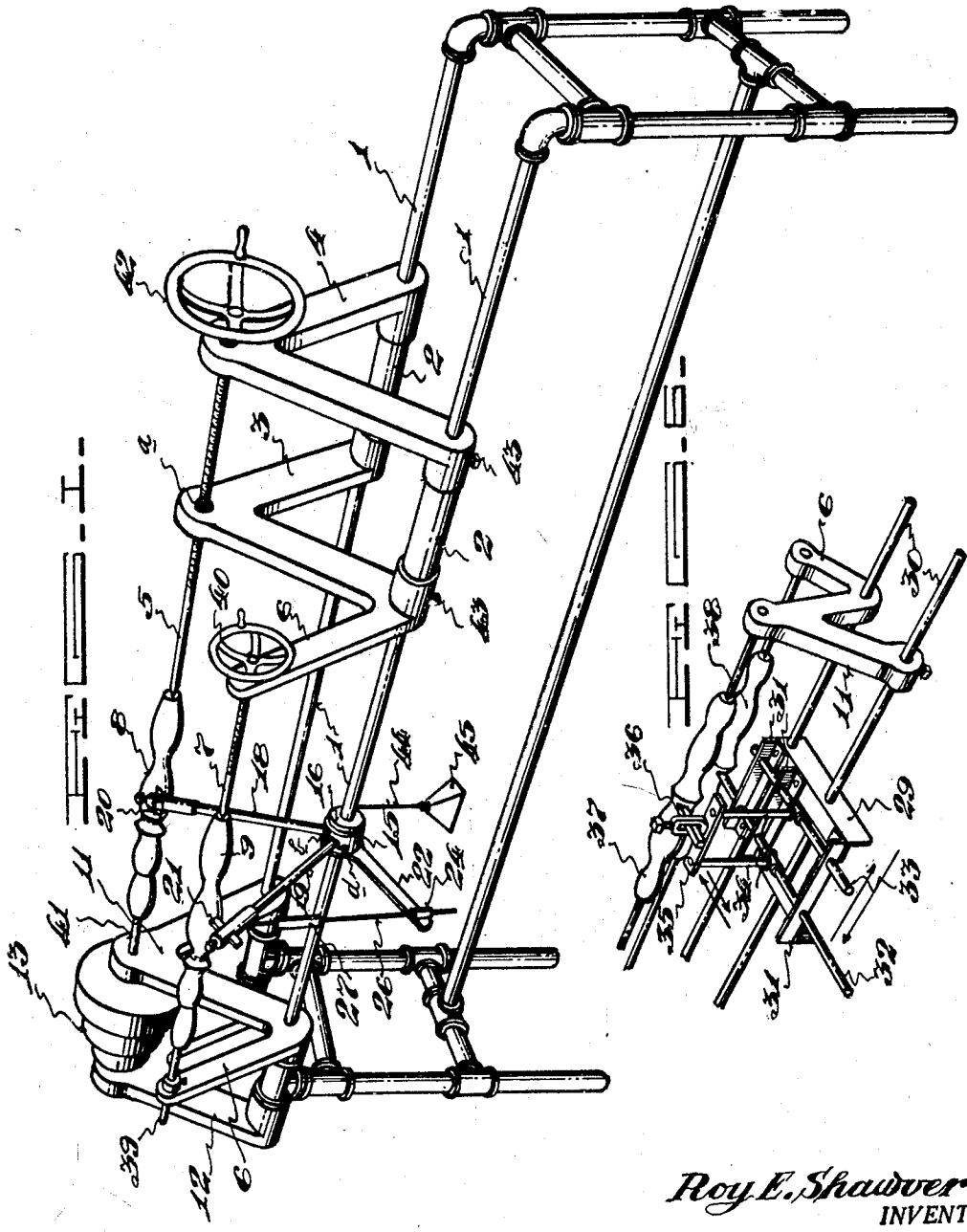
May 24, 1932. R. E. SHAWVER 1,859,474

WOOD TURNING LATHE

Filed May 4, 1931 2 Sheets-Sheet 1



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WOOD TURNING LATHE

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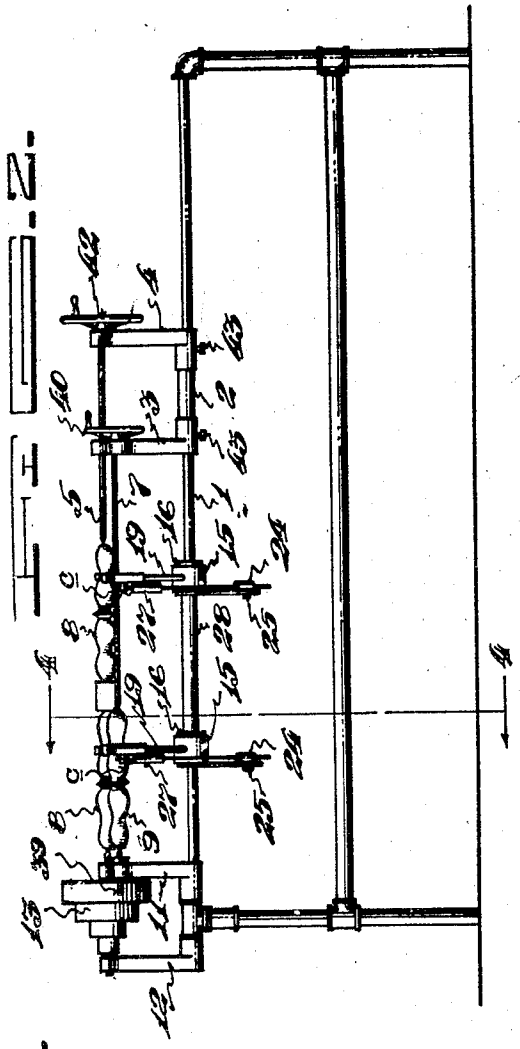

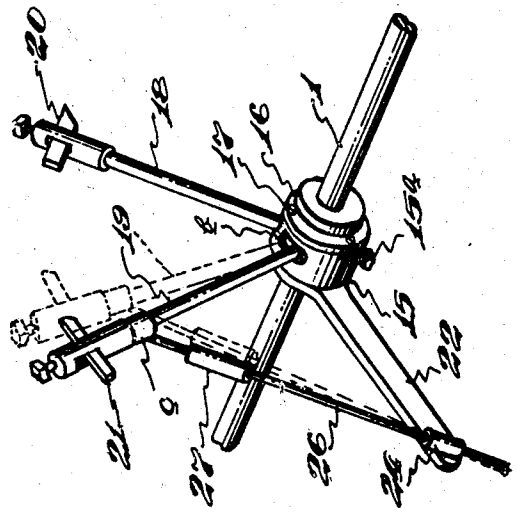

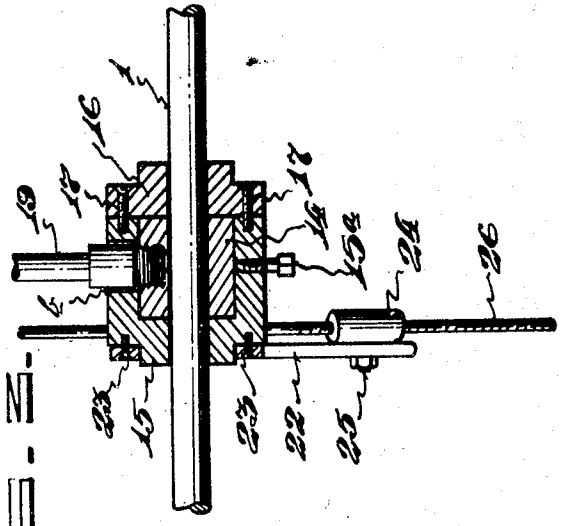

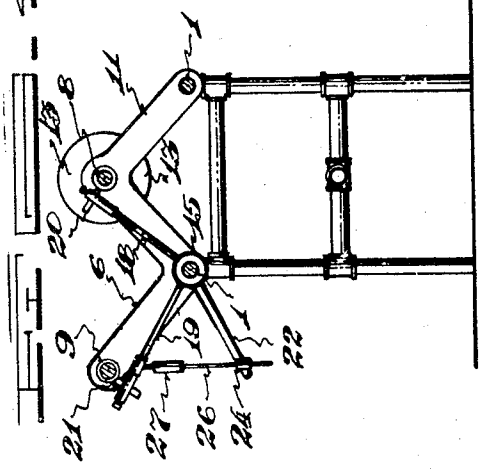

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UNITED STATES PATENT OFFICE

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WOOD TURNING LATHE

Application filed May 4, 1931. Serial No. 534,913.

This invention relates to wood turning lathes and it has particular reference to lathes designed for producing various designs for table legs, bedposts and other articles of a utilitarian nature having symmetrical form and appearance and the principal object of the invention resides in the provision of a new and useful combination of elements, including an improved lathe bed, the combination being capable of turning articles of the character specified with minute precision equalling that of more expensive and complicated machines.

Another object of the invention resides in the provision of an improved tailstock, combined with a novel tracer and cutter mounting having means providing for minute adjustments of the cutter blade relative to the work in accordance with the design of the tracer.

Still another object of the invention resides in its extreme simplicity as compared with machines designed to produce the same character of work for which the invention is designed, and in addition, the capability of the invention of being dismantled for shipment and readiness of assembly for operation, these being within the range of the ability of unskilled persons.

With the foregoing objects as paramount, the invention has particular reference to its salient features of construction and arrangement of parts which will become manifest as the description proceeds, taken in connection with the accompanying drawings, wherein:

Figure 1 is a perspective view of the invention.

Figure 2 is a front elevation.

Figure 3 is a sectional view of the cutter and tracer mounting.

Figure 4 is a sectional view on lines 4—4 of Figure 2.

Figure 5 is a perspective view of the cutter, tracer and the mounting for these elements, illustrating adjustments, and

Figure 6 is a modified form of cutter and tracer carriage.

In continuing more in detail with the drawings, it may be first mentioned that in view of the economical construction adhered to throughout the entire arrangement, the invention may find use in many places other than wood working establishments, such for instance as in large hotels and the like when it is required to duplicate broken table legs or bedsteads which have become worn or broken. In repairing furniture and the like, especially in the case of chairs and bedposts, the unimpaired parts may be used as patterns by which to reproduce a duplicate part. The fact that the invention occupies but little space, requires but little power to operate and, in view of its simple and economical construction, its use is well adapted to the character of work specified. In applying the invention for the foregoing uses, the operator is not required to be entirely skilled in the art, which lends a greater value to the machine.

Accordingly, the frame of the device is preferably comprised of a plurality of sections of pipe, threaded and joined together by conventional T's and elbows. The pipes provide a very desirable lathe bed upon which slides the tubular elements 2. These tubular elements provide spacing means for the tailstock elements 3 and 4. The tailstock elements are in inverted V form and stock 3 serves the dual purpose of providing a bearing at *a* for the spindle 5 and through the medium of the arm 6, provides a support for the spindle 7. The spindle 5 serves to hold the work 8 in its proper relationship with the pattern 9, as shown in Figure 1, while the spindle 7 maintains proper position of the pattern.

A desirable feature of the construction of the head and tailstock elements lies in the fact that the tailstock elements 3 and 4 are of precisely the same construction as the stocks 11 and 12 which comprise the headstock elements, although they are reversely disposed when in operative position.

Interposed between the headstock elements 11 and 12 is a variable speed pulley 13. This pulley is of a conventional design and it is through the medium of this pulley that rotation is imparted to the work 8 and by adjusting the driving belt, not shown, on this

pulley, the work may be rotated at any desired speed.

With particular reference to Figures 3 and 5, showing the cutter and tracer mounting, it is pointed out that there is provided a collar 14 which is frictionally slidable upon one of the lathe bed members 1 and about which is a housing 15. A set screw 15*a* is provided for locking the housing 15 in non-rotatable relationship with the collar 14. The housing 15 entirely covers the collar 14, as shown in Figure 3 and a cap 16, through the medium of screws 17 securely holds the cap in position on the housing 15, yet allowing for rotation of the collar 14 when the screw 15*a* is loosened. An arm 18 is threaded into the housing 15 in the manner shown. A similar arm 19, disposed at an angle relative to the arm 18, has its end passed through a slot *b* and is threaded into the collar 14 in the manner shown in Figures 3, 4 and 5 particularly. Accordingly, the arm 19 is capable of movement relative to the companion arm 18 for adjustments as will be later described.

It will be observed from the foregoing description that in view of the fact that the collar 14 is allowed to rotate on the lathe bed member 1 within the housing 15, the arms 18 and 19 are capable of relative movement and the arm 18, which carries the knife 20, is held in operative engagement with the work 8 in the manner to be presently described.

The tracer arm 19, supporting the adjustable tracer 21, is held in operative position more or less rigidly with the cutter arm 18 by the arrangement shown in Figures 3 and 5. This arrangement consists of an arm 22, affixed by means of the screw 23 to the housing 15 and extends radially outward from the housing. Upon the outer end of the arm 22 is mounted an interiorly threaded sleeve 24 and the sleeve being pivoted at 25, it is capable of displacement on its mounting. A threaded arm 26 is received by the sleeve 24 and is rotatably connected at *c* near the upper end of the tracer arm 19. A handle 27 is provided on the rod 26 in order that the same may be conveniently rotated.

Due to the fact that the arm 22 is in fixed relation to the collar 15, rotation of the threaded rod 26 will effect movement of the tracer arm 19, as shown in dotted lines in Figure 5. When the cutter arm 18 is set to operatively engage the work rotation of the threaded rod 26 will, of course, move the tracer arm nearer the cutter arm until the tracer rests against the pattern. The slot *b* through which the arm 19 passes permits of this adjustment.

In Figure 1 a single pattern is employed for turning out a single piece of work, but in Figure 2, one tracer and two cutters are shown. In the latter case, it is shown how the work is duplicated with a single pattern and tracer. In order to accomplish this, a tubular member 28 is interposed between the two mountings which support the arms 18 and 19 and is affixed to the two mountings by screws or other suitable means not shown. Thus it may be seen that by manually manipulating the mounting nearest the headstock elements, motion is transmitted to the companion mounting to reproduce the pattern on the companion piece of work.

With reference to Figure 6 showing a modified form of the arrangement described in the foregoing and shown in Figures 1 to 5 inclusive, it is pointed out that a carriage 29 is provided and is slidable upon the parallel rods 30 forming the lathe bed. Suitable bearings 31, formed of angle iron are affixed to the carriage 29 and are provided with holes through which rods 32 and 33 are passed. To these rods are affixed vertical rods 34 carrying a cross head 35, which latter in turn, supports an adjustable cutter 36, which engages the work 37. The rod 32 extends well beyond the sides of the carriage 29 at both ends and one end engages the pattern 38 as a tracer while the other end affords a handle by means of which the carriage is moved along the work 37.

In operation, reference being made to Figures 1 to 5 inclusive, the pattern 9 is affixed in the manner shown, one end being received by the stationary spindle 39, while the opposite end is received by the spindle 7 by rotating the wheel 40. A length of suitable material is operatively held between the rotatable spindle 41 and the retaining spindle 5, being so mounted by advancing the spindle 5 upon the end of the material or work by rotation of the wheel 42. It is understood that the tailstock elements 3 and 4 are frictionally movable along the pipes 1 constituting the lathe bed and after having been adjusted to position, screws 43 may be tightened upon the pipes 1 to prevent undue movement.

The lathe being thus prepared for operation, the mounting 15, together with the arms 18 and 19 are adjusted so that the tracer 21 will frictionally engage the pattern 9 and the knife 20 will be in operative position to act upon the work. The pulley 13 is set to rotating which rotates the work 8 and as the operator moves the mounting 15 slowly longitudinally, the effect of the design of the pattern 9 on the tracer will transmit such motion as required to duplicate the design on the work 8 through the medium of the cutter knife 20.

A cable 44 has one end connected at *d* and extends partially around the housing 15 and suspends a weight 45 as apparent in Figure 1. The purpose of this arrangement is to aid the operator in holding the tracer against the pattern 9. While the weight 45 is not necessary to the successful operation of the

improved lathe, it is found to be a desirable feature in relieving the operator of a part of the effort required to maintain the tracer operatively against the pattern, although the adjustment afforded through the medium of the threaded rod 26 and swivel collar 24 has been found to be quite reliable in maintaining this engagement.

The arrangement shown is not limited to the character of work described in the foregoing, it being pointed out that by simply turning the tracer 21 and cutter head carrying the knife 20, at right angles relative to the axes of the arms 19 and 18 respectively, face plate work can be done with equally as effective results. Moreover, the construction shown and described for accomplishing the foregoing is capable of considerable modification and such modification as is considered within the scope and meaning of the appended claims is also considered within the spirit and intent of the invention.

What is claimed is:

1. A turning lathe including a supported frame constructed to provide relatively parallel bed members, head and tailstock elements including pairs of inverted V-members, the apices of which define bearings to receive spindles for holding work, one of each pair of said members having outwardly extending arms for supporting spindles to receive a pattern, a housing having an inner rotatable member mounted for sliding movement on one of said bed members, a tracer arm carried by said inner rotatable member, a cutter arm carried by said housing and means for adjusting said tracer arm relative to said cutter arm.

2. A turning lathe including a holding frame constructed to provide parallel bed members, pairs of inverted V-shaped elements defining a head and tailstock elements, the pair of elements defining said tailstock elements being arranged for sliding movement relative to said headstock elements, the apices of the said pairs of inverted V-shaped members affording bearings for work receiving spindles, means integral with one of each of said pair of said inverted V-shaped elements for receiving a pattern in parallel relationship with said work and means mounted for sliding movement in a plane parallel with said work and supporting relatively adjustable arms, a cutting knife carried by one of said arms and a tracer carried by the other of said arms and means for adjusting the tracer arm relative to said cutter arm.

3. A wood turning lathe including a supporting frame having pairs of inverted V-shaped elements thereon, one pair of said elements defining a tailstock and capable of movement relative to the other pair of said elements, means carried by each pair of V-shaped elements for rotatably supporting work securing spindles, means integral with one element of each pair of V-shaped elements for supporting pattern securing spindles, a tracer and a cutting knife, relatively adjustable means for carrying said knife and tracer and means to which said latter means are connected for moving the same longitudinally of the work.

4. A wood turning lathe including the supporting frame having parallel tubular bed members, a pair of inverted V-shaped elements stationarily mounted upon said bed members, a pair of similar inverted V-shaped members held in spaced relationship and movable relative to said first V-shaped members, rotatable work holding spindles mounted in the apices of each pair of V-shaped members, means carried by said V-shaped members for supporting similar spindles in parallel relationship with said first spindles whereby to receive and hold a pattern, means slidable on one of said tubular bed members between said pairs of V-shaped elements and comprised of relatively adjustable parts, an arm secured to and extending outwardly from each of said parts, a cutting knife carried by one of said arms and engageable with said work, a tracer carried by the other of said arms and engageable with said pattern, means for adjusting said latter arms and means for rotating said work.

In testimony whereof I affix my signature.

ROY E. SHAWVER.