

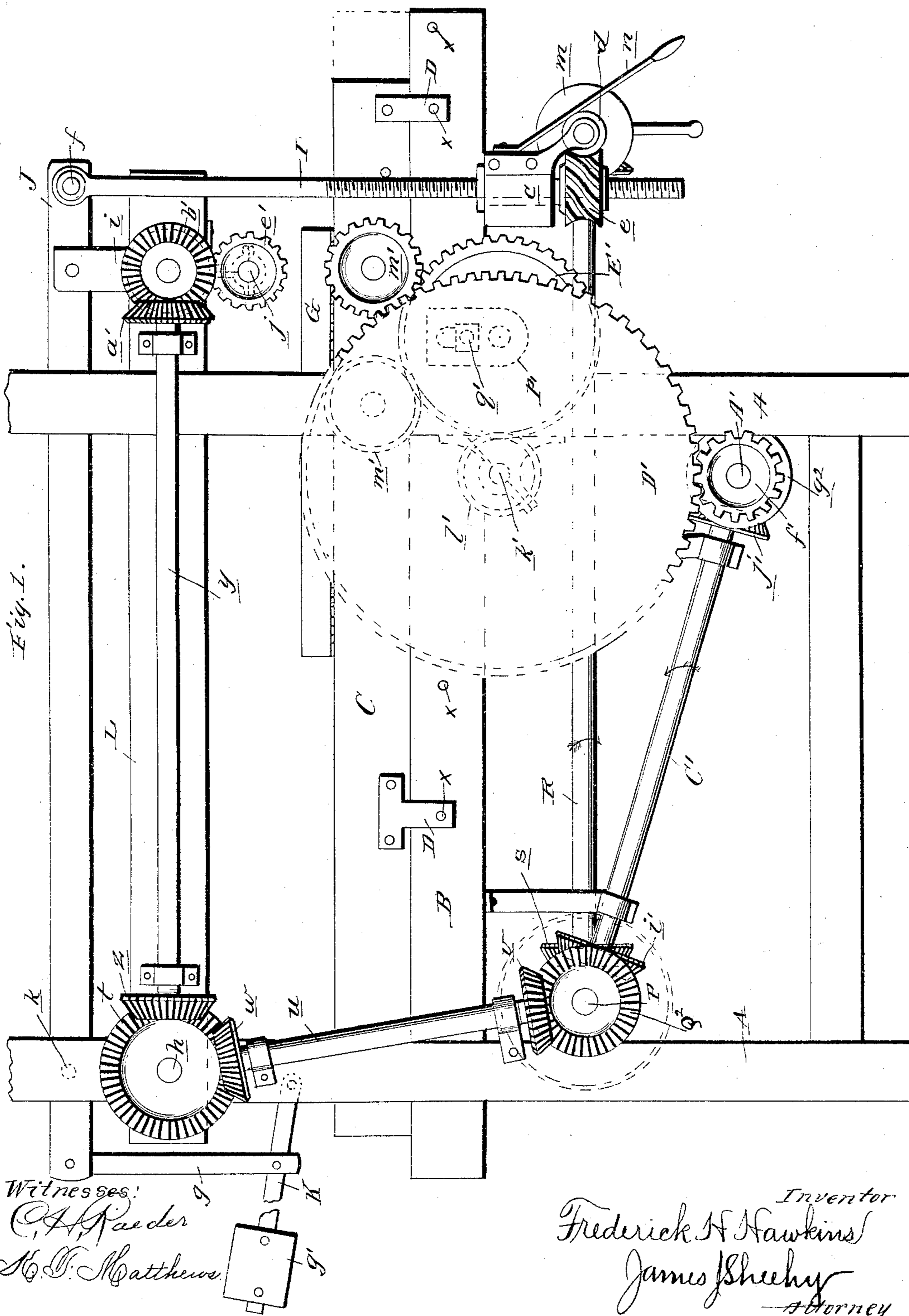
(No Model.)

3 Sheets—Sheet 1.

F. H. HAWKINS.
MACHINE FOR EMBOSSEING DESIGNS ON WOOD.

No. 461,919.

Patented Oct. 27, 1891.



Witnesses:
C. A. Raeder
H. B. Matthews.

Inventor
Frederick H. Hawkins
James Sheehy
Attorney

(No Model.)

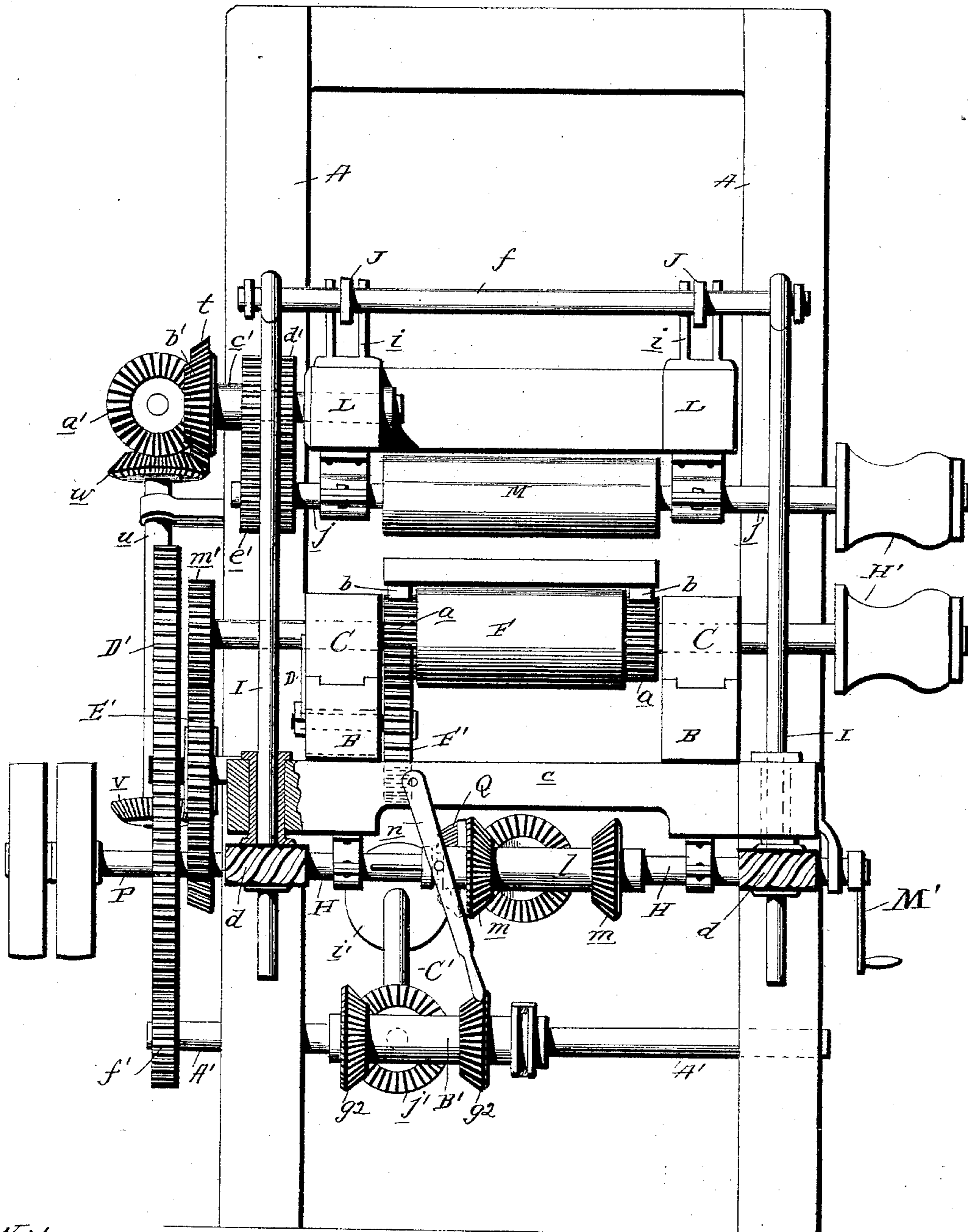
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Fig. 2.



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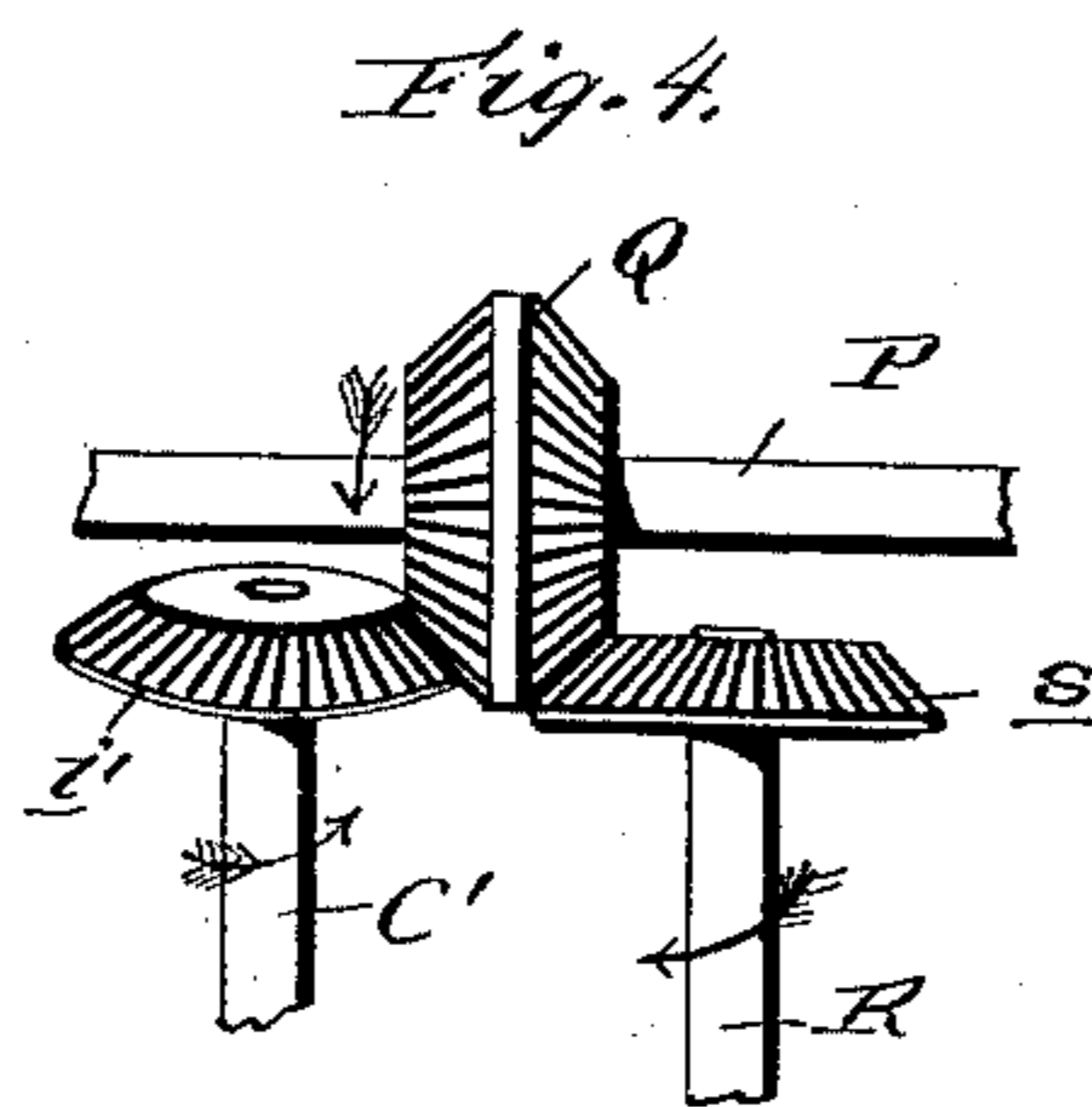
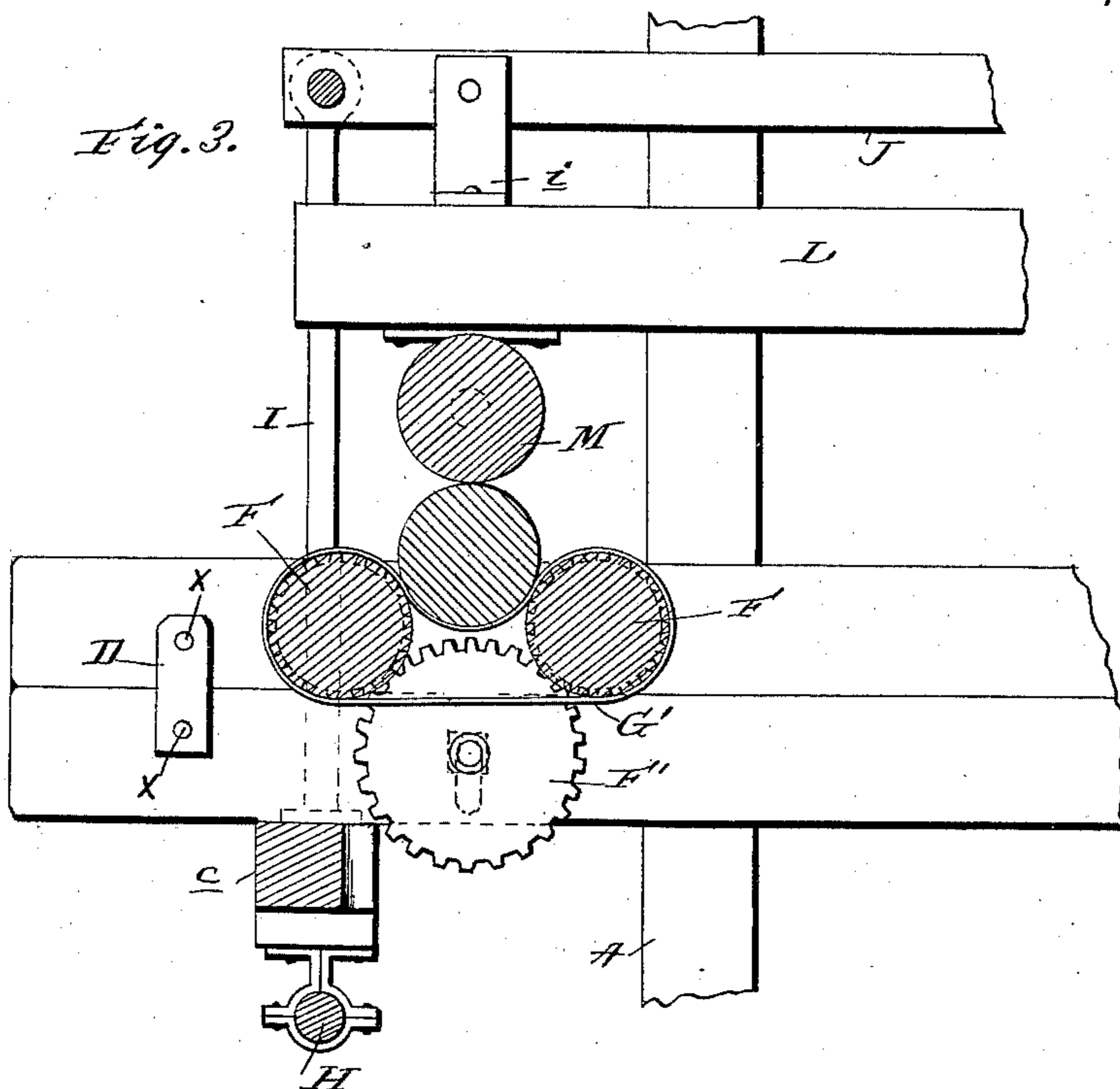
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UNITED STATES PATENT OFFICE.

FREDERICK H. HAWKINS, OF NEW YORK, N. Y.

MACHINE FOR EMBOSSING DESIGNS ON WOOD.

SPECIFICATION forming part of Letters Patent No. 461,919, dated October 27, 1891.

Application filed March 25, 1891. Serial No. 386,344. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK H. HAWKINS, a citizen of Great Britain, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Machines for Embossing Designs on Wood, &c.; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has relation to improvements in machines for embossing designs on wood and other compressible material; and it has for its general object to provide a machine of a construction thoroughly capable of embossing straight, flat, turned, and irregular-shaped articles of wood or the like.

To the attainment of the foregoing and other objects the invention consists in the construction, certain novel combinations, and adaptations of parts hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of my improved machine. Fig. 2 is a front elevation of the same with a portion of the bed removed for the better illustration of the gearing. Fig. 3 is a detail view illustrating the manner of embossing turned articles. Fig. 4 is a detail top plan of a portion of the gearing.

In the said drawings, similar letters indicate corresponding parts throughout the several views, referring to which—

A indicates the uprights of the main frame of my improvements, which are connected by suitable horizontal beams and support the stationary open rectangular bed B, the upper side of the longitudinal branches of which are longitudinally grooved to seat and form a way for the longitudinal branches of the open rectangular adjustable bed C, which branches are longitudinally tongued on their lower sides, as illustrated, and are connected to the stationary bed by links or straps D, which are adapted to be secured at different points to the stationary bed by transverse bolts taking through the transverse apertures *x*, whereby the movable bed may be adjusted so as to bring the space between the bed-rollers beneath the die-roller for embossing round articles, as will be presently described.

Mounted upon transverse shafts journaled at intervals in the side branches of the bed C, adjacent to the forward end thereof, are bed-rollers F, which may have plain or engraved peripheries, as desired. Fixed upon the shafts of the said bed-rollers F, at the ends thereof, are gear-wheels *a*, upon which rest longitudinal rack-bars *b*, which are attached to the under side of a movable reciprocating bed G, upon which flat stock is designed to be fed to the die-roller presently to be described.

Journaled in hangers depending from a cross-bar *c*, attached to the under side of the stationary bed, adjacent to the forward end thereof, is a transverse shaft H, which is provided adjacent to its ends with horizontal worm-wheels *d*, which mesh with horizontal concaved gear-wheels *e*, which are provided with central vertical screw-threaded apertures to receive vertically-disposed threaded rods I, which take through threaded sleeves in the cross-bar *c* and are provided at their upper ends with eyes to receive a transverse bar *f*, to which are pivotally connected rearwardly-extending lever-arms J, which have their rear ends pivotally connected by a depending strap *g* to weight-levers K, which are pivotally connected to the rear uprights of the frame and have their rear portions provided at intervals with apertures, whereby the weights *g'* may be adjustably fixed thereon. Pivotaly mounted upon a transverse shaft *h*, fixed at a suitable elevation in the rear uprights of the frame, is a rectangular frame L, which extends forwardly and is pivotally connected by the hangers *i* to the levers J, before described.

Journaled in depending bearings upon the under side of the longitudinal branches of the frame L, adjacent to the forward end thereof, is the transverse shaft *j* of the die-roller M, which is provided upon its periphery with suitably-engraved designs to be embossed upon the stock.

The transverse shaft H is adapted to be alternately rotated in opposite directions by the power or driving shaft, as will be presently described, whereby it will be seen that the die-roller may be readily raised and lowered through the medium of the worms *d*, gears *e*, and rods I to permit of stock being placed upon the reciprocating bed, and by the em-

ployment of the levers J and the weighted levers K, arranged as described, it will be seen that the die or embossing roller is subjected to a yielding pressure regardless of its adjusted position.

When it is not desirable to have a yielding pressure upon the die-roller, I design employing a transverse rod or bolt *k*, which takes through the rear uprights of the frame and the levers and serves to fix the latter to the former.

Fixed by a feather upon the transverse rotatable shaft H is a sleeve *l*, upon which are fixed oppositely-beveled gear-wheels *m*, which are designed to alternately engage a gear carried by a shaft, presently to be described, whereby the shaft H may be readily rotated in either direction.

Pivotally connected to the cross-bar *c* and engaging the sleeve *l* is a lever *n*, whereby the sleeve may be readily adjusted to bring either gear into engagement with the driving-gear.

Journalled in suitable bearings at the rear end of the frame is the transverse driving-shaft P, upon one end of which are mounted the ordinary fast and loose pulleys for the reception of a belt from the motor designed to drive the machine, and upon the shaft P, at a suitable point, is fixed a double-faced beveled gear Q, from which the feed and die rollers are driven, and the die-roller and its frame are raised and lowered through the medium of devices which I will now proceed to describe.

Journalled in suitable bearings at about the elevation illustrated is a longitudinal shaft R, upon the rear end of which is fixed a beveled gear *s*, which is adapted to drive the transverse shaft H through the medium of the sleeve *l* and gears *m* to raise and lower the die-roller, as has been described.

Turning loosely upon the shaft *h*, adjacent to one end thereof, is an idler beveled gear *t*, which is driven from the main drive-shaft P through the medium of a vertically-oblique shaft *u*, journalled in suitable bearings and carrying a beveled gear *v* at its lower end to mesh with a beveled gear *Q*² upon the shaft P, and another beveled gear *w* at its upper end to mesh with the gear *t*.

Journalled in suitable bearings upon the side of the die-roller frame L is a longitudinal shaft *y*, upon the rear end of which is fixed a beveled gear *z*, which meshes with the idler *t*, while upon the forward end of said shaft is fixed another beveled gear *a*', which meshes with a gear *b*', fixed upon a sleeve *c*', which turns loosely in a suitable bearing in the side of the frame L, adjacent to the forward end thereof. Also fixed upon the sleeve *c*' is a vertical gear-wheel *d*', which meshes with a pinion *e*' upon the end of the shaft *j* of the die-roller M, whereby said roller is rotated.

Journalled in suitable bearings upon the rear side of the forward uprights is a transverse shaft A', which carries a vertical gear *f*'

at one end and has mounted upon it a sleeve B', which carries oppositely-beveled gears *g*² and is adapted to be secured to the said shaft by a suitable feather, said sleeve being adapted to be moved longitudinally upon the shaft by means of a lever, (not shown,) so as to throw the gears thereof alternately into engagement with a gear designed to rotate the shaft.

C' indicates a horizontally-oblique shaft, which is journalled in suitable bearings and has fixed to its upper rear end a beveled gear *i*', which meshes with one side of the double-faced beveled gear Q upon the main drive-shaft P, and upon the forward end of said shaft C' is fixed a beveled gear *j*', adapted to alternately mesh with the respective beveled gears *g*'. Fixed upon a transverse shaft *k*', journalled in bearings upon the rear side of the forward uprights, is a large gear-wheel D', which meshes with the small gear *f*' upon the end of shaft A', by which it is driven. Also fixed upon the shaft *k*' is a small gear or pinion *l*', which is designed to mesh with an adjustable gear-wheel E', which is designed to normally mesh with both of the gears *m*' upon the ends of the respective bed-roller shafts, whereby said bed-rollers are rotated in the same direction as illustrated.

The shaft of the adjustable idler E' is journalled in slotted hangers *p*', which are designed to be adjustably fixed to the side of the stationary bed B by a suitable transverse bolt *q*' or the like, whereby said idler may be adjusted out of engagement with the pinions *m*', whereby the adjustable bed may be slid forward and fastened in the position it will occupy when the machine is adjusted to emboss round articles. After the adjustment of the bed is effected the said idler E' is adjusted so as to engage the pinion upon the rear bed-roller only.

F' indicates another adjustably-mounted idler-gear, which is journalled on a shaft adapted to be vertically adjusted in the bed-frame B and occupies a position on the side of the longitudinal branch of said bed-frame opposite to the idler E'. This latter idler F' is adapted to mesh with the gear-wheels *a* on the shafts of the bed-rollers, so as to impart motion from the rear roller to the forward roller when the idler E' is adjusted to engage the pinion on the rear roller only.

When it is desired to emboss round articles, the reciprocating bed G is removed and a belt G' is passed around the bed-rollers, upon which belt the stock rests between the bed-rollers and beneath the die-roller, the adjustment of the movable bed bringing the bed-rollers into such position. By the provision of the belt it will be seen that the stock is continuously rotated during the embossing operation.

Upon the ends of the shafts of the bed and die rollers I fix rolls H', two of which serve as bed-rolls, while the upper one serves as a die-roller, although all three might be engraved

to emboss, if desired. The peripheries of the rolls H' are concave for a portion of their length and convex for the other portion; or, in other words, they are of a compound curvilinear configuration, whereby articles of irregular shape, which cannot be embossed upon the bed-rolls by the die-roll, may be embossed by passing them through these rolls H'; but, if desired, the rolls H' may be of a configuration capable of embossing any specific form of stock.

In practice I design employing a table or bed in conjunction with the rolls H', which bed may be removably connected to the main frame of the machine.

Upon one end of the shaft H, I design placing a crank M', whereby the said shaft may be rotated and the die-supporting frame raised and lowered by hand when desired.

The general operation of the machine when employed to emboss flat, turned, and irregular shaped articles is substantially the same, and a description of the operation when the machine is employed for flat work is deemed sufficient, and is as follows: Motion being imparted to the main driving-shaft, it rotates the double-faced gear Q and the shafts C' and R in the direction indicated by the arrows.

When it is desired to start the bed-rolls, the sleeve on the shaft A' is adjusted to bring one of the beveled gears g' into engagement with the gear j' upon the end of shaft C', whereby said shaft A' will be rotated, and the pinion on the end thereof will rotate the gear D', and in turn the pinion l', the idler E', and the respective feed-rollers. Motion is imparted from the driving-shaft to the die-roll through the pinions v and w, the shaft u, the idler t, the pinion z, the shaft y, the pinion a', the pinion b', the pinion c', the sleeve, the gear d' thereon, and the pinion e' upon the end of the die-shaft. By adjusting the sleeve B' on the shaft A' so as to throw first one gear into engagement with the gear j' and then the other the direction of rotation of the elements intermediate of said shaft A' and the bed-rollers will be reversed, whereby it will be seen that the bed G may be reciprocated so as to repeatedly pass the stock beneath the die by the operator simply adjusting the sleeve B', which may be done by the lever h' or may be accomplished by any suitable automatic device.

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

1. In a machine for embossing wood and other compressible material, the combination, with a frame, the upper die-roller, the bed-rollers, and a stationary bed provided with transverse bolt-holes at intervals in its length, of a movable bed mounted on said stationary bed, straps attached to and depending from the movable bed, and bolts taking through said straps and the transverse bolt-holes in the stationary bed, whereby the movable bed

may be adjustably fixed, substantially as and for the purpose described.

2. In a machine for embossing wood and other compressible material, the combination, with a vertically-movable die-roller and a bed-roller, of a driving or power shaft, a set of gearing intermediate of said shaft and the die-roller, adapted to rotate the same, another set of gearing intermediate of the shaft and die-roller, adapted to raise and lower said roller, and a set of gearing intermediate of the driving-shaft and the bed-roller, adapted to rotate said roller, substantially as and for the purpose described.

3. In a machine for embossing wood and other compressible material, a die-roller, in combination with two or more rotatable bed-rollers and a belt passing around said rollers and adapted to support and rotate stock beneath the die-roller, substantially as and for the purpose specified.

4. In a machine for embossing wood, the combination, with a die-roller and a stationary bed beneath said roller, of a movable bed, two bed-rollers journaled in said movable bed, and a suitable means for adjustably fixing the movable bed upon the stationary bed, substantially as and for the purpose specified.

5. In a machine for embossing wood, a die-roller and a stationary bed arranged beneath the die-roller, in combination with a movable bed, two bed-rollers journaled in said movable bed, a belt passing around said rollers and adapted to support and rotate stock beneath the die-roller, and a suitable means for adjustably fixing the movable bed upon the stationary bed, substantially as and for the purpose specified.

6. In a machine for embossing wood, the combination, with a rotatable die-roller, a stationary bed beneath said die-roller, a transverse shaft, as k', journaled beneath the stationary bed and carrying a pinion, and an idler gear-wheel journaled in adjustable bearings and meshing with said pinion, of a movable bed, two bed-rollers journaled in said movable bed and carrying gear-wheels at one of their ends, and a suitable means for adjustably fixing the movable bed upon the stationary bed, substantially as specified.

7. In a machine for embossing wood, the combination, with a stationary bed, a transverse shaft journaled beneath said bed and carrying a pinion, an idler-gear journaled in adjustable bearings and meshing with said pinion, another idler-gear F', also journaled in adjustable bearings, and a rotatable die-roller arranged above the stationary bed, of a movable bed, bed-rollers journaled in said movable bed and carrying gear-wheels a and m', and a suitable means for adjustably fixing the movable bed upon the stationary bed, substantially as specified.

8. In a machine for embossing wood and other compressible material, the combination, with a die-roller and a stationary bed ar-

5 ranged beneath said die-roller, of a movable bed, two bed-rollers journaled in said movable bed and carrying gears a and m' , a sliding bed having rack-bars on its under side meshing with the gears a of the bed-rollers, and a suitable means for adjustably fixing the movable bed to the stationary bed, substantially as specified.

10 9. In a machine for embossing wood and other compressible material, the combination, with the main frame, the drive-shaft journaled thereon, the fixed transverse shaft h , a beveled gear loosely mounted on said fixed shaft, and gearing intermediate of the drive-
15 shaft and the beveled gear to drive the latter, of the rectangular frame pivotally connected at one end to the fixed transverse shaft, the die-roller journaled in hangers depending from the forward end of said frame and carrying a gear-wheel at one end, the short trans-
20 verse shaft journaled in the rectangular frame and carrying a vertical gear and a beveled gear, the longitudinal rotatable shaft journaled on the rectangular frame and carrying beveled gears at its ends, meshing
25 with the idler-gear upon the fixed shaft, and the beveled gear upon the short transverse shaft, all adapted to operate substantially as and for the purpose specified.

30 10. The combination, with the main frame, the drive-shaft journaled thereon, the fixed transverse shaft h , the rectangular frame pivotally connected at one end to the fixed transverse shaft and carrying a die-roller at its
35 forward end, and gearing intermediate the drive-shaft and die-roller, adapted to rotate the same, of screw-threaded hangers connected with said rectangular frame and taking through screw-threaded bearings in the
40 main frame, horizontal gear-wheels mounted on said hangers, a rotatable horizontal shaft carrying worm-gears meshing with the gear-wheels on the hanger, a sleeve feathered on

said shaft and carrying oppositely-beveled gear-wheels at its ends, a longitudinal rotatable shaft carrying a beveled gear at its end, adapted to mesh alternately with the gears of the sleeve, and gearing intermediate said longitudinal shaft and the drive-shaft, substantially as and for the purpose specified. 50

11. In a machine for embossing wood and other compressible material, the combination, with the main frame and the fixed transverse shaft, of the rectangular frame pivotally connected at one end to the fixed shaft, a die-roller journaled in said frame, the weighted
55 levers pivotally connected at one end to the main frame, the lever-arms J , loosely connected adjacent their forward ends to the rectangular frame, and straps connecting the rear ends of the lever-arms and weighted levers, substantially as and for the purpose specified. 60

12. In a machine for embossing wood and other compressible material, the combination, with the main frame, the fixed transverse shaft, and the rectangular frame pivotally connected adjacent its rear end to the fixed shaft and carrying a die-roller adjacent its forward end, of the weighted levers pivotally
65 connected at one end to the main frame, the lever-arms J , loosely connected adjacent their forward ends to the rectangular frame and having bolt-apertures adjacent their rear ends, straps connecting the rear ends of the lever-arms and the weighted levers, and a transverse bolt adapted to take through the main frame and the apertures in the lever-arms, substantially as and for the purpose specified. 70 80

In testimony whereof I affix my signature in presence of two witnesses.

FREDERICK H. HAWKINS.

Witnesses:

M. L. FOOTE,

CHARLES P. SPEED.