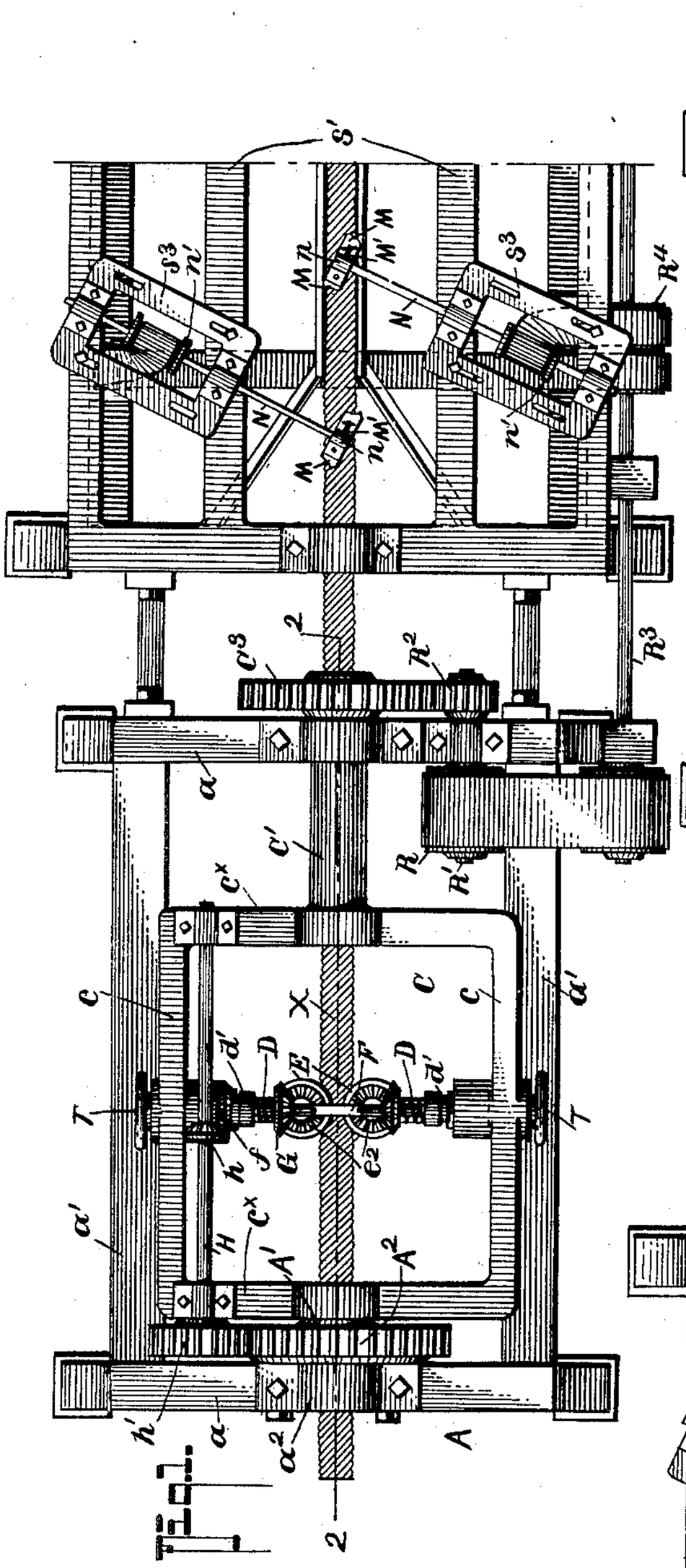
No. 703,258. Patented June 24, 1902.

J. HOAGLAND.

MOLDING MACHINE.

(Application filed Sept. 30, 1901.)

(No Model.) 3 Sheets—Sheet 1.



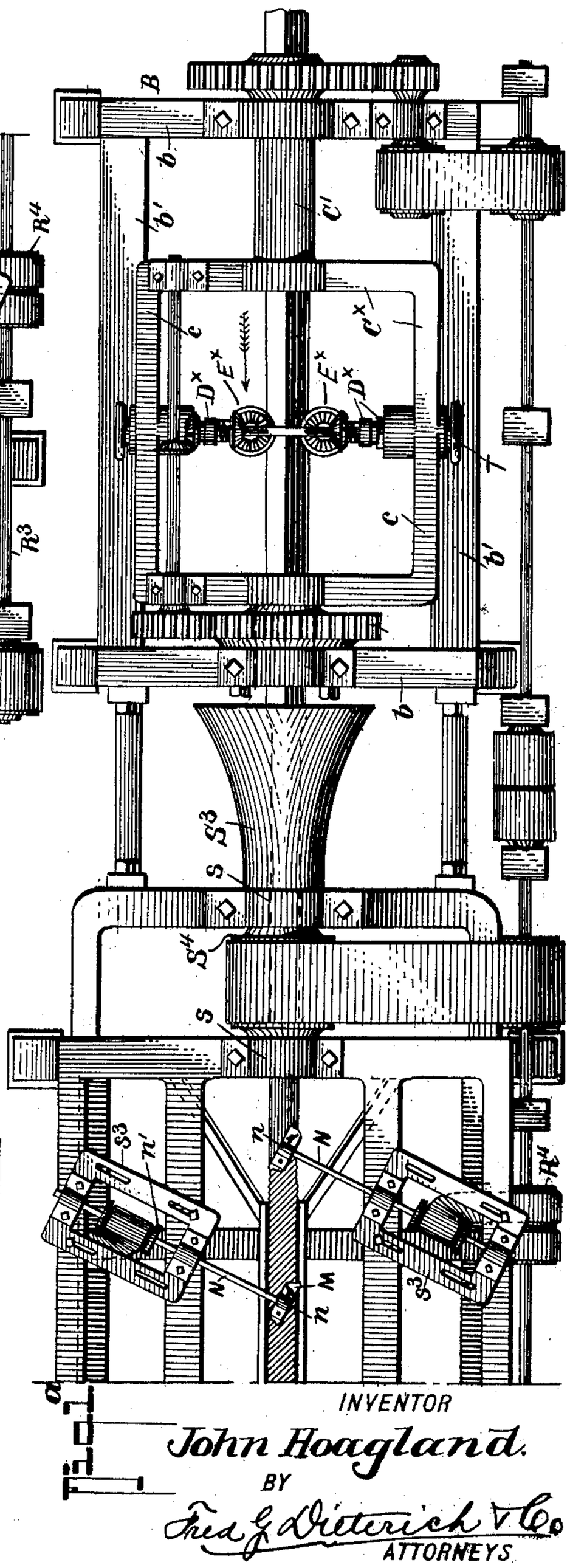


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FIG. 2.

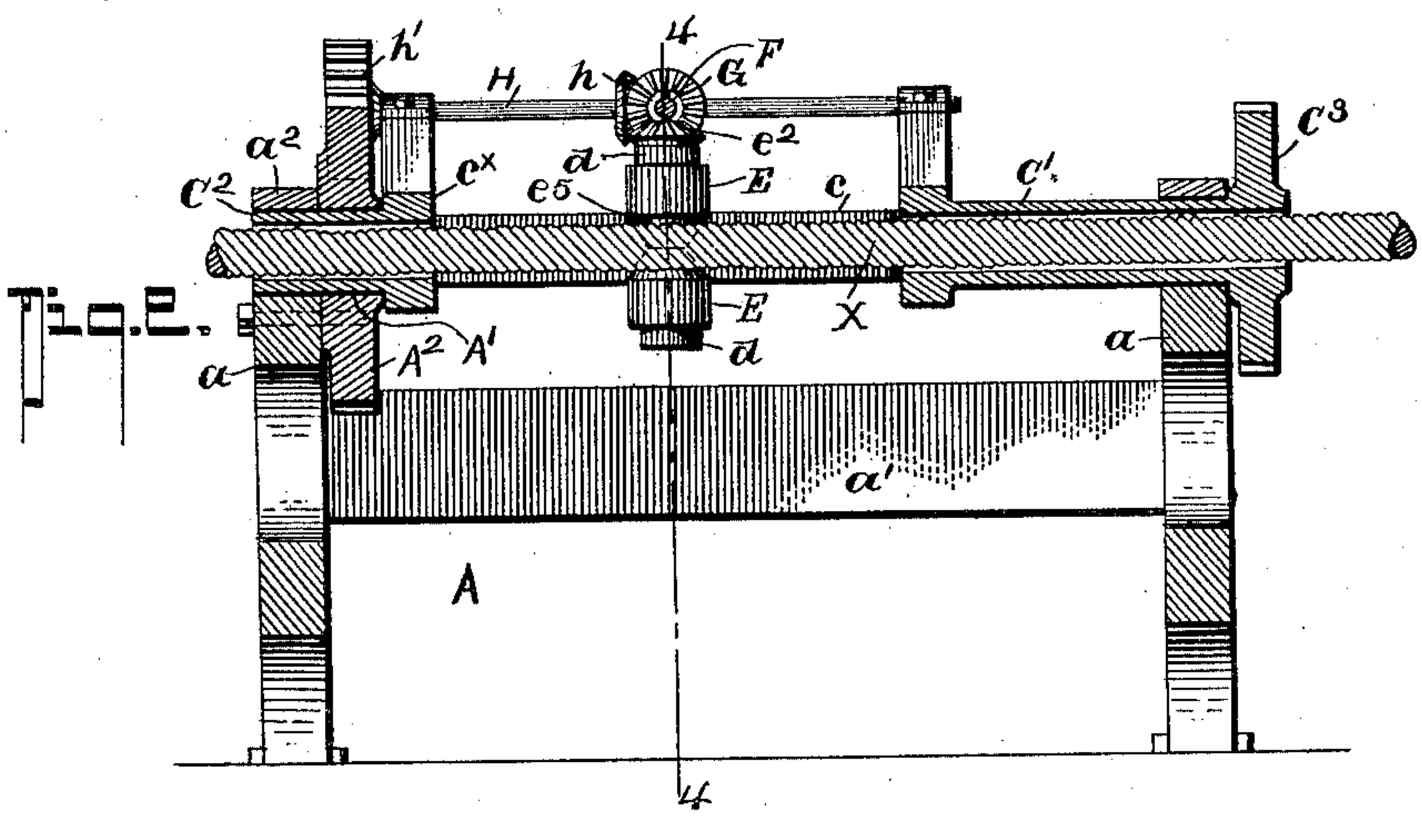


FIG. 3.

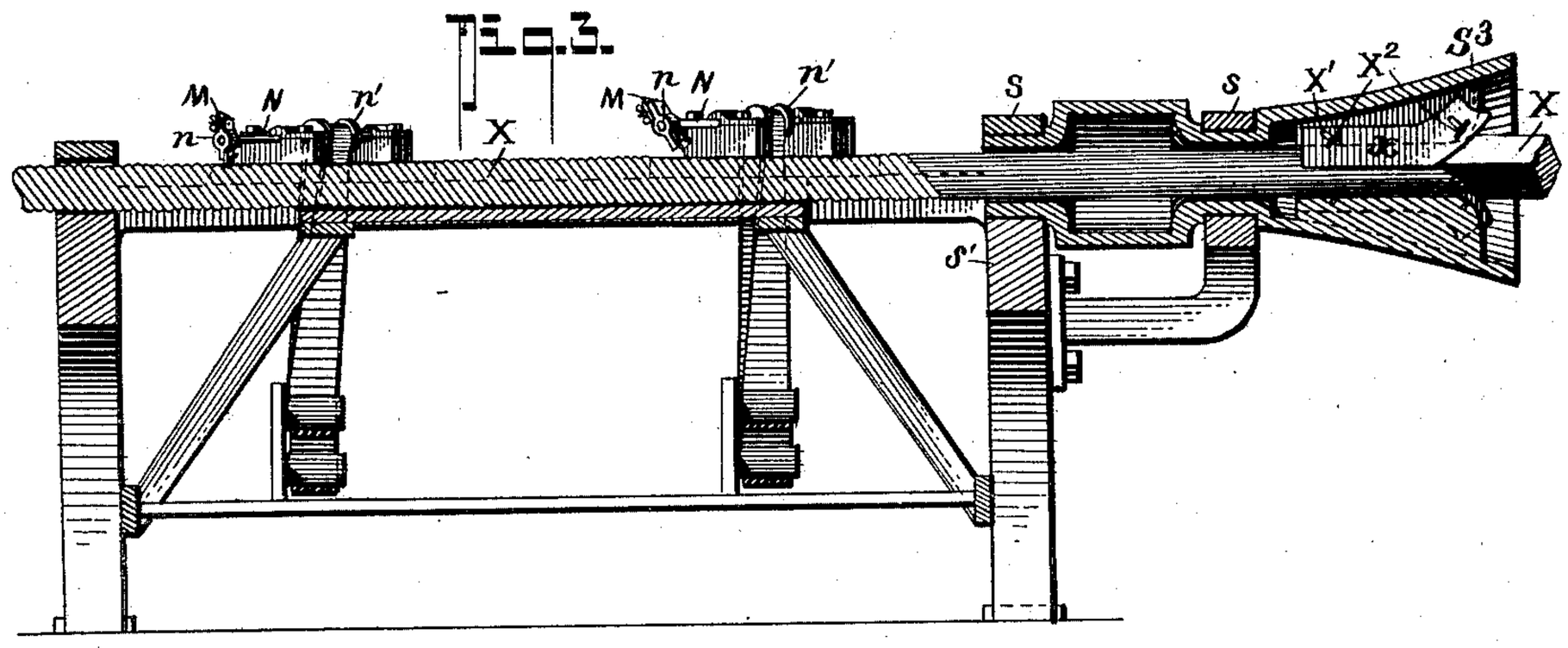
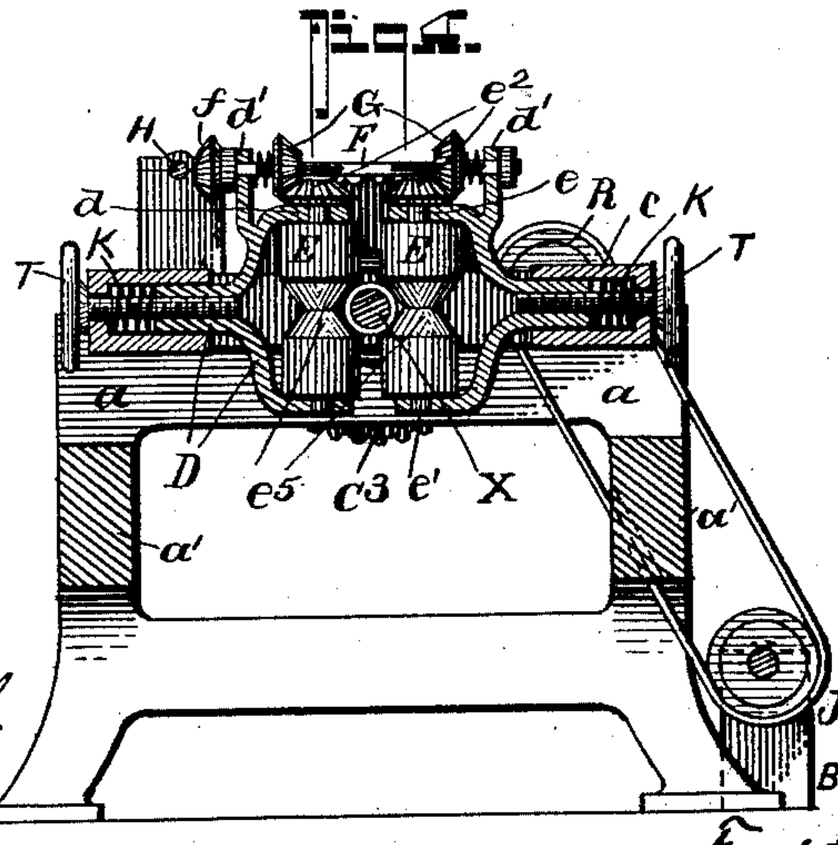


FIG. 4.



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(No Model.) 3 Sheets—Sheet 3.

Fig. 5.

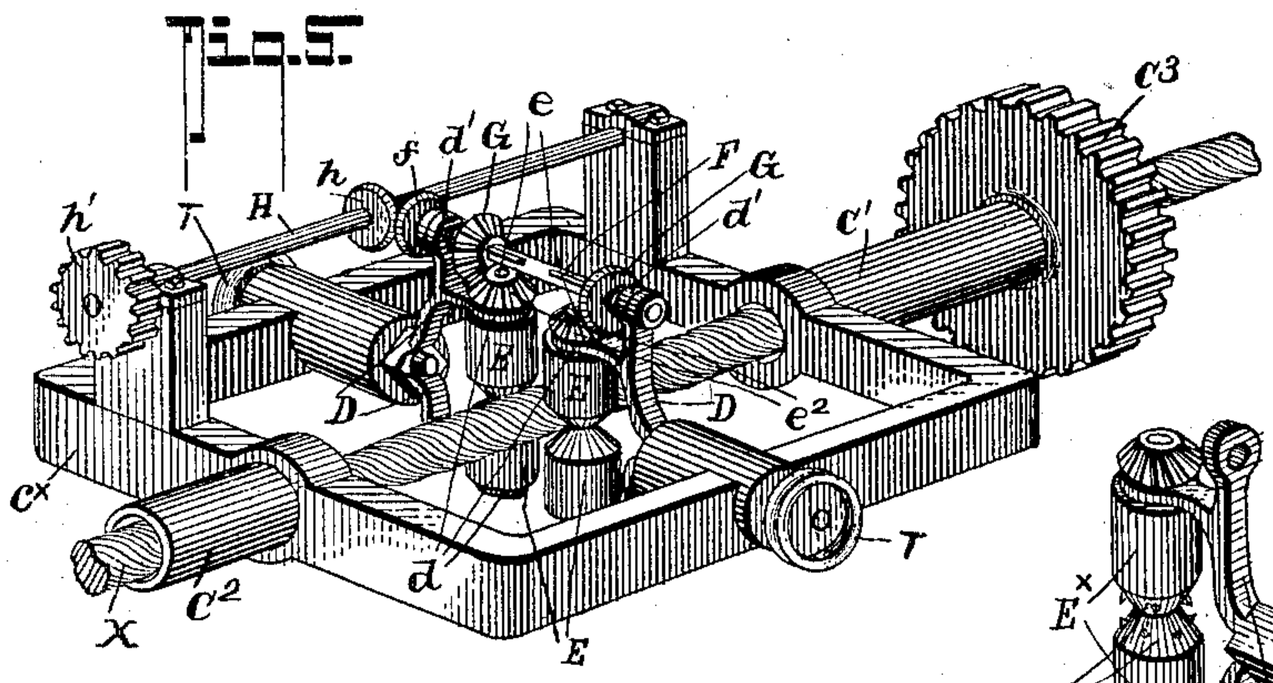


Fig. 9.

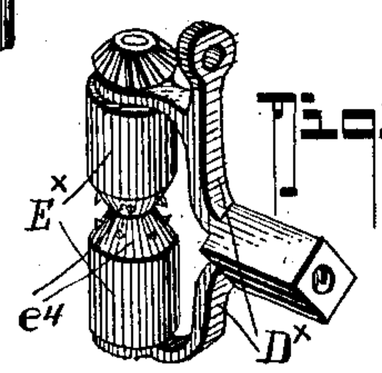


Fig. 6.

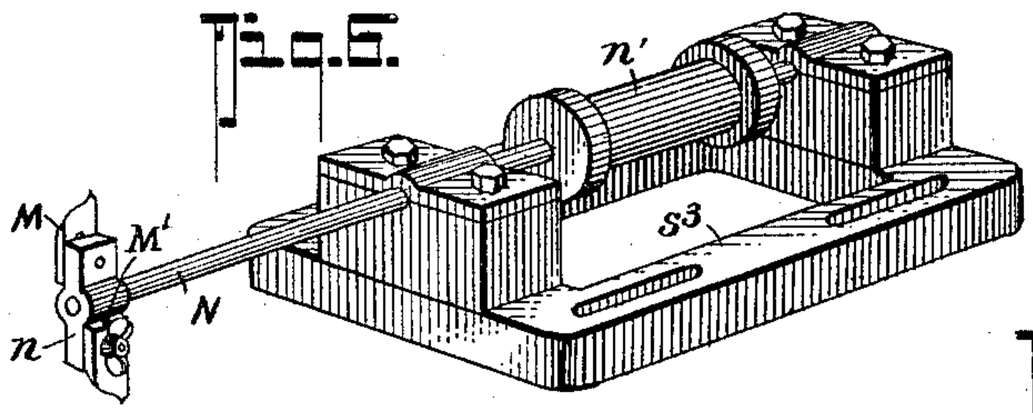


Fig. 7.

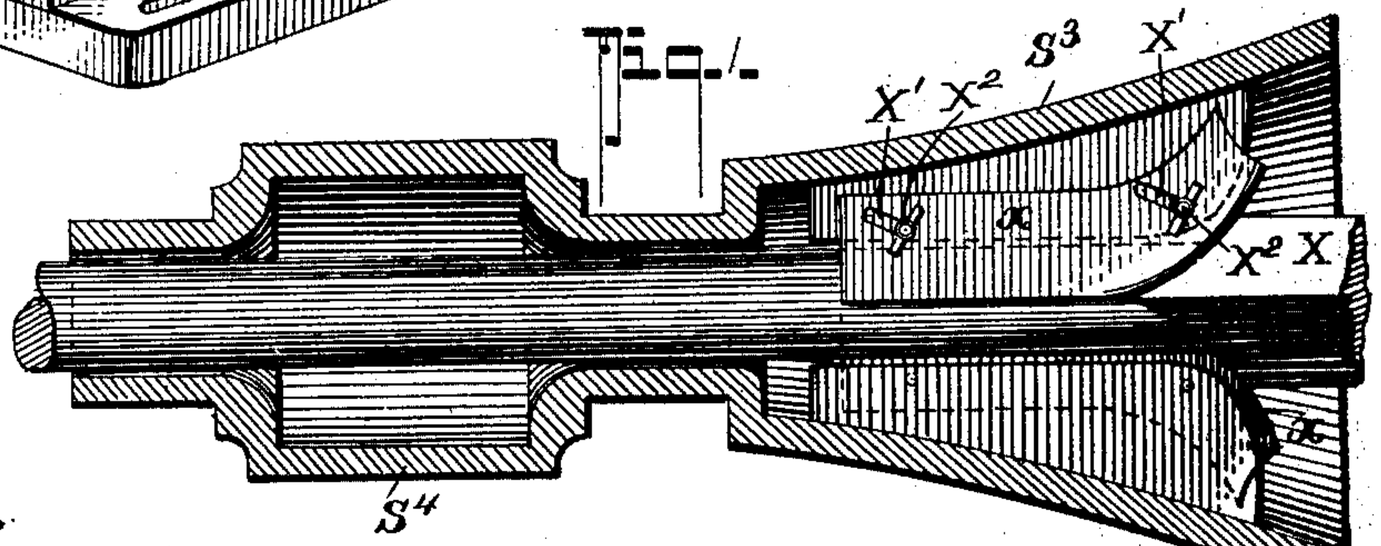


Fig. 8.

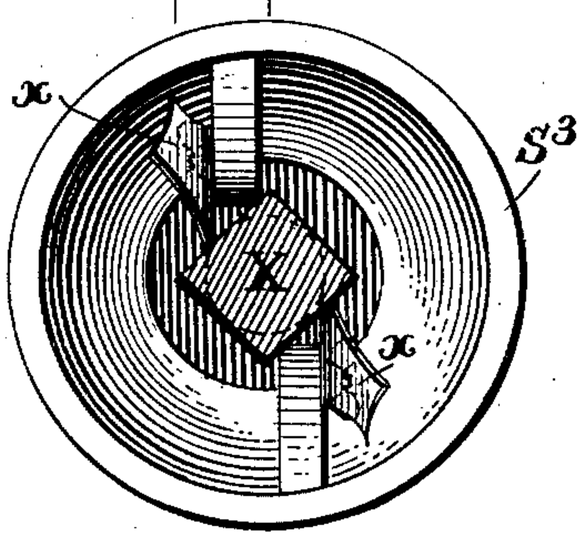
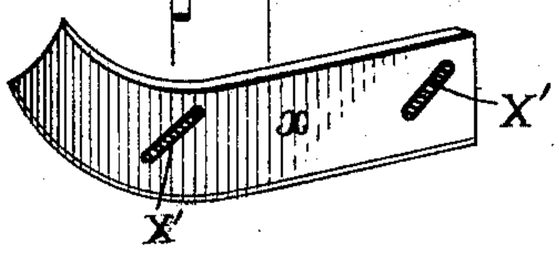


Fig. 8a.



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UNITED STATES PATENT OFFICE.

JOHN HOAGLAND, OF CLARKSBURG, WEST VIRGINIA.

MOLDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 703,258, dated June 24, 1902.

Application filed September 30, 1901. Serial No. 77,107. (No model.)

To all whom it may concern:

Be it known that I, JOHN HOAGLAND, residing at Clarksburg, in the county of Harrison and State of West Virginia, have invented a new and Improved Molding-Machine, of which the following is a specification.

My invention relates to improvements in lathes or wood-turning machines of that kind more especially adapted for producing rope or spiral forms of molding; and it primarily seeks to provide an improved machine of this character of a very simple, economical, and compact construction in which the several parts are coöperatively arranged for convenient manipulation and of easy adjustment and which will positively, uniformly, and effectively operate for the intended purposes.

Heretofore in the ordinary types of molding-machines constructed to cut spiral or rope molding the work has been done on square or round wooden pieces swinging over a carriage between two centers that revolve, and by reason thereof the work is rotated against the cutters and fed automatically from end to end. From practical experience I have found this method requires a change or adjustment of the several parts for every piece or block worked on.

My invention seeks to overcome the objectionable features above noted and to provide for feeding the square pieces or blocks being worked on automatically in continuous lengths and without intermission, and for such purpose my invention in its generic nature comprehends, in a machine of the character noted, a series of feed-rolls arranged to impart a spiral motion to the block or piece being cut and means for simultaneously feeding the stock through the machine in continuous lengths without intermission, whereby the stock can be entered in the rough at one end of the machine and come out at the other end in its finished state.

My invention in its complete nature also includes a certain novel construction of drive mechanism and coacting feed-rolls and adjusting means therefor, whereby to readily set them to properly grip and feed different thickness of stock; and in its more subordinate features it consists in certain novel features of construction and peculiar combinations of parts, all of which will hereinafter be fully explained, and specifically pointed out in appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of one half of my complete molding-machine. Fig. 1ª is a similar view of the other half. Fig. 2 is a longitudinal section on the line 2 2 of Fig. 1. Fig. 3 is a longitudinal section of the cutter mechanism. Fig. 4 is a cross-section on the line 4 4 of Fig. 2. Fig. 5 is a detail view, on an enlarged scale, of one set of gripper and feed rolls and their adjusting devices. Fig. 6 is a perspective view of the cutter mechanism. Fig. 7 is a detail longitudinal section of the rounding-chuck with the rounding-knives. Fig. 8 is an end view thereof. Fig. 8ª is a detail view of one of the rounding knives or cutters. Fig. 9 is a detail perspective view of one set of feed-rolls detached.

In its practical arrangement my construction of molding-machine comprises a rear and front end section A and B, each of which consists of a suitable metal frame having vertical ends *a a* and *b b*, joined by longitudinal brace members *a'* and *b'*, as shown. The rear frame-section A has bearings on the upper edges of its end members, in its rear one, a^2, of which is journaled a hollow spindle C^2, rotatable within the hub A' of a stationary cog-wheel A^2, bolted to the rear end of the frame.

Referring to the rear section A of the machine, C designates a rotatable frame, one end of which is fixedly joined with the spindle C^2, which forms one of the end supports of said frame, which at the other end is provided with another hollow spindle C', held to rotate in a suitable bearing on the upper edge of the front end of the rear section A of the machine. The two spindle-sections C^2 and C' are joined by the spider-arms *c c*, on each of which is adjustably mounted a yoke-frame D D, disposed at right angles to the arms *c c*.

The yoke-frames D have their opposite ends provided with bearings *d d* to receive the spindle ends *e e'* of the feed-rolls E, presently again referred to, and one of the ends of each yoke frame or arm D also has a bearing *d'*, in which is mounted a shaft F, said shaft having bevel-gears G G, adapted to mesh with bevel-gears e^2 e^2 on the ends of the roll-spindles, and the said bevel-gears G G have a

feather-and-spline connection with the shaft F to permit of their sliding thereon, the reason for which will presently appear.

The spindle C′ carries a large drive-gear C^3, which meshes with a smaller cog-wheel R^2 on a counter-shaft R′, parallel with the longitudinal axes of the rotatable carrier or frame C, which carries a band-pulley R, from which the carrier-frame receives its motion.

The shaft F and the feed-rolls have independent motion, but are only revolved when power is applied to the shaft R′, and the said shaft F, in addition to the bevel gear-wheels, also has a third bevel-pinion *f* at one end, which meshes with a bevel-pinion *h* on a shaft H, extended rearward at right angles from shaft F, but in same plane therewith.

The shaft H is journaled in bearings on the members $c^{\times}$, forming a part of the rotatable carrier or frame C, and at the rear end it has a small cog-wheel *h*′, that gears with and travels around the stationary cog-wheel A^2 and receives rotary motion therefrom, which motion is imparted to the feed-rolls E E to effect a longitudinal movement to the stock X. The feed-rolls E E, as will be clearly seen by reference to Fig. 4, have annular V-shaped grooves e^5 e^5, whereby to engage the stock X. By reason of sustaining the rolls in the adjustable frames D D said rolls can be readily set to suit various sizes of stock by means of the hand-wheels T, threaded into the frames D and made to engage bars *c c* of the frame C.

The front section of the machine is constructed substantially the same as the rear section A and includes a rotary frame $C^{\times}$, with the parts $D^{\times}$ $D^{\times}$ and feed-rolls arranged the same as in the back or rear section. The front rolls $E^{\times}$ (see Fig. 9) also have their grooves e^4 provided with spurs to the more firmly grip the corners of the stock, and an intermediate gear connection is also used to effect a proper rotation of the two sets of rolls $E^{\times}$ $E^{\times}$. The rounding knives or chucks, as also the spiral-mold-cutter devices, are disposed on independent frames between the two frame portions A and B, and their detailed construction and operation will be presently explained.

So far as described it will be apparent that by having a rotary carrier to engage the stock, a similar carrier for engaging its square end and at its finished end in the manner hereinbefore described and shown in the drawings the stock will be continuously fed from the entrant to the exit ends of the machine and at the same time that it is fed longitudinally a twist or spiral movement is imparted thereto, and as the mold-cutters that engage the stock are held in stationary frames it follows a rope or spiral mold effect is thereby produced in a simple, inexpensive, and positive manner without requiring any material adjustment of the several parts.

S^3 designates a spindle mounted on a suitable bearing *s* in an independent frame-section *s*′, disposed between the rear and front frame-sections A and B. The spindle S^3 is hollow, and it has a pulley S^4, taking motion from the counter-shaft R^3.

Within the hollow spindle S^3 is adjustably held a pair of rounding knives or cutters *x x*, the special construction of which is clearly shown in Figs. 7, 8, and 8^a, by reference to which it will be noticed the said cutters *x x* have diagonal slots X′ X′ to receive the fastening-bolts X^2 X^2, that secure the cutters adjustably on the spindle-stock. The cutters *x x* have their cutting edges shaped to effect a rounding off of the square edges of the stock being worked on.

The molding or spiral-shaped cutters or blades M, the peculiar construction of which is best shown in Fig. 6, each have slotted ends M′, whereby to adjustably connect with the heads *n* of the spindles N, held to rotate in bearing on a frame s^3, fastened on the independent frame *s*′. The several cutters M are arranged to be adjusted at different angles to the work, and each of the spindles N carries a drive-pulley *n*′, driven by intermediate devices that receive motion from the main drive-pulley R^4 on counter-shaft R^3.

From the foregoing description, taken in connection with the accompanying drawings, it is thought the complete operation of my invention will be readily understood by those skilled in the art to which my invention belongs.

It will be observed that in the practical operation of the machine the work or stock in square cross-section is passed into the hollow spindle at the front end and pushed inward to engage the front gripper or feeder rolls, which when operated from the counter-shaft R^3 carry the stock through the hollow spindle on the discharge end of the front section and feed it into the hollow spindle having the rounding-cutters, which revolve about the continuously longitudinally and rotatably moving stock-piece and reduce it to a round member, which first passes between and in engagement with the rotatable blades M, held on stationary frames which cut the spiral or rope shape, the proper spiral motion of the stock being worked on being also effected by the guide-rolls in the rear frame-section B, which also act to steady the front end of the stock, which finally and in a complete state passes out through the hollow spindle at the discharge end of the rear frame-section B. The yoke-frames, supporting the feed-rolls, are thrust against coiled springs K by the action of the work, which act as cushions, and to avoid bruising the material worked on the rear feed-rolls are covered with a yielding material. The front feed-rolls, which also act as grippers, have spurs to engage the stock-piece.

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

1. A machine for the purposes described, including front, rear and intermediate frame-

sections in longitudinal alinement with each other, a pair of rectangular cutter-frames mounted on the intermediate frame, disposed parallel to each other and at an angle to the stock; slots in said cutter-frames to provide means for their adjustment on the intermediate frame in the direction of their greatest length; each of said cutter-frames carrying a shaft mounted centrally and longitudinally thereof and extending inwardly beyond the frame to the stock; a pulley mounted on said shaft between its bearings in the cutter-frame; and at the inner projected end of said shaft a cutter-head adjustable longitudinally of the shaft and carrying a rotatable cutter, adapted to engage the opposite faces of the turned part of the stock, said cutters having mold-producing edges, as set forth.

2. A machine of the character described, including a frame having front and rear end sections in longitudinal alinement, and an intermediate section; rotary cutter mechanism mounted on the intermediate frame, said mechanism including a spindle, having a revolving cutter on one end thereof for engaging the stock; feed mechanism for the front and rear sections, adapted to engage the stock and feed it to the cutters in a combined rotary and longitudinal direction; said carriers including horizontally-disposed longitudinal frames having thimble portions at the center of their end sections through which the stock passes, feed-rollers for gripping the stock and a longitudinal shaft mounted in bearings at one side of the rectangular frame, said shaft having means for rotating the rollers, and having one end extending beyond the said rectangular frame, carrying a gear to engage a stationary cog-wheel on the main frame, for the purposes described.

3. In a machine as described, a feed mechanism for imparting a longitudinally-spiral movement to the stock being worked on, said mechanism including a rectangular rotatable frame mounted on hollow spindles through which the stock passes, said spindles being rigidly secured to said rotatable frame midway of its end sections and forming journals therefor, said journals having bearings in the main frame of the machine, said rotatable frame carrying two oppositely-disposed yoke-frames, which form supports for the feed-rolls, and a longitudinal shaft having a gear-wheel at one end thereof, meshing with a wheel rigidly attached to the main frame, and means at its center for communicating motion to a transverse shaft operatively connected to the feed-rolls, and imparting motion thereto, said opposing feed-rolls adapted to grip the stock from opposite sides, and yieldable laterally relatively to the stock, for the purposes described.

JOHN HOAGLAND.

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