

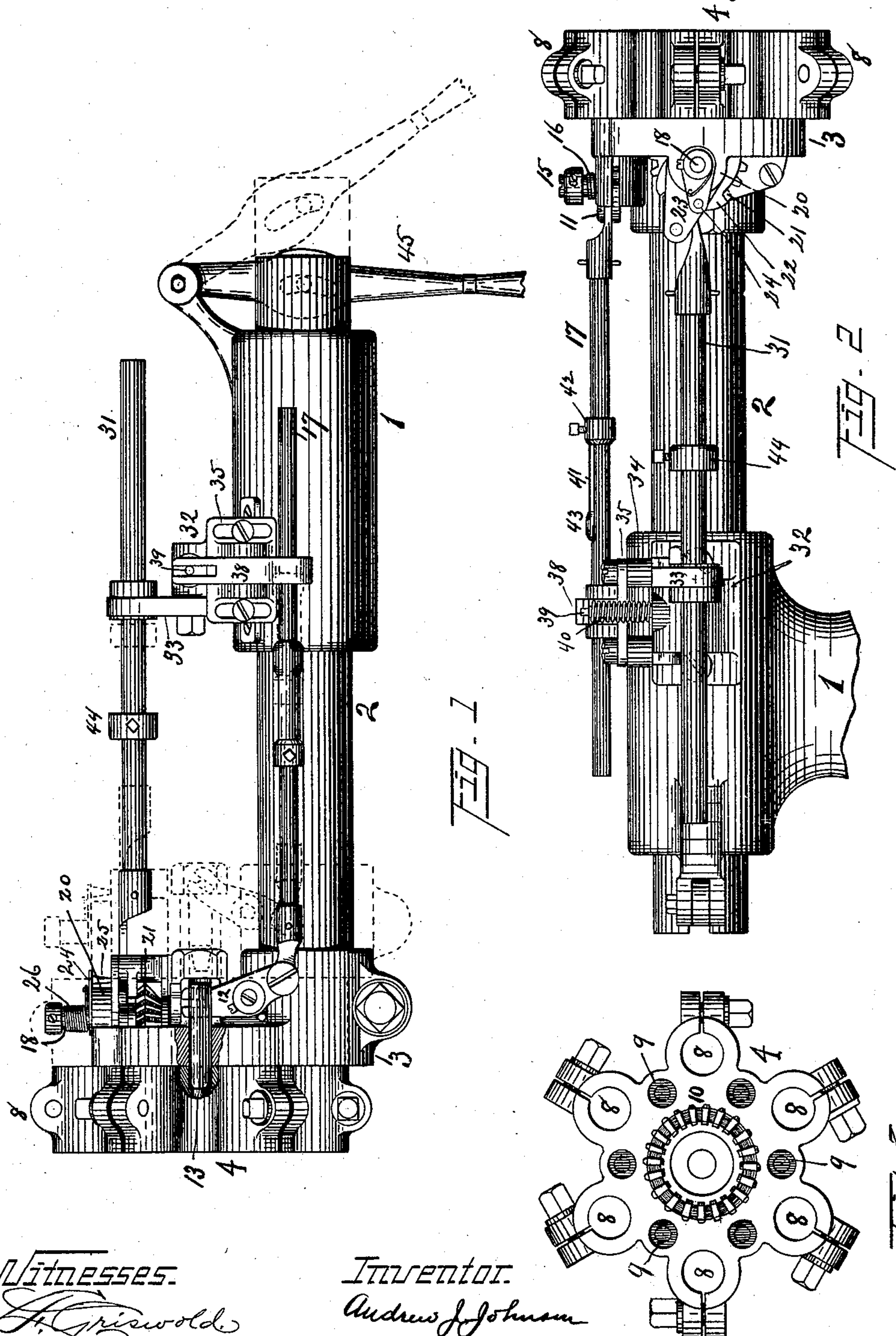
(No Model.)

2 Sheets—Sheet 1.

A. J. JOHNSON.
AUTOMATIC TURRET HEAD FOR LATHES.

No. 603,484.

Patented May 3, 1898.



Witnesses.

H. Griswold.
Wm. F. Fennell

Inventor.

Andrew Johnson
By N. S. Sprague
Atty.

(No Model.)

2 Sheets—Sheet 2.

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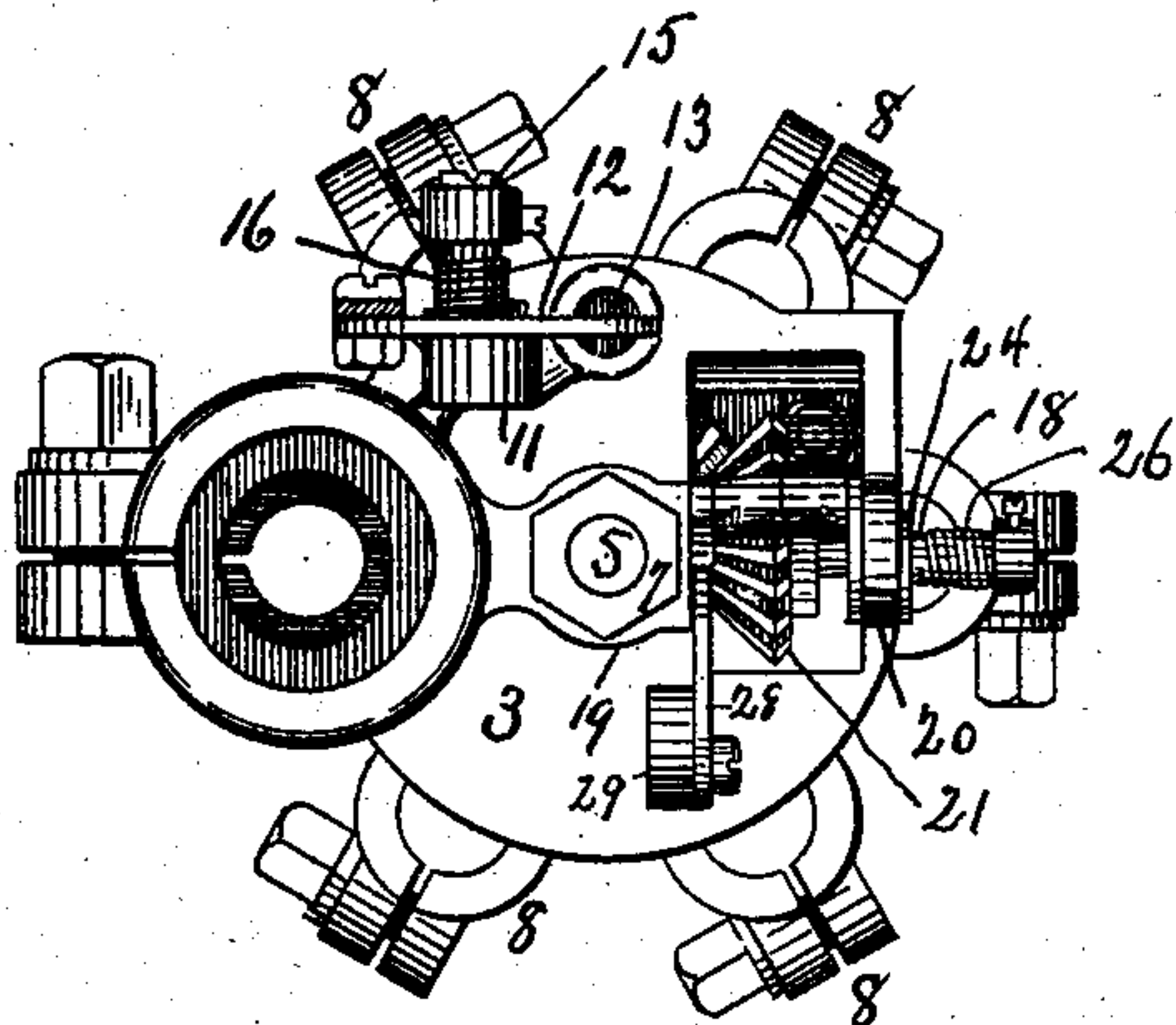


Fig. 4

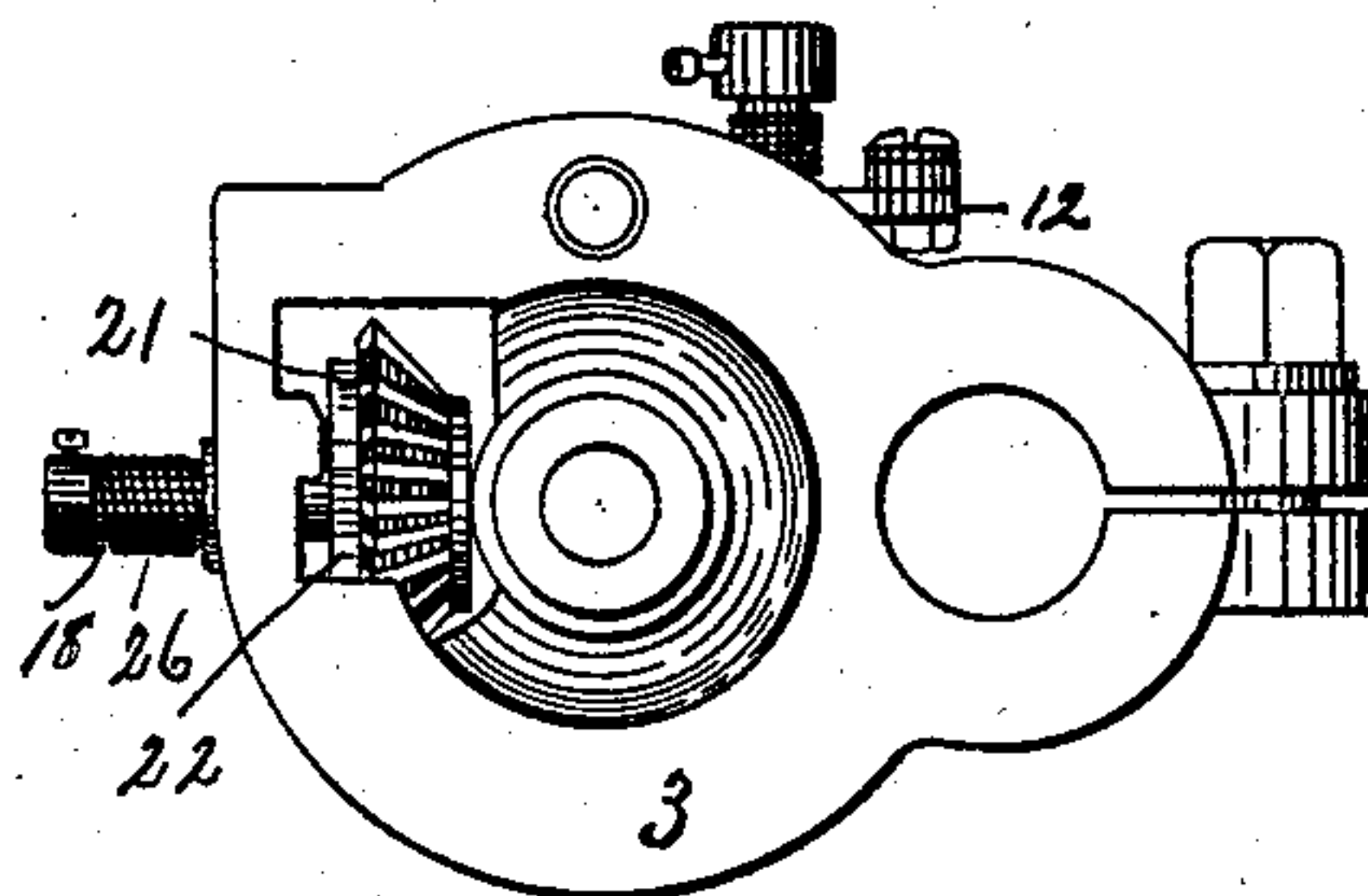


Fig. 5

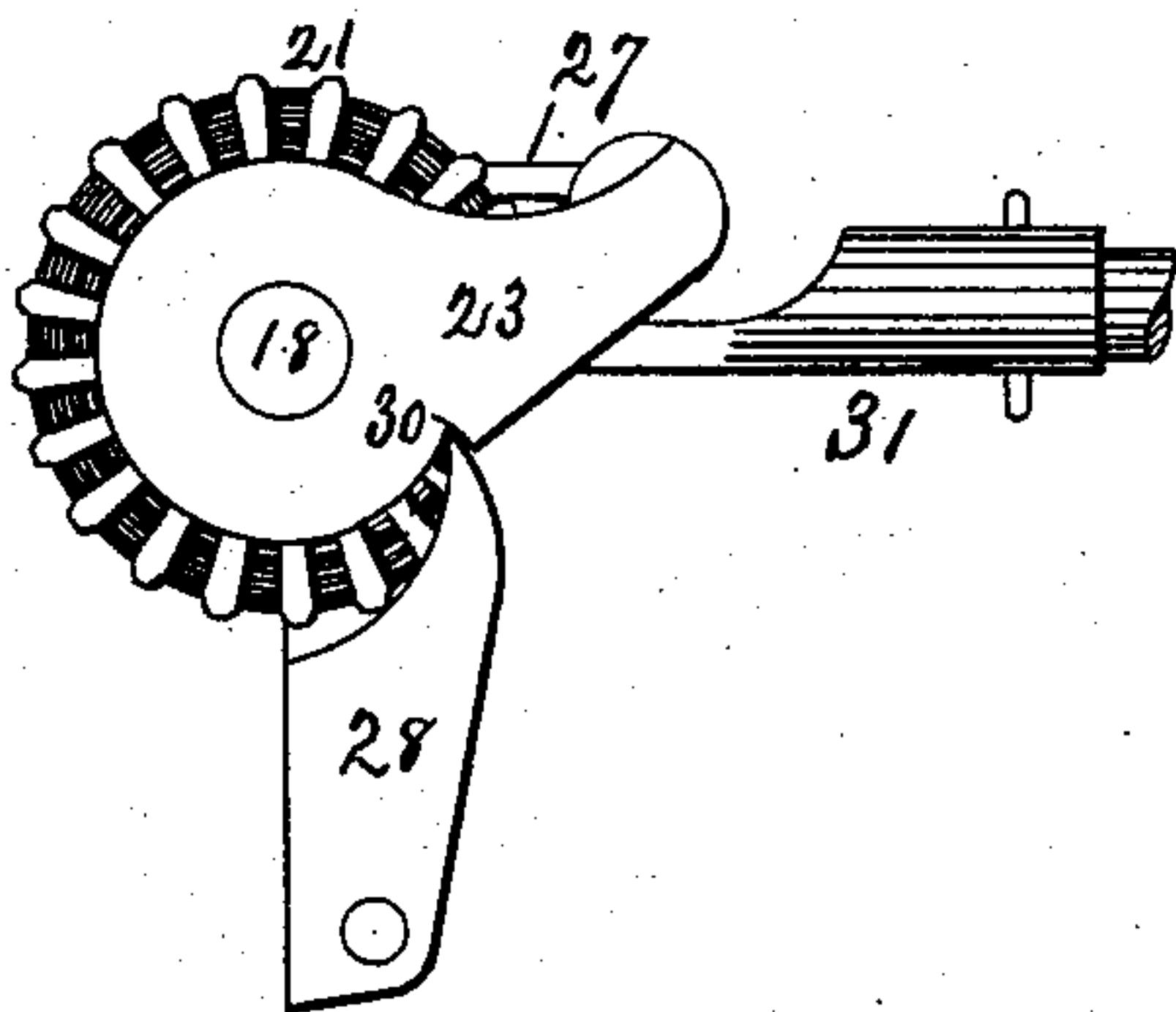


Fig. 6

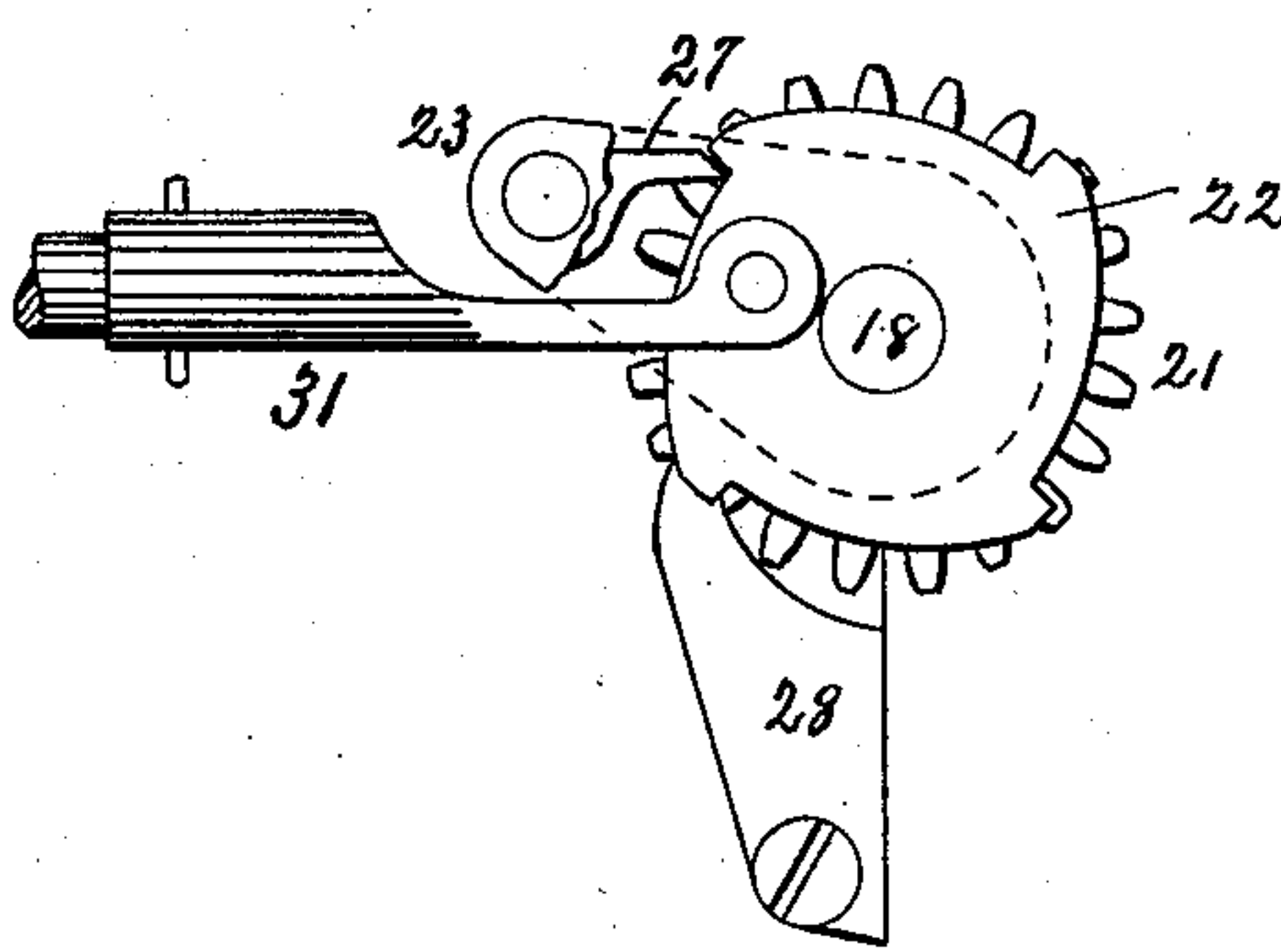


Fig. 7

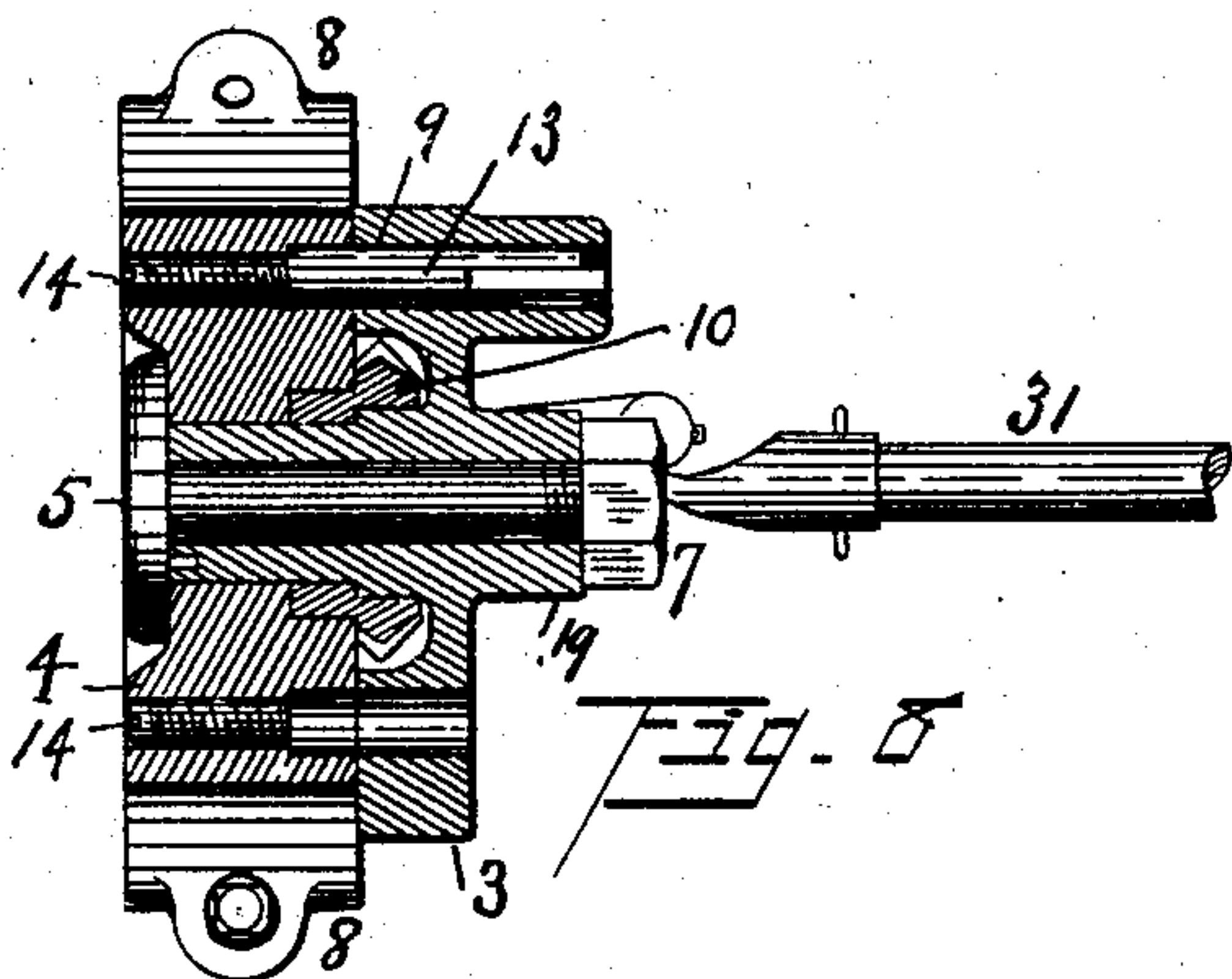


Fig. 8

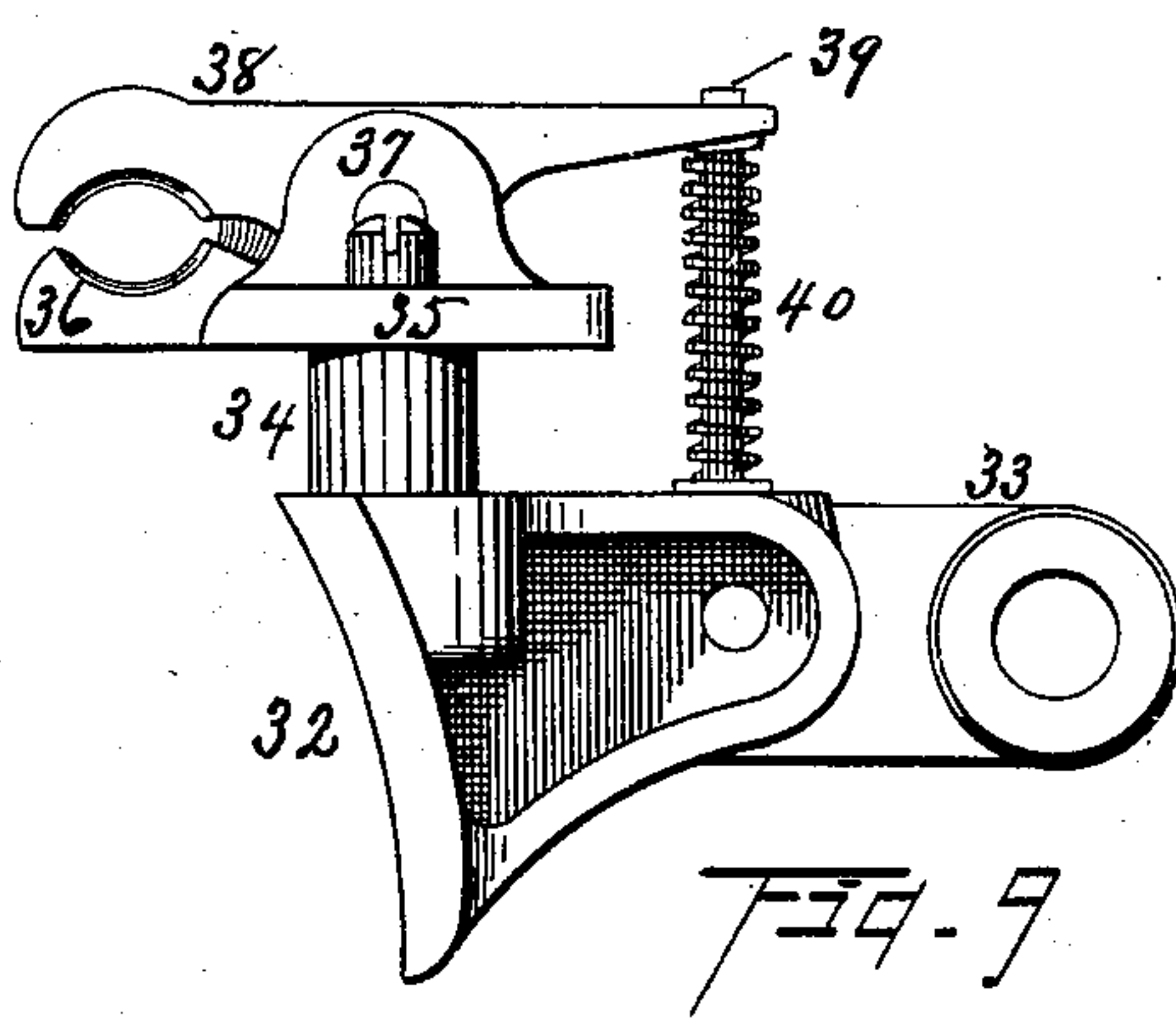


Fig. 9

Witnesses.

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Wm. L. Lennard

Inventor.

Andrew J. Johnson
By *H. S. Sprague* Atty.

UNITED STATES PATENT OFFICE.

ANDREW J. JOHNSON, OF CLEVELAND, OHIO, ASSIGNOR OF ONE-HALF TO
WALTER KENNARD, OF SAME PLACE.

AUTOMATIC TURRET-HEAD FOR LATHES.

SPECIFICATION forming part of Letters Patent No. 603,484, dated May 3, 1898.

Application filed May 10, 1897. Renewed February 21, 1898. Serial No. 671,200. (No model.)

To all whom it may concern:

Be it known that I, ANDREW J. JOHNSON, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Automatic Turret-Heads for Lathes, of which the following, with the accompanying drawings, is a specification.

This invention relates to certain new and useful improvements in portable automatic turret-heads for lathes; and it is designed to be connected or attached to the tail stock and spindle of an ordinary lathe.

The invention consists in the novel features and peculiarities of construction and arrangement of the turret-head and its actuating mechanism, all as more fully hereinafter set forth, and pointed out in the claims.

In the accompanying drawings, which form a part of this specification, Figure 1, Sheet 1, is a top plan of the tail-stock of an ordinary lathe with my improvement attached thereto. Fig. 2, Sheet 1, is a rear elevation of the same. Fig. 3, Sheet 1, is an elevation of the inner face of the turret-head detached. Fig. 4, Sheet 2, is a rear elevation of the puppet-head. Fig. 5, Sheet 2, is an elevation of the inner face of the puppet-head. Fig. 6, Sheet 2, and Fig. 7 are details of construction of the ratchet and pawl for turning the turret-head. Fig. 8, Sheet 2, is a central section through the axis of the turret-head. Fig. 9, Sheet 2, is an enlarged side elevation of the bracket and its attachments designed to be secured to the tail-stock.

Like numerals of reference indicate like parts in the several figures.

1 represents the tail-stock, and 2 its tail or dead spindle. To the inner end of this spindle 2 I removably attach in any proper and convenient manner the puppet-head 3, so that the axial center of such puppet-head is concentric to the axis of the spindle, as shown.

The turret-head 4 is rotatably secured upon the face of the puppet-head 3 by means of the central bolt 5 and nut 7, the front face of the turret-head being countersunk to receive the head of the bolt. The periphery of the turret-head is provided with a series of split sockets 8, of any desired number, to receive va-

rious tools which may be successively brought into operation, as hereinafter described.

The inner face of the turret-head is provided with a series of register-holes 9, equal in number to the tool-sockets 8. It is also provided with a bevel-gear 10, rigidly secured in its inner face, or it may be formed integrally therewith.

Projecting from the rear face of the puppet-head 3 is a boss 11, to which is fulcrumed a lever 12, one end of which carries a register-pin 13, which passes slidingly through the puppet-head and is designed to engage one of the register-holes 9. These register-holes are provided with adjustable screws 14, tapped through the front face of the turret-head coincident and communicating with such register-holes, and they are designed to be so adjusted as to receive the inward thrust of the register-pin and prevent its sticking. At the fulcrum of the lever 12 there rises a post 15, which carries a spring 16, designed to exert its force upon the lever 12 and cause the register-pin to enter one of the register-holes. To the opposite end of this lever 12 there is secured an actuating-rod 17, as hereinafter more fully set forth.

18 is a shaft-post which projects laterally from the hub 19 of the puppet-head and through the ear 20 thereon. Upon this shaft-post 18 and between the ear 20 and the hub 19 there is placed the bevel-gear 21, to the back of which is secured the ratchet 22, both being embraced by the arms of the bifurcated lever 23, said bevel-gear, ratchet, and lever being adapted to have free movement upon said shaft-post 18.

24 is a supplemental lever fulcrumed upon the post-shaft 18, its outer end being connected to the lever 23 by a pin 25, so as to move simultaneously therewith, and a spring 26 upon the post-shaft is adapted to return the bifurcated lever to its normal position, as hereinafter explained. In the free end of the lever 23 is pivotally secured the pawl 27, which engages with the ratchet 22.

28 is a dog pivoted to a lug 29, projecting from the rear face of the puppet-head and is designed to engage with a stop-notch 30 in the adjacent arm of the lever 23 for the pur-

pose of limiting the retrograde movement of such lever. The forward end of an actuating-rod 31 is pivotally secured to the lever 23.

32 is a bracket designed to be bolted or otherwise secured to the tail-stock 1. Projecting rearward from this bracket is an adjustable arm 33, through the rear end of which the rod 31 loosely passes.

Rising from the bracket 32 are elongated posts 34, which carry the adjustable plate 35, provided with the rigid jaw 36. Pivotally secured between ears 37, rising from the plate 35, is the lever-jaw 38, the rear end of which is bifurcated to embrace the upper end of the stud 39, around which is placed a coil-spring 40, the office of which is to keep the said lever-jaw in its closed position. The free end of the rod 17 passes loosely between the jaws 36 and 38.

41 represents a stop adjustably secured upon the rod 17 by means of the adjustable collar 42. The free end of this stop is provided with a head 43, Figs. 1 and 2.

44 is an adjustable stop-collar upon the rod 31.

45 is a lever by means of which the tail-spindle, with its attachments, is advanced or retracted.

When the parts are assembled, the two bevel-gears intermesh, as is clearly shown in Fig. 4, and it requires but a moment to secure the device above described to the tail stock and spindle of an ordinary lathe, and as the particular use of "turret-head lathes" is so well understood by those skilled in the art it is deemed sufficient in this connection to confine further description to the automatic operation of the device.

It will be presumed that the various tools to be brought into successive operation have been secured in the tool-sockets of the turret-head and that the position of the parts when at work is that shown in Figs. 1 and 2. It will be noticed that the head of the stop 41 of the rod 17 is in advance of the stop 44 upon the rod 31. The first tool in the series having performed its work it is desired to bring the next successive tool into action. To accomplish this, the lever 45 is moved rearwardly, which retracts the tail-spindle and turret-head into the position shown in dotted lines in Fig. 1. In making this movement the head 43 of the stop 41 upon the rod 17 meets with resistance at the jaws 36 and 38 sufficient to withdraw the register-pin 13 from its engagement with the turret-head, while the stop 44 upon the rod 31 finds an unyielding resistance against the arm 33 of the bracket. As the spindle is still further pushed back through the tail-stock the rod 31, being stopped from further retrograde movement, actuates the bifurcated lever, so as to partially rotate the gear 21, which imparts a like movement to the turret-head through the medium of gear 10, thereby bringing the next successive tool into place and the next successive register-hole coincident with the

guide-pin 13. By this time the head of the stop 41 has overcome the resistance of the spring-jaw 38 and has passed through between the jaws, leaving the rod 17 practically free, so that the register-pin 13 may, through the action of the spring 16, engage the register-hole. As the spindle is now advanced by means of the lever 45 so as to bring the tool up to the work the stop 41 of rod 17 is drawn through between the jaws 36 38, and the rod 31 is likewise advanced, thus permitting the spring 26 to cause the lever 23, with its connections, to assume their normal positions and bring the pawl 27 into engagement with the next tooth of the ratchet 22, while the dog 28 limits the retrograde movement of the lever 23 to such engagement. This operation is repeated till all or as many as desired of the tools have been brought into use, and it will be readily seen that by simply drawing the device back sufficiently to disengage the register-pin the turret-head may be turned by hand so as to bring any desired tool into use.

The device above described is simple and durable and will be found to perform its work equally as well as a turret-head lathe, while it has the advantage of being inexpensive and can be attached to the ordinary tail-stock without the necessity of removing the latter from the lathe.

What I claim as my invention is—

1. The combination, with the tail stock and spindle of a lathe, of a bracket secured to said tail-stock, a spring-jaw upon said bracket, a puppet-head upon said spindle carrying a rotatable turret-head, a register-pin slidingly engaging said puppet and turret heads, a spring-actuated lever engaging said register-pin, and an actuating-rod connected to said lever and slidingly engaging said spring-jaw upon said bracket, in the manner and for the purpose, substantially as described.

2. The combination, with the tail stock and spindle of a lathe, of a bracket upon said tail-stock, an adjustable arm upon said bracket, a puppet and turret head removably secured to said spindle, a rigid bevel-gear upon said turret-head engaging with a rotatable gear in said puppet-head, a ratchet, a spring-actuated lever and pawl, and an actuating-rod secured to said lever and slidingly engaging said arm upon the bracket, and provided with a stop-collar, as a means for partially turning said turret-head, automatically, as it is retracted from the work, in the manner and for the purpose substantially as described.

3. In a device of the character described, the following elements in combination: a puppet-head 3, adapted to be secured to the tail-spindle 2, a turret-head 4, rotatably secured to the face of said puppet-head, a register-pin 13, slidingly engaging said puppet and turret heads, a lever 12, fulcrumed to said puppet-head, one end of said lever engaging the register-pin 13, and actuating-rod 17, connected to the opposite end of said lever 12,

and a proper stop upon the tail-stock for compelling the withdrawal of said register-pin from said turret-head as the latter is retracted from the work, in the manner and for the purpose, substantially as set forth.

4. In a device of the character described, the following elements in combination: a puppet-head 3, adapted to be secured to the tail-spindle 2, of a lathe, a turret-head 4, rotatably secured to the face of said puppet-head, and provided with a series of tool-sockets 8, a rigid bevel-gear 10, in the inner face of said turret-head, a rotatable bevel-gear 21, in the puppet-head engaging said gear 10, a ratchet 22 upon the gear 21, a spring-actuated lever

23, having a pawl 27 engaging said ratchet, an actuating-rod 31, one end of which is connected to said lever, a stop-collar 44 upon said rod 31, the opposite end of said rod slidingly engaging a suitable bracket-arm 33, upon the tail-stock, in the manner and for the purpose, substantially as specified.

In testimony whereof I affix my signature, in presence of two witnesses, this 10th day of April, 1897.

ANDREW J. JOHNSON.

Witnesses:

H. S. SPRAGUE,

WM. TENWINKEL.