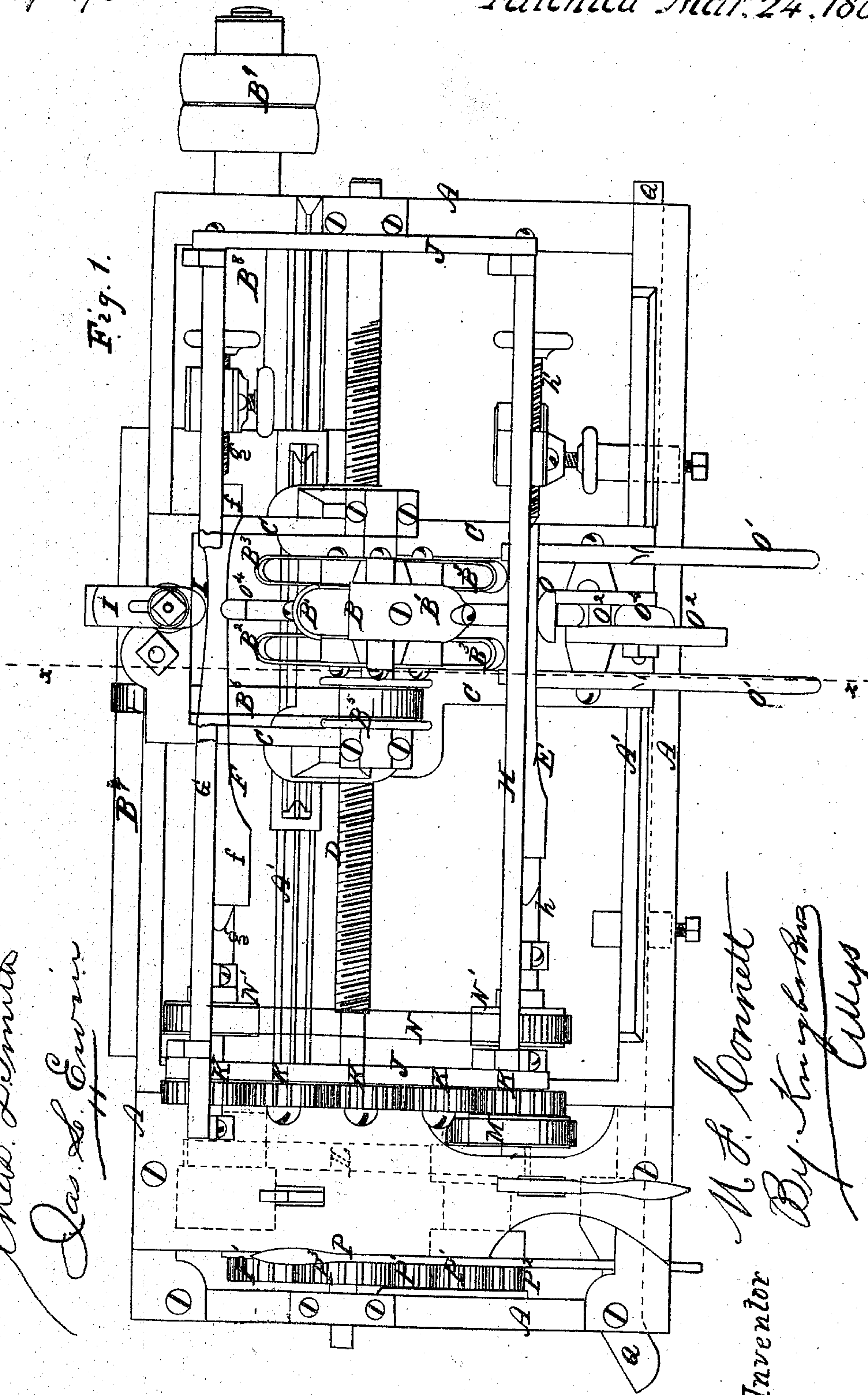


M. F. Connett,
Wood Lathe.

No 75.736.

Patented Mar. 24. 1868.



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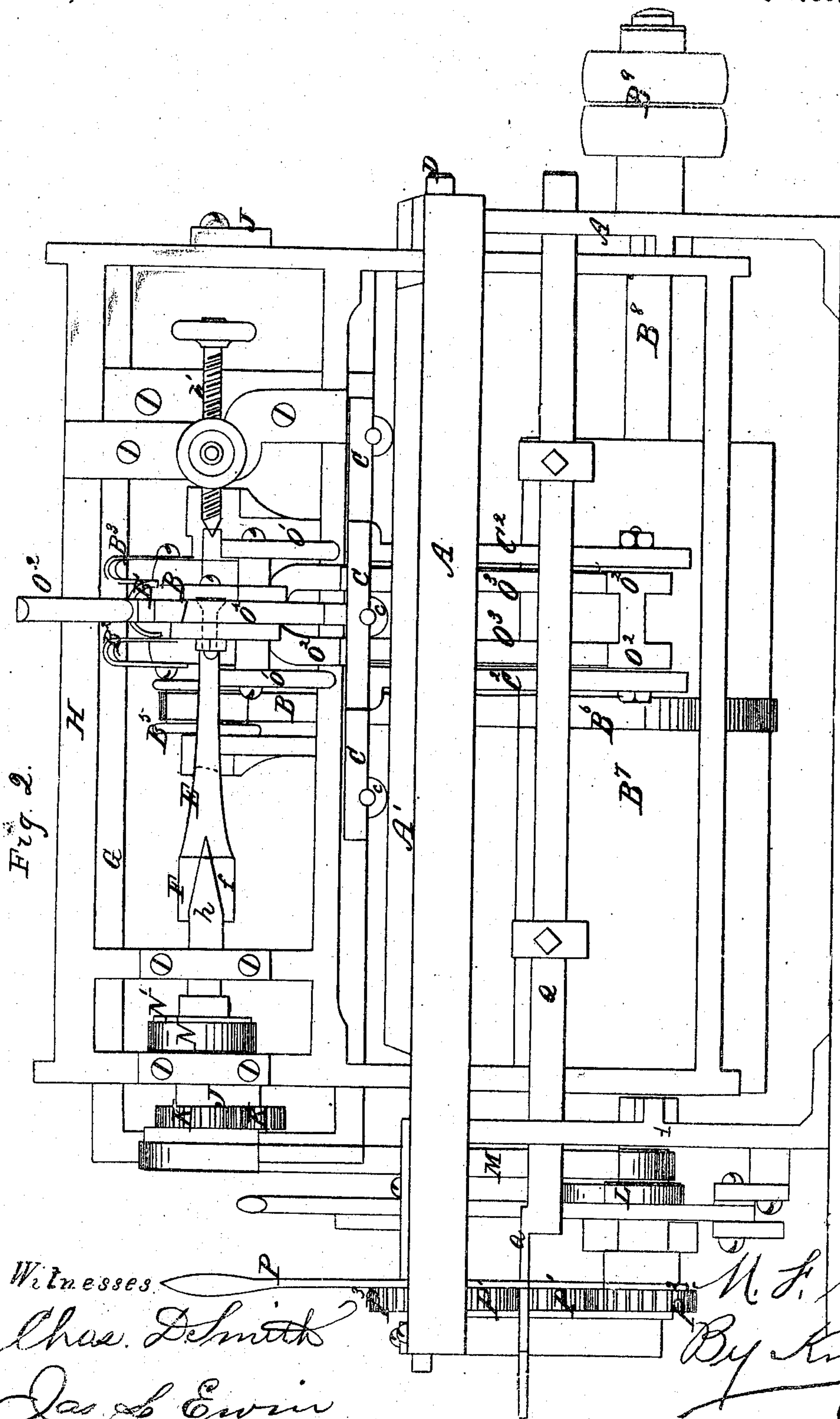


Fig. 2.

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Fig. 3

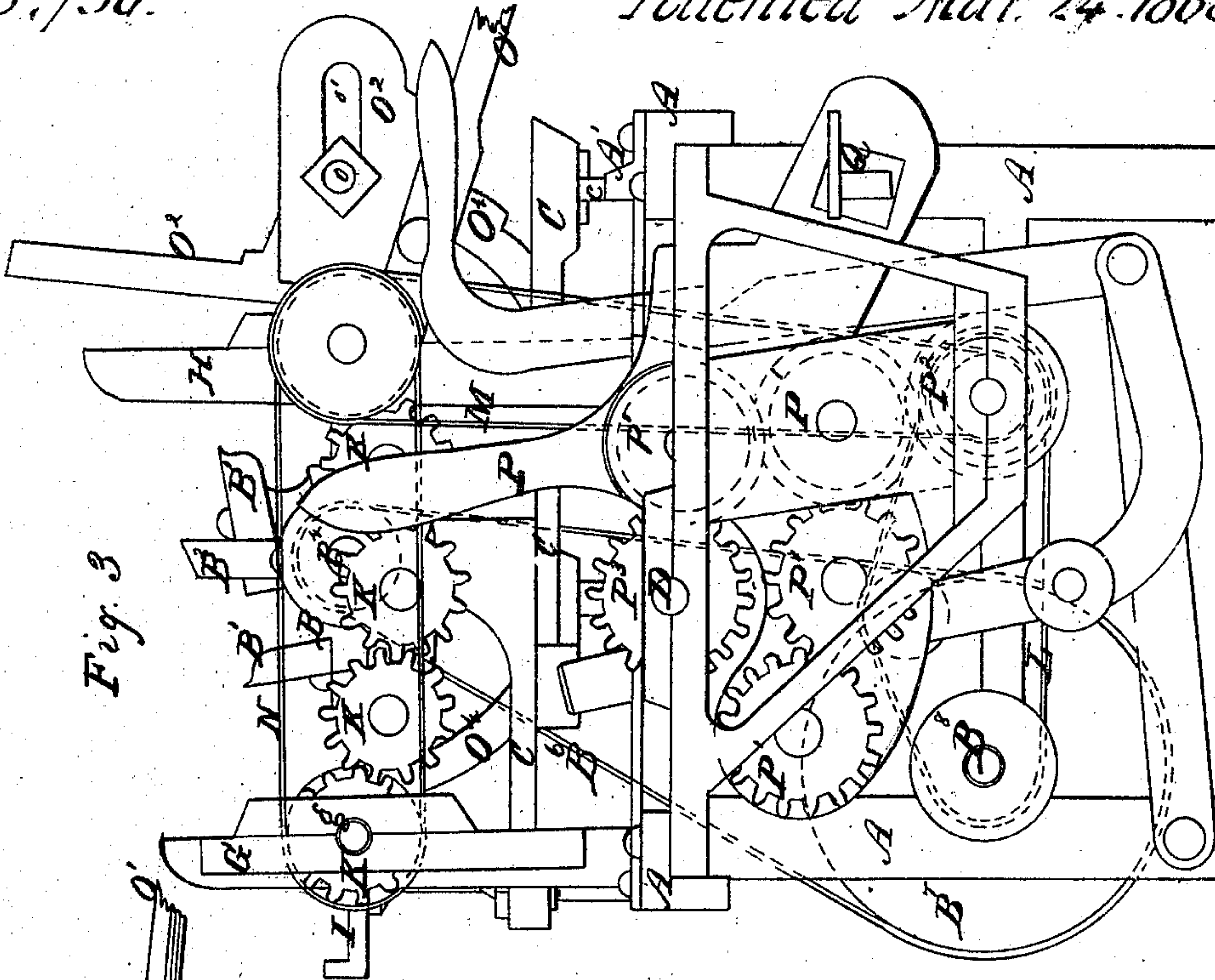
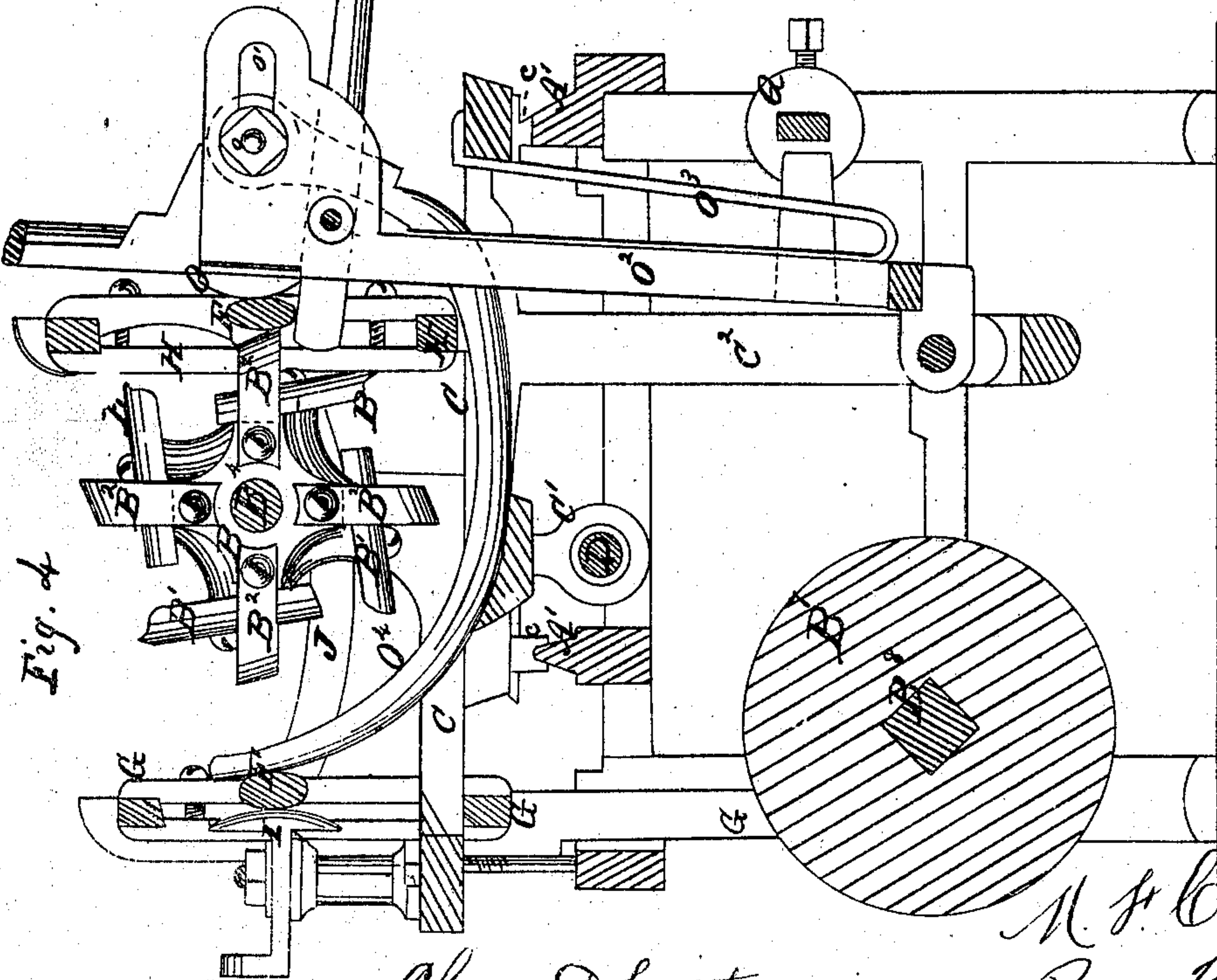


Fig. 4



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T. G. MAIDEN, AND WILLIAM C. HENDRICKS.

Letters Patent No. 75,736, dated March 24, 1868.

IMPROVEMENT IN WOOD-TURNING LATHES.

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, MATTHEW F. CONNETT, of Ladoga, in the county of Montgomery, and State of Indiana, have invented a new, useful, and improved Wood-Turning Lathe; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, which are made a part of this specification.

This invention relates to a machine for turning irregular forms, such as spokes, axe-helves, &c., and which operates upon the same general principles as the well-known Blanchard wood-turning lathe, upon which the present machine is designed as an improvement.

My invention consists in the employment of two vibrating lathes or frames, which serve, respectively, to hold the pattern and the material to be operated upon, and which enable the machine to produce a *fac-simile* of the pattern, both as to dimensions and shape, instead of an article proportionately smaller than the pattern, as is necessitated in machines of this class heretofore invented.

My invention further consists in certain other features, which are hereinafter explicitly described.

Figure 1 is a plan of a wood-turning machine illustrating my invention.

Figure 2 is a side elevation thereof.

Figure 3 is an end view of the same.

Figure 4 is a vertical transverse section in the plane indicated by the line *x x*, fig. 1.

Similar letters of reference indicate corresponding parts in the several figures.

A A A may represent a rectangular frame, supporting the various operating parts of the machine and their several adjuncts. B is a rotary cutting-device, (which I will term the cutter-head,) whose axial shaft, B⁴, is mounted in suitable bearings upon the traversing-carriage C, from the under side of which projects an internally-threaded collar or lug, C¹, in which works a lead-screw, D, (see figs. 1 and 4,) whereby the carriage C and cutter-head D are moved horizontally forth and back upon the machine. The carriage C is sustained in proper position by the rollers *c*, which rest and traverse upon the ways A¹, running lengthwise upon the frame A.

In order to a clear understanding of the construction and operation of the cutter-head, it should be here explained that the piece of stuff, E, to be turned, while being operated upon, and the pattern F, (see fig. 1,) are held at the opposite sides of the lead-screw D, and parallel therewith, so that, as the carriage and cutter-head are fed from end to end of the frame A by said screw, the revolving cutters on the head B are brought into action upon constantly-changing parts of the rotating piece or stuff E. The central and finishing-knives B¹ are flanked by or situated between two sets of roughing-cutters, B² and B³, respectively. The cutters B¹ B² B³ are all fixed to the same cutter-head, B, or to a compound wheel or head, consisting of three connected disks or heads, secured to and rotating with the same axial shaft B⁴. The salient cutting-edges of the cutters B² B³ are somewhat nearer to the centre of the cutter-head B than the salient cutting-edges of the cutters B¹, so that, (observing the machine as it is seen in figs. 1 and 2,) supposing the carriage C and cutter-head B to be moving toward the right-hand end of frame A, it is manifest that the revolving cutters B³, moving in advance of the central cutters B¹, will serve to remove the superficial roughness from the piece E, and be followed, in their action upon the latter, by the more projecting finishing central cutters B¹, while the other set of roughing-cutters, B², which follow the cutters B¹ B³ in their feed-motion, do not act upon the stuff during this trip of the carriage, in consequence of the previous removal, by B¹ and B³, of that portion of the stuff which would have come within the reach of said cutters B².

During the return trip of the carriage C and cutter-head B—that is to say, when they are performing their movement towards the left, after having completed their previous movement towards the right—the cutters B² act in advance of the central cutters, B¹, to remove the rough exterior of the stuff E, (a new piece of which has been substituted for that acted upon by the former feed-motion,) and are followed in their action by the central finishing-cutters B¹, while the cutters B³ are idle for the time being, or during this trip of the carriage.

The cutters B¹ may be so constructed as to cut from the edge toward the centre, but as the precise construction of the cutters or knives is not specially material, and as I propose to modify them to suit the occasion

of their use, the illustration, in connection with the above description of their relative arrangement, will suffice to enable experts to readily understand this part of the invention, and apply it to practical operation.

I have described a cutting-device which reduces, by one half, the time required to perform an aggregate amount of work with a wood-turning lathe, as it enables the knives to act upon the stuff under both motions of the carriage, instead of remaining idle during the return motion, as is the case in turning-machines heretofore devised.

B⁵ is a flanged pulley, keyed upon the cutter-shaft B⁴, and B⁶ is a belt, communicating motion to the pulley B⁵ from the drum B⁷, which rotates with and upon the shaft B⁸, to which power may be applied, at B⁹, in customary manner.

G H are two vibrating lathes or frames, situated at the opposite sides of the cutter-head, and parallel with the screw D. These frames are pivoted to the lower girders of the frame A, and provided with dogs or centres *g g'* and *h h'*, respectively, upon which centres are held the pattern F and stuff E, as shown in fig. 1. The frames G H are connected at their ends by the pivoted bars J J, which cause the frames to move simultaneously, and insure their exact and steady vibrating motion. These frames, and their mode of connection, overcome a defect of the Blanchard lathe, namely, the springing of the vibrating frames, in performing such operations as the turning of the butt and shank of a large spoke.

The dogs *g g'* and *h h'* are situated at an equal distance from the centres or pivots upon which the frames G H vibrate, and said dogs, together with the pattern F and stuff E, also occupy the same horizontal plane as the axial shaft, B⁴, of the cutter-head F.

I represents a rest or "friction-point," fixed adjustably upon the carriage C. The pattern F rests against the curved convex face of the rest I, and, inasmuch as the latter is immovable when the machine is in operation, the frames G H are vibrated in conformity with the changes in the contour or size and shape of the pattern, at the different parts of its length, as the rest I is moved by the carriage from end to end of the pattern. The rest I thus causes the stuff E to move away from and toward the axis about which the cutters B¹ B² B³ are revolved, and the pattern and stuff being simultaneously rotated, the stuff is turned by the cutters into an article corresponding with the pattern. Under this arrangement, the pattern and stuff being held at equal distances from the centres of vibration of their respective frames, the cutters are adapted to produce a *fac-simile* of the model or pattern; *i. e.*, the turned article corresponds in size as well as shape with the pattern.

In antecedent machines of this class, of which the Blanchard lathe is a type, the pattern is placed upon the same frame as the material to be turned, and vibrates at a greater distance from the centre of motion than the material, thus necessitating a diminution in the size of the article turned.

The dogs *g h*, which rotate the pattern and piece to be turned, are prolongations of shafts mounted in the upper ends of the frames G H, and connected and driven by a train of gear-wheels, K K K K K, which derive motion from the main shaft B⁸, through the medium of the belts L M. The journals of the gear-wheels K have their bearings in one of the bars J, which connect the frames G H together. In addition to this means of rotating the dogs *g h*, a belt, N, is employed, said belt being tightly stretched around pulleys N' N', which are keyed to the said dogs. This belt insures the continuous, uniform, and equable rotation of the dogs, yet it acts merely as a correcting adjunct to the gearing K, upon which the duty mainly devolves. The belt N obviates the thumps and jerks of the pattern, which are due to the lost motion caused by the wearing of the gear, and which, in the machines in common use, cause the timber (at the shank and butt of a spoke, for example,) to be cut away too much on one side and too little on the other.

O is the adjustable back-rest, and O¹ O¹ are the under rest-levers, which sustain the stuff E, and prevent the same from trembling under the action of the cutters. The rests O O¹ O¹, being attached to a vibrating stock, O², which is pivoted at its lower end to the hangers C², depending from the carriage C, are carried with the latter in its feed-motions on the frame. The stock O² is acted upon by the springs O³ O³, which give the rests O O¹ O¹ a constant tendency toward the cutters, but which yield to allow said rests to conform to the motions of the stuff, produced by the action of the pattern upon the rest or friction-point I.

O⁴ is a curved arm attached to the stock O², and extending backward therefrom so as to touch the pattern, as shown in fig. 4. The pivotal attaching-bolt, *o*, of the arm O⁴ is fixed in a slot, *o'*, in the yielding stock O², said slot running parallel with the adjusting-slot of the back-rest O, in order that the yielding stock O² may be adjusted so that the rest O will bear against the stuff E with any desired pressure. The pressure of the rest O against the stuff has the effect to minutely increase or diminish the size of the work, as well as to steady the work under the action of the cutters.

The pattern F has conical enlargements *ff* formed upon its opposite ends, so that, at the terminus of every movement of the carriage, the contact of these enlargements with the rest or friction-point I and arm or rest O⁴ serves to force back the frame H and stock O², and hold them at a point sufficiently removed from the cutters to enable the turned piece to be taken out, and another piece put in to be operated upon.

P (see end view fig. 3) is a lever, which affords bearings for a set of reversing cog-wheels, P¹, driven by the cog-wheel P², to the shaft of which a rotary motion is imparted, by the belt L, from the main shaft. The vibration of the lever P serves to throw one of the cog-wheels, P¹, out of gear with the cog-wheel P³, on the screw, D, of the carriage, and by a continuation of the same motion of the lever, another of said cog-wheels, P, is thrown into gear with P³, thus reversing the motion of the carriage.

The customary devices are employed for increasing and diminishing the motion of the operating parts, and for instantaneously stopping the machine at any stage of the operation.

To operate the machine: Power being applied to rotate the shaft B⁸, the operator grasps the lever P, and draws it toward the working side of the machine, until the appropriate wheel, P¹, gears with the corresponding wheel, P³, on the screw D. The carriage C will then begin to travel toward the left, and when it is near the

terminus of this movement, the carriage actuates the shifting-bar Q, which moves the lever P, throwing the wheels P¹ out of gear with P³, and stopping the carriage. The lever P may be then hooked up or held in any suitable manner, while the operator takes out the piece which is finished, and places another piece upon the dogs h h', to be operated upon. The lever P is then pushed backward until the gearing P¹ engages with P³, when the carriage is reversed, and made to travel toward the right-hand end of the machine, the cutters finishing another piece of work as the carriage runs in that direction.

Having thus described my invention, what I claim as new herein, and desire to secure by Letters Patent, is—

1. The two vibrating frames G H, employed, respectively, to hold the pattern and the material to be operated in or nearly in the same plane with the axis of the cutters, and vibrate them at equal distances from the centres of points of vibration of the frames, so as to produce a *fac-simile* of the pattern, substantially as described.
2. I claim releasing the stuff E from the back-rest and cutters, by means of the conical enlargements f f, formed upon the end of the pattern F, substantially as set forth.
3. The adjustable arm or rest O⁴, in combination with the yielding stock O² and back-rest O, all arranged and operating substantially as described and represented.

To the above specification of my improved wood-turning lathe, I have signed my hand, this seventh day of October, A. D. 1867.

MATTHEW F. CONNETT.

Witnesses:

R. OSGOOD,
J. E. BARRETT.