal Turning.

No. 122,769.

Fig 3.

Patented Jan. 16, 1872.



UNITED STATES PATENT OFFICE.

WILLIAM KITSON, OF LOWELL, MASSACHUSETTS.

IMPROVEMENT IN METAL TURNING-LATHES.

Specification forming part of Letters Patent No. 122,769, dated January 16, 1872.

To all whom it may concern:

Be it known that I, WILLIAM KITSON, of Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Turning-Lathes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 represents a side elevation; Fig. 2, an end view; and Fig. 3, a plan or top view of one side of my machine, the opposite side being the same, except the gear V and other slight changes shown in Fig. 4.

This invention has for its object to provide a simple, convenient, and desirable combination and arrangement of turning-lathes whereby each operator may easily perform a greater amount of work, two or more lathes being arranged one above another, and if preferable, each upper lathe a little back of the next below it, and all connected and operated both in their rotation, and fed by two belts which communicate, respectively, rotation to the spindles and rotation to the feed-screws. The general construction of the lathes need not be essentially varied from those in common use, except in the formation of the head-stock and the tail-stock, to render them applicable to the frame-work or arch, and in the yoke or hub furnished arms, which support the operating end of the feed-screw.

In the drawing, A A represent a suitable frame-work with semicircular or arch-formed ends provided at each extremity with projecting stands or arms C, which form supports for the base or bed of each upper lathe. Each lower lathe may have like or similar supports or these may be applied directly to the lower part of the arches or the frame-work. Each head-stock D, and tail-stock E, or the stands which support the spindles *a* and *b*, are applied directly to the arches or the frame-work, each a little above their respectively-connected lathe, and on each head-stock spindle is a small gear, G, all meshing into large driving-gears H and L arranged on the central shaft I, which extends the whole length of the machine, and rotates in bearings rising from the end girts K forming a part of the end frames. One end of the central shaft I overhangs the girt or pro-

jects a sufficient distance to accommodate two large gears, H and L, and the chain-wheel *h*, and the large gear L meshes into a small gear, M, arranged on the driving-shaft N. This driving-shaft is provided with cone-pulleys P, which receive the driving-belt and provide for changing the speed of the connecting machinery. A pulley, *d*, is fastened to the driving-shaft N a little inside of the cone-pulleys, and at the opposite side of the machine is a similar pulley, S, arranged on a shaft, B, supported by stands R. A belt or band, T, passes round the pulleys *d* and S, and the former pulley imparts motion to the latter by means of this belt. On the operating end of each feed-shaft B' is a chain-wheel, *g*, and on the outer end of the central shaft is a similar chain-wheel, *h*, and around these last-named wheels I apply a feed-chain, *y*. The chain-wheel *h* may serve as a binder to keep the chain tight around the other wheels, and it also serves as a driver to impart motion to all the others, and to all the feed-screws B' so that all the feeds are operated simultaneously and by one motor. In Fig. 4 I have shown a small gear, V, secured to the shaft B, and this gear meshes into the large gear H and gives it motion, operated by the pulleys *d* and S and the belt T. The large outer gear L is fixed or fastened to the shaft I, and the inner large gear H fits loosely on the shaft, and is rotated in the opposite direction. The head-stock gears G and their spindles at one side of the machine are driven by the large gear H and those at the other side of the machine are driven by the similar gear L, each rotating in an opposite direction, and this causes each head-stock spindle to rotate in the proper direction for turning each a shaft suspended on its centers. On one end of the carriage J and pivoted to the latter is a feed connecting lever, *f*, which has a screw-furnished recess or half-nut which fits the screw-thread of the feed-shaft, and gives the carriage its feeding motion. When brought into feeding contact with the screw the operating end of this lever is held in position by a pin, *c*, placed above it and passing through an ear, *n*, which forms one side of a slot made to receive the shank of the lever. To stop the feed of the lathe or carriage the pin *c* is withdrawn from the ear, and the operating end of the lever

raised, which liberates the half-nut from the screw. This lever may be thrown back to the position shown in dotted lines, and the carriage fed by hand, if preferred. In practice, a suitable cone of pulleys are arranged on a conveniently located rotating-shaft, and a belt passed around one of these and one of the cone-pulleys P on the driving-shaft N, which sets this shaft in motion. The small gear M on the driving-shaft operates the large gear L on the central shaft, and this gear L operates the gears G and rotates the head-stock spindles at one side of the machine. The head-stock spindles at the opposite side of the machine are rotated by similar gears G, and these are driven by the inner gear H, receiving its motion from the gear V on the shaft B operated by the belt or band T and the pulleys d and S, as before described. While these parts are thus operating to rotate the head-stock spindles and to turn shafting or other devices, the driving-chain wheel h on the rotating central shaft and the connected chain y, on the chain-wheels g operates all the feed-screws, and each carriage is set in motion by the feed-lever f, as before described. The form of the arched top end frames may be considerably varied, as also many minor details of the machine, without departing from the merits and principles of my invention, and instead of curved surfaces flat straight places may be formed on the arches to receive the stands which hold the spindles.

My invention is intended to be used for turning shafting, rolls, or other common work where a great number of pieces are required, and it is to be expected that with my improvements combined, arranged, and operating as described, each operator will perform a greater amount of work than with the ordinary lathes

now in use, and on some kinds of plain turning any well skilled machinist may attend three or four lathes, arranged and connected as herein described.

I claim as my invention—

1. The combination herein described and shown, of the frame A and shear or bed supports, for the convenient arrangement and support on opposite sides thereof of a plurality of lathe-shears.

2. The combination, with two or more turning lathes placed opposite to one another on the same frame, substantially as described, of three sets or series of operating mechanisms, one set or series consisting of the driving gear M on the shaft N, the fast gear L on the central shaft I, and the head-stock gears at one side of the machine. A second set or series consisting of the pulley d on the driving-shaft N, the cross-belt T, the pulley S, and gear V on the shaft B, the large gear H on the central shaft I, and the head-stock gears G at one side of the machine, and a third series consisting of the driving-chain wheel h on the central shaft I, and the several chain-wheels g on the feed-screws B', and the feed-chain y for connecting and operating the latter, and all arranged and operating together, in the manner and for the purpose set forth.

3. The combination, with the frame A, of two or more lathe-shears or beds, corresponding lathe-centers, lathe-rests, and feed-screws; said duplicated sets of devices being arranged on opposite sides of the same frame, substantially as described.

WILLIAM KITSON.

Witnesses:

F. A. STILLINGS,
E. S. UPHAM.

(100)