

A. R. Stewart

Spoke Lathe.

No 63,574,

Patented Apr. 2, 1867.

Fig 2.

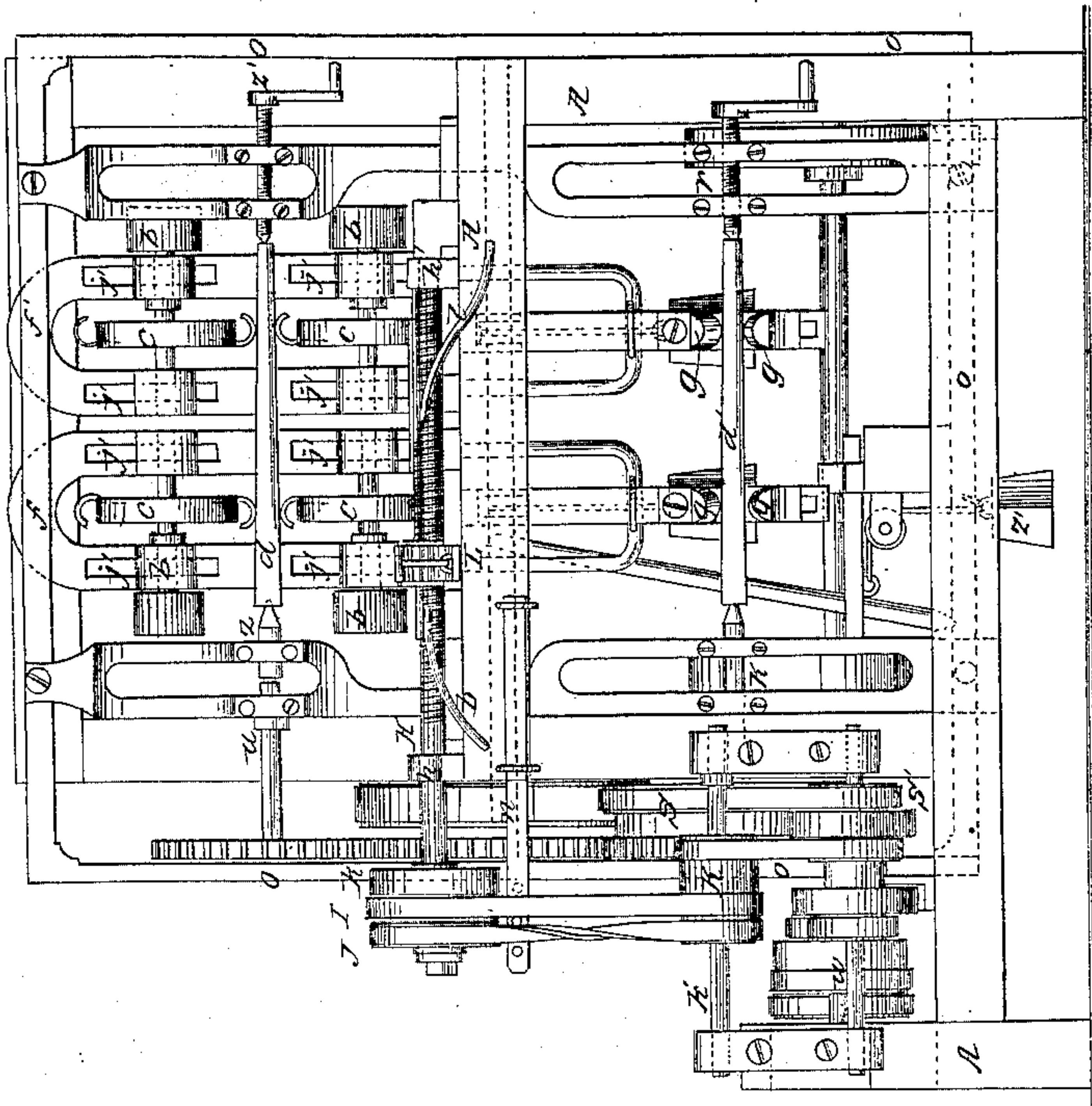
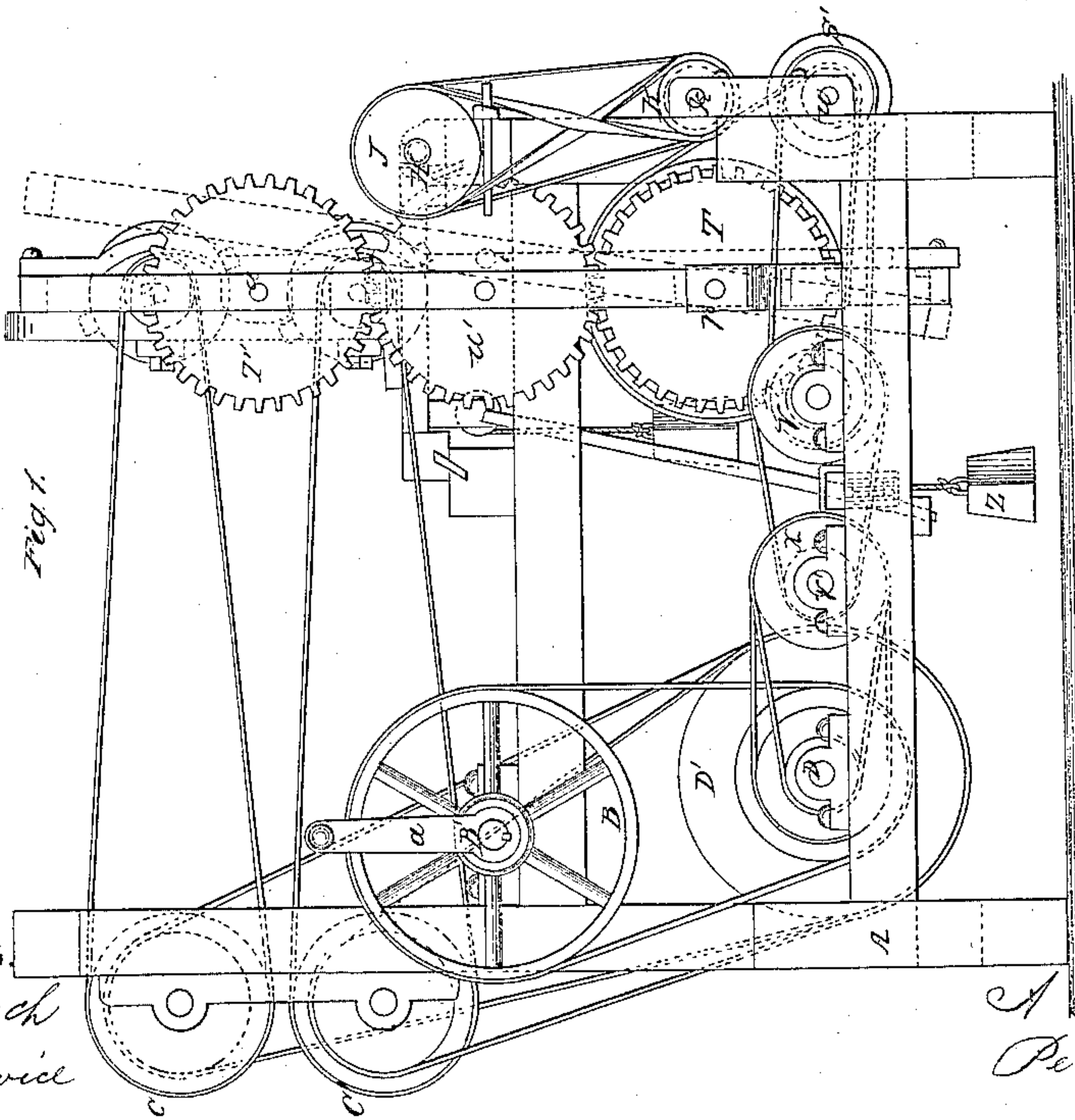


Fig 1.



Witnesses.
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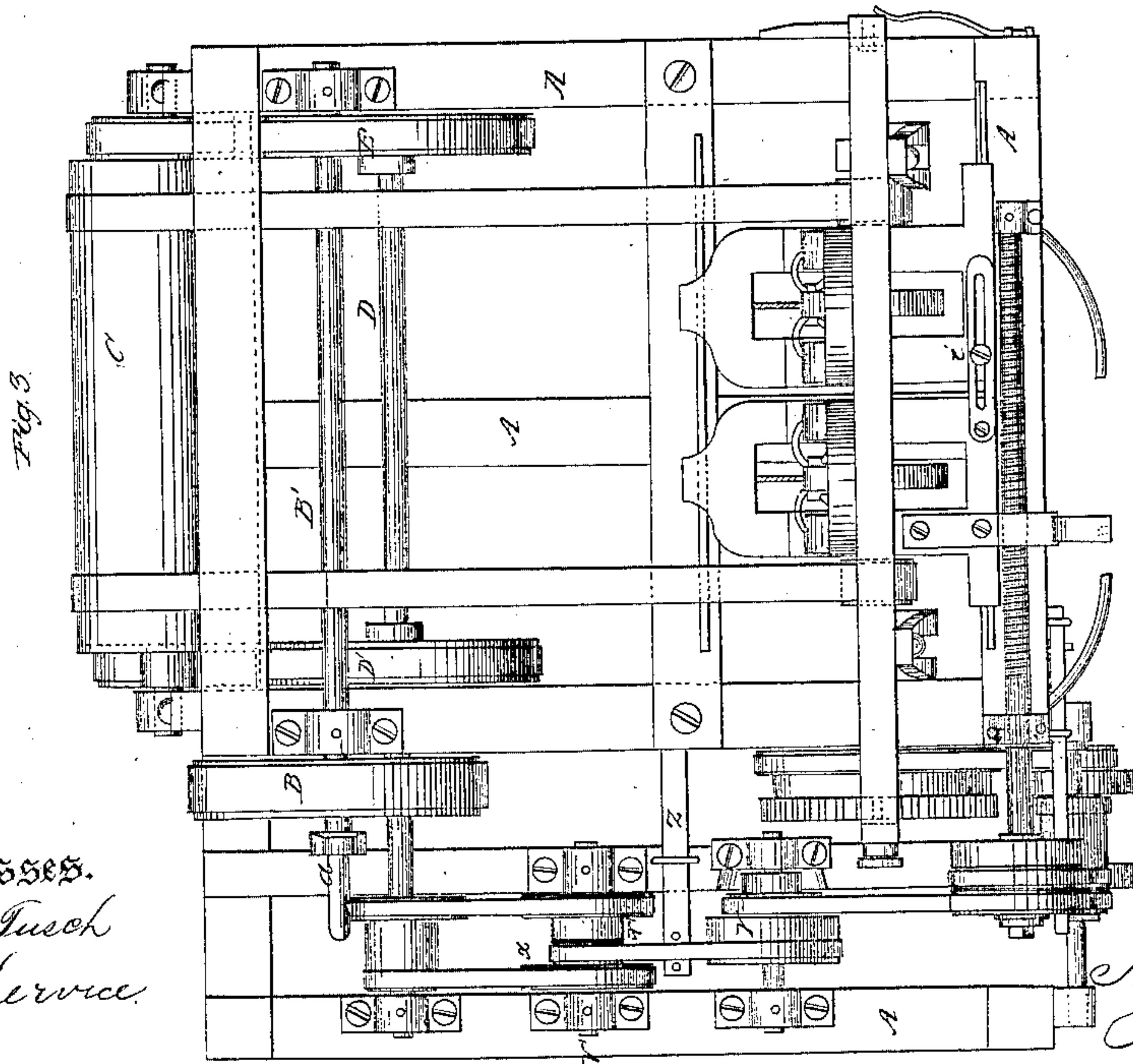
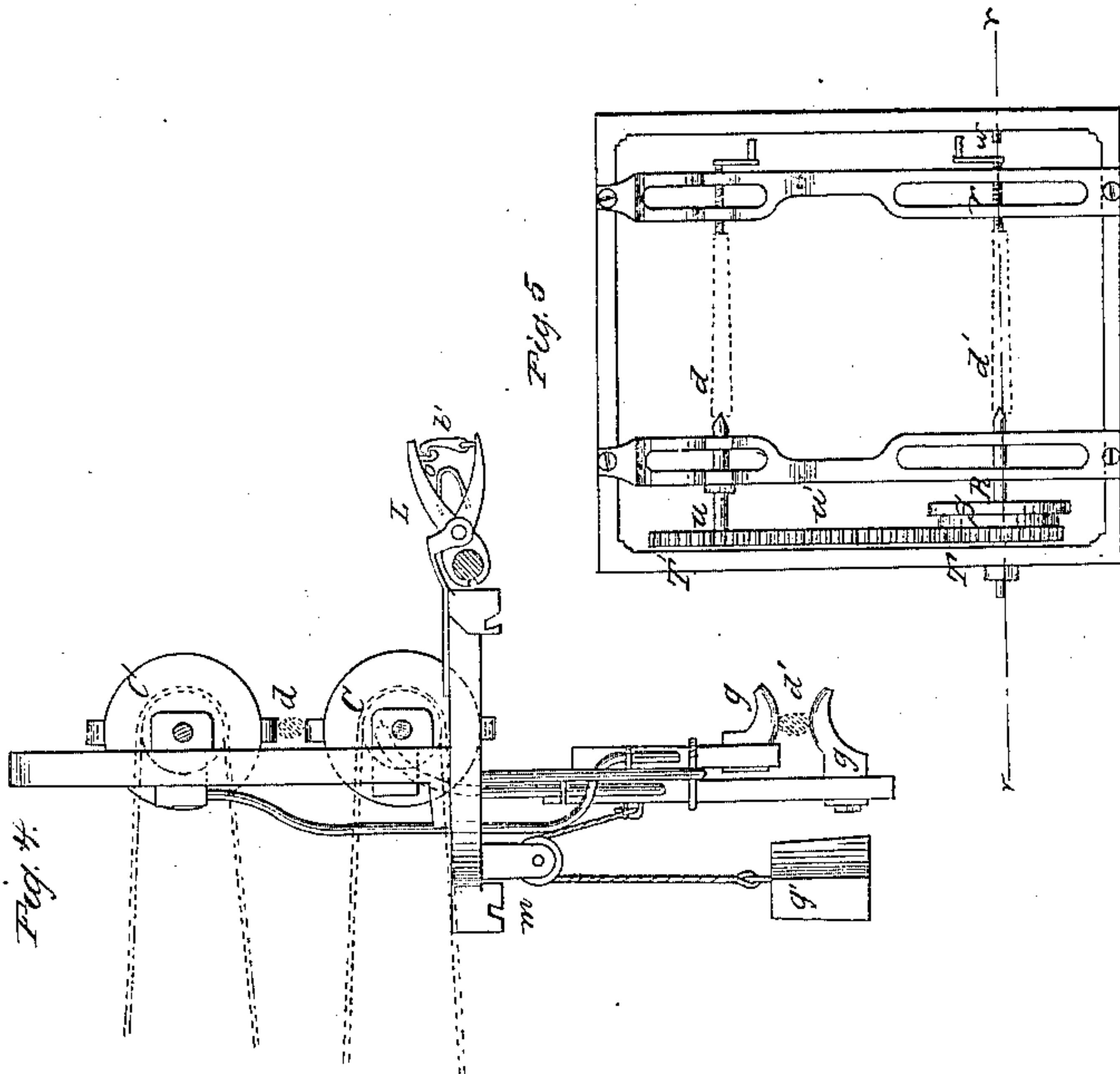
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A. R. STEWART, OF DOUGLAS HARBOR, CANNING, NEW BRUNSWICK.

Letters Patent No. 63,574, dated April 2, 1867.

IMPROVEMENT IN WOOD-LATHES FOR TURNING IRREGULAR FORMS.

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, A. R. STEWART, of Douglas Harbor, Canning, in the county of Queens, and British Province of New Brunswick, have invented a new and improved Machine for Turning Irregular Forms; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

My invention consists principally in so constructing a machine for turning irregular forms that I am enabled to use four cutter-wheels with cutters at the same time, on the same piece of wood, and in attaching the cutters to two separate frames, as will be hereinafter explained.

Figure 1 is a front elevation.

Figure 2 is a side elevation.

Figure 3 is a plan or top view.

Figure 4 is a side view of the carriages.

Figure 5 is a view of the swinging frame which holds the piece to be turned, the pattern, and the gearing. Similar letters of reference indicate like parts.

My machinery is attached to a substantial square frame, which is so constructed that it supports my shafting, pulleys, and gear-wheels, and other portions in their proper positions.

A indicates the frame. B is the driving-wheel, which is attached to the driving-shaft B'. C and C' are drums, from which the cutters are driven. For convenience in demonstrating my invention in the present instance I have represented a crank, *a*, as attached to the driving-shaft. In actual practice there would of course be a pulley where the crank is. D is a shaft, supported on the lower portion of the frame, having upon it a pulley, D', from which the upper drum C is driven. E is another pulley, on the same shaft, from which the other drum C' is driven. These drums C and C' extend across this portion of the frame between the posts, giving ample room for the belts to move back and forth to correspond with the motion of the cutter carriages. There are four cutter-wheel shafts, each having a pulley and cutter-wheel upon it. Two of them are above and two are below the spoke or piece of wood to be turned, so that when the cutters are revolved they cut upon opposite sides of the piece. Each cutter-wheel has two or more cutters. The two cutter-shafts above and the two below stand in line with each other and revolve with the same speed. The upper two are driven from the upper drum, and the lower two from the lower drum. The pulleys upon these cutter-shafts are indicated by *b*, and the cutter-wheels by *c*. Both are seen in figs. 2 and 4, also in dotted lines in fig. 1. The piece to be turned is represented by *d*. The cutter-shafts are attached to two carriages, two shafts to each carriage. The upright portion of these carriages forms two arches, as seen at *ff'*, fig. 2, the supporting columns of which are slotted, *jj'*, and the boxes upon which the cutter-shafts run are confined in these slots, but are allowed to move up and down according to the shape of the piece to be turned. These carriages are denoted by *f* and *f'* in the drawing, a side view of which is seen in fig. 2. Attached to the lower portion of these carriages, and directly under or corresponding with the cutters above, are traversers *g*, which, of course, move back and forth as the cutters and the carriages move. The pattern *d'*, to which the pin *d* is to be turned, is placed between these traversers. The upper traversers rest upon the top of the pattern *d'*, and are held in contact with the pattern by their own weight and the weight of the cutter-shaft and wheel above. The lower two traversers are held in contact with the pattern by weights *g'* attached to them, which operate by cords running over pulleys *m*. The carriages *ff'* move laterally back and forth on ways which are supported by the frame. H is a screw, attached to the frame A at *h* and *h'*. This screw has a pulley, I, near one end, by which it is revolved. J and *k* are loose pulleys, which revolve on this end of the screw-shaft. The screw-shaft is driven from the short drum K on the shaft *k'*. *n* is a belt-shifter, to throw the belt from the fast pulley I either to the loose pulley J or *k*. It will be noticed that there are two belts running from the short drum K, one of which is crossed so that it turns the screw in an opposite direction from the other when it is on the fast pulley I. L is a clamp nut, secured to the carriage *f*. The two parts of the nut are hinged together something like a pair of pincers, so that when the outer ends are brought together, the jaws which form the nut are made to enclose the screw. When the screw revolves in the nut the carriage moves one way or the other according to the way the screw turns. When it is

desired to stop the motion of the carriage the jaws of the nut are unclamped. The clasp or hook h' is so arranged that when the motion of the carriage is to be stopped the hook comes in contact with one of the wires b which are fast to the frame. This crowds the hook from the catch o , and the jaws are then thrown apart by a spring, when the carriage at once stops its motion. The two carriages $f f'$ are coupled together by a slotted plate and a screw or bolt. The plate is made fast to f , as seen in the drawing, at one end. The slotted portion laps on to f' , to which it is fastened by the screw or bolt. The plate is represented in the drawing by i and the screw by j' . By this arrangement the two carriages can be connected together when both are to be used at the same time, and at any distance apart allowed by the length of the slot, and to suit different kinds and lengths of turning. In this machine either one or both of the carriages may be used on the same piece of turning. For rapid work, and for turning adapted to both carriages, one set of cutters will be placed so as to commence at the end of the piece and work to the middle, while the other set would commence at the middle and work to the end. The piece to be turned is cut in strict conformity to the pattern, as the traversers and the cutters are so connected together that the vertical motion of each is the same, the inequalities of the irregular-shaped pattern being communicated to the cutters by the traversers, the latter being always in contact with the pattern. The manner in which this contact is maintained has been already described. Fig. 5 represents that portion of the machine which supports the piece to be turned as well as the pattern. This view shows the whole of the frame, the top and outside portions of which are represented by o in the drawing. The lower portion or bottom piece is seen in dotted lines o . This frame is hung on pivots, the axial centre being through the line $r r$, fig. 5. The pattern d' is attached to the end of the shaft R at one end, and to a centre crank, r' , at the other. The pattern is revolved by a belt running over a pulley, S , on the shaft R . This pulley is formed in two sections, which correspond with the sections of the pulley from which it is driven, S' . This is for the purpose of changing the speed of the shaft R . Attached to this shaft R is a gear-wheel, T , figs. 1 and 5, which rotates with the shaft. The motion of this wheel is communicated to the shaft U (which is the centre shaft for supporting the piece to be turned) d through an intermediate gear-wheel, U' , to the gear-wheel T' on the centre shaft U . These three wheels stand directly over each other, and revolve with a uniform speed, the intermediate wheel being used to transmit the motion from T to T' . As before stated, this frame, fig. 5, swings on the centre and crank-shafts of the pattern, on the line $r r$ and on the pivot w in the side of the frame at the right hand. When a piece is turned and to be taken out of the machine the top of the frame is drawn forward out of the line of rotation of the cutters w . Fig. 2 is a shaft, upon which the pulley S' is fast. Upon this shaft are two other pulleys, of two sections each, one of which drives the small drum K , and the other receives the motion by which the shaft is driven from a cone, V , fig. 3. This cone V is driven from another cone of two sections, X , on the shaft V' . This shaft has another pulley, X' , which is fast to the shaft. X is a loose pulley, but both are driving-pulleys. These pulleys receive their motion from the shaft D , from which the drums $C C'$ are driven, as before described. Z , fig. 3, is a belt-shifter, lying in a horizontal position on the lower part of the frame. It is attached to or governs the belt which drives the pulley V from the pulleys on the shaft V' . This shifter is shoved out by the carriage f in its motion, and shifts the belt from the pulley X' to X . This is done by a lever, which extends up from the shifter and comes in contact with the carriage. When that contact ceases the shifter is brought back by a weight attached to the shifter by a cord running over a pulley. This weight is shown at Z' . The shifting of this belt alters the speed of the screw as well as that of the pattern and the piece to be turned. The burr or chuck z , which holds the spoke or piece to be turned, is a hollow chuck placed on to the end of the shaft u , with a pin coupling at the end, which slips out of gear, when the spoke is removed, and does not revolve with the shaft until another spoke is attached, when it is driven endwise and coupled with the shaft by the crank-centre z' at the other end.

I do not claim as new the transmission of motion by pulleys or gears in the manner described, nor do I claim the particular construction or arrangement of the screw or the clamp nut, as I am aware that substantially the same arrangements have been in use hitherto; but, having thus described my invention, what I do claim as new, and desire to secure by Letters Patent, is—

1. The double carriage f and f' with their shafts and cutter-wheels and traversers, arranged and operated substantially as herein shown and described.
2. I claim the screw H , the clamp nut L and the swinging frame, fig. 5, in combination with the double carriage f and f' , operating substantially as herein shown and described and for the purposes set forth.

A. R. STEWART.

Witnesses:

W. H. OBER, Jr.,
W. H. BARNABY.