No. 886,719. PATENTED MAY 5, 1908.

P. MURRAY.

LATHE.

APPLICATION FILED APR. 24, 1907.

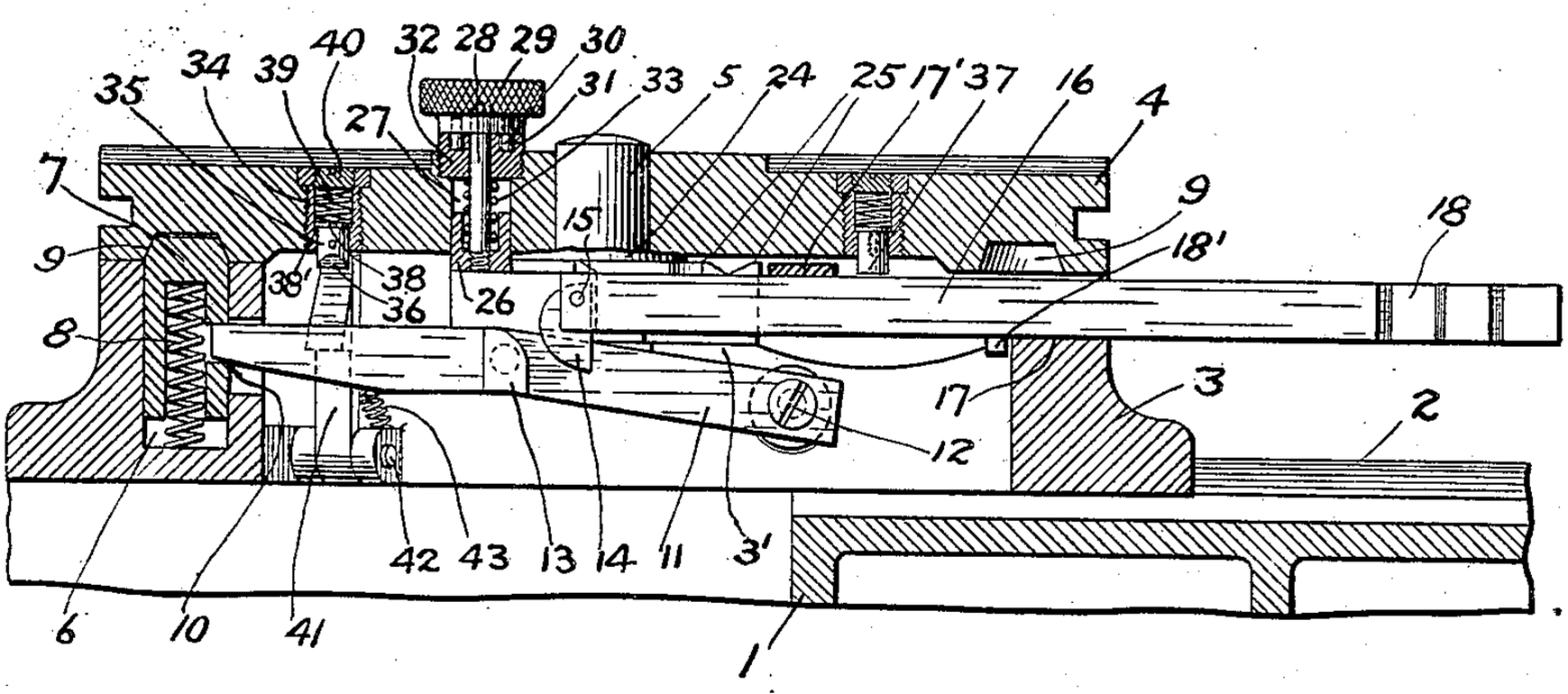

FIG. 1.

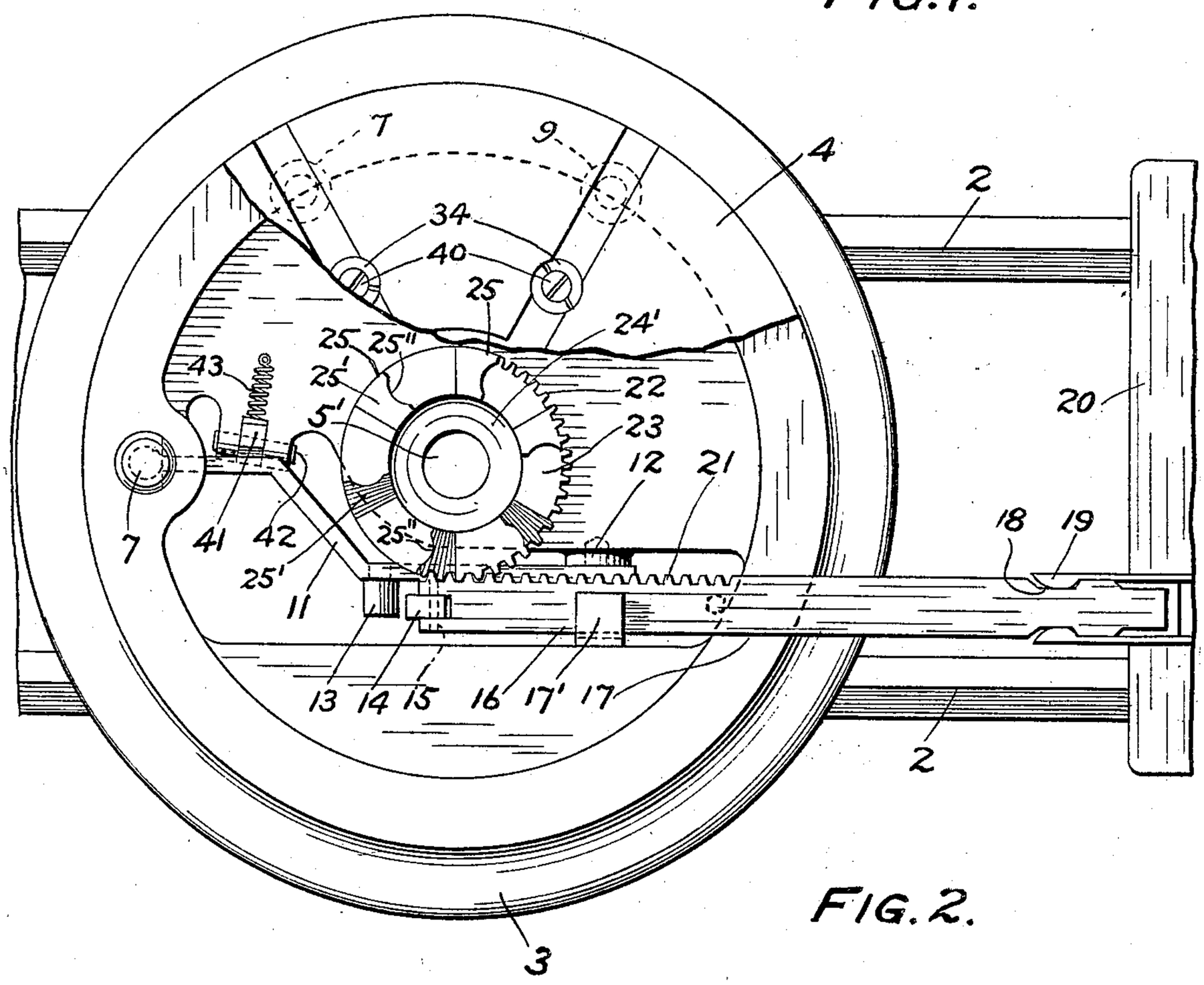

FIG. 2.

WITNESSES:

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LATHE.

No. 886,719. Specification of Letters Patent. Patented May 5, 1908.

Application filed April 24, 1907. Serial No. 369,913.

To all whom it may concern:

Be it known that I, PETER MURRAY, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain Improvements in Lathes, of which the following is a specification.

This invention is an improvement in turret lathes which require a complete forward revolution of the turret to bring the tool into position for successive operations.

It is the object of my improvements to provide simple means applicable to existing constructions whereby the turrets of such lathes can be revolved, backward as well as forward, to any position desired.

In the Jones & Lamson flat turret lathe, for example, a piece of work requiring but two operations would necessitate a complete forward revolution of the turret to bring the tool into position for repeating the first operation, whereas by the substitution of my device for the trip screws and latch of that lathe the previous functions are performed with the additional function of permitting a reverse movement to any desired position.

In the accompanying drawing, Figure 1 is a vertical sectional view of a lathe slide and turret with my improvements applied thereto, and Fig. 2 is a broken plan view of the turret and slide showing the interior mechanism.

In the drawings, the base 1 has the ways 2 for guiding the slide 3 which is provided with the turret 4, the latter being held in revoluble relation to the slide by the arbor 5.

In the socket 6 of the slide is the vertically movable bolt 7 supported by a coiled spring 8 which acts to elevate it, the bolt being adapted for engaging the sockets 9 of the turret to hold the latter and center the operating tool. The bolt has the recess 10 therein which is engaged by one end of the lever 11, the latter being fulcrumed at the other end on the bearing 12 carried by the slide. The lever has thereon the cam 13 which is reciprocated by the reciprocation of the slide and is thereby brought into engagement with the cam 14 having the pivotal connection 15 with an end of the bar 16, the cam 14 swinging freely to the left and being limited in movement to the right. The lever is lowered by the engagement of the cams, and the bolt withdrawn to release the turret, on the backward movement of the slide, while the cam 14 swings on its pivot so as to ride over the cam 13 in the forward movement of the slide. The bar 16, held by and movable relatively to the bearings 17 and 17′ of the slide, has on the end opposite the cam the notches 18 adapted for engagement with spring jaws 19 which are fixed to the bed 20, the bar being disengaged from the jaws when the slide in traveling forward strikes the lug 18′ on the bar. The bar has thereon the gear rack 21 which engages the circular rack 22 on a revoluble hub 23 supported on the bearing 3′ of the slide, the hub having the bearings 5′ and 24′ which receive the arbor 5 and the turret boss 24. Cams 25 on the hub, having the inclined surfaces 25′, and the vertical surfaces 25″, lie in the circular path described by the catch 26 which is adapted to reciprocate in the socket 27 of the turret. This catch is connected by a rod 28 with a knurled head 29 having the pins 30 thereon. The pins are adapted to fit in the sockets 31 of a plug 32 which is set in the turret, the rod being movable freely through the plug. A coiled spring 33 is disposed between the catch and plug, acting to hold the former down in the path of the cams. When the pins 30 register with the holes 31 and the head 29 rests on the plug 32, the catch 26 is down in position for engaging the cams 25. In this position of the locking device and with the hub 23 held stationary by the bar 16, the turret can be revolved to the right, the catch 26 riding up the inclined surfaces 25′, but cannot be revolved to the left, the catch 26 being held by engagement with a vertical surface 25″. But by lifting the head 29 the catch is drawn up out of range of the cams so as not to interfere with the reverse movement of the turret, the catch being held up by turning the elevated head so that the pins 30 are thrown out of registration with the sockets 31 and rests on the top of the plug.

In the turret are set the barrels 34 which hold the vertically movable latches 35 having the inclined surfaces 36 and the oppositely disposed vertical surfaces 37, the latches being limited in downward movement by the engagement of the flanges 38 on their tops with the flanges 38′ of the barrels. Springs 39, held in the barrels by the plugs 40, act to press the latches down. These latches, each corresponding to a socket 9 and a cam 25, revolve in a path containing a de-

tent or hook 41 pivoted on the fulcrum 42. The coiled spring 43 presses the hook toward the lever 11, the hook automatically engaging and holding the lever when the latter is pressed down.

With the catch 26 elevated so as to pass the cams 25 and the slide 3 drawn back with the depression of the lever 11 so as to withdraw the bolt 7, the turret can be turned to the left or reversed, as the inclined surfaces of the latches 35 will ride over the top of the hook now engaging the lever. Upon revolving the turret to the right, a latch 35 will disengage the hook 41 and the bolt 7 will be elevated by the spring 8 to engage a socket 9 corresponding to the engaging latch whereby the turret is fixed to the slide. With the catch 26 down, upon advancing the slide 3, the rack bar 16, while stationary or still disengaged from the spring jaws 18, revolves the hub 23 to the left; the catch 26 riding over the cams 25. When the movement of the slide is reversed, the rack bar moves with the slide until it reaches its engagement with the jaws 19, but the slide moves further, sufficiently to engage the cams 13 and 14 and depress the bolt 7, releasing the turret.

Having described my invention, I claim:—

1. In a lathe, a slide, a turret revoluble thereon, a device for engaging said turret to said slide, means for automatically withdrawing said device and disengaging said turret, a catch carried by and adapted to reciprocate in said turret, a series of cams over which said catch is adapted to ride in revolving said turret in the forward direction and by which said catch and turret are held in revolving in the reverse direction, and means whereby said catch can be withdrawn and said turret revolved in the reverse direction.

2. In a lathe, a slide, a turret revoluble thereon, an automatically operating mechanism adapted for alternately holding and releasing said turret, a spring pressed catch adapted to reciprocate in said turret, a revoluble hub having cams disposed so as to engage said catch to hold said turret against movement in one direction and permit it to move in the other direction, and a member engaged to said catch whereby it can be lifted and held against the action of said spring out of engagement with said cams.

3. In a lathe, a slide, a turret revoluble thereon, a spring pressed bolt for engaging said turret to said slide, a lever for withdrawing said bolt and disengaging said turret, a detent for holding said lever, a spring pressed latch which is constructed and arranged to engage said detent and withdraw it from said lever in revolving said turret in the forward direction and to ride over said detent in revolving said turret in the reverse direction, a cam, a spring pressed catch carried by said turret, said catch being constructed and arranged to ride over said cam in revolving said turret in the forward direction and positively engage said cam in revolving said turret in the reverse direction, and a head for said catch above said turret whereby said catch can be elevated and held out of engagement with said cam.

4. In a lathe, a slide, a turret revoluble on said slide, a hub having cams thereon with inclined and substantially vertical surfaces connected in revoluble relation to said turret, mechanism for revolving and holding said hub, a spring pressed catch adapted to reciprocate in said turret into and out of position for engaging said cams, a rod connected with said catch and reciprocating in a bearing carried by said turret, and a head fixed to said rod for lifting it and withdrawing said catch from position for engaging said cams.

In testimony whereof I have hereunto set my name this 22nd day of April, 1907, in the presence of the subscribing witnesses.

PETER MURRAY.

Witnesses:

ROBERT JAMES EARLEY,

JOS. G. DENNY, JR.