

No. 615,256.

Patented Dec. 6, 1898.

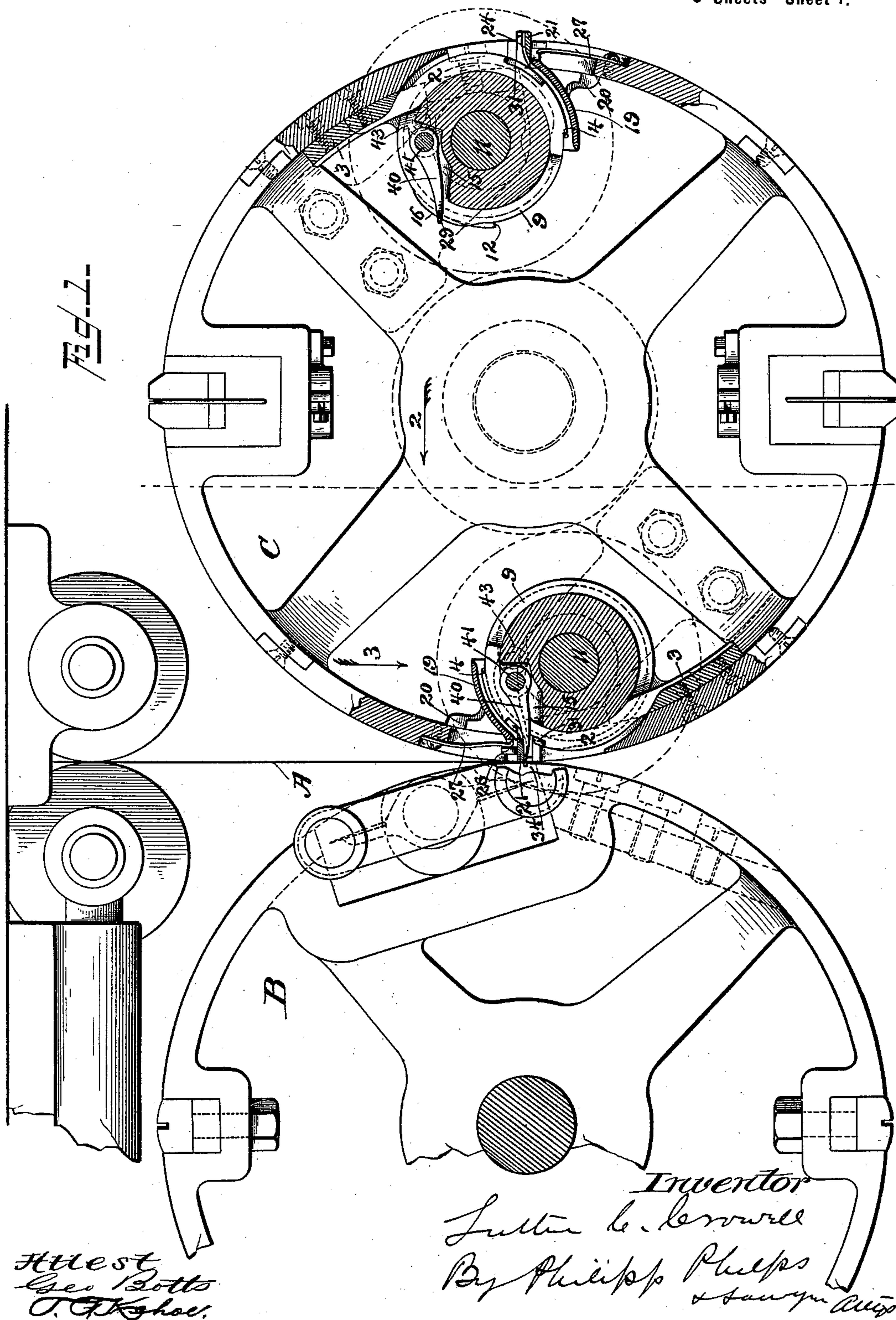
L. C. CROWELL.

STAPLE BINDING DELIVERY MECHANISM FOR PRINTING MACHINES.

(Application filed Dec. 31, 1897.)

(No Model.)

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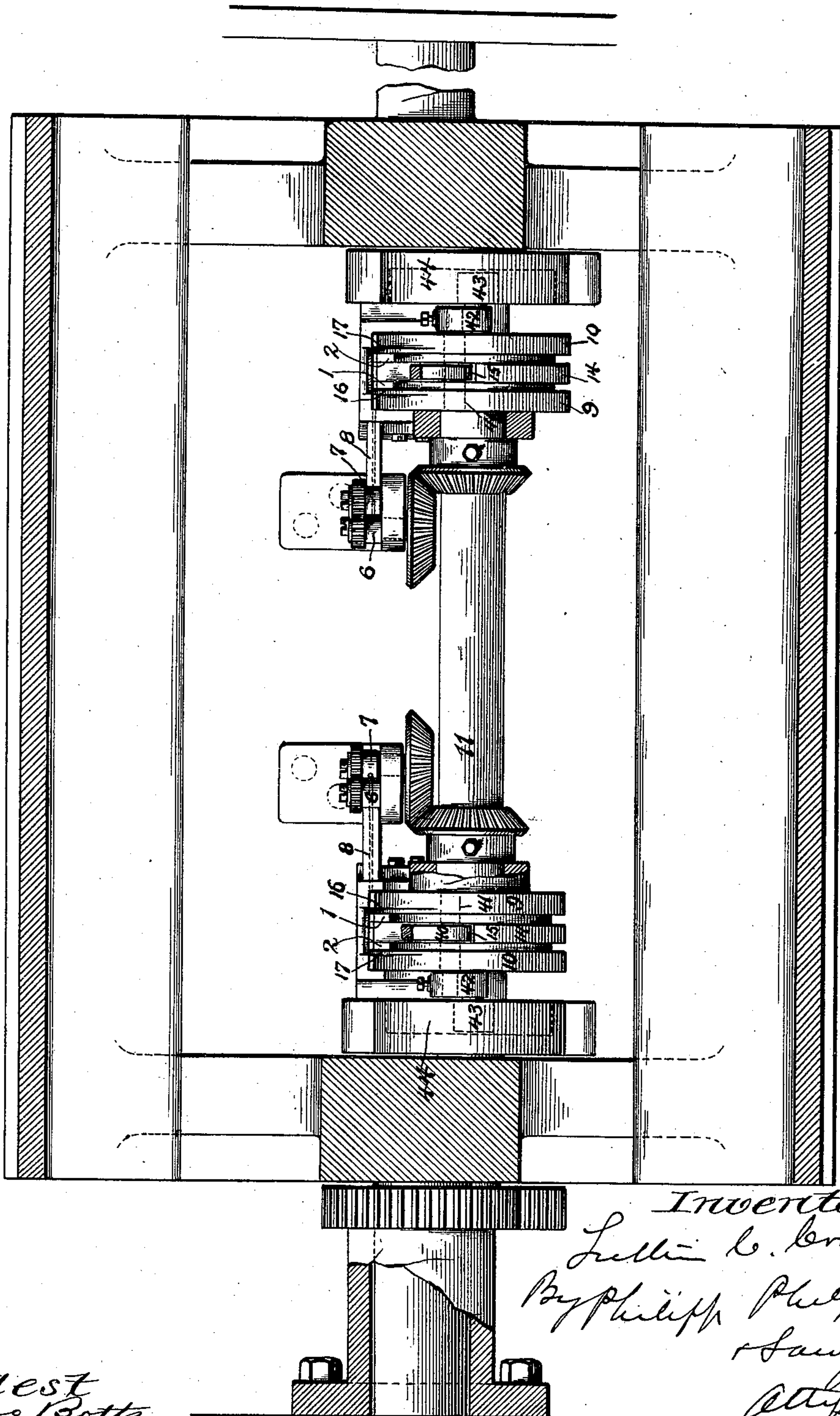
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Fig. 2.



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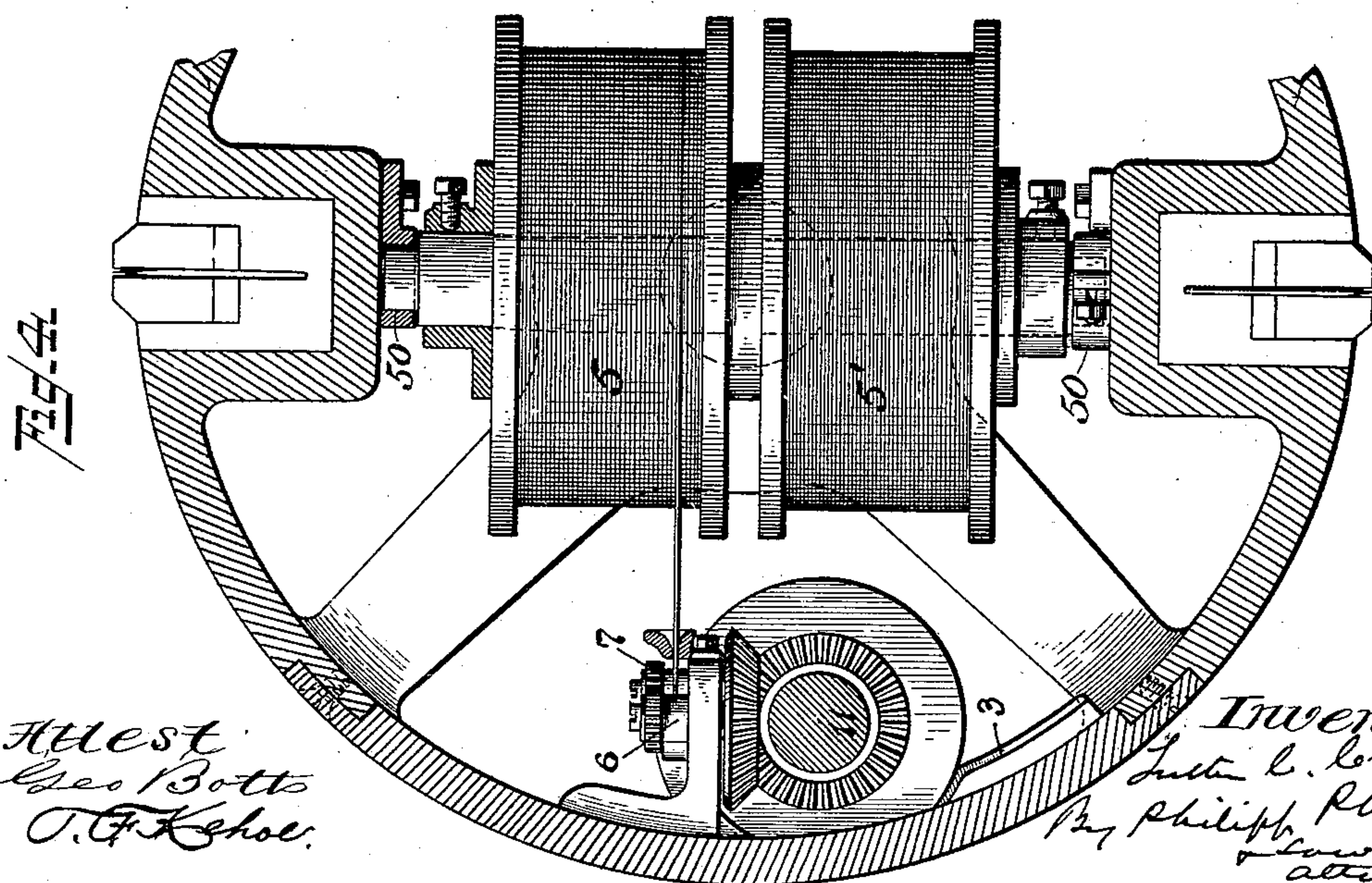
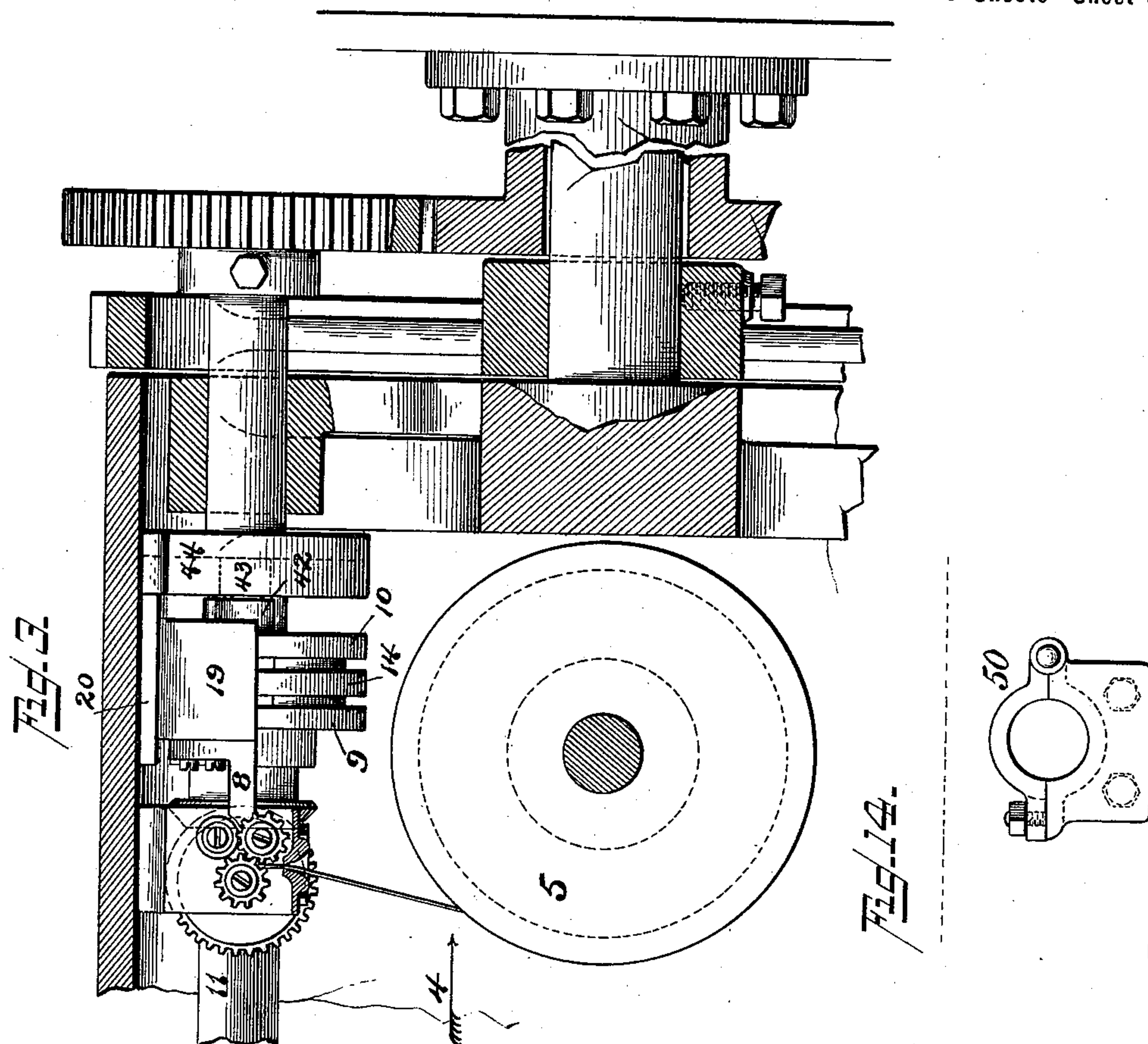
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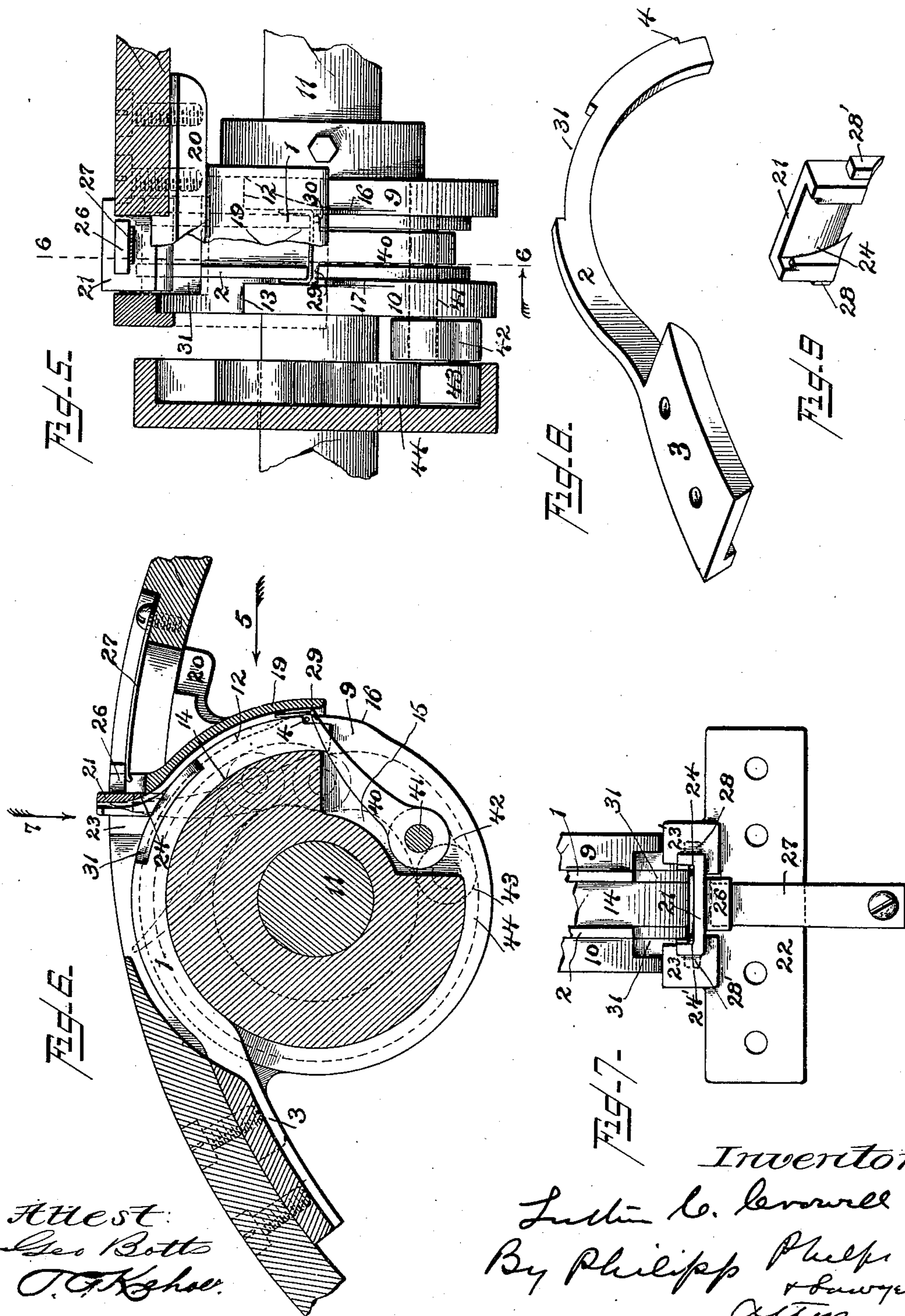
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(No Model.)

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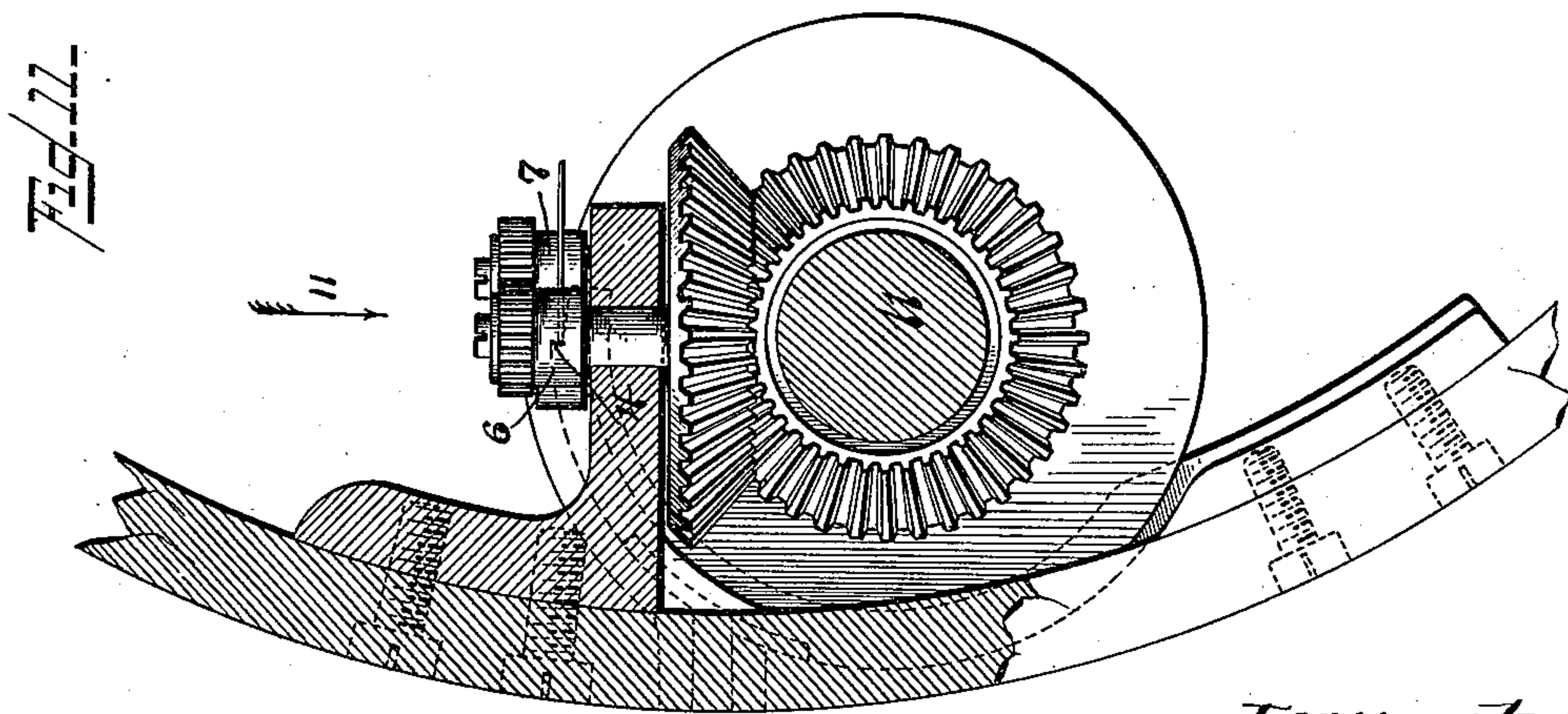
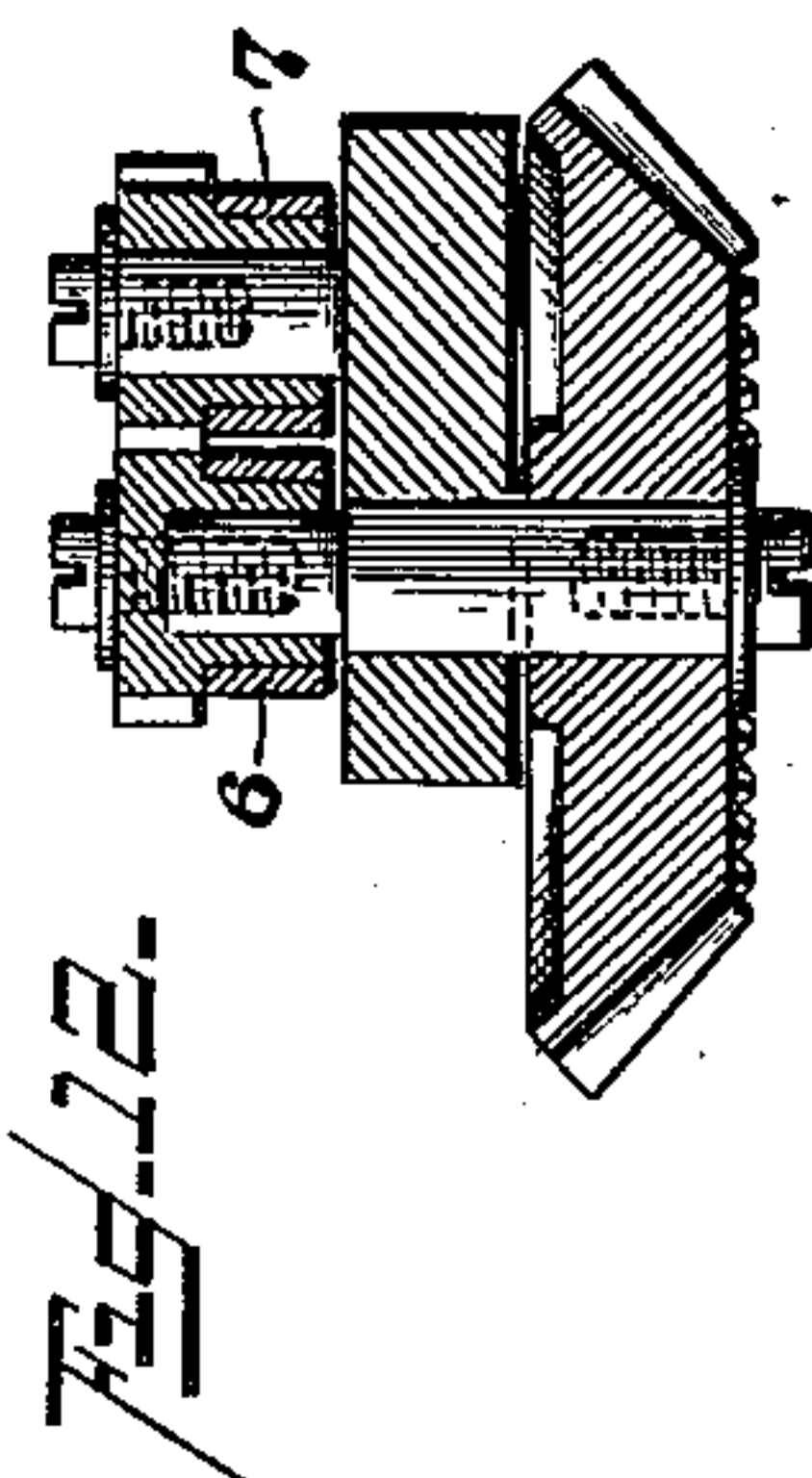
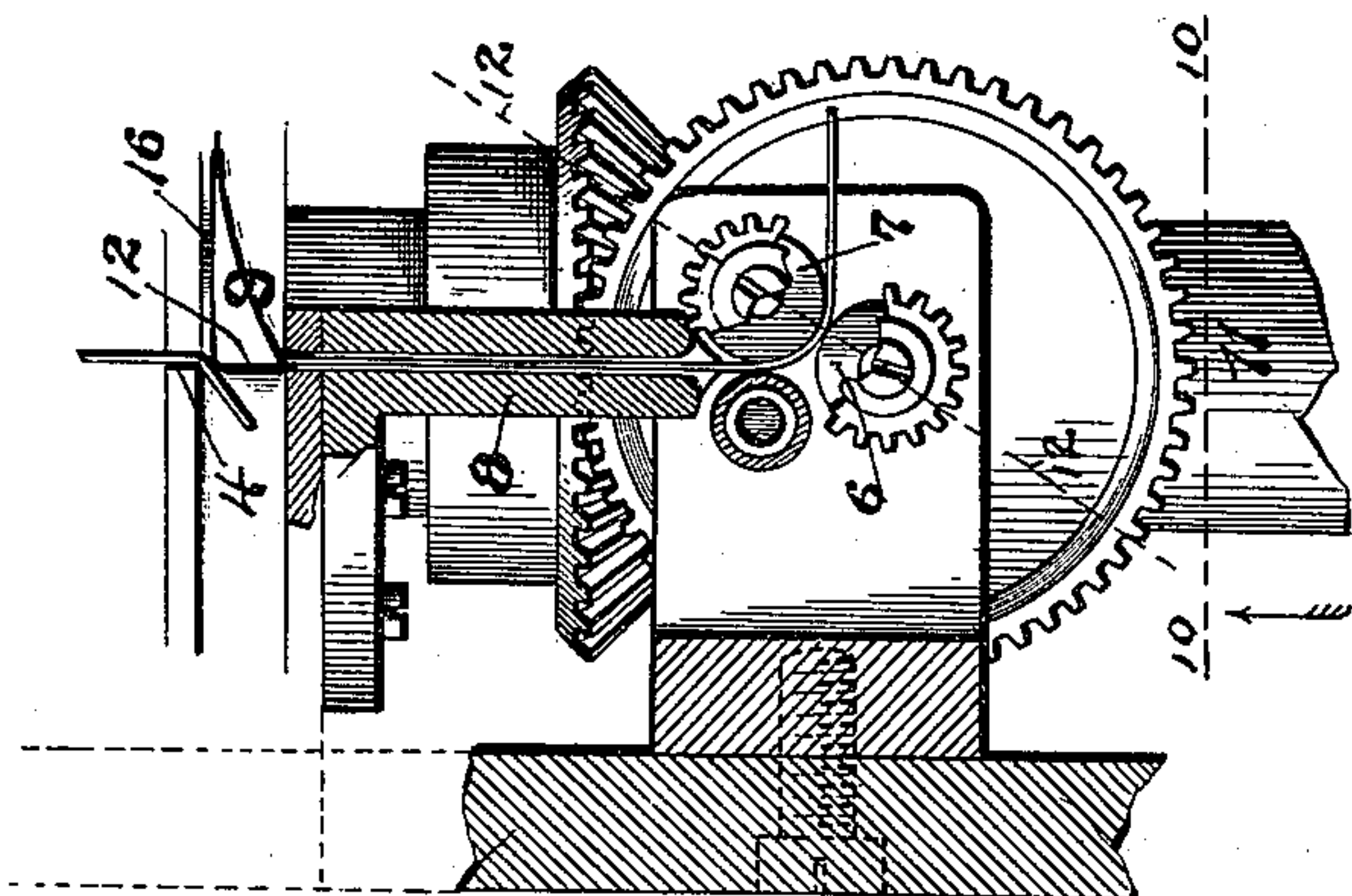
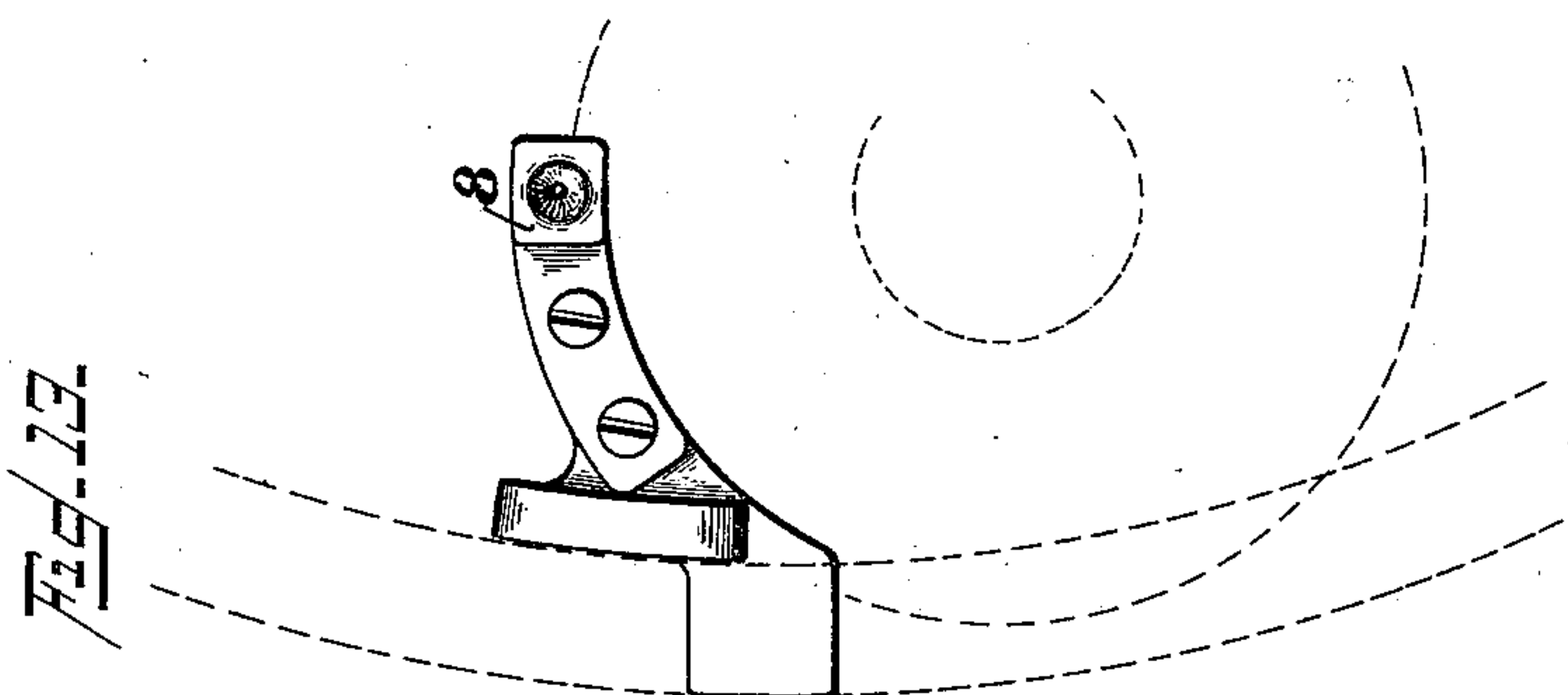
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FIG. 17.

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# UNITED STATES PATENT OFFICE.

LUTHER C. CROWELL, OF NEW YORK, N. Y., ASSIGNOR TO ROBERT HOE,  
THEODORE H. MEAD, AND CHARLES W. CARPENTER, OF SAME PLACE.

## STAPLE-BINDING DELIVERY MECHANISM FOR PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 615,256, dated December 6, 1898.

Application filed December 31, 1897. Serial No. 685,168. (No model.)

*To all whom it may concern:*

Be it known that I, LUTHER C. CROWELL, a citizen of the United States, residing at New York, (Brooklyn,) county of Kings, and State of New York, have invented certain new and useful Improvements in Staple-Binding Delivery Mechanism for Printing-Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The present improvements relate in a general sense to that class of stapling mechanisms especially adapted for attachment to a web-printing machine to form a part of the delivery mechanism thereof, whereby the plicated material in the form of webs or sheets may be bound together in packs on the line of ultimate folding thereof by means of staples made and set therein during the onward progress of the said plicated packs for final delivery, and thus form a completed product, such as a pamphlet or newspaper, whose leaves are bound together in the form of a book-like product. In a general sense the type of such machines is comprehended in Patent No. 510,528, and more specifically the improved machine is of the class in which the staple forming, presenting, and inserting mechanisms are contained within the confines of a rotary carrier supporting them, which carrier also supports the wire-length-supplying means delivering material to form the staple, which class has its type disclosed in Patent No. 510,843.

In the drawings annexed hereto and forming a part of this specification, Figure 1 is a sectional view of the stapling and folding cylinders, showing the parts in the position in which they are at the moment of driving the staple. Fig. 2 is a side view of the stapling mechanism, the line of sight being indicated by the arrow marked 2 in Fig. 1. Fig. 3 is a plan view, partly in section, of the right-hand mechanism in Fig. 2, the line of sight being indicated by the arrow 3 in Fig. 1. Fig. 4 is a view looking in the direction of the arrow 4 in Fig. 3. Fig. 5 is a side view, on an enlarged scale, of one of the staple-binding mechanisms at the left end of the carrier, as shown in Fig. 2, showing the position of the

parts just after the staple has been formed, the point of view being indicated by the arrow 5 in Fig. 6. Fig. 6 is a sectional view, on an enlarged scale, on the line 6 6 of Fig. 5. Fig. 7 is a detail plan view on a still larger scale, the point of view being indicated by the arrow 7 in Fig. 6. Fig. 8 is a detail of one of the arms, two of which together furnish the staple-bending anvil. Fig. 9 is a detail of the holder or guide-block for the staple. Fig. 10 is a view of a part of the wire-feeding mechanism at the right-hand end of the carrier, as shown in Fig. 2, on the line 10 of Fig. 11; and Fig. 11 is a plan view, partly in section, of the same mechanism, the point of view being indicated by the arrow 11 in Fig. 10. Fig. 12 is a section on the line 12 12 of Fig. 11. Fig. 13 is a detail of the fixed guide for the wire and the bracket for the same. Fig. 14 is a detail of the journal-boxes of the wire-spools.

The stapling mechanisms on the right and left hand ends of the carrier are substantially alike, and the parts of each are symmetrically placed with reference to each other. A description of one will therefore suffice for both.

Referring to said drawings, the web or webs of paper A are led to the stapling mechanism from any appropriate printing and folding or associating mechanism between the carriers B C, which support the stapling mechanism and which may also carry cutting and folding mechanisms, although of course, if preferred, the cutting and folding operations may be performed by other means. The staple-forming mechanism consists in part of two arms 1 2, one of which is shown in perspective in Fig. 8 and the other in side view in Fig. 6, which are carried by the plates 3, fixed to the shell of carrier C, these arms being provided with shoulders or abutments 4, constituting an anvil against which the wire is bent to form the staple. The wire is fed from spools 5 5', mounted upon the end of the carrier between feeding-disks 6 7, to guiding-slot 8, which latter conducts the wire to a position in which it lies against the anvil-shoulders 4.

The staples are bent by two forming-disks



9 10, mounted upon the shaft 11, journaled in the carrier, these disks 9 10 being placed each on one side of the arms 1 2 and having shoulders 12 13, which cooperate with the anvil-shoulders 4 to bend the staple, as best shown in Fig. 5. Shoulder 12 also serves as a knife to sever the staple-forming length of wire.

Mounted on the shaft 11 between the disks 9 10 and also between the arms 1 2 is a third disk 14. The disk 14 has a recess 15, in which is pivoted a lever 40, keyed to a shaft 41, journaled in the disks 9 10, and having keyed to the end thereof the arm 42, at the other end of which arm is placed a bowl 43, running in a path-cam 44, fixed to the carrier. This lever 40 is guided by the cam 44 appropriately to move the staple, as hereinafter explained. The disks 9 10 are provided with cam-like surfaces or rises 16 17 for the purpose of lifting the staples over the anvil-shoulders 4, so that the same shall lie tangentially to the circumference of the disks 9 10, as shown in Fig. 6. After it has been so elevated by these rises the tip of lever 40 comes in contact with it, as shown in Fig. 6, and pushes it forward, it being confined in this position by the curved guard 19, attached to the framework of the carrier by bracket 20. The three disks 9 10 14 may be made separate and fixed to the shaft or they may be made in one piece.

At the point where the circumference of the disks 9 10 comes nearest to the circumference of the carrier B is mounted a guide-block 21, which slides radially of the carrier in blocks 23 23', fixed to a plate 22, attached to the carrier-shell. This guiding-block is provided with interior grooves 24 24', which are curved outward from a direction tangential to the circumference of the disks 9 10 to a direction nearly radial thereof, as shown in Fig. 6. This block is provided with a lug 26, against which bears spring 27, pressing it outward, and its outward movement is limited by the contact of lugs 28 28' with the upper surface of recesses in blocks 23 23'.

In the normal position of the guide-block 21, when the same is pressed outward by the spring 27, the guiding-slots 24 24' register with the space between the guard 19 and the disks 9 10, so that as the tip of the lever 40 revolves it will push the staple into the slots, as is apparent will be the case from inspection of Fig. 6. As the guide-block comes to the staple-setting point it is pushed in by the surface of carrier B against the pressure of spring 27 to the position shown in Fig. 1, the arms 1 2 being provided with recesses 31 to permit this inward movement. The action of the cam 44 upon the lever 40 is such that the tip of this lever pushes the staple through the guideways 24 24', the lever 40 being provided with flanges 29 30, which run in these grooves, and in this manner the lever 40 pushes the staple up to the setting-point, as shown in Figs. 1 and 6. The flanges 29 30 broaden the tip of the lever 40, so that it extends the whole width of the staple and gives

a full bearing to the staple-crown as it is being set. The guide-block 21 is cut away, as shown in Fig. 9, to permit the passage of these flanges as the lever 40 leaves the guide-block in its continued rotation after the setting of the staple.

The staple-leg-clenching anvil-block 34 is fixed to the carrier B in any suitable manner. The bearings 50 of the wire-feeding reels are made adjustable, so that the friction thereon may be increased or diminished as desired, as shown in Fig. 14.

What I claim is—

1. The combination in a staple forming and setting mechanism, of a stationary anvil, a rotary bender, means for lifting the formed staple over the anvil, a pivoted moving member, and means for giving said member suitable movement to engage with the staple and carry it forward to the setting-point, substantially as described.

2. The combination in a staple forming and setting mechanism, of a stationary anvil, a rotary bender, moving raised surfaces for lifting the formed staple over the anvil, a pivoted member, and means for giving said member proper movement to engage with the staple and carry it forward to the setting-point, substantially as described.

3. The combination in a staple forming and setting mechanism, of a stationary anvil, a rotary bender, provided with raised surfaces for lifting the formed staple over the anvil, and also provided with a pivoted member for engaging with the staple and carrying it forward to the setting-point, substantially as described.

4. The combination of a rotating carrier, mechanism rotating within the carrier for presenting the staple to the setting-point, a member pivoted in said rotating mechanism, and means for giving said member proper movement to act as a support for the staple while being driven, substantially as described.

5. The combination of a rotating carrier, an anvil stationary with reference thereto, a bender mounted to rotate in the carrier, means for lifting the formed staple over the anvil, a pivoted member, and means for giving said member a suitable movement to engage with the staple and carry it forward to the setting-point, substantially as described.

6. The combination of a rotating carrier, mechanism rotating within the carrier, a member pivoted in said rotating mechanism, the end of which pivoted member lies behind the crown of the staple when the staple reaches the setting-point, and means for giving the pivoted member such movement that its end shall continue to support the crown of the staple while the same is being driven notwithstanding the continued rotary motion of the pivot thereof, substantially as described.

7. The combination in a staple forming and setting mechanism, of a stationary anvil, a rotary bender, means for lifting the formed



staple over the anvil, a pivoted member, and means for causing said member to carry forward the staple to the setting-point, and to support the crown of the staple while the latter is being driven, substantially as described.

8. The combination in a staple forming and setting mechanism, of a stationary anvil, a rotary bender, raised surfaces for lifting the formed staple over the anvil, a rotary pivoted member, a guideway for the staple, and means for giving the said pivoted member such movement as to carry the staple forward in the guideway to the setting-point and support it while being driven, substantially as described.

9. The combination in a staple-setting mechanism, of a curved guideway, a rotary pivoted member, and means for causing the said member to move so as to press the staple forward in the guideway and support it while being driven, substantially as described.

10. The combination in a staple-setting mechanism, of a rotary pivoted member, a curved guideway for the staple consisting in part of a spring-pressed guide-block, and means for causing the rotary pivoted member to move so as to press the staple outward in the guideway and support it in the guide-block while being driven, substantially as described.

11. The combination of a rotating carrier, an anvil stationary with reference to the carrier, a bender mounted to rotate within the carrier, moving raised surfaces for lifting the formed staple over the anvil, a pivoted member, and means for giving said member proper movement to engage with the staple and carry

it forward to the setting-point, substantially as described.

12. The combination of a rotating carrier, an anvil stationary with reference thereto, a bender mounted to rotate in the carrier and provided with raised surfaces for lifting the formed staple over the anvil and also provided with a pivoted member for engaging with the staple and carrying it forward to the setting-point, substantially as described.

13. The combination of a rotating carrier, an anvil stationary with reference thereto, a bender mounted to rotate therein, means for lifting the formed staple over the anvil, a member pivoted to the bender, and means for causing said member to carry forward the staple to the setting-point and support the crown of the staple while the latter is being driven, substantially as described.

14. The combination of a rotating carrier, a guideway for the staple for conveying the same from the point where it is formed to the point where it is set, a pivoted member the pivot of which is mounted so as to be continuously rotated about an axis fixed within the carrier, and means for causing said member as it rotates about said axis to press the staple forward in the guideway and support it while being driven, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

LUTHER C. CROWELL.

Witnesses:

T. F. KEHOE,  
N. MAGUIRE.