

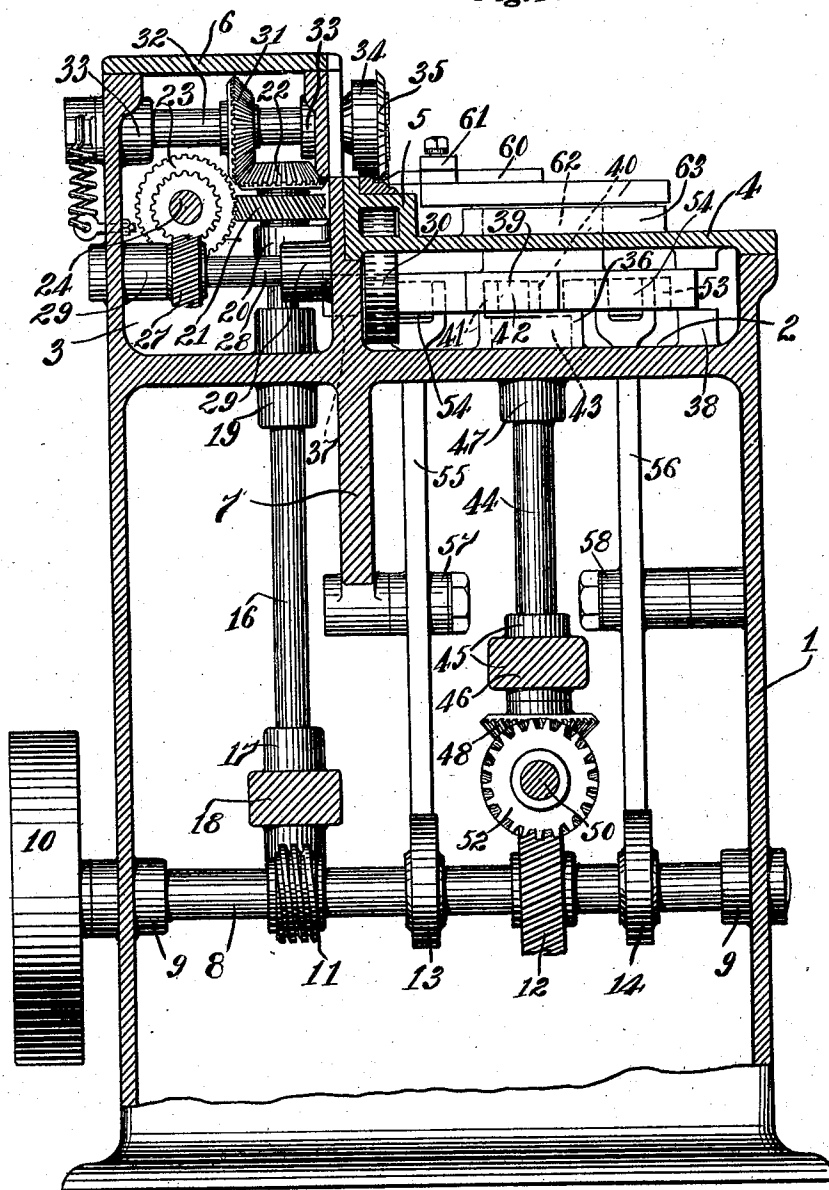
No. 867,414.

PATENTED OCT. 1, 1907.

F. H. RICHARDS.
CARVING MACHINE.
APPLICATION FILED JAN. 20, 1903.

4 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
J. E. Dandee
Herbert J. Smith

Inventor:
F. H. Richards

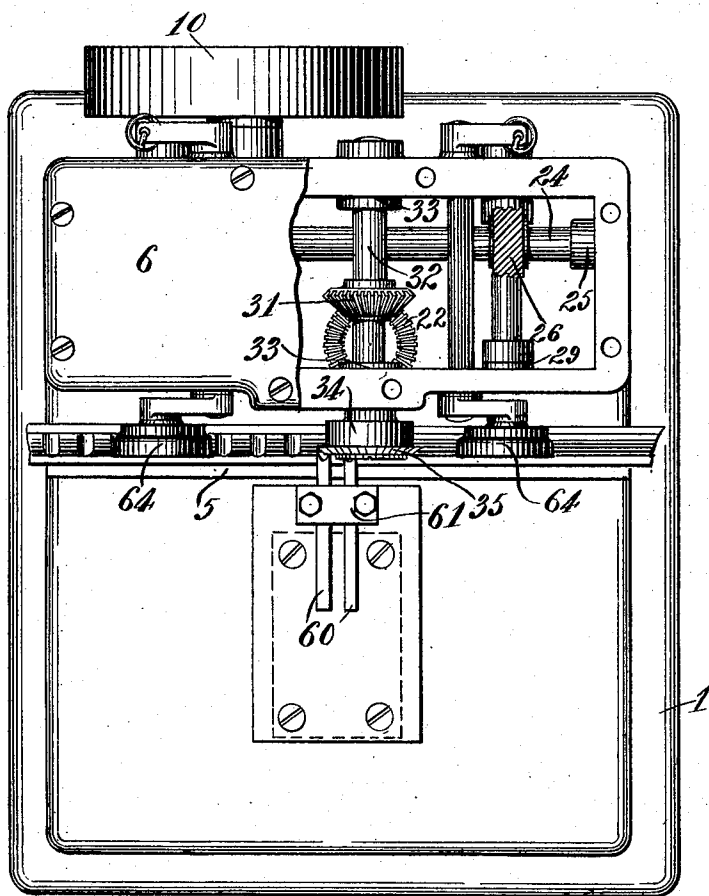
No. 867,414.

PATENTED OCT. 1, 1907.

F. H. RICHARDS.
CARVING MACHINE.
APPLICATION FILED JAN. 20, 1903.

4 SHEETS—SHEET 2.

Fig. 2



Witnesses:

J. E. Dandson
Herbert J. Smith

Inventor:

F. H. Richards.

No. 867,414.

PATENTED OCT. 1, 1907.

F. H. RICHARDS.
CARVING MACHINE.
APPLICATION FILED JAN. 20, 1903.

4 SHEETS—SHEET 3.

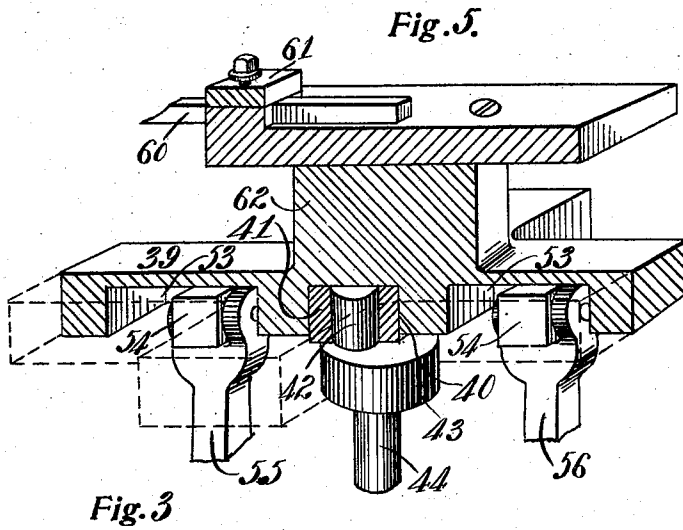
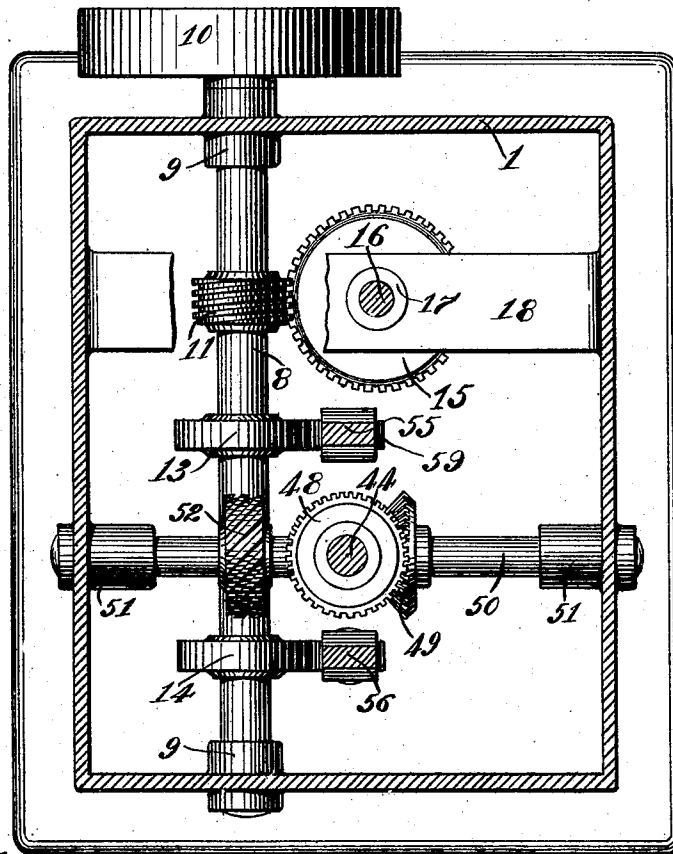


Fig. 3



Witnesses:

J. E. Davidson.
Herbert J. Smith.

Inventor:

F. H. Richards.

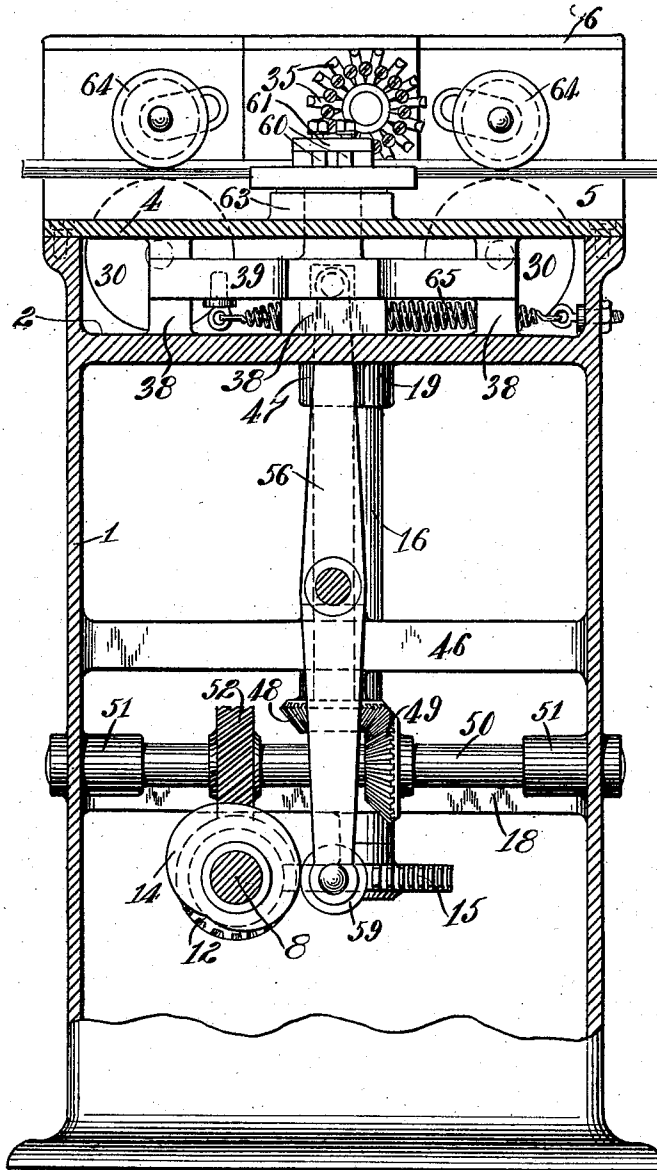
No. 867,414.

PATENTED OCT. 1, 1907.

F. H. RICHARDS.
CARVING MACHINE.
APPLICATION FILED JAN. 20, 1903.

4 SHEETS—SHEET 4.

Fig. 4



Witnesses:

J. C. Davidson.
Herbert J. Smith

Inventor:

F. H. Richards.

UNITED STATES PATENT OFFICE.

FRANCIS H. RICHARDS, OF HARTFORD, CONNECTICUT.

CARVING-MACHINE.

No. 867,414.

Specification of Letters Patent.

Patented Oct. 1, 1907.

Application filed January 20, 1903. Serial No. 139,793.

To all whom it may concern:

Be it known that I, FRANCIS H. RICHARDS, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Carving-Machines, of which the following is a specification.

My invention pertains to machines for carving wood, moldings or the like, and relates more particularly to machines of the above-named class wherein the stock is fed continuously and at a uniform velocity during the operation of the carving instrumentalities thereon.

This invention consists in the improved mechanism employed for effecting the coöperation of the parts and the constructional features, positionment and correlation of the several elementary mechanisms, and of the combinations herein described or claimed.

Some of the objects of this invention are to provide simple, effective and compact mechanism for effecting the desired steps in the manufacture of carved molding, and to provide a machine wherein the several parts are easily assembled and wherein the wear and tear upon the machine is reduced by the employment of improved organization of parts.

I have illustrated my invention in a carving machine in the accompanying drawings, in which like reference characters designate like parts throughout the several views.

Figure 1 is a left-side elevation showing the left side wall of the frame broken away exposing the inclosed mechanisms; Fig. 2 is a plan showing parts of the top plate broken away; Fig. 3 is a horizontal cross-section; Fig. 4 is a longitudinal vertical section; and Fig. 5 is a sectional detail in perspective of the carrier and driving instrumentalities therefor.

Referring to the drawings, the machine is shown mounted and assembled upon a suitable support in the present illustration on and in a box-like frame 1. The box-like frame 1 is provided with a pan 2 in its upper part and a box-like portion 3 extending upwardly above the main portion of the frame 1 and some distance above the pan 2. The pan 2 is provided with a closure 4 in the nature of a table upon which is formed a bed or stock-guide 5 adjacent the box-like portion 3 of the frame 1. The box-like portion 3 is provided with a removable top-plate 6. A longitudinal rib 7 is formed cross-wise of the frame 1 depending from the top of the frame 1 proper. A driving shaft 8 is mounted horizontally in bearings 9 in the side-walls of the frame 1. The driving shaft projects without the frame and is provided upon its projecting portion with a driving pulley 10. The driving shaft 8 carries a fast worm 11, a spiral gear 12, and two peripheral cams 13 and 14. The worm 11 meshes with and drives a worm

wheel 15 fast on a vertical shaft 16 mounted in a bearing 17 in a cross beam 18 of the frame 1, and a bearing 19 in the top proper of the frame 1, said bearing 19 leading said shaft 16 through said top and into the box-like compartment 3, where a further bearing 20 projecting from the wall of said compartment 3 is afforded for the shaft 16. Upon the upper end of the shaft 16 within the compartment 3 are mounted a spiral gear 21 and a miter gear 22. The spiral gear 21 meshes with and drives a spiral gear 23 fast on a horizontal shaft 24 mounted in bearings 25, 25, in the end walls of the compartment 3. Spiral gears 26, 26, one only of which is shown, are mounted fast on the shaft 24, and respectively mesh with and drive the spiral gears 27, one only of which is shown fast on shafts 28, 28, one only of which is shown. The shafts 28, 28, are mounted in bearings 29, in the side walls of the compartment 3, projecting through the left hand side wall of said compartment 3 and provided on their projecting ends with feed rolls 30, 30, the peripheries of which feed rolls 30 project upwardly through apertures in the stock guide 5, just above the floor of said stock guide. The periphery of the feed rolls 30 may be roughened in any suitable manner.

The miter gear 22 fast on the shaft 16 meshes with and drives a miter gear 31 fast on a horizontal shaft 32 mounted in bearings 33, 33 in the side walls of the compartment 3. The shaft 32 projects without the left side wall of the compartment 3 and is provided upon its projecting end with a rotary cutter 34. The rotary cutter is provided with a plurality of radial cutting elements 35 which are brought directly above the stock guide and are adapted to incise the stock as it passes along said stock guide.

It will be seen that the feed rolls 30 and the rotary cutter 34 are rotated by the shaft 16 in opposite directions through the gearing described, and it is further pointed out that the velocities of the active peripheries of both the feed rolls 30 and the rotary cutter 34 should be the same, so that when the feed rolls 30 feed the stock along the stock guide 5, the rotary cutter 34 upon the opposite side of the stock from that of the feed roll 30 will roll along the stock at a peripheral velocity equivalent to the surface velocity of the stock and incise the same by the rolling movement thereover.

A central stud 36 upstands from the center of the floor of the pan 2 and is provided with an opening there-through extending from the interior of the pan 2 to the interior of the frame 1 proper. The left side of the compartment 3, which is also the right side wall of the pan 2, is recessed at 37, the bottom wall of said recess forming a bearing surface at the same height as that of the central stud 36. Three other studs 38 up-

stand from the floor of the pan 2 on three sides of the central stud 36, the floor of the aperture at 37 forming the bearing surface on the fourth side. All of the said studs are of the same height and are provided with bearing surfaces on their upper ends.

A carrier 39 is shown having a base in the form of a cross, each of the arms of said cross lying upon one of the outlying studs and the center of said cross resting upon the central stud 36. The base of the carrier 39 is provided with a guideway 40 on its under surface running longitudinally of the machine, in which guideway a block 41 is adapted to slide. The block 41 embraces a wrist pin 42 of a crank 43. The crank 43 is mounted fast on the end of a shaft 44, said shaft 44 being mounted in a bearing 45 in a crossbeam 46 in the frame 1, and a bearing 47 in the top proper of the frame 1. On the lower end of the shaft 44 is mounted fast a miter gear 48 which meshes with and is driven from a miter gear 49 fast on a horizontal shaft 50. The shaft 50 is mounted in bearings 51, in the end walls of the frame 1 and carries a spiral gear 52 which meshes with and is driven from the spiral gear 12 on the driving shaft 8. It will be seen that the action of the crank 43 on shaft 44 will be to reciprocate the carrier 39 toward and from the stock guide 5, and the sliding block 41 in the guideway 40 permits the longitudinal movement of said carrier independently of the reciprocation by said crank 43.

As the stock is fed continuously at an uniform velocity through the machine it is necessary that the carrier which is designed to carry cutting tools should be reciprocated parallelly of the stock guide 5 at an uniform velocity in the direction taken by the stock and with a speed corresponding to the speed of said stock. This I accomplish by providing in the under surface of the base of the carrier 39 guideways 53 transverse of the guideway 40 and perpendicular to the stock guide 5. I prefer to use two of these latter guides in each of which I mount a sliding block 54 and to each of which sliding blocks 54 the bifurcating ends of two rocking levers 55 and 56 are respectively pivoted. The rocking lever 55 is pivoted on a stud 57 mounted on the part 7 of the frame 1, and the rocking lever 56 is pivoted on a stud 58 projecting from the side wall of the frame 1 and directly in alinement with the stud 57. The lower ends of the rocking levers 55 and 56 are provided with idle rollers 59, 59, which are respectively adapted to contact the peripheries of the peripheral cams 13 and 14 on the driving shaft 8.

It will be seen that when the rocking levers 55 and 56 are rocked, and they are always rocked in a like manner, that is, together, that the sliding blocks pivoted to their upper ends will work up and down in the guideways 53 to compensate for the arcal movements of said levers and operate against the side walls of said guideways to reciprocate the carrier 39 parallelly of the stock guide 5, while the length of the guideway 53 will permit of the sliding lengthwise therein and allow of movement in said direction by the carrier 39 independently of the connection with said rocking levers. The cams 13 and 14 are formed to produce a movement of the carrier 39 in the direction taken by the stock at an uniform velocity, and the arms of the levers 55 and 56 are proportioned in connection with the cams 13 and 14 to produce said uniform movement at a velocity equal

to that of the traveling stock. The crank 43 on the shaft 44 is set to cause the nearest approach of the carrier 39 to the stock guide 5 at approximately the center of the uniform movement of the carrier 39 traveling with the stock. The carrier 39 carries a tool or tools 60 clamped thereto by a clamp 61, which tools during the operation of the machine operate to incise the stock and chip out the ornament already partially incised by the rotary cutter 34. The carrier 39 is provided with a narrowed waist 62 which is adapted to pass through an opening in the closure 4 of the pan 2, which opening is provided with an arm 63 upstanding from the closure 4 preventing the chips from falling into the pan 2 and clogging the mechanism therein. The rocking levers 55 and 56 pass upwardly through apertures in the top of the frame 1 proper. The tools 60 are set on the carrier 39 and exactly register with incisions previously made by the tools on the rotary cutter 34. Presser rolls 64 of the usual design are provided to insure a secure grip of the stock by the feed roll 30. A strong spring 65 is fastened at one end to the carrier 39 and at the other to the frame 1 and continually tends to return the carrier 39. The carrier 39 being probably the heaviest part of the carrier mechanism is directly acted upon by the spring 65 and carries with it the lighter rocking levers 55 and 56, thereby keeping the idle rolls 59 constantly in engagement with the cams 13 and 14.

It is obvious that various changes may be made in the details of construction and in the arrangement of my device, to adapt the same to varying environments and different classes of work, without departing from the spirit of my invention.

Having thus described my invention, I claim—

1. In a carving machine, the combination of a support, a carrier slidably mounted upon said support, said carrier having an upstanding narrowed waist portion thereon, a table having a portion for surrounding said waist portion and permitting a circuitous movement of said carrier, an upstanding flange on said table, and a bed mounted upon the top of said upstanding portion overhanging said upstanding flange.

2. In a carving machine, the combination of a frame, a carrier slidably mounted on said frame and provided with radial arms contacting said frame, a narrow waist portion upstanding from said carrier, said frame having a portion for surrounding said waist portion for permitting a circuitous movement of said carrier, said frame contacting the upper surfaces of said arms, an upstanding flange on said frame, and a bed mounted upon the top of said waist portion and overhanging said flange.

3. In a carving machine, the combination of a frame, a carrier slidably mounted upon said frame, a portion upstanding from said carrier, a table mounted on said frame and surrounding said portion for permitting a circuitous movement of said carrier, said table contacting the upper surface of said carrier.

4. In a carving machine, the combination of a support, a carrier slidably mounted on said support and having an upstanding narrow waist portion, a table mounted on said support and surrounding said portion for permitting a circuitous movement of said carrier, and an overhanging bed mounted on the top of said portion.

5. In a carving machine, the combination of a frame, a carrier slidably mounted on said frame and having a narrow upstanding waist portion, a table mounted on said frame to contact the upper surface of said carrier and surrounding said narrow waist portion for permitting a circuitous movement of said carrier, and an overhanging bed mounted on top of said portion.

6. In a carving machine, the combination of a frame, a carrier slidably mounted thereon and having an upstand-

ing portion, a table mounted on said frame, and contacting the upper surface of said carrier and surrounding said portion for permitting a circuitous movement of said carrier, a flange upstanding from said table, and a bed mounted on the top of said portion to overhang said upstanding flange.

7. In the carving machine, the combination of a frame, a carrier slidably mounted on said frame, a portion upstanding from said carrier, a table mounted on said frame adapted to contact the upper surface of said carrier and apertured to surround said portion and permit of a circuitous movement of said carrier, a bed mounted on the top of said portion to overhang said aperture, means for imparting a reciprocating motion in one direction to the said carrier, and separate means for simultaneously imparting a reciprocating motion transversely of said first reciprocating motion to said carrier to produce a resultant circuitous movement of said carrier.

8. In a carving machine, the combination of a frame, a carrier slidably mounted upon said frame, an upstanding portion on said carrier, a table mounted upon said frame, contacting the upper surface of said carrier and surrounding said portion and permitting a circuitous movement of said carrier, an overhanging bed mounted on the top of said portion to overhang said aperture, transverse guideways in the under surface of said carrier, rocking levers engaging one of said guideways, a crank engaging the other of said guideways, and suitable connections for producing by the movement of said levers and said crank a resultant movement of said carrier in a circuitous path.

9. In a carving machine, the combination of a support, a carrier slidably mounted on said support, an upstanding portion on said carrier, a table mounted on said support and contacting the upper surface of said carrier and surrounding said portion for permitting a circuitous movement of said carrier, an overhanging bed mounted on the top of said portion, transverse guideways in the under surface of said carrier, a crank mounted in said frame engaging one of said transverse guideways, rocking levers mounted on said support and engaging the other of said transverse guideways, and driving mechanism operatively connected to rotate said crank and to simultaneously rock said levers organized and timed to produce a resulting circuitous movement of said carrier having a diametral velocity uniform throughout an appreciable distance in one direction.

10. In a carving machine, the combination of a frame, a plurality of raised bearing surfaces upon said frame, a cruciform carrier mounted with its arms slidably supported on said surfaces, a table mounted on said frame above said carrier, depending bearing surfaces on said table contacting the upper surfaces of the arms of said carrier, and means for imparting a circuitous translation to said carrier within the limits of the engagement of the arms of said carrier by said bearings.

11. In a carving machine, the combination of a frame, a plurality of bearing surfaces upstanding from said support, a cruciform carrier mounted with its arms slidably supported on said surfaces, an upstanding portion on said carrier, said frame having bearing surfaces contacting the upper surfaces of the arms of said carrier, said frame being apertured to surround said portion and permit of a circuitous translation of said carrier within the limits of the engagement of the arms of said carrier by said bearings, a flange upstanding from said carrier surrounding said aperture, and a bed mounted on the top of said portion to at all times overhang said upstanding flange.

12. In a carving machine, the combination of a frame, a plurality of bearing surfaces on said frame, a cruciform carrier mounted with its arms slidably supported upon said surfaces, a portion upstanding from said carrier, said frame having a plurality of bearing surfaces contacting the upper surfaces of said arms of said carrier, said frame apertured to surround said portion and permit of a circuitous translation of said carrier within the limits of engagement of said arms by said bearings, a bed mounted on the top of said upstanding portion to overhang at all times said aperture, transverse guideways in the under

surface of the arms of said carrier, and driving means mounted in said frame and engaging said transverse guideways to impart a resulting circuitous translation to said carrier.

13. In a carving machine, the combination of a frame, a carrier slidably mounted on said frame for movement in one plane only, transverse guideways in the under surface of said carrier, a shaft mounted in said frame, a crank on said shaft engaging one of said guideways, a driving shaft mounted in said frame and geared to said crank carrying shaft for driving the same, a plurality of cams mounted fast on said driving shaft, a plurality of rocking levers engaging said cams and the other of said guideways in said carrier, and means for maintaining the contact of said cams by said rocking levers all organized and timed to effect a resulting circuitous translation of said carrier, said cams conformed to produce through the medium of said rocking levers a diametral movement of said carrier in one direction of uniform velocity throughout an appreciable distance in the movement of said carrier.

14. In the carving machine, the combination of a frame, a carrier slidably mounted on said frame, transverse guideways in the under surface of said carrier, a shaft mounted in said frame perpendicularly of said carrier, a crank on said shaft engaging one of said guideways, a plurality of rocking levers pivoted on said frame engaging the other of said guideways, a driving shaft mounted in said frame parallel to the plane of movement of said carrier and that guideway in said carrier engaged by said rocking lever, said driving shaft geared to said crank carrying shaft for driving the same, a plurality of cams mounted fast on said driving shaft adapted to be engaged by said rocking levers and conformed to produce like movements of said rocking levers which movement of said rocking levers shall impart to said carrier a translation of uniform velocity for an appreciable distance in the direction of the planes of movement of said rocking levers, a stock guide on said frame parallel to the plane of movement of said carrier and to the planes of movement of said carrier and to the planes of movement of said rocking levers, a feed roll mounted in said frame in operative position with regard to said stock guide, said feed roll geared to said driving shaft to have a peripheral velocity equal to the translation of said carrier by said rocking levers during the period of uniform translation of the said carrier by said rocking levers, said crank timed with said rocking levers to produce a circuitous movement of said carrier.

15. In a carving machine, the combination of a support, a carrier slidably mounted on said frame for movement in one plane only, transverse guideways in the under surface of said carrier, a crank mounted for rotation in said frame and engaging one of said guideways, a plurality of rocking levers pivoted upon said frame and engaging the other of said guideways, a driving shaft mounted for rotation in said support, a plurality of cams driven by said driving shafts and adapted to be contacted by said rocking levers, said cams conformed to produce through said rocking levers a translation of said carrier at uniform velocity in one direction, a stock guide mounted on said frame parallel to the plane of movement of said carrier and to the direction of the translation of said carrier by said rocking levers, a feed roll or feed rolls mounted in operative position to said stock guide, a rotary cutter mounted in operative position to said stock guide and opposite that of said feed rolls, said feed rolls and said rotary cutter geared to said driving shaft to have a peripheral velocity equal to the uniform translation of said carrier by said rocking levers, said crank geared to said driving shaft and timed to produce with said rocking levers a resultant movement of said carriage in a circuitous path.

16. In a carving machine, the combination of a frame, a carrier slidably mounted upon said frame, transverse guideways in the under surface of said carrier, a crank engaging one of said guideways and rocking levers engaging the other of said guideways, said crank and said rocking levers connected and timed to produce a circuitous movement of said carrier having a uniform diametral movement in one direction.

17. In a carving machine, the combination of a frame, a carrier slidably mounted on said frame, transverse guideways in the under surface of said carrier, a crank mounted for rotation in said frame engaging one of said guideways, a plurality of rocking levers pivoted on said frame and engaging the other of said guideways, a driving shaft geared to said crank, cams on said driving shaft adapted to be contacted by said rocking levers, said cams and said crank timed to produce a circuitous movement of said carrier, and a spring between said carrier and said support for maintaining the contact of said rocking levers with said cams.
18. In a carving machine, the combination of a frame, a plurality of studs upstanding from said support, a cruciform carrier mounted with its arms slidably supported upon said studs, an upstanding portion on said carrier, a table mounted on said frame, a plurality of bearing surfaces depending from said table and engaging the upper surfaces of said arms of said carrier, said table apertured to surround said portion and permit of a circuitous translation of said carrier within the limits of the engagement of said arms by said bearings, a flange upstanding from said table and surrounding said aperture, a bed mounted on the top of said portion and overhanging at all times said flange, transverse guideways in the under surfaces of said arms of said carrier, a shaft mounted in said frame perpendicularly of the plane of movement of said carrier, a crank mounted fast on said shaft and engaging one of said guideways, a plurality of rocking levers pivoted on said support engaging the other of said guideways, a driving shaft mounted in said support parallelly of the plane of movement of said carrier and said guideway in said carrier engaged by said rocking levers, said driving shaft geared to said crank carrying shaft, a plurality of cams on said driving shaft adapted to be contacted to said rocking levers, said cams conformed to produce a translation of said carrier through said rocking levers at a uniform velocity for an appreciable distance, said crank and said rocking levers timed to produce a circuitous movement of said carrier, a stock guide on said frame parallel to the plane of movement of said carrier, and to the planes of oscillation of said rocking levers, a feed roll or rolls mounted in operative position to said stock guide, a rotary cutter mounted in operative position to said stock guide oppositely disposed to said feed rolls, and feed rolls and reciprocatory cutter geared to said driving shaft to have peripheral velocities equivalent to the uniform velocity of the translation of said carrier by said rocking levers, a spring connected to said carrier and to said support for maintaining the contact of said levers with said cams and effecting the retraction of said carrier, and spring pressed presser rolls in connection with said feed rolls.
19. In a carving machine, the combination of a frame, a carrier slidably mounted upon said frame, said carrier having a narrow waist portion thereon, said frame surrounding said portion and permitting a circuitous movement of said carrier, a flange in the frame, and a bed mounted upon said portion overhanging said flange.
20. In a carving machine, the combination of a frame, a carrier slidably mounted on said frame and provided with radial arms contacting said support, a narrow waist portion mounted upon said carrier, a table mounted on said frame and apertured to surround and permit of a circuitous movement of said carrier, said table contacting the upper surfaces of said arms, a flange surrounding said aperture in said table, and a bed mounted upon the top of said portion overhanging the flange.
21. In a carving machine, the combination of a frame, a carrier slidably mounted upon said frame, a narrow waist portion mounted upon said carrier, a table mounted on said frame and apertured to surround said portion and permit of a circuitous movement of said carrier, said table contacting the upper surface of said carrier.
22. In a carving machine, the combination of a frame, a carrier slidably mounted on said frame, a narrow waist portion mounted upon said carrier, a table mounted on said frame and apertured to surround said portion and permit of a circuitous movement of said carrier, and a bed mounted on the top of said portion to overhang said aperture.
23. In a carving machine, the combination of a frame, a carrier slidably mounted on said frame, said frame contacting the upper surface of said carrier and apertured to surround a portion of the carrier and permit of a circuitous movement of said carrier, and a bed mounted on top of said portion to overhang said aperture.
24. In a carving machine, the combination of a frame, a carrier slidably mounted on said frame and having a narrow waist portion, said frame contacting the upper surface of said carrier and surrounding said portion to permit of a circuitous movement of said carrier, a flange upstanding from said frame, and a bed mounted on the top of said portion to overhang said flange.
25. In a carving machine, the combination of a frame, a carrier slidably mounted on said frame and having a narrow waist portion, said frame adapted to contact the upper surface of said carrier and surrounding said portion and permitting a circuitous movement of said carrier, an overhanging bed mounted upon the top of said portion, means for imparting a reciprocating motion in one direction to the said carrier, and separate means for simultaneously imparting a reciprocating motion transversely of said first reciprocating motion to said carrier to produce a resultant circuitous movement of said carrier.
26. In a carving machine, the combination of a frame, having an upstanding column, a carrier slidably mounted upon said support, a narrow waist portion mounted upon said carrier, a table mounted upon said frame to contact the upper surface of said carrier and apertured to surround said portion and permit of a circuitous movement of said carrier, a bed mounted on the top of said column to overhang said aperture, transverse guideways in the under surface of said carrier, a crank engaging one of said guideways and a lever or levers engaging the other of said guideways, and suitable connections for producing by the movement of said levers and said crank a resultant movement of said carrier in a circuitous path.
27. In a carving machine, the combination of a frame, a carrier slidably mounted on said frame, a narrow waist portion mounted upon said carrier, a table mounted on said frame and contacting the upper surface of said carrier and apertured to surround said portion to permit of a circuitous movement of said carrier, a bed mounted on the top of said portion to overhang said aperture, transverse guideways in the under surface of said carrier, a crank mounted in said frame engaging one of said transverse guideways, rocking levers mounted on said frame and engaging the other of said transverse guideways, a driving mechanism operatively connected to rotate said crank and to simultaneously rock said levers organized in time to produce a resulting circuitous movement of said carrier having a diametral velocity uniform throughout an appreciable distance in one direction.
28. In a carving machine, the combination of a frame, a plurality of studs mounted upon said support, a carrier mounted with its arms slidably supported on said studs, a table mounted on said frame above said carrier, depending studs on said table contacting the upper surfaces of the arms of said carrier, and means for imparting a circuitous translation to said carrier within the limits of the engagement of the arms of said carrier by said studs.
29. In a carving machine, the combination of a frame, a plurality of studs mounted upon said support, a carrier provided with arms slidably mounted on said studs and having a narrow waist portion, a table mounted on said frame above said carrier, depending studs on said table contacting the upper surfaces of the arms of said carrier, said table apertured to surround said waist portion and permit of a circuitous translation of said carrier within the limits of the engagement of the arms of said carrier by said studs, a flange mounted upon said carrier surrounding said aperture, and a bed mounted on the top of said column to at all times overhang said flange.
30. In a carving machine, the combination of a frame, a plurality of studs upstanding from said frame, a carrier

5 mounted with its arms slidably supported upon said studs,
a narrowed waist portion mounted upon said carrier, a
table mounted on said frame above said carrier, a plural-
ity of studs depending from said table and contacting the
upper surfaces of said arms of said carrier, said table
apertured to surround said portion and permit of a cir-
cuitous translation of said carrier within the limits of
engagement of said arms by said studs, a bed mounted on
the top of said portion to overhang at all times said aper-
10 ture, transverse guideways in the under surface of the

arms of said carrier, and driving means mounted in said support and engaging said transverse guideways to impart a resulting circuitous translation to said carrier.

Signed at Nos. 9-15 Murray street, New York, N. Y.,
this 19th day of January, 1903.

FRANCIS H. RICHARDS.

Witnesses:

FRED. J. DOLE,
JOHN O. SEIFERT.