

No. 768,183.

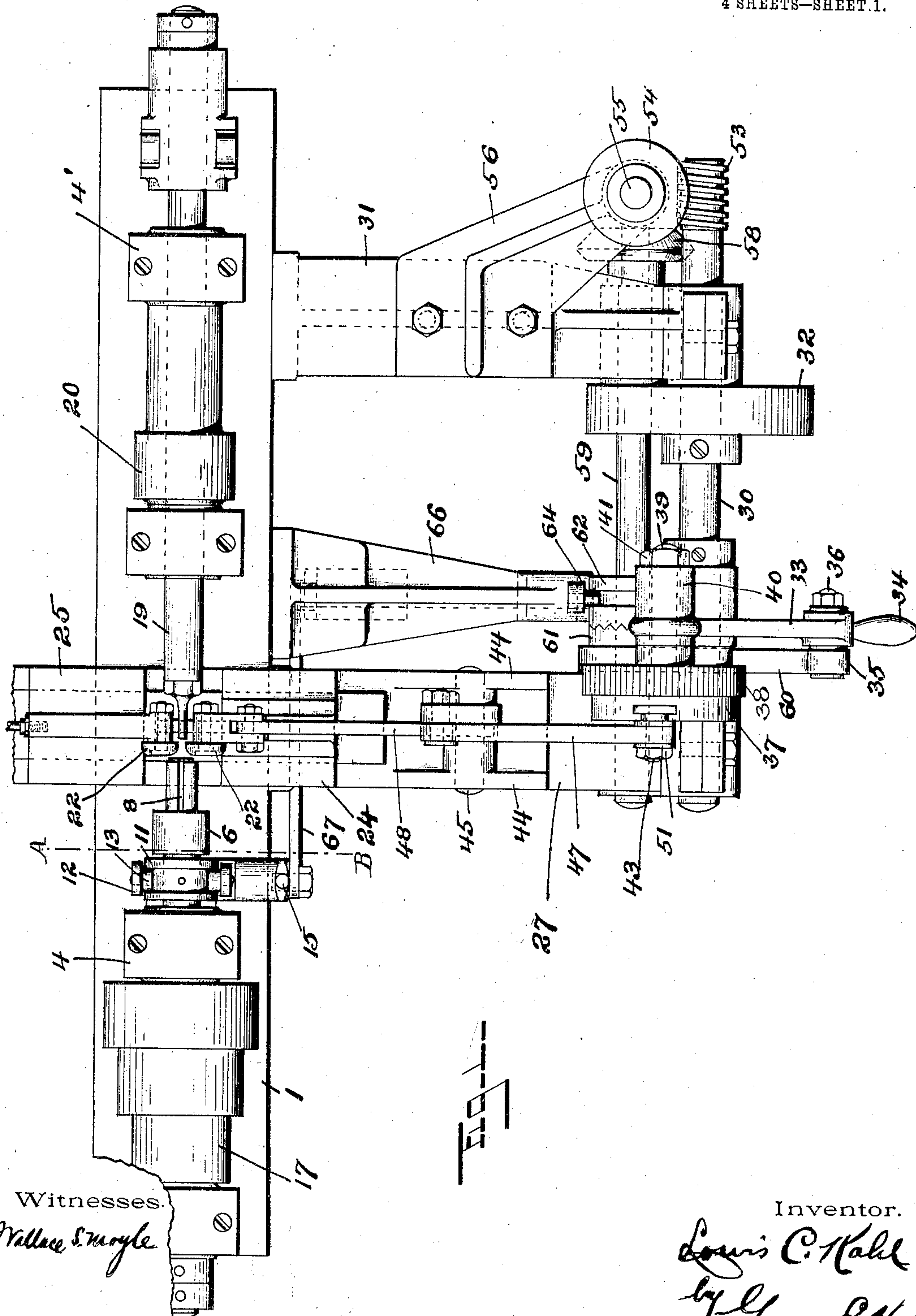
PATENTED AUG. 23, 1904.

L. C. KAHL.
ATTACHMENT FOR SPINNING LATHES.

APPLICATION FILED AUG. 6, 1903.

NO MODEL.

4 SHEETS—SHEET 1.



Witnesses.
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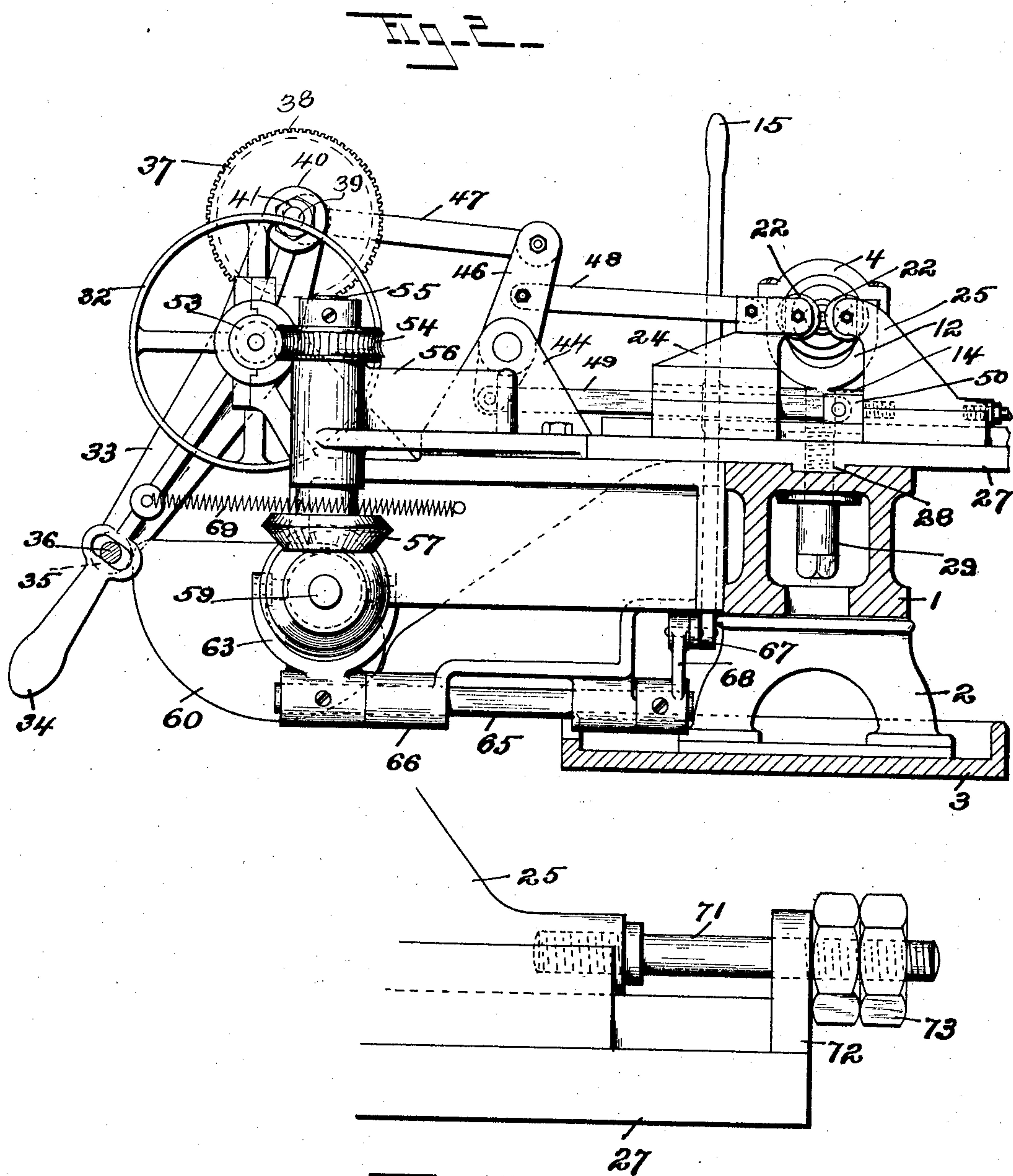
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4 SHEETS—SHEET 2.



Witnesses.

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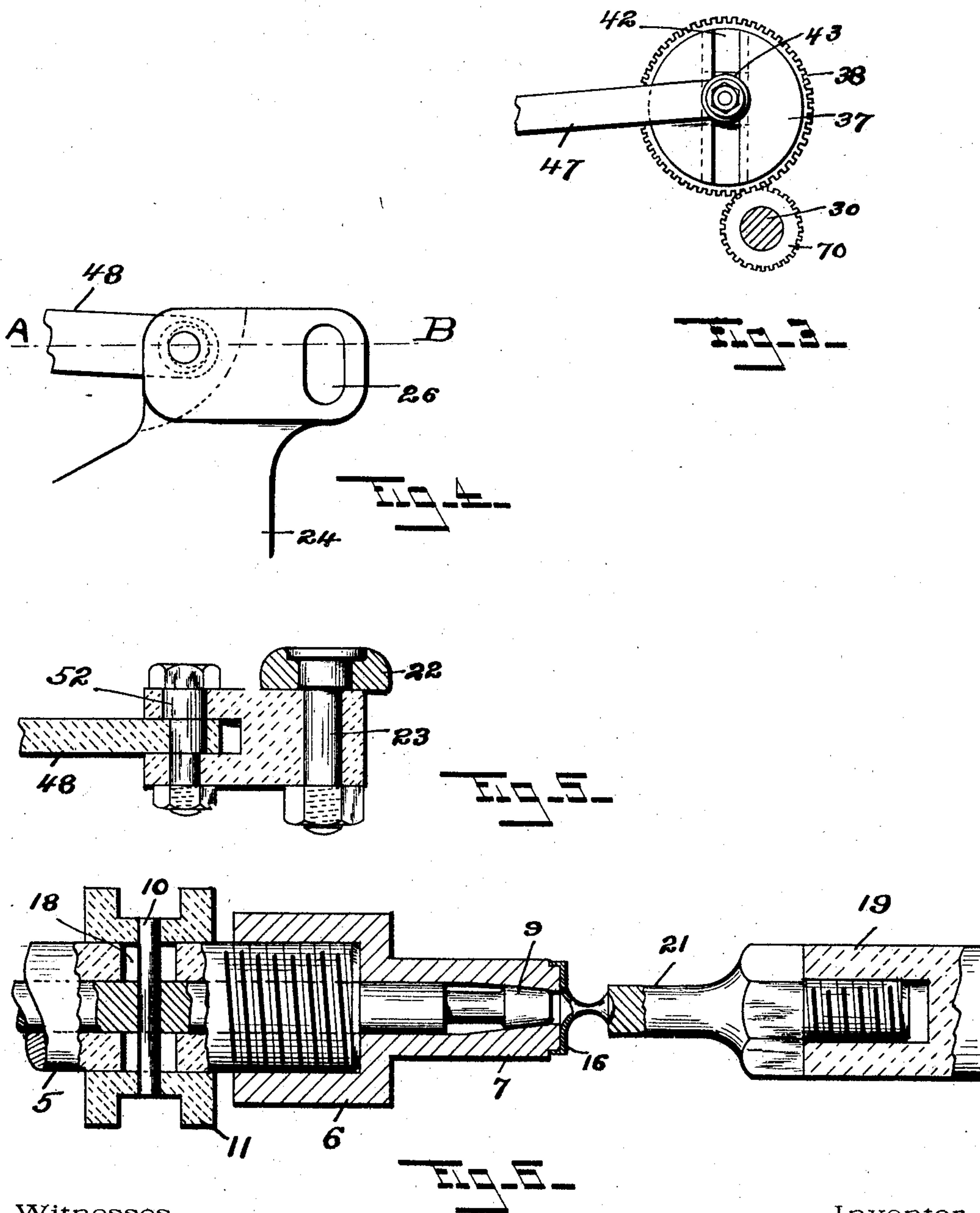
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4 SHEETS—SHEET 3.



Witnesses.

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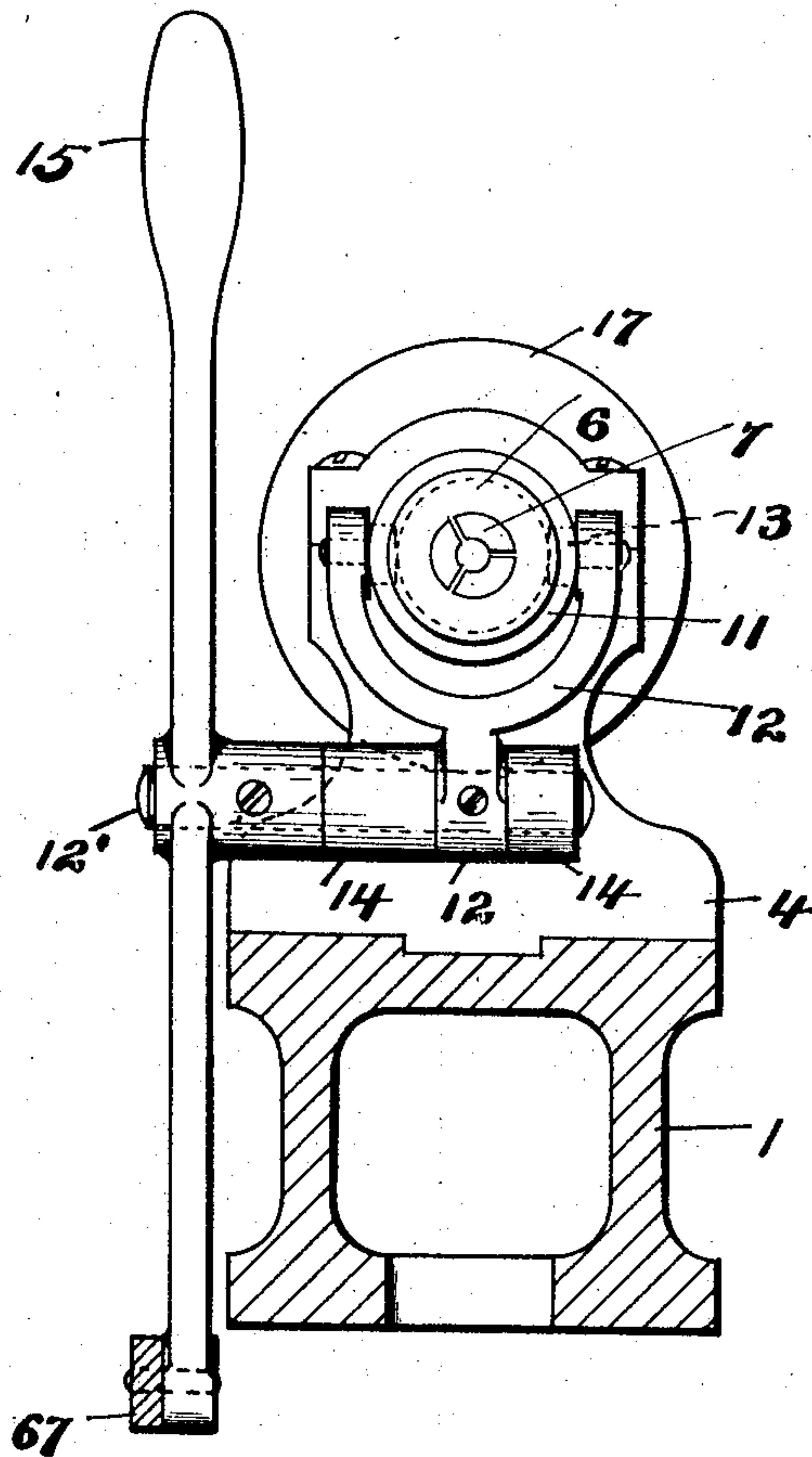


Fig. 4

Witnesses.

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UNITED STATES PATENT OFFICE.

LOUIS C. KAHL, OF WATERBURY, CONNECTICUT, ASSIGNOR TO THE
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ATTACHMENT FOR SPINNING-LATHES.

SPECIFICATION forming part of Letters Patent No. 768,183, dated August 23, 1904.

Application filed August 6, 1903. Serial No. 168,482. (No model.)

To all whom it may concern:

Be it known that I, LOUIS C. KAHL, a citizen of the United States, residing at Waterbury, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Attachments for Spinning-Lathes, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to new and useful improvements in attachments for spinning-lathes, and refers more especially to a device for automatically performing a spinning operation and at the same time to operate the spinning-rolls so that they will have substantially the same effect during the spinning operation as swaging-dies.

It is the object of my invention, among other things, to construct a device in which the spinning-rolls can be fed either automatically or by hand and during said feeding operation actuate the spinning-rolls so that they will impart a continual succession of hammering blows, as well as to construct the device of few parts so designed as to be economically constructed and readily attached to a spinning-lathe.

To these and other ends my invention consists in the attachment for spinning-lathes having certain details of construction and combination of parts, as will be hereinafter described, and more particularly pointed out in the claims.

Referring to the drawings, in which like numerals of reference designate like parts in the several figures, Figure 1 is a fragmentary plan view of a spinning-lathe with my improved attachment affixed thereto. Fig. 2 is a sectional end elevation thereof. Fig. 3 is a detailed elevation of the crank-plate. Fig. 4 is a fragmentary view of the upper portion of one of the roll-slides. Fig. 5 is a sectional plan view thereof upon line A B of Fig. 4. Fig. 6 is a fragmentary sectional view of the spindles. Fig. 7 is a fragmentary view of the slide-table, one of the slides, and adjacent mechanism; and Fig. 8 is an end elevation of

one of the spindle-heads with the bed in section upon line A B of Fig. 1.

The spinning-lathe shown in the drawings is especially designed for spinning collar-buttons, although of course my invention can be applied to any other form of spinning-lathe; but for purposes of illustration I have adopted this special type of spinning-lathe.

In spinning small devices, such as collar-buttons, the diameter of the stock is so small that its speed of movement is practically nothing and the spinning-rolls have a tendency to drag upon the periphery of the stock and practically nullify their spinning action, and where the device is plated with gold or silver prior to the spinning operation the dragging of the rolls upon the stock tears the plating off, and thus produces an imperfect product. I overcome these objections by constructing the mechanism so that the spinning-rolls strike successive blows upon the device being spun during the spinning operation. This reduces the time required to perform the spinning operation, it taking much less time to perform a spinning operation where the rolls strike continued successive blows than when the rolls are held continuously against the surface to be spun, and, again, this action is such that the rolls do not drag, and hence the plating is not torn off.

The spinning-lathe shown in the drawings comprises a bed 1, that is supported by legs 2 above a tray 3, which tray is designed to catch chips, drippings of oil, &c. Upon the bed 1 are the spindle-heads 4 and 4'. Within the head 4 is rotatable the spindle 5, upon the forward end of which is a chuck 6, which is provided with a head portion 7, having a plurality of slots 8 therethrough. Within this spindle and chuck the plug 9 is movable endwise, and connected with said plug by the pintle 10 is the annular grooved collar 11, which is slidable upon said spindle 5. The collar 11 is movable lengthwise upon the spindle 5 by the yoke 12, that is provided with rollers 13, which enter the annular groove in said collar, as shown in Fig. 1, and is fixed on

the pintle 12' between the ears 14 14. (See Fig. 8.) The yoke 12 is operated through the lever 15, which is fixed on said pintle 12'. To secure the button (which is designated 16 in the drawings) to the spindle 5, which is rotated by means of a belt upon the cone 17, the jaws of the chuck 6 are opened by moving the plug 9 rearwardly, through the hand-lever 15 and mechanism above described, and then placing the button upon the end of said chuck, as shown in Fig. 6. The direction of the hand-lever 15 is then reversed, and the engagement of the end of the plug 9 with the interior of the head 7 of the plug 6 expands the spring-fingers on said chuck, which engage the collar-button and hold it rigidly. A slot 18 through the spindle 5 is provided to permit the pin 10 to move endwise therein.

Mounted within the head 4' is the spindle 19, which is rotated by a belt upon the cone-pulley 20, connected with said spindle and movable endwise by any desired means, the details of which are not material to my invention. Within the forward end of said spindle 19 is threaded the head-block 21. After the button has been secured to the chuck 7, as above described, the spindle 19 is moved endwise and the head of the button enters the recess in the head of the block 21, thus supporting it during the spinning operation.

As before stated, the details of construction and type of spinning-lathe is immaterial to my invention, as I can use any form or type as well as the one herein shown and described.

The spinning-rolls are designated 22, the contour of which can be of any preferred form. They are rotatably mounted on studs 23, that are secured within the roll-slides 24 and 25 and are vertically adjustable within the slots 26. These slides are movable upon the table 27, which is provided upon its under side with a tongue 28, which enters a longitudinal groove in the top of the bed 1 and is secured to said bed by the bolt 29, which is threaded into said table.

The mechanism for operating the roll-slides comprises a shaft 30, which is rotatable at one end within the journal upon the end of the table 27 and at the other end in a bracket 31, which is secured to the bed 1 by any preferred means. Fixed upon said shaft is a pulley 32, which is driven by means of a belt connecting said pulley with the small portion of the cone 20. Mounted upon said shaft is the lever 33, having a handle 34 at one end and a cam-roll 35 secured thereto upon the stud 36. Upon the opposite end of said lever 33 to that of the handle 34 is rotatably secured the crank-plate 37, provided with teeth 38 in its periphery and having a stud 39 connected therewith, which is journaled within the hub 40 upon the end of said lever, said crank-plate being held against endwise movement in said hub by the nut 41. Within the face of

the crank-plate 37 is a T-slot 42, within which is adjustably secured the stud 43, having a T-head. Mounted between the ears 44 upon the table 27 and upon the pintle 45 is the rock-lever 46, which is connected with the stud 43 by means of the link 47. Connecting the rock-lever 46 with the slide 24 is the link 48, and connecting the slide 25 with the said rock-lever is the link 49, which passes through a slot in the slide 24 and is pivotally secured at its forward end to a bolt 50, threaded into said slide. The position of the stud 43 in the slot 42 determines the rocking motion that is imparted to the rock-lever 46, it being apparent that the nearer the center of the crank-plate the stud 43 is brought the less rocking motion will be imparted thereto, and vice versa, so that the movement of the slides 24 and 25 and the spinning-rolls can be adjusted by means of the position of the stud 43, as above described. This adjustment is obtained by simply unloosening the nut 51 and shifting the position of the stud within said slot and after this position has been secured again tightening the nut 51.

To adjust the relative position of the spinning-rolls 22 laterally, I have provided an eccentric-stud connection between the link 48 and the slide 24, which is illustrated in Fig. 5, the eccentric stud being designated 52 and the eccentric portion thereof being within the end of the link 48. From this view it is apparent that by rotating the stud 52 upon its axis the endwise position of the roll 22 will be varied, as the connection between the link 48 and the rock-lever 46 is fixed.

Upon the end of the shaft 30 is the worm 53, which meshes into the worm-wheel 54, which is fixed to shaft 55, journaled in the bracket 56, which is secured to the bracket 31. Upon the lower end of the shaft 55 is the bevel-gear 57, which meshes into a bevel-gear 58 upon the end of the shaft 59, which is journaled at one end in the bracket 31 and at the other end in the table 27. Loosely mounted upon said shaft 59 is a cam 60, upon one side of which is a hub 61, having a plurality of teeth upon the face thereof, as shown in Fig. 1, and fixed to said shaft, but slidable thereon, is the clutch-collar 62, which is provided with an annular groove therein and has teeth in its front face which correspond in number and size with those in the hub 61. The engagement of the collar 62 with that of the hub 61 makes a rigid connection between the shaft 59 and the cam 60, so that when said teeth are engaged with each other the cam 60 will rotate and when disengaged will be at rest. The mechanism for shifting the endwise position of the collar 62 upon the shaft comprises a yoke 63, having pins 64 therein, which enter annular grooves in the collar 62 and which is fixed upon one end of a rock-shaft 65,

which is journaled in the bracket 66, secured to the bed 1. A rocking motion is imparted to the shaft 65 through the link 67, which is connected at one end with the bottom end of the hand-lever 15 and at the other end to a crank-arm 68, which is secured to said rock-lever 65, it being apparent that when the lever 15 is oscillated upon its pivot-mounting a rocking movement will be imparted to the shaft 65, and through the yoke 63 an endwise movement will be imparted to the collar 62. The cam-roll 35 is always held in engagement with the periphery of the cam 60 by movement of the spring 69, which is fixed at one end to the lever 33 and at the other end to the table 27.

The operation of my invention is as follows: The same movement which operates the chuck 6 so that it holds the collar 16 in engagement therewith also causes the endwise movement of the collar 62, both being operated from the hand-lever 15, which engagement causes the cam 60 to rotate, and during said rotation the engagement of the cam-roll 35 with said cam causes the lever 33 to swing upon the shaft 30, and through the link 47 the rock-lever 46 is oscillated, and through the links 48 and 49 the roll-slides 24 and 25 are moved upon the table 27 toward each other, and through the pinion 70, which is fixed to the shaft 30 and meshes into the teeth 38 of the crank-plate 37, a rotary movement is imparted to said crank-plate and during the movement of said slides imparts a minor endwise backward-and-forward movement to said slides upon the table 27 and through said slides to said rolls 22, the movement of the rolls then imparting a succession of hammering blows while the rolls are being fed together. After the rolls have been brought to their closed position, which is determined by the size and shape of the cam 60, the rolls are then drawn apart by means of the spring 69, which keeps the cam-roll 35 against the said cam 60. The limit of the feed of the slides 24 and 25 is determined by the bolt 71, which is threaded into the slide 25 and moves through a lug 72 upon the table 27 and is provided upon its outer end with the chuck-nuts 73.

There are many minor changes and alterations that can be made within my invention aside from those herein shown and suggested, and I would therefore have it understood that I do not limit myself to the exact construction herein shown and described, but claim all that falls fairly within the spirit and scope of my invention.

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

1. In a device of the character described, the combination with a spinning-lathe; of spinning-rolls; means for moving said spinning-rolls toward each other; and means for impart-

ing a vibratory movement to said rolls while the same are being moved toward each other.

2. In a device of the character described, the combination with a spinning-lathe; of spinning-rolls; and means for operating said rolls, whereby they will strike a succession of blows during the spinning operation.

3. In a device of the character described, the combination with a spinning-lathe; of spinning-rolls; means for feeding said rolls toward and away from each other; and means for actuating said rolls, whereby they will strike a succession of blows upon the spinning-surface during the aforesaid operation.

4. In a device of the character described, the combination with a spinning-lathe; of spinning-rolls; means for moving said rolls toward each other and vibrating the same at one and the same time.

5. In a device of the character described, the combination with a spinning-lathe; of roll-slides; spinning-rolls mounted on said slides; means for moving said slides toward each other; and means for imparting a minor forward-and-backward movement to said slides while the same are moving toward each other.

6. In a device of the character described, the combination with a spinning-lathe; of roll-slides; spinning-rolls mounted on said slides; a swinging lever; means for actuating said slides from said lever; and means for automatically actuating said lever.

7. In a device of the character described, the combination with a spinning-lathe; of roll-slides; spinning-rolls mounted on said slides; a swinging lever; means for actuating said slides from said lever; a rotary member mounted on said lever and means for connecting said slide-actuating means with said rotary member.

8. In a device of the character described, the combination with a spinning-lathe; of roll-slides; spinning-rolls mounted upon said slides; a swinging lever; a rock-lever; means for connecting said slides with said rock-lever; means for connecting said swinging lever with said rock-lever; and means for connecting the same with said swinging lever so that one end thereof will move in a rotary path.

9. In a device of the character described, the combination with a spinning-lathe; of roll-slides; spinning-rolls mounted on said slides; a swinging lever; a rotary member connected with said swinging lever; and means for connecting said slides with said rotary member.

10. In a device of the character described, the combination with a spinning-lathe; of roll-slides; spinning-rolls mounted on said slides; a swinging lever; a rotary member connected with said swinging lever; means for connecting said slides with said rotary member; and means for imparting a rotary movement to said rotary member.

11. In a device of the character described, the combination with a spinning-lathe; of roll-

slides; spinning-rolls mounted on said slides; a swinging lever; a rock-lever; means for connecting said slides with said rock-lever; a rotary member connected with said swinging lever; and a rigid connection between said rock-lever and said rotary member.

12. In a device of the character described, the combination with a spinning-lathe; of roll-slides; spinning-rolls mounted on said slides; a swinging lever; a rock-lever; means for connecting said slides with said rock-lever; a rotary member connected with said swinging lever; a rigid connection between said rock-lever and said rotary member; and means for securing said rigid connection to said rotary member, whereby it may have a radial adjustment thereon.

13. In a device of the character described, the combination with a spinning-lathe; of roll-slides; spinning-rolls mounted on said slides; a swinging lever; means for actuating said slides from said lever; and cam mechanism for actuating said swinging lever.

14. In a device of the character described, the combination with a spinning-lathe; of roll-slides; spinning-rolls mounted on said slides; a swinging lever, a crank-plate rotatably mounted on said swinging lever; a rotary shaft; means for rotating said crank-plate from said rotary shaft; and a positive connection between said roll-slides and crank-plate.

15. In a device of the character described, the combination with a spinning-lathe; of roll-slides; spinning-rolls mounted on said slides; a rotary shaft; a lever loosely mounted on said shaft; a crank-plate in said lever; a pinion on said shaft engaging said crank-plate; and a positive connection between said crank-plate and slides.

16. In a device of the character described, the combination with a spinning-lathe; of roll-slides; spinning-rolls mounted on said slides; a swinging lever; means for actuating said slides from said lever; cam mechanism for ac-

tuating said swinging lever; and a separable connection between said cam mechanism and the shaft upon which it is mounted.

17. In a device of the character described, the combination with a spinning-lathe; of roll-slides; spinning-rolls mounted on said slides; a swinging lever; means for actuating said slides from said lever; a cam for actuating said swinging lever; a rotary shaft; and a separable connection between said cam and shaft.

18. In a device of the character described, the combination with a spinning-lathe; of roll-slides; spinning-rolls mounted on said slides; a rotary shaft; a lever loosely mounted on said shaft; a rotary shaft parallel to said first-mentioned shaft; a cam thereon for actuating said swinging lever; and a separable connection between said shaft and cam.

19. In a device of the character described, the combination with a spinning-lathe; of roll-slides; spinning-rolls mounted on said slides; a rotary shaft; a lever loosely mounted on said shaft; a rotary shaft parallel to said first-mentioned shaft; a cam thereon for actuating said swinging lever; a separable connection between said shaft and cam; and means for positively connecting said rotary shaft, whereby they will rotate together.

20. In a device of the character described, the combination with a spinning-lathe; of roll-slides; spinning-rolls mounted on said slides; a lever; means for actuating said slides from said lever; a cam for actuating said lever; a rotary shaft; a clutch upon said shaft adapted to engage said cam; and means for moving said clutch endwise upon said shaft so as to engage and disengage said cam.

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

LOUIS C. KAHL.

Witnesses:

R. LESTER WILCOX,
ROGER S. WOTKINS.