C. B. RUMSEY.

SHAPER ATTACHMENT.

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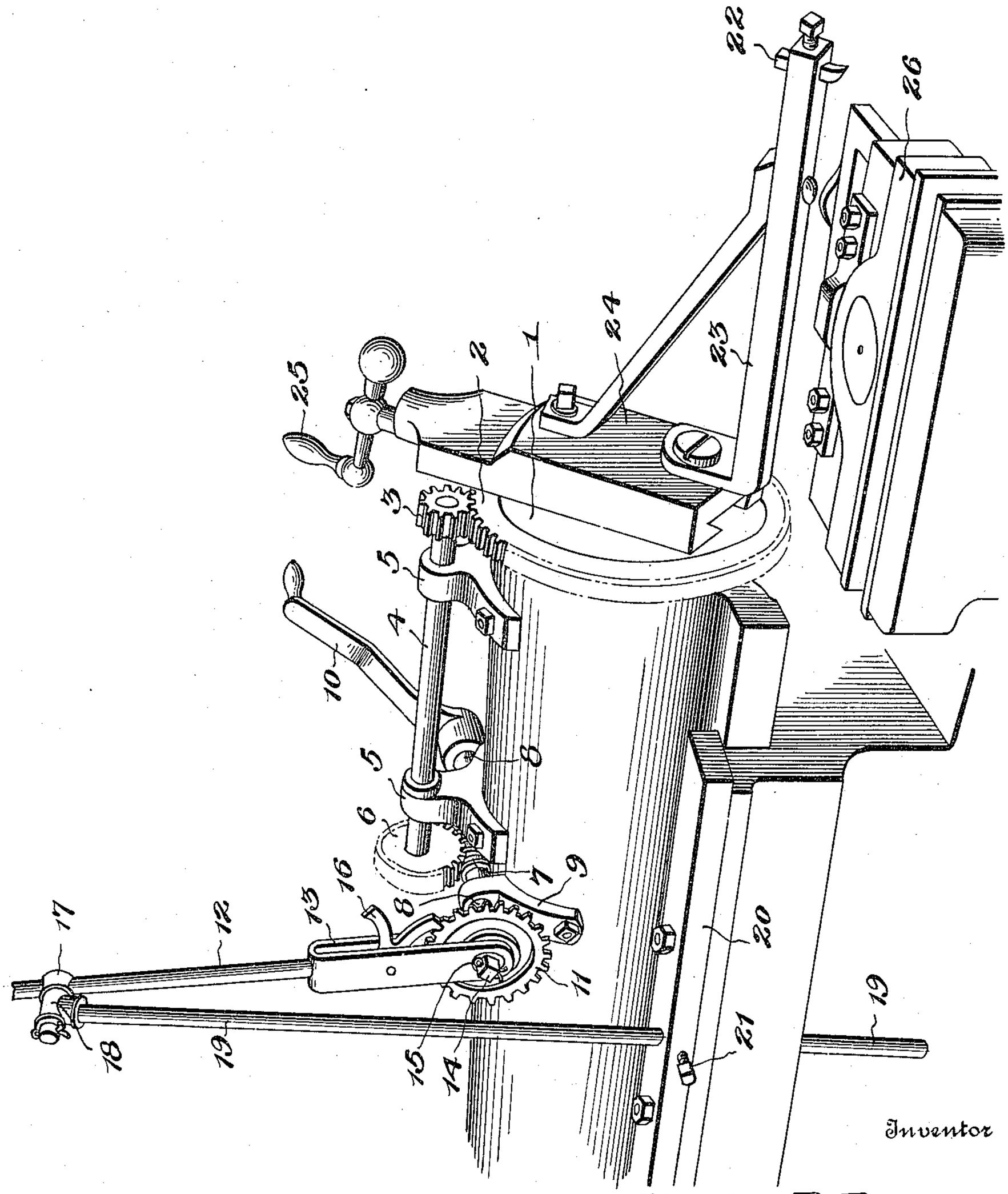

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SHAPER ATTACHMENT.

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To all whom it may concern:

Be it known that I, CHARLES B. RUMSEY, a citizen of the United States of America, residing at Tuscaloosa, in the county of Tuscaloosa and State of Alabama, have invented certain new and useful Improvements in Shaper Attachments, of which the following is a specification.

My invention relates to an attachment for shapers having for its object to automatically feed the shaper head in a circle so that by adjusting the tool relatively to the center of the head, it will automatically cut a perfect circle or curves of any desired radius within the capacity of the shaper.

The object of my invention is to adapt a shaper by means of my attachment to take the place of slot machines and like tools, when it is desired to make curved or circular cuts such as in the case of machining the crown brasses for locomotive driving boxes and for other similar jobs.

My invention comprises in its preferred embodiment the details of construction and arrangements of parts which are hereinafter more particularly described, and which are illustrated in the accompanying drawings, which shows a typical shaper in perspective view with my attachments mounted thereon.

The preferred embodiment of my invention, to which however I do not desire to limit myself except as defined in the appended claims, is shown applied to a shaper having a head 1 upon which I shrink or otherwise mount a gear 2. A small gear 3 meshes with the gear 2 and is mounted fast on a shaft 4 which turns in bearings 5, 5, attached to the shaper. Fast on the rear end of the shaft 4 is a worm gear 6 which meshes with the worm 7 on a worm shaft 8 which is mounted in bearings 9 (only one of which is shown) and which are suitably attached to the shaper. A hand crank 10 is made fast to one end of the shaft 8 and on its other end a ratchet gear 11 is made fast. A rod or pipe 12 is connected at its lower end to a fork which straddles the ratchet gear 11 and is journaled at its lower ends on the shaft 8 which is squared at its outer end 14 and drilled to receive a cotter key 15 which holds the parts assembled thereon. Between the legs of the fork is pivoted a reversible latch 16 which is adapted to swing from one side to the other thereof and to engage the teeth on the ratchet wheel 11 and move it in one or the other direction according to the position of the latch. The rod or pipe 12 is adapted to slide freely through a hole provided therefor in the swivel head 17 which rocks in a bearing 18 provided therefor at the top of a vertical standard 19. This standard 19 is inserted into a hole drilled for it through one side of the shaper bed 20 and is held in the desired adjusted position by means of a set screw 21. The standard 19 is preferably formed from a pipe and the bearing 18 from a T-fitting at the top thereof, but this construction is merely regarded as preferable.

The tool 22 is mounted in the customary manner in a tool holder 23 made fast to the head 24 and adjustable therewith crosswise of the head 1 under the control of the screw 25 in the manner well understood in the art.

In operation, when the work has been set up on the bed 26 and the head 24 adjusted to give the tool the desired radius from the center of the head, the latch is then set in accordance with the direction in which it is desired to turn the head 1 and feed the tool about the circle and the shaper is started in operation. As it reciprocates, the standard 19 being stationary, the fork 13 which is movable with the head 1, is rocked thereby and the latch 16 caused to feed the ratchet and turn the worm shaft, imparting motion through the worm gear to shaft 4 and through gears 3 and 2 to the shaper head to turn the latter about its long axis. By this means the tool is moved angularly a small distance with each stroke and by raising the standard 19, the rate of feed can be decreased and by lowering it it can be increased, the latch being caused to engage a lesser or greater number of teeth on the ratchet wheel 11. The number of teeth on the ratchet wheel may be increased or diminished from that shown which is merely illustrative. To reverse the rotary travel of the tool, it is only necessary to throw the latch 16 over to cause it to engage the ratchet wheel on the other side of the fork. When it is desired to control the angular movement of the tool by hand, the crank 10 is employed and the latch moved out of engagement with the ratchet wheel 11.

While I have described my invention as an attachment for shapers, I wish it understood that my invention covers the application of the attachment to any machine cutting tool to which it is adapted. It will

be further understood that the mechanism described for effecting the angular adjustment of the cutting tool is what I consider preferable but it may be varied in many ways within the scope of the appended claims.

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

1. The combination of a shaper having an endwise and angularly movable cutter head, a stationary standard vertically adjustable in the shaper frame, a rocking arm mounted on and reciprocable with the shaper, means on the standard with which said arm slidingly engages and by which it is rocked as it reciprocates, and mechanism driven by said oscillating member for adjusting the shaper head angularly, substantially as described.

2. A shaper attachment comprising, in combination, a gear fast on the shaper head and concentric therewith, a shaft reciprocable with the shaper head, a worm drive for said shaft, a pawl and ratchet drive mechanism for the worm drive, said ratchet mechanism comprising an oscillatory pawl bearing member, a stationary standard through which said member passes with a loose sliding fit and by means of which it is rocked when the shaper head reciprocates, and a gear on said shaft meshing with the gear on said shaper head.

3. A shaper attachment comprising, in combination, with a reciprocatory and rotatable shaper head, a gear concentric with said head, a shaft journaled on the shaper, a gear on said shaft meshing with the gear on the shaper head, a countershaft journaled on the shaper reciprocable with the shaper head, a worm on said shaft, a worm wheel on the first mentioned shaft meshing with said worm, a ratchet wheel on the worm shaft, an oscillatory pawl bearing member, a pawl thereon adapted to engage the ratchet wheel, and a stationary standard having a slotted member through which said oscillatory member passes loosely and by means of which it is rocked when the shaper head reciprocates, substantially as described.

4. In an attachment for shapers, the combination with a reciprocatory shaper, its bed frame and a shaper head angularly adjustable in said shaper, of a vertical standard, means to mount said standard for vertical adjustment in the frame, a swivel head on the standard, an arm in slidable engagement with the swivel head, a transverse shaft journaled on the shaper and on which the lower end of said arm is journaled, a reversible pawl mounted on said arm, a ratchet wheel fast on said shaft and adapted to be driven in either direction by said pawl, bearings for said shaft which are mounted on said shaper, a worm on said shaft, a second shaft also reciprocable with the head carrying a worm wheel at one end meshing with said worm and a small gear at the other end, and a large gear meshing with said latter gear and mounted fast on the head and concentric therewith, substantially as described.

5. A shaper attachment comprising, in combination, a gear fast on the shaper head and concentric therewith, a shaft reciprocable with the shaper head, a worm drive for said shaft, a pawl and ratchet drive mechanism for the worm drive, said ratchet mechanism comprising an oscillatory pawl bearing member, a stationary standard through which said member passes with a loose sliding fit and by means of which it is rocked when the shaper head reciprocates, a gear on said shaft meshing with the gear on said shaper head, means to disconnect the worm drive from said pawl and ratchet driving mechanism, and means to operate the worm drive by hand, substantially as described.

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

CHARLES B. RUMSEY.

Witnesses:
B. P. HEAD,
W. E. PETERS.