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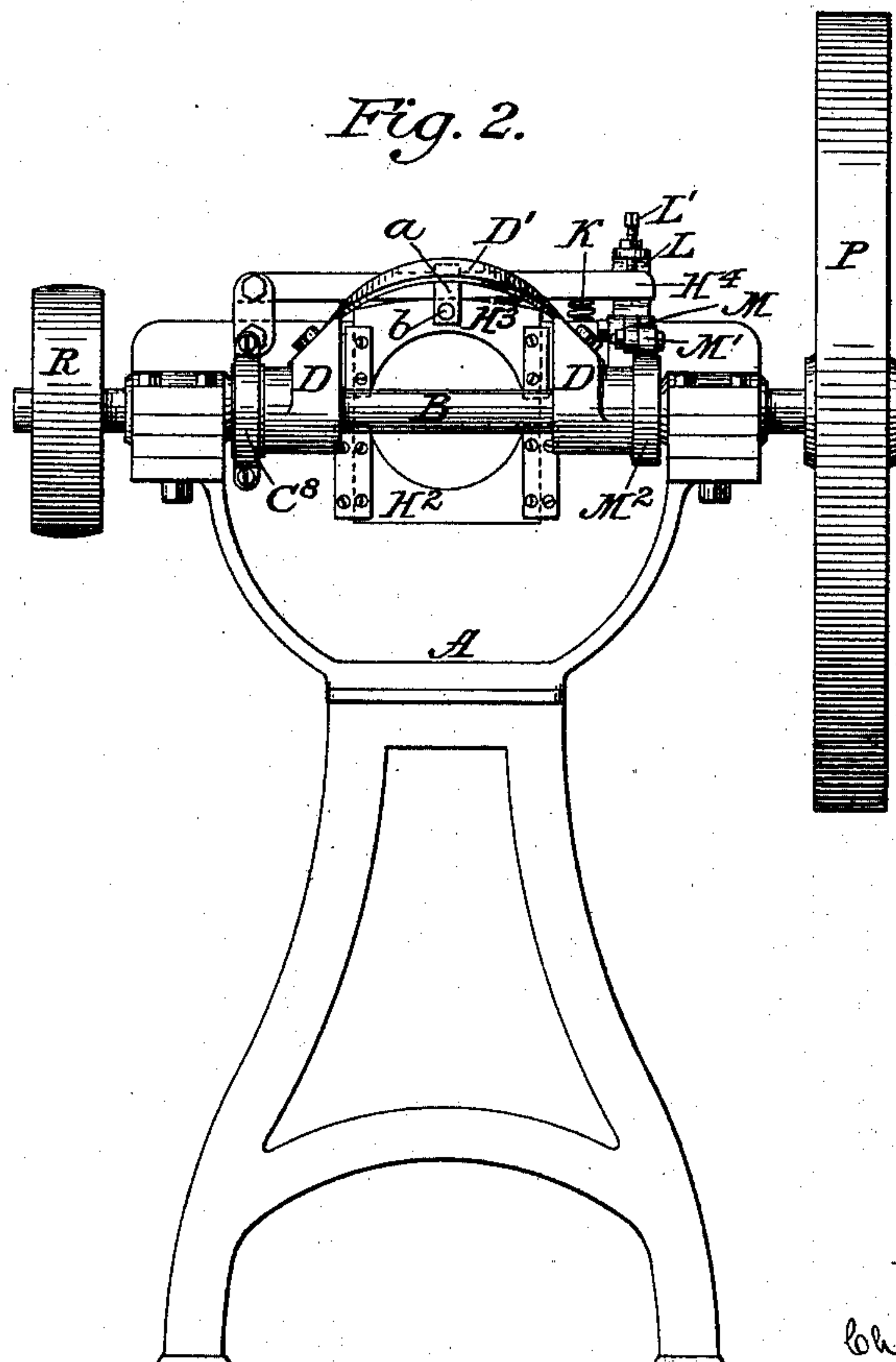
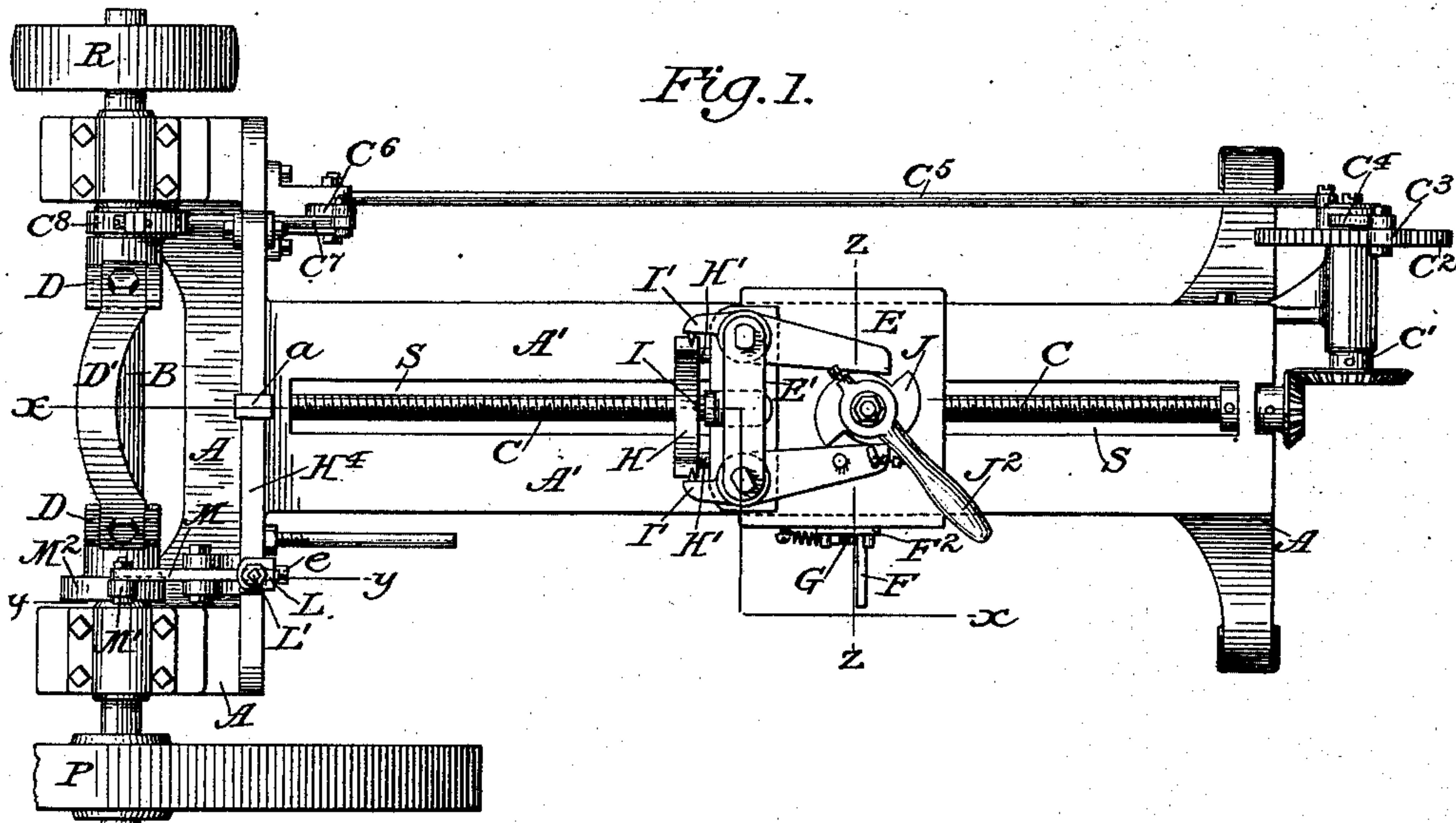
2 Sheets—Sheet 1.

C. SPOFFORD.

MACHINE FOR CUTTING OUT CONCAVO-CONVEX SHELLS OR DISHES.

No. 410,299.

Patented Sept. 3, 1889.



Attest:

A. H. Jester.
E. M. Watson.

Inventor:

Charles Spofford

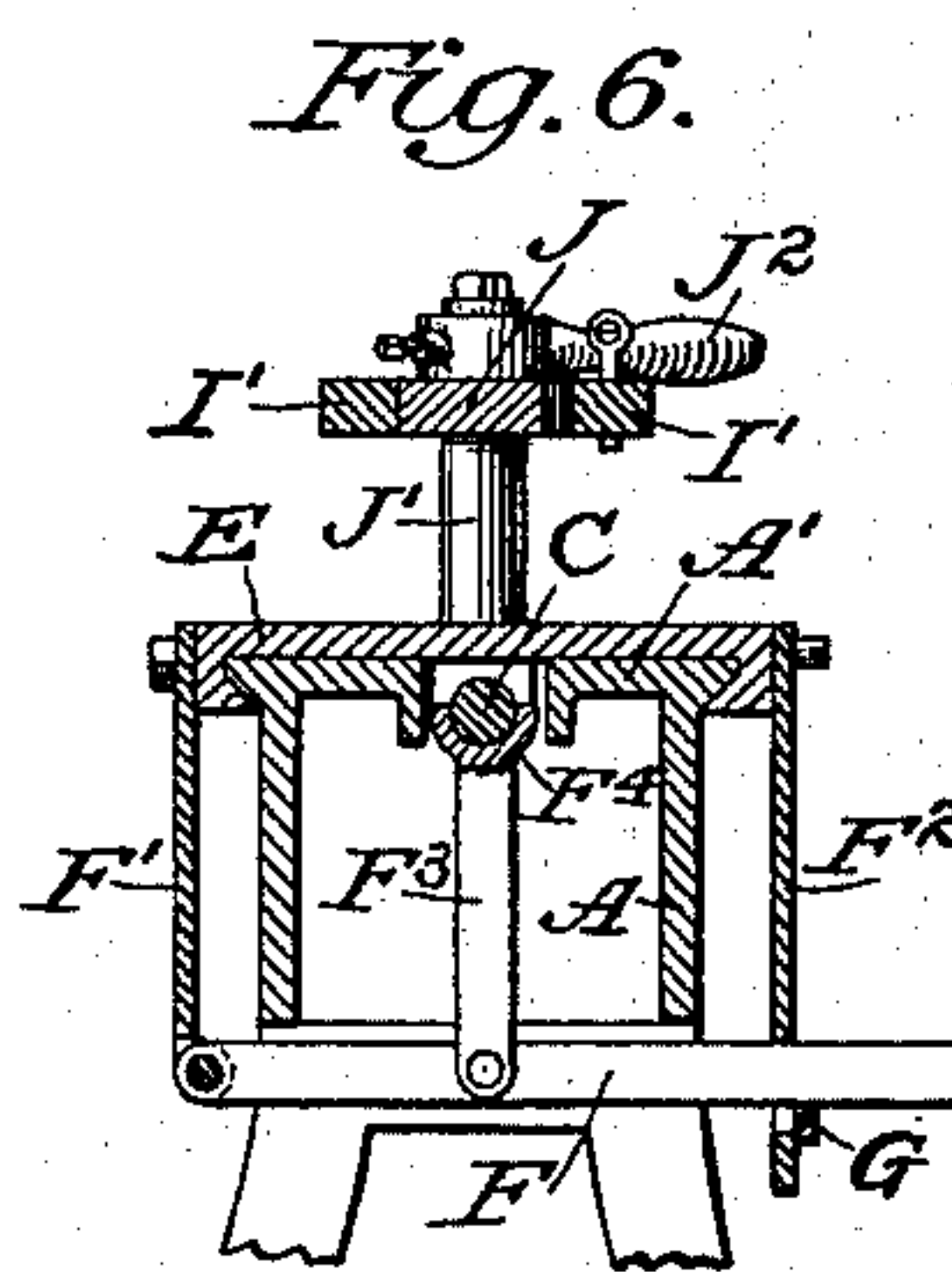
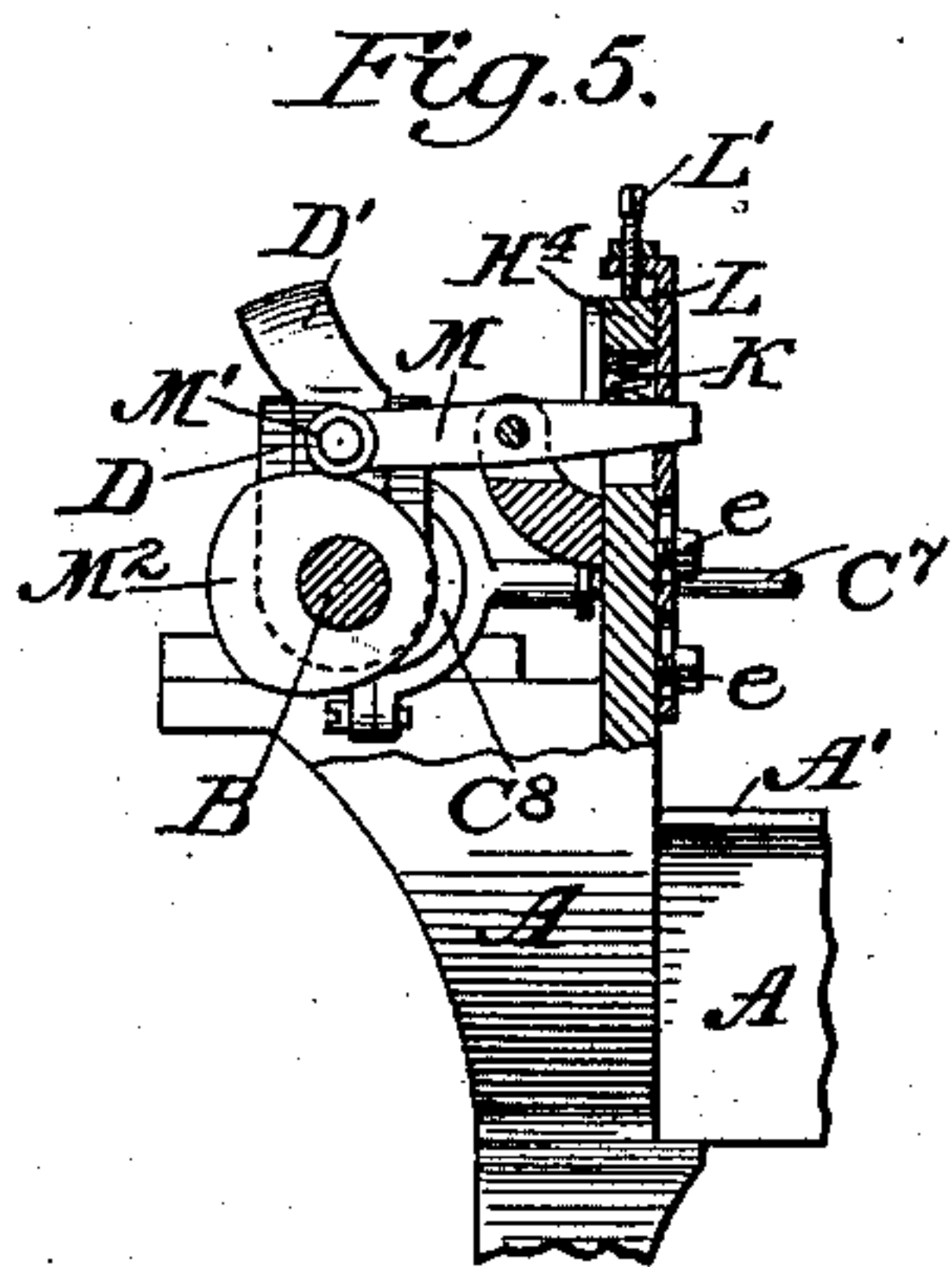
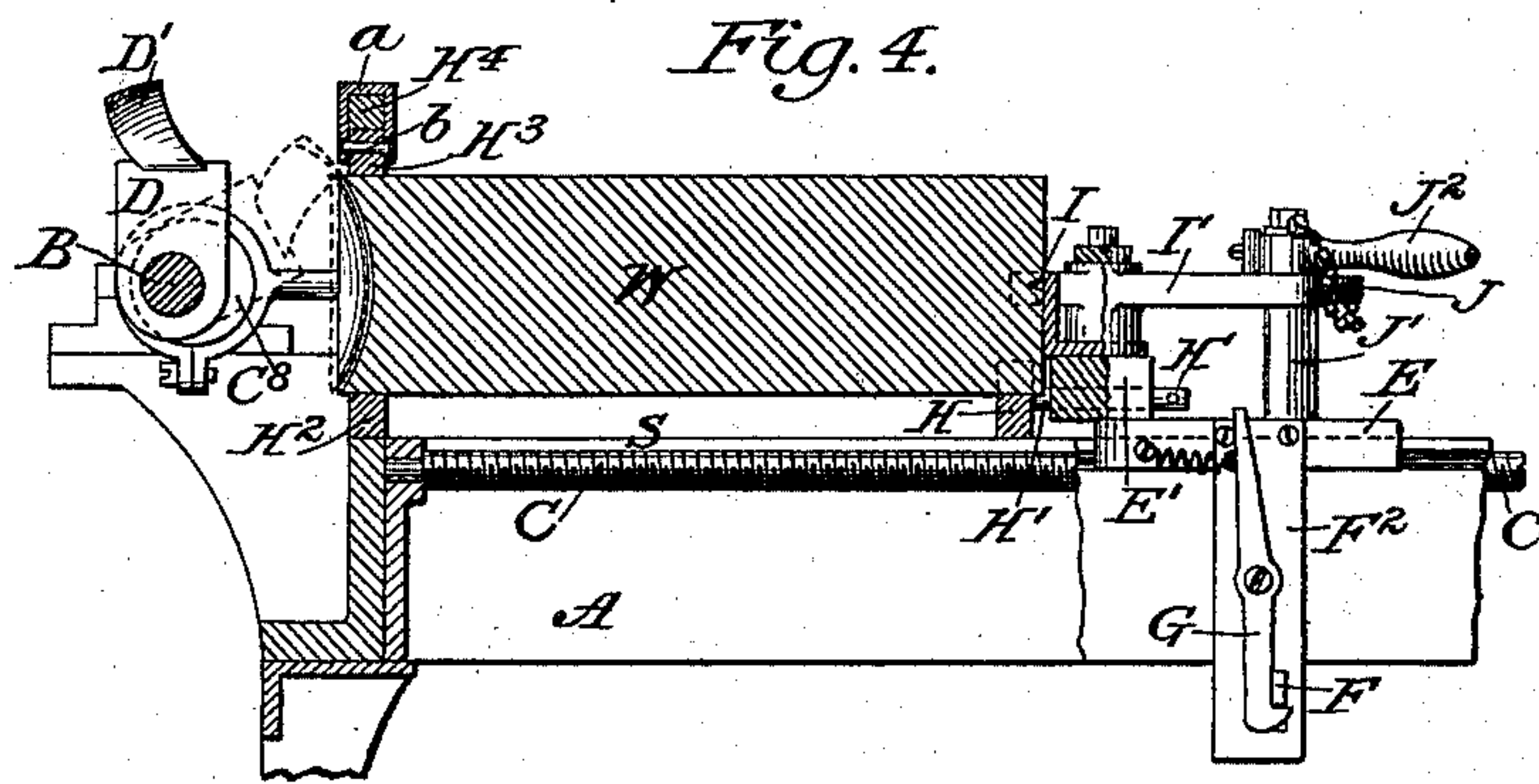
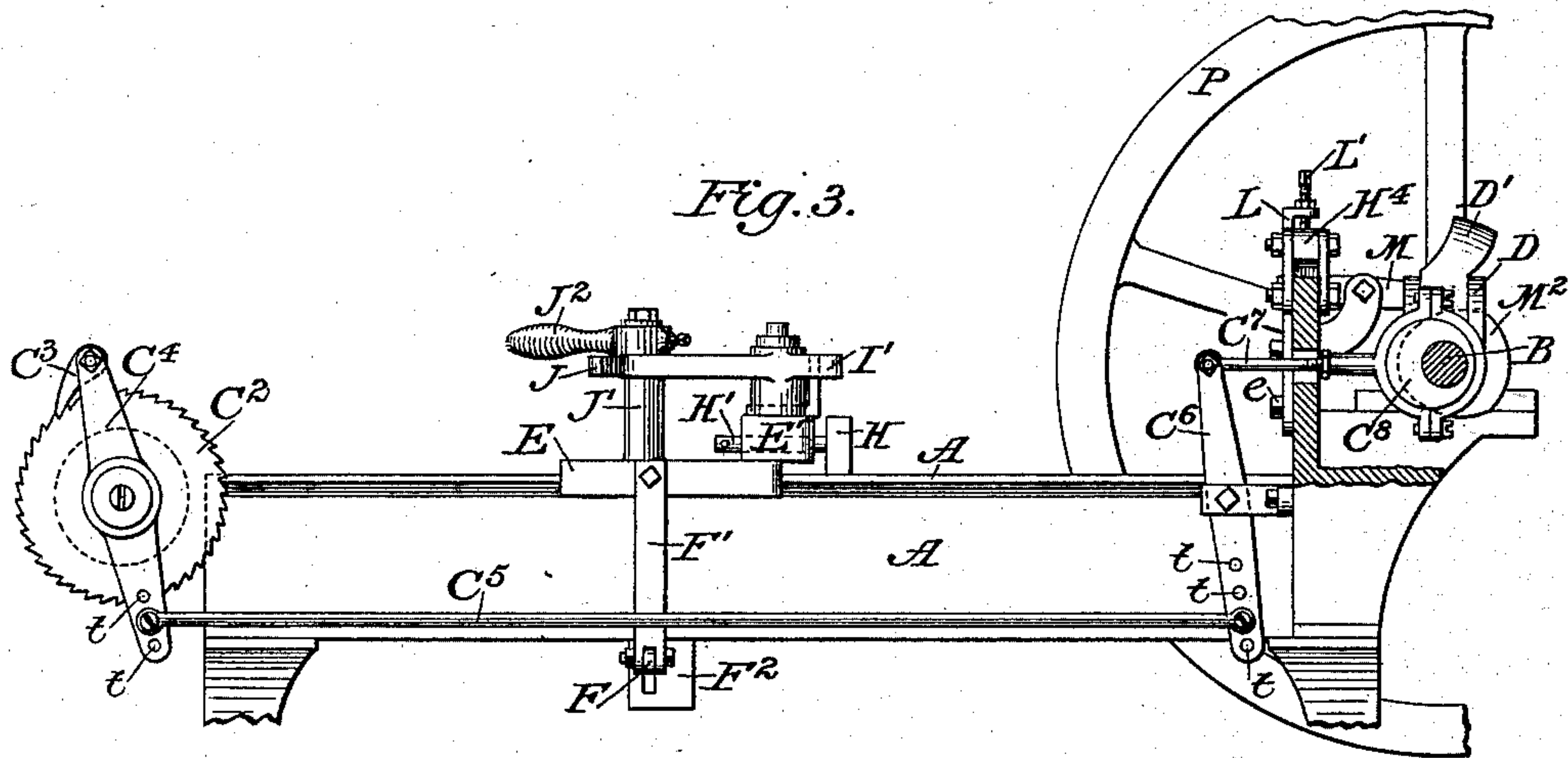
By David A. Burr

Atty.

(No Model.)

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UNITED STATES PATENT OFFICE.

CHARLES SPOFFORD, OF NEW YORK, N. Y., ASSIGNOR TO WILLIAM J. HISS
AND WILLIAM P. SANDFORD, BOTH OF SAME PLACE.

MACHINE FOR CUTTING OUT CONCAVO-CONVEX SHELLS OR DISHES.

SPECIFICATION forming part of Letters Patent No. 410,299, dated September 3, 1889.

Application filed May 8, 1889. Serial No. 310,052. (No model.)

To all whom it may concern:

Be it known that I, CHARLES SPOFFORD, of the city, county, and State of New York, have invented certain new and useful Improvements in Machines for Cutting out Wooden Concavo-Convex Shells or Dishes; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

This invention relates to an improved machine for cutting concavo-convex shells or dishes from a wooden log, and has for its object to simplify the working parts of the machine and facilitate the cutting of finished shells from a suitable block by means of a single knife without the need of subsequently facing off either the block or the shell.

It consists in the novel construction and combination of the several parts involved in the organization of the machine, as hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is a plan view of the improved machine; Fig. 2, a front end view thereof; Fig. 3, an elevation of the side of the machine, showing the feeding mechanism; Fig. 4, a longitudinal section in line *xx* of Fig. 1 of the front end of the machine, showing a log in position to be cut and the rear clamping devices in elevation; Fig. 5, a detail section in line *yy*, and Fig. 6 a detail section in line *zz* of Fig. 1.

Similar letters indicate like parts in all of the figures.

A in the drawings represents the frame of the machine. At its front end the knife-shaft B is mounted in suitable bearings, and upon it are secured the two heads D D, (see Figs. 1, 2, and 4,) to which are fastened the ends of a curved knife D', adapted to cutting out the shells.

A longitudinal slot S is formed centrally in the top or bed plate A' of the frame, and a parallel endless screw C is mounted beneath it. This screw is connected at the rear end of the frame by means of a bevel-gear to a shaft C', carrying upon its outer end a ratchet-wheel C², which is actuated by a pawl C³, pivoted upon the upper end of a lever C⁴, oscillating upon the axis of the wheel. The lower

end of this lever is coupled by a rod C⁵ to the corresponding end of a similar lever C⁶, (see Fig. 3,) pivoted to the side of the frame near its front end, and whose upper end is coupled by a link C⁷ to an eccentric C⁸ upon the appropriate end of the knife-shaft B. An oscillation of the pawl is thus produced at each revolution of the knife-shaft, and by means thereof an intermittent rotation of the screw C is obtained in unison with the revolution of the knife, the eccentric C⁸ being so adjusted as that this movement of the screw occurs immediately after the cutting-stroke of the knife is completed. The length of the stroke of the pawl, and consequently the extent of movement of the screw, is readily adjusted by means of a series of apertures *t t t* in the levers C⁴ and C⁶, through which the pivot-pins for the rod C⁵ are passed, and whereby the rod may be brought more or less closely to the axis of the lever.

A carriage consisting of a plate E, (see Figs. 1, 3, 4, and 6,) adapted to overlap transversely the top plate A' of the frame, is fitted to slide freely thereon.

A lever F, pivoted at one end to an arm or plate F', depending from the carriage E on one side of the frame, is extended transversely under the top of the frame and under the endless screw C, mounted therein, and passes at its free end through a vertical slot in a second dependent plate F² on the opposite side. (See Figs. 3, 4, and 6.) From the middle of this transverse lever F a rod F³ (see Fig. 6) extends up vertically immediately under the endless screw C and terminates in a half-nut F⁴, adapted to engage said screw when brought up into contact therewith by the elevation of the free end of the lever F. The lever is held up to produce the engagement of the nut and screw by means of a catch or hook on the end of a spring-actuated catch-lever G, as shown in Fig. 4. When released from the catch, the end of the lever F will drop by its own weight to the lower end of the slot, through which it passes, and the nut will be freed from the screw. The engagement of the nut F⁴ with the screw C will cause the former, and with it the carriage E, to be moved longitudinally upon the frame by the rotation of the latter.

A supporting-block H, having a curved re-

cess in its upper face, is carried upon the front end of the carriage E, being supported upon pins $H' H'$, extending longitudinally parallel with the screw C through apertures in a bar E' upon the carriage-plate E, so as to admit of adjustment to and from the front edge of the carriage.

A dog I is fixed centrally upon the front edge of the carriage to project upward therefrom, and its upper end is bent forward and fashioned to form a tooth adapted to enter the center of the end of the cylindrical block or log W, (see Fig. 4,) placed upon the supporting-block H, to be cut up into shells.

Two lateral dogs $I' I'$ (see Fig. 1) are pivoted upon the top of pedestals on each side of the central dog I, to vibrate in a horizontal plane and engage the cylindrical block or log W from either side. These dogs are swung into engagement with the log by means of a double cam J, pivoted upon the upper end of an upright pillar J' at the rear of the carriage, and which is adapted to engage the arms or extended end of said dogs $I' I'$, as shown in Fig. 1. The cam J is turned as required to actuate the dogs by means of a handle J^2 . A second bearing or supporting-block H^2 , recessed on its upper side, with a curved recess to correspond with that of the adjustable movable supporting-block H, is fixed at the front end of the frame (see Figs. 2 and 4) immediately in front of the knife D' , so that the latter in its revolution will just clear it.

A clamping-block H^3 , having a curved recess in its lower side corresponding with that in the upper side of the block H^2 , is fitted in suitable ways to move to and from it in the same vertical plane, so that when the two are brought together a more or less circular opening will be left between them, as shown in Fig. 2, said opening being somewhat smaller in diameter than the log to be cut. The upper block H^3 is coupled to a lever H^4 , pivoted at one end to a support secured in the side of the frame upon which the feed-eccentric C^8 is located, and which extends transversely above the block H^3 parallel with the knife-shaft to the opposite side of the machine. The top of the upper clamping-block H^3 is coupled to the lever by means of a central strap a , passing over the lever, and which, extending down each face of the block, is confined by a transverse pin b . (See Figs. 2 and 4.)

The outer free end of the clamping-lever H^4 rests upon a spiral spring K, which operates automatically to throw up the lever and free the clamping-block. Said outer end is also overlapped by the bent end of a slide L, working vertically against a suitable upright on the frame, being guided by means of pins $e e$, (see Fig. 5,) passing through vertical slots in the slide and fixed in the upright. A set-screw L' , working vertically through the upper bent end of the slide L, bears against the top of the lever H^4 , so that by depressing the slide the lever is borne down against the

stress of its spring to close the clamping-block H^3 toward the lower fixed block H^2 . The movement of the slide L to actuate the clamping lever and block is effected by means of a pivoted lever M, one end of which is fitted with a roller M' (see Fig. 5) to ride upon the periphery of a cam-wheel M^2 on the knife-shaft, while its opposite end engages a slot in the slide. The cam-wheel M^2 is so formed and so adjusted relatively to the knife D' and to the eccentric C^8 on the opposite end of the knife-shaft as that the clamping-lever H^4 is borne down and held down by the action of the eccentric just before and during the sweep of the knife across the end of the log W, held between the clamping-blocks, but is released so as to be lifted by the spring K so soon as the cutting-stroke of the knife is completed, and remains free while the carriage E is moved forward by the action of the eccentric C^8 . The knife-shaft is fitted, as is customary, with a fly-wheel P and a driving-pulley R.

In the operation of the machine a log W, previously turned so as to be either circular or oval in cross-section, as may be desired, and of the diameter required in the plates or dishes to be cut therefrom, is placed with its front end upon the fixed supporting-block H^2 and under the movable clamping-block H^3 , and its rear end upon the supporting-block H of the carriage E, the carriage and block being adjusted to the length of the log. The carriage is left free for this adjustment by disengaging the lever F from the hook on the lever G, so as to allow the half-nut F^4 to drop from the screw C. The rear end of the log is then fastened by means of the dogs I and I' , the latter being clamped upon each side of the log by means of the double cam J, actuated by its handle J^2 . The engagement of the slide L with the free end of the lever H^4 , which bears upon the upper clamping-block H^3 , is then adjusted by means of the set-screw L' , so that the lever will operate to firmly clamp the log between the blocks H^2 and H^3 while it is being cut. The width of the cut to be made is also determined by an adjustment of the rod C^5 to and from the axes of the levers C^4 and C^6 in manner as hereinbefore described. If, now, the half-nut F^4 of the carriage E be carried up into engagement with the screw C, and the knife-shaft be rotated to produce a revolution of the curved knife D' in front of the log, the eccentric C^8 will operate by means of the oscillating levers C^4 and C^6 and the ratchet-wheel C^2 to move the carriage E, and thereby push the log W forward between the blocks H^2 and H^3 intermittently at each revolution of the knife for a distance equal to the thickness of the shell to be cut, as determined by the adjustment of the coupling-rod C^5 . As the carriage begins its movement the upper block H^3 is lifted by the action of the spring K under the lever H^4 , so as to leave the log free to move with it; but so soon as the movement of the carriage ceases the cam-wheel M^2 on the knife-shaft will come

into play to produce, in manner as described, a pressure of the lever H^4 upon the block H^3 to cause it to clamp the log, and while it is so clamped the knife will in its revolution sweep across the end of the log and operate in the customary manner to cut therefrom a concavo-convex shell.

While it is preferable that the clamping-block H^3 shall be lifted while the log is moving forward under it, this is not essential, and the log may be pushed forward between the blocks by the action of the carriage, without the co-operation of a spring K .

I claim as my invention—

1. In a machine for cutting out concavo-convex shells, the combination, with the curved revolving knife and with the intermittently-moving carriage by which the log to be cut is fed to the knife, of the clamping-block made to engage the frontend of the log and the mechanism whereby said clamping-block is closed intermittently upon the log to bind and hold it during the cutting-stroke of the knife, substantially in the manner and for the purpose herein set forth.

2. The combination, in a machine for cutting concavo-convex shells from a log of wood, with the cutting-knife and the revolving shaft carrying said knife, of the fixed supporting-block mounted in front of the knife to form a seat for the log, the clamping-block moving to and from the fixed block in the same vertical plane to close down upon the interposed log, the pivoted lever attached to said block, a cam upon the knife-shaft, and mechanism intermediate the cam and lever, whereby the lever and block are depressed by the action of the cam to clamp the log while the knife is sweeping over its end, substantially in the manner and for the purpose herein set forth.

3. The combination, in a machine for cutting concavo-convex shells from a log of wood, with the cutting-knife and the revolving shaft carrying said knife, of the fixed supporting-block mounted in front of the knife to form a seat for the log, the clamping-block moving to and from the fixed block in the same vertical plane to close down upon the interposed log, the pivoted lever attached to said block, a spring automatically lifting the lever and block, a cam upon the knife-shaft,

mechanism intermediate the cam and lever, whereby the lever and block are depressed by the action of the cam to clamp the log while the knife is sweeping over its end, and mechanism for moving the log intermittently toward the knife when the clamping-block is lifted, substantially in the manner and for the purpose herein set forth.

4. The combination of the knife-shaft, the curved knife carried thereby, the log-supporting block fixed in front of the knife, the movable clamping-block mounted over the supporting-block in the same vertical plane, the cam on the knife-shaft operating mediately to depress the clamping-block during the sweep of the knife across the log held between the two blocks, the carriage moving to and from said blocks, the endless screw rotating in fixed bearings under the carriage, the detachable nut carried by the carriage to engage the screw, and the eccentric on the knife-shaft geared mediately to said screw to produce an intermittent rotation thereof at each revolution of the knife after it has completed its cutting-stroke, substantially in the manner and for the purpose herein set forth.

5. The combination, with the revolving knife, the log-supporting block fixed in front of the knife, and the carriage moving to and from the fixed block, of the endless screw under the carriage, the mechanism by which said screw is geared to the knife-shaft in manner to produce an intermittent rotation of the screw, the lever pivoted to the carriage to extend transversely under the screw, the catch carried by the carriage to uphold the free end of the lever, and the sectional nut carried by said lever into engagement with the screw when upheld by the catch, whereby the log to be cut may be adjusted in front of the knife independently of the screw and automatically fed forward by its action, substantially in the manner and for the purpose herein set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES SPOFFORD.

Witnesses:

A. N. JESBERA,
E. M. WATSON.