No. 767,078. PATENTED AUG. 9, 1904.

E. C. MUELLER.

STOCK FEEDING DEVICE.

APPLICATION FILED DEC. 19, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

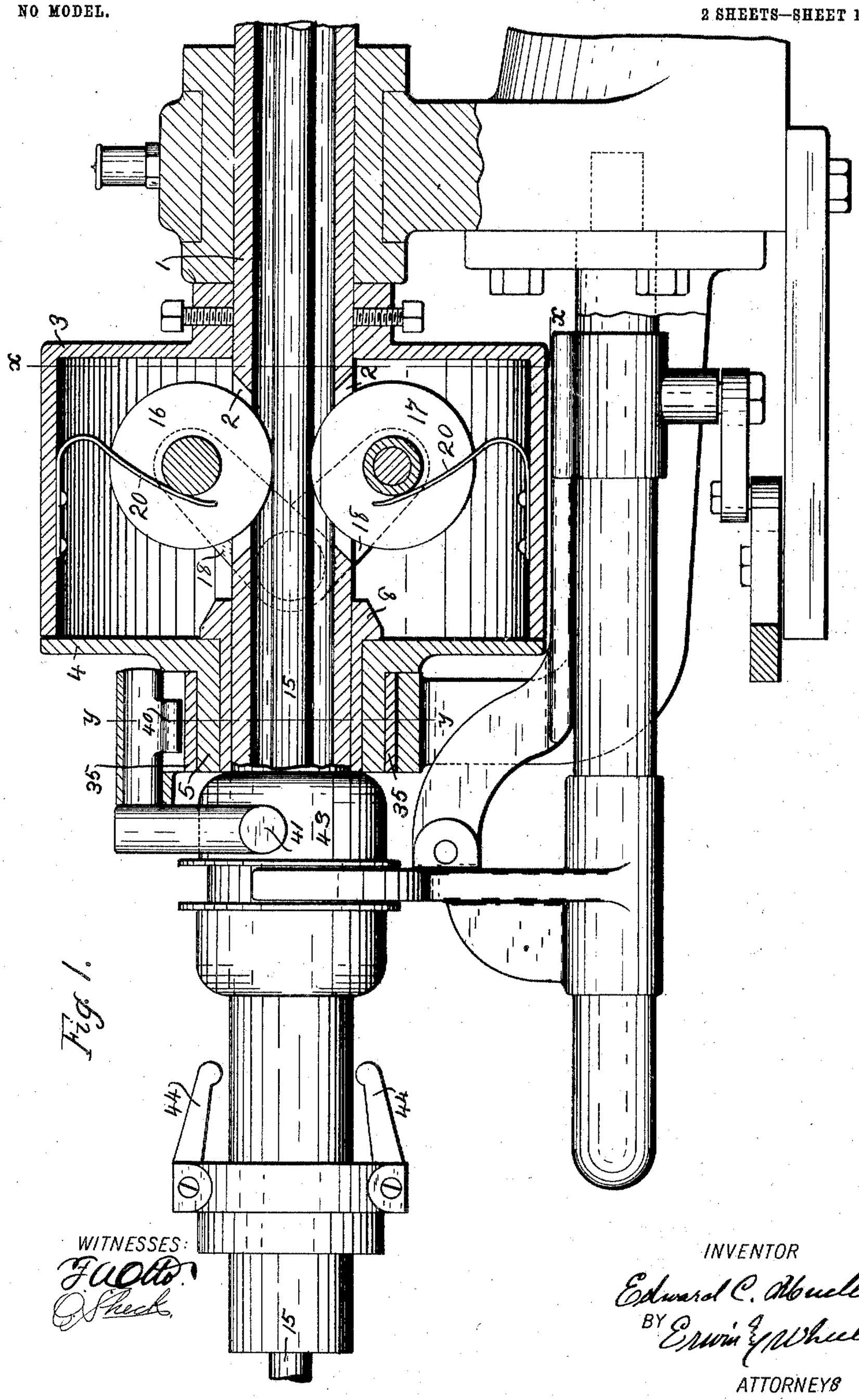

Fig. 1.

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APPLICATION FILED DEC. 19, 1903.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 2.

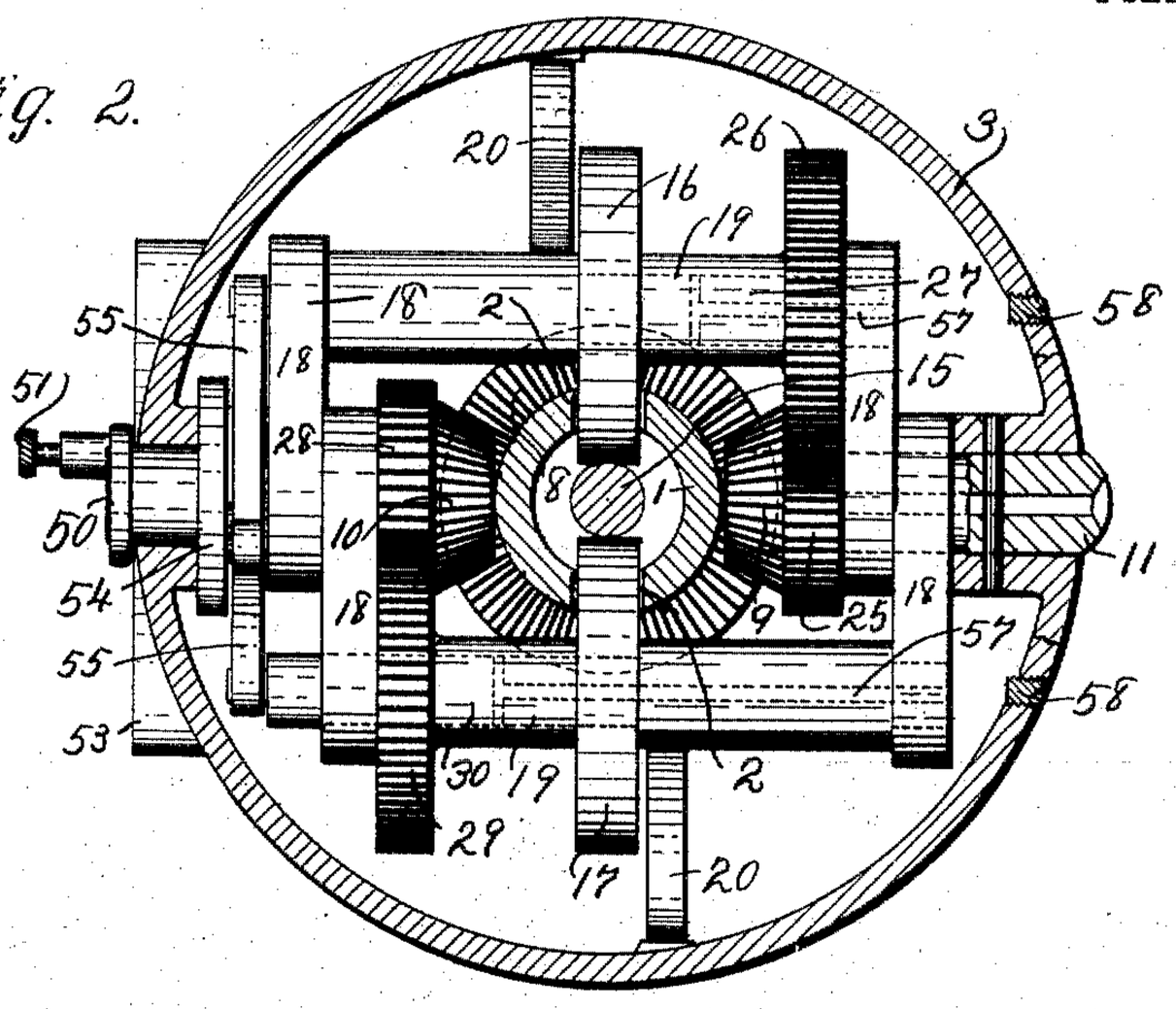


Fig. 3.

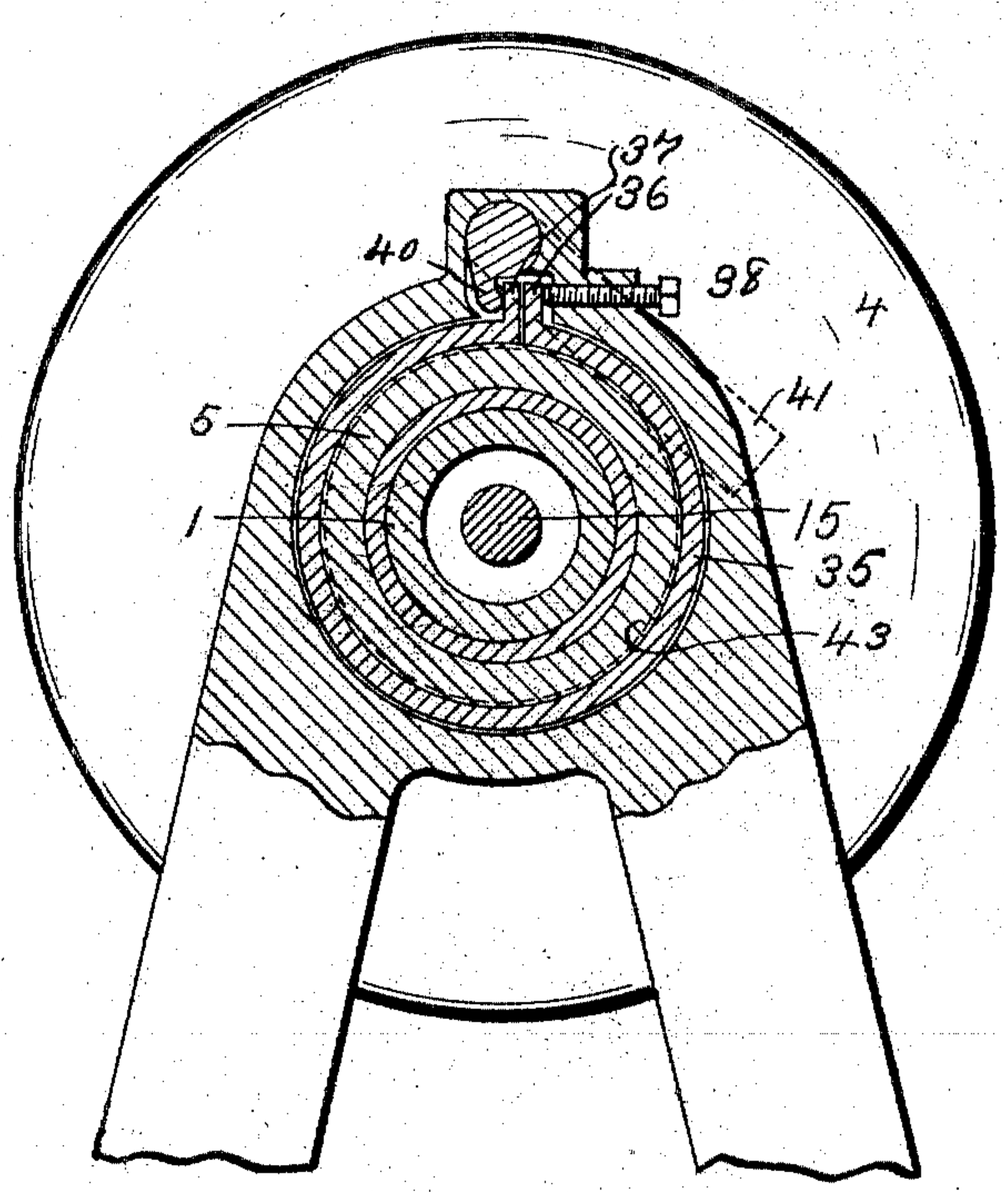
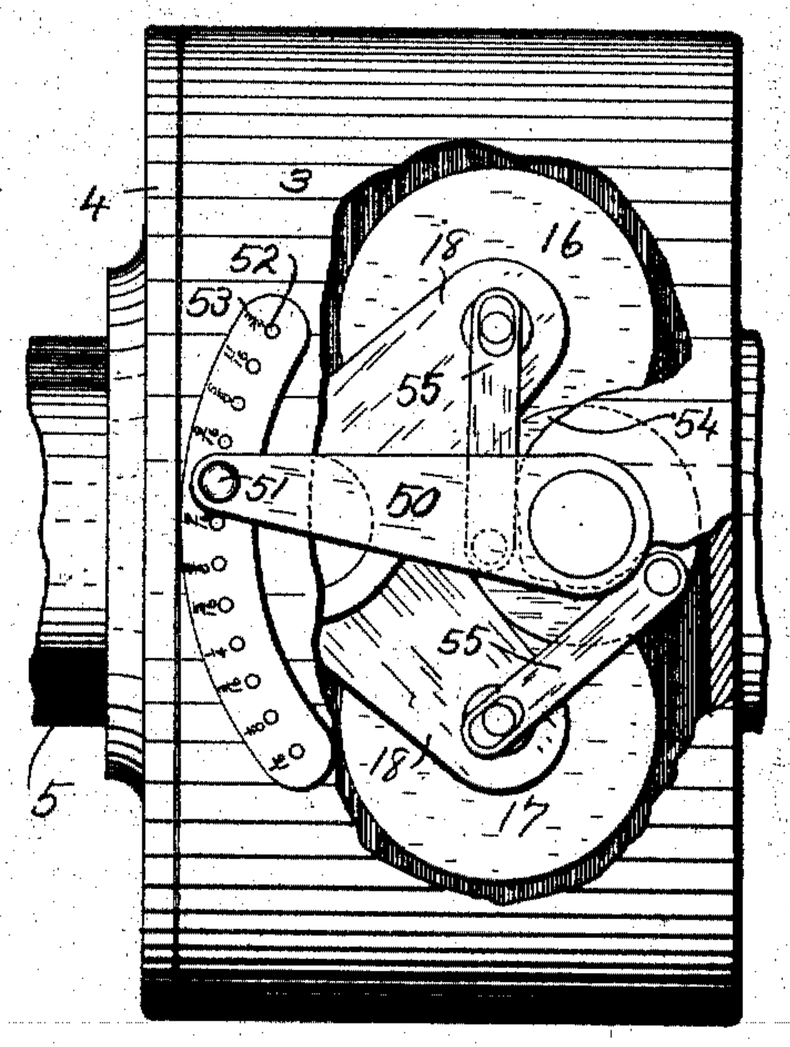


Fig. 4.



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No. 767,078. Patented August 9, 1904.

UNITED STATES PATENT OFFICE.

EDWARD C. MUELLER, OF MILWAUKEE, WISCONSIN, ASSIGNOR OF ONE-HALF TO CHARLES J. KAISER, OF MILWAUKEE, WISCONSIN.

STOCK-FEEDING DEVICE.

SPECIFICATION forming part of Letters Patent No. 767,078, dated August 9, 1904.

Application filed December 19, 1903. Serial No. 185,780. (No model.)

To all whom it may concern:

Be it known that I, EDWARD C. MUELLER, a citizen of the United States, residing at Milwaukee, county of Milwaukee, and State of Wisconsin, have invented new and useful Improvements in Stock-Feeding Devices, of which the following is a specification.

My invention relates to improvements in stock-feeding devices for lathes and other machines in which an intermittent feeding movement within a rotating tube or cylinder is desired.

The object of my invention is to provide means for transmitting the rotary movement of an inclosing tube or cylinder to feed the stock longitudinally thereof at the will of the attendant or operator, the feeding devices being adapted to operate through apertures in the tube or cylinder and arranged to rotate with it during the feeding operation.

In the following description reference is had to the accompanying drawings, in which—

Figure 1 is a central vertical sectional view of my invention, showing also a portion of the frame in full. Fig. 2 is a sectional view drawn on line *x x* of Fig. 1. Fig. 3 is a sectional view drawn on line *y y* of Fig. 1. Fig. 4 is a side view of the housing of the motion-transmitting mechanism with a portion of the wall of the housing partially broken away to show such mechanism.

Like parts are identified by the same reference characters throughout the several views.

1 is the spindle-shaft of a lathe. This is provided with slots 2 on opposite sides of the shaft, which are covered by a suitable housing formed in sections, one section, 3, being fast on the spindle-shaft and the other section, 4, being mounted on a hub 5, normally loose on the shaft, the two sections being unconnected with each other.

The section 4 is provided with a beveled gear-wheel 8, through which the spindle-shaft passes and which is arranged to mesh with beveled pinions 9 and 10, which are mounted to revolve on suitable stud-shafts 11, projecting inwardly from opposite sides of the section 3 of the housing at right angles to a plane common to the slots 2.

15 is the stock, represented in the drawings as a wire such as is fed through a lathe to be cut into lengths or formed into screws, nails, or other articles. Feed-rollers 16 and 17 are supported from the respective stud-shafts 11 by arms 18 and roller-supporting shafts 19, the arms 18 being free to swing on the stud-shafts 11 and arranged to support the rollers, with their inner portions entering the slots 2 of the spindle-shaft 7 and gripping the stock between them. 20 represents springs secured to the section 3 of the housing and arranged to bear against the roller-supporting shafts 19, whereby the rollers are pushed resiliently against the stock and permitted to move inwardly or outwardly, according to the thickness of the stock. It will be observed that each set or pair of arms 18 and the corresponding roller-supporting shaft 19 constitute a swinging frame which is pivoted to the housing at opposite sides of the shaft and that these frames extend divergently from the pivot-points and hold the roller-shafts 19 in positions transverse to the spindle-shaft and on opposite sides thereof, but parallel with the stud-shafts 11.

The feed-roller 16 is arranged to be driven from the pinion 9 through the medium of the gear-wheels 25 and 26 and a sleeve 27, connecting the latter with said feed-roller. The feed-roller 17 is driven from the pinion 10 by similar gear-wheels 28 and 29 and a sleeve 30. As the motion originates from the beveled gear-wheel 8 and the pinions 9 and 10 mesh with such wheel on opposite sides, it is obvious that the feed-rollers will revolve in opposite directions, and their action upon the stock will therefore be in the same direction.

It is obvious that so long as the section 4 of the housing is permitted to revolve with the spindle-shaft of the lathe no feeding motion will be transmitted to the feed-rollers, but the entire mechanism within the housing will revolve with the housing and spindle-shaft. Means are provided, however, for checking the motion of the section 4 when the pinions 9 and 10, which are mounted on section 3, will travel around the bevel gear-wheel 8, and thus be caused to revolve axially on their supporting stud-shafts. Their motion will then be

communicated to the feed-rollers to push the stock forwardly in the spindle-shaft.

To check the motion of section 4 at the will of the operator, I have provided a friction brake-band 35, which encircles the hub 5, and the respective ends of which are provided with lugs 36 and 37, Fig. 3. The lug 36 is held by means of an adjustable stop comprising a set-screw 38, and the lug 37 is actuated to set the brake by means of a bell-crank lever having one arm 40 in position to engage lug 37 and an actuating-arm 41, which in the construction illustrated is arranged to be engaged by a shifting clutch member 43, which is also used to actuate the chuck-levers 44, whereby the same movement of the shifting lever which withdraws the member 43 from the levers 44 to release the chuck actuates the arm 41 of the bell-crank to apply the brake-band 35 to the hub 5 and stop the motion of section 4, thus starting the feed-motion. The reverse movement of the clutch member 43 stops the feed-motion and again sets the chuck to grip the stock. As the connections between the chuck-controlling levers 44 and the chuck form no part of the present invention, they are not illustrated in the drawings.

In order that the feeding-rollers 16 and 17 may be adjusted for stock of different diameters, the section 3 of the housing is provided with an exterior gage-lever 50, having a spring-controlled pin 51, adapted to engage in holes 52 in a segmental gage-plate 53. This lever 50 is connected with a bell-crank 54, which is connected with the roller-supporting shafts 19 by links 55. The outer ends of the links 55 are slotted for the reception of the reduced ends of the shafts 19, thus allowing the shafts to oscillate on their supporting-arms to accommodate stock of varying thickness and permit the springs 20 to press the rollers resiliently against the stock. The lever 50 will of course be adjusted when the spindle-shaft is at rest.

Oil-ducts 57 are provided in the stud-shafts 11 and the roller-supporting shafts 19, whereby the various parts may be lubricated. The casing-section 3 is provided with suitable apertures normally closed by screw-plugs 58 opposite the ends of the oil-ducts in the shafts 19, which permit access to such ducts.

In review, assuming that a wire or bar constitutes the stock and is to be fed through the lathe-spindle and cut into lengths, the feed-rollers 16 and 17 are first adjusted, by means of the gage-lever 50, to a distance from each other approximating the diameter of the wire, the end of which is inserted through the spindle-shaft. The shaft being then set in motion, the clutch-member 43 is adjusted under the actuating-arm 41 of the brake-setting bell-crank lever and the band-brake adjusted to grip the hub 5 of the housing-section 4. The gearing of the revolving section 3 of the housing will then be actuated, as above explained, and motion communicated to the feed-rolls to move the stock forwardly. When the required length of stock is exposed to the tools, the clutch member 43 is shifted out from under the arm 41 of the brake-setting lever, whereupon the section 4 of the housing is permitted to revolve with the shaft and the feeding movement ceases.

It will be understood that the arrangement by which the brake-band is set through the medium of the clutch member 43 is one of convenience and that, if desired, any ordinary means, such as a simple hand-lever, may be used to apply said brake.

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

1. The combination with a rotary hollow shaft, of a pair of supports connected therewith and projecting toward the shaft on opposite sides thereof; a pair of arms connected with each support and projecting divergently therefrom; cross-shafts mounted on one arm of each support and located respectively on opposite sides of said hollow shaft; rollers mounted on said cross-shafts and projecting through slots in said hollow shaft; and means for pressing said rollers inwardly; said pivotal arms being adapted to permit the rollers to swing in a longitudinal plane of the hollow shaft; together with a supporting member through which the spindle-shaft loosely passes; a driving-wheel fixed on said member; and connections for actuating the rollers from said driving-wheel.

2. In a machine of the described class, the combination with a rotary hollow shaft, of a supporting member fixed thereon; feed-rollers arranged to enter suitable apertures in the shaft; supporting-arms for said feed-rollers pivotally connected with said supporting member; a second member loose on the shaft; a driving-wheel connected therewith; motion-transmitting devices for the feed-rollers connected with the fixed supporting member and arranged in permanent motion-receiving connection with said driving-wheel; a friction brake-band controlling the movement of the loose member; a lever pivotally mounted on a stationary support with an arm projecting along one side of said hollow shaft and another arm connected with one end of the brake-band; chuck-actuating levers; a clutch-actuating member, movable longitudinally of the shaft and interposed between one arm of the brake-actuating lever and said chuck-levers; said clutch-actuating member being formed to actuate the chuck-levers when moved in one direction and the brake-lever when moved in the opposite direction; and manually-controlled means for shifting said clutch-actuating member.

3. The combination with a rotary hollow

shaft; of a supporting member fixed on the shaft; cross-shafts supported on opposite sides of said hollow shaft by arms pivotally connected with said member; feed-rollers mounted on said cross-shafts and extending through suitable apertures in the hollow shaft; gear-wheels on said cross-shafts, connected with the feed-rollers; pinions, located at the pivots of said shaft-supporting arms and arranged to drive the gear-wheels of the respective feed-rollers; a driving gear-wheel, loose on the hollow shaft, and arranged to mesh with the respective pinions; and means for stopping the motion of the driving-wheel; said pinions being adapted to travel around said driving-wheel with the revolutions of the shaft.

4. The combination with a rotary hollow shaft; of a supporting member fixed on the shaft; cross-shafts supported on opposite sides of said hollow shaft, by arms pivotally connected with said supporting member; feed-rollers mounted on said cross-shafts and projecting through suitable apertures in the hollow shaft; a bell-crank lever linked to the supports of the feed-rollers and having an exterior actuating-arm; and connections controlled by the operator for transmitting the motion of the hollow shaft to axially rotate the feed-rollers.

5. The combination with a rotary hollow shaft; of a supporting member fixed on the shaft; cross-shafts supported on opposite sides of said hollow shaft, by arms pivotally connected with said supporting member; feed-rollers mounted on said cross-shafts, and projecting through suitable apertures in the hollow shaft; a bell-crank lever having an exterior actuating-arm and having slotted link connections with the supports of the feed-rollers, adapted to permit a limited independent movement of the supporting-shafts of the feed-rollers and their supporting-arms; an exterior gage arranged to hold the slotted arm in any desired position of adjustment; spring tension devices for pushing said feed-rollers inwardly in the direction of the hollow shaft; and motion-transmitting devices controlled by the operator for driving said feed-rollers from said hollow shaft.

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

EDWARD C. MUELLER.

Witnesses:

LEVERETT C. WHEELER,

JAS. B. ERWIN.