M. J. SIELAFF.

WHEEL TURNING MACHINE.

APPLICATION FILED JAN. 26, 1918.

1,366,543.

Patented Jan. 25, 1921.

5 SHEETS—SHEET 1.

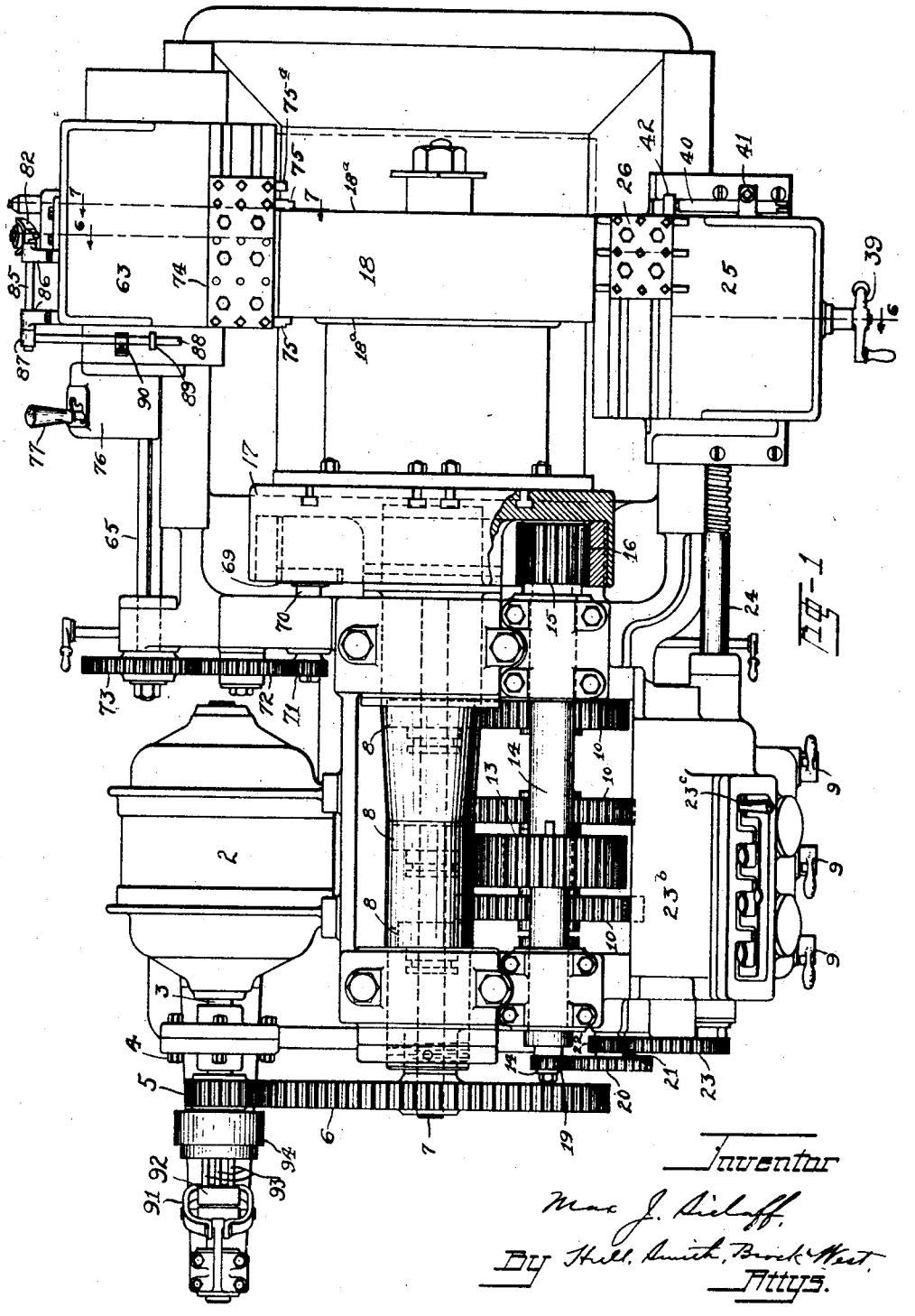

Fig. 1

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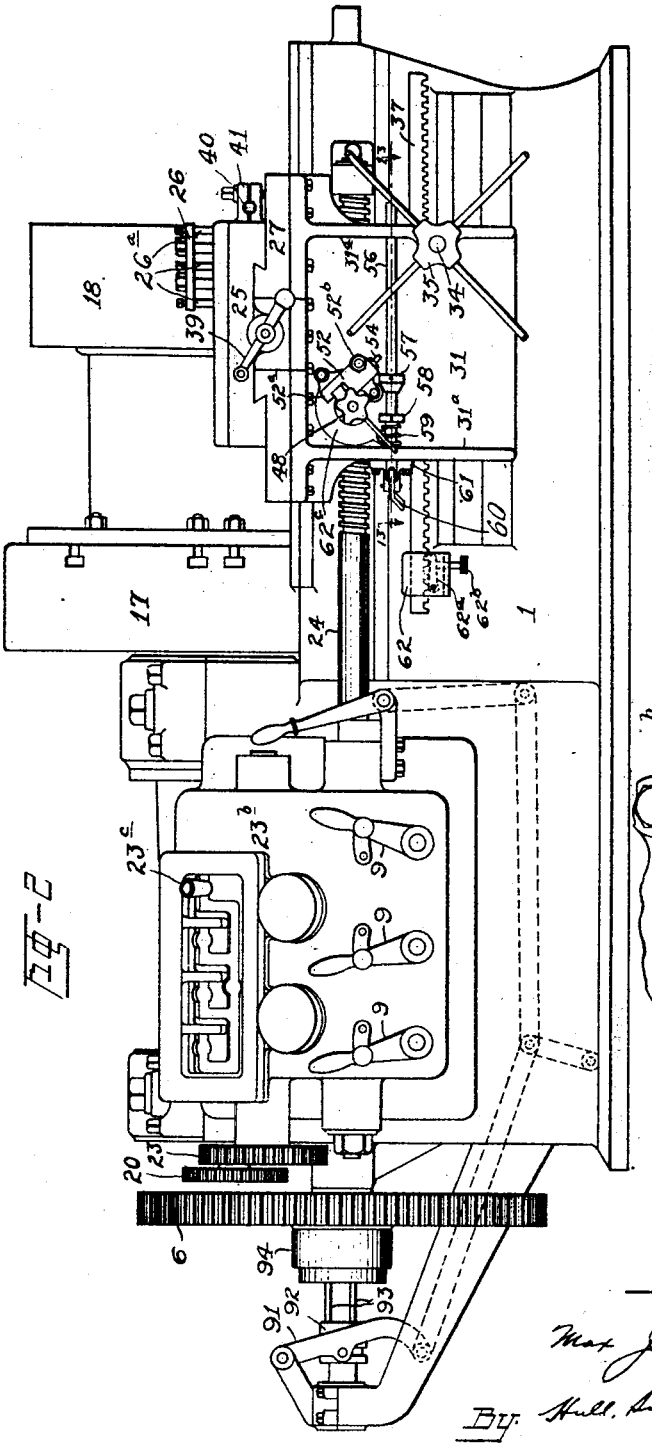

Fig-2

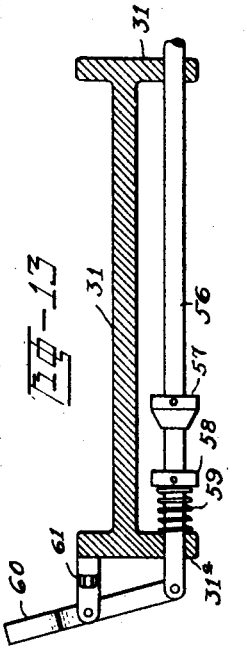

Fig-13

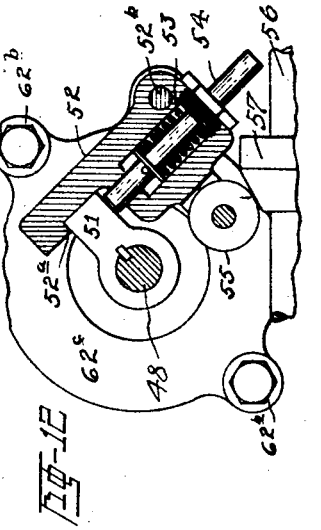

Fig-12

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5 SHEETS—SHEET 3.

Fig-3

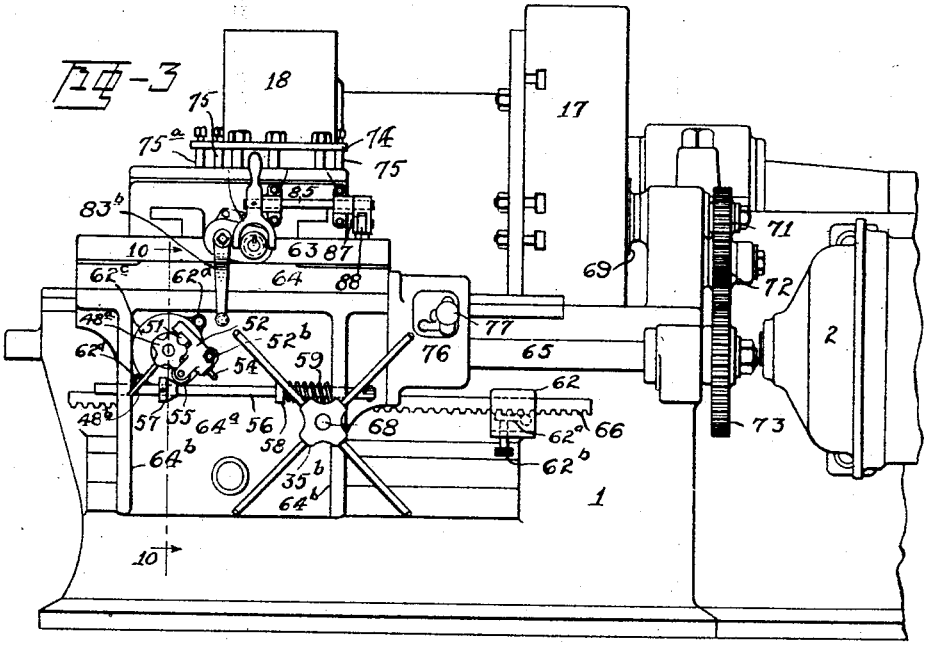


Fig-10

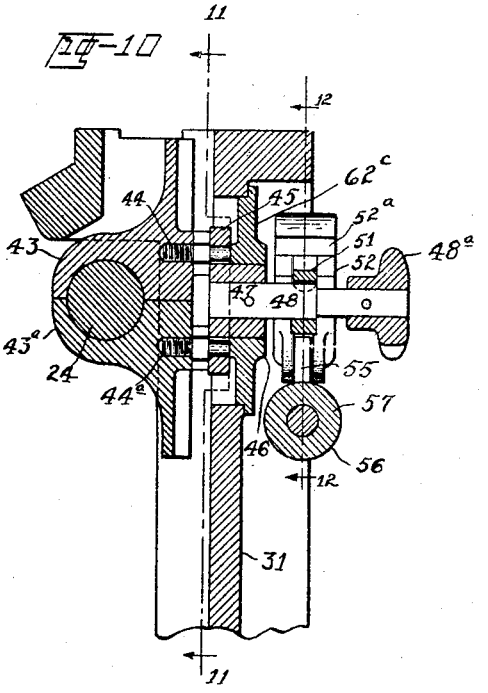
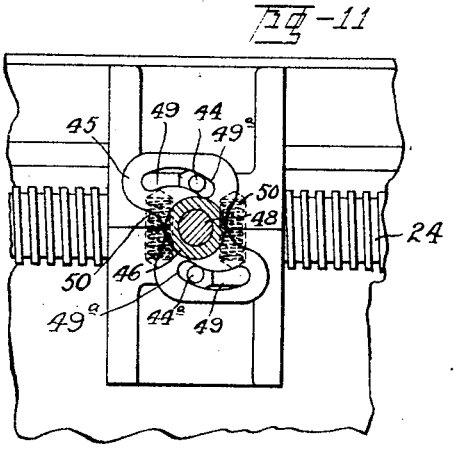


Fig-11



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5 SHEETS—SHEET 4.

Fig-4

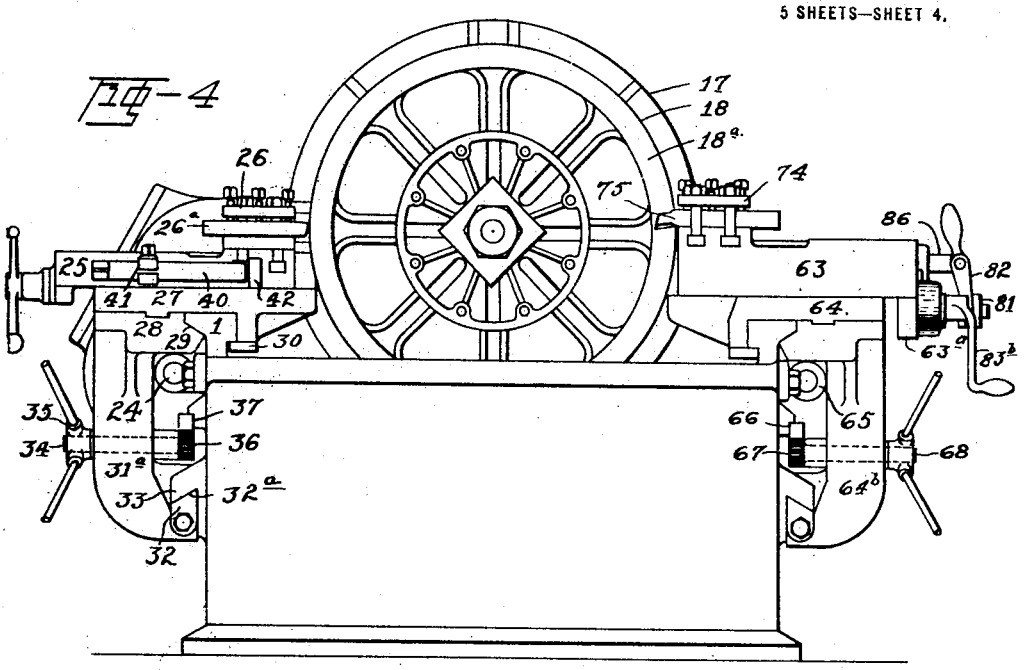
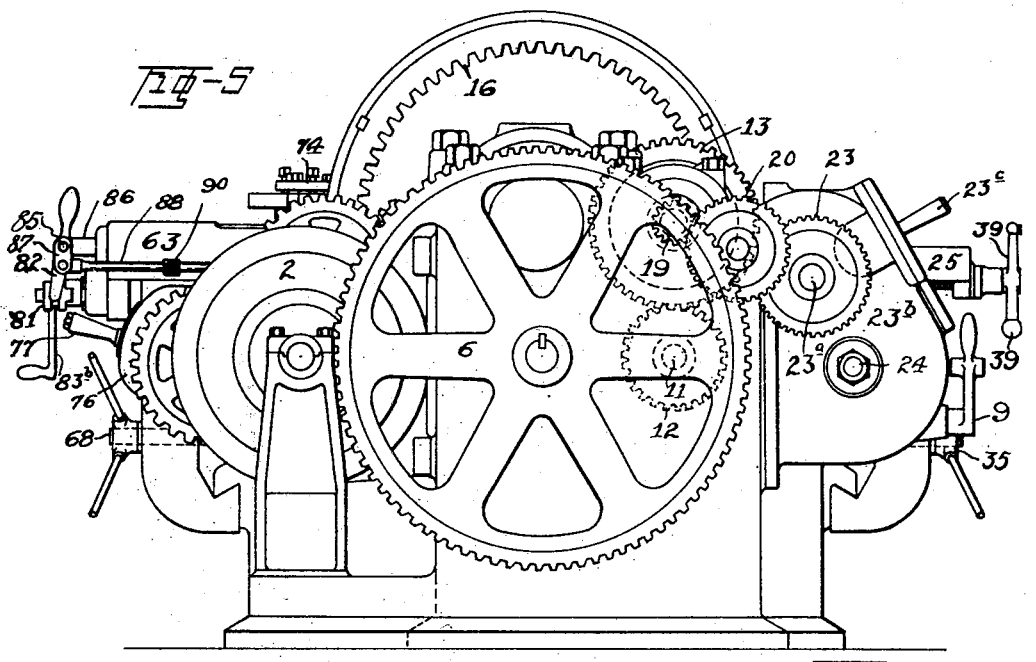


Fig-5



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5 SHEETS—SHEET 5.

Fig-6

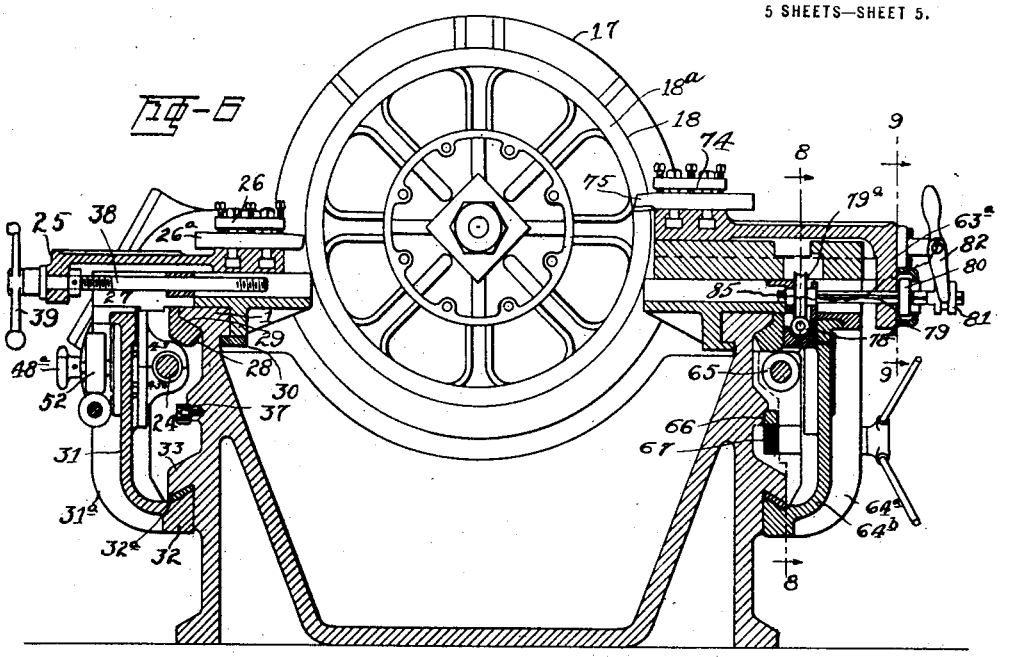


Fig-7

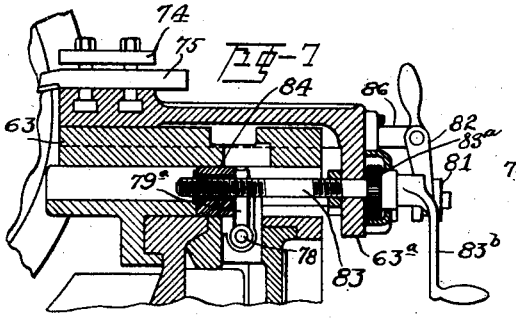


Fig-8

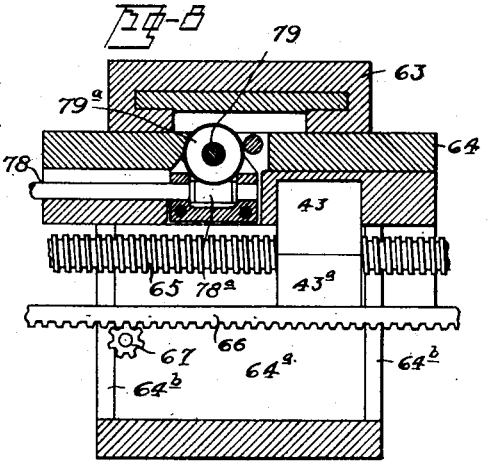
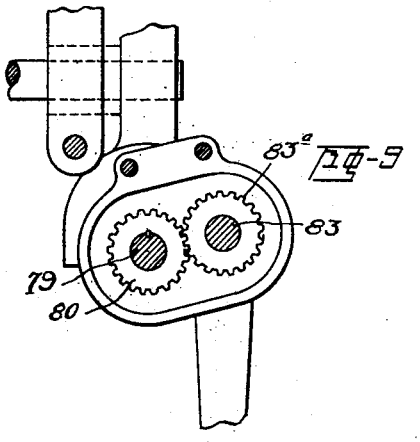


Fig-9



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UNITED STATES PATENT OFFICE.

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WHEEL-TURNING MACHINE.

1,366,543. Specification of Letters Patent. **Patented Jan. 25, 1921.**

Application filed January 26, 1918. Serial No. 213,882.

To all whom it may concern:

Be it known that I, MAX J. SIELAFF, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Wheel-Turning Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to machines for finishing articles and more particularly to machines which are especially designed with the view of "machining" articles of cylindrical form, such as cast metal wheels.

It is the general purpose of the invention to provide a machine of this character which is capable of finishing these objects in an efficient and economical manner. A further object of the invention is to produce a machine wherein the tools are capable of operating conjointly upon different portions or the same portion of the work; also to provide a machine wherein the tools are capable of being driven in different directions from a common operating device and one wherein the movements of the tools are conveniently and automatically controlled. Further objects and purposes of the invention will be set forth in the specification and will be realized in and through the drawings as well as by the combinations of elements embodied in the claims hereto annexed.

In the drawings, Figure 1 represents a plan view of a machine of the character described, certain parts being broken away; Fig. 2 a front side elevation and Fig. 3 a rear side elevation of such machine; Figs. 4 and 5 elevations of opposite ends of such machine; Figs. 6 and 7 sectional views corresponding respectively to the lines 6—6 and 7—7 of Fig. 1; Figs. 8 and 9 sectional views corresponding respectively to the lines 8—8 and 9—9 of Fig. 6; Fig. 10 a sectional detail corresponding to the line 10—10 of Fig. 3; Fig. 11 a sectional view corresponding to the line 11—11 of Fig. 10; Fig. 12 a sectional view corresponding to the line 12—12 of Fig. 10; and Fig. 13 a similar view corresponding to the line 13—13 of Fig. 2.

Describing by reference characters the various parts illustrated herein, 1 denotes generally the bed of the machine. Secured to one side of the machine (hereinafter designated the "rear" side) is an electric motor 2, the armature shaft 3 whereof is shown as made of flanged sections connected by bolts 4, the shaft being provided with a pinion 5 meshing with a gear 6 driving a shaft 7 having the change-speed pinions 8 thereon (see dotted lines, Fig. 1). These pinions are operated in the usual manner by the gear-shift levers 9 at the front side of the machine. Each of the pinions 8 is adapted to be moved into and out of mesh with one of the gears 10 on the shaft 11 (see Figs. 1 and 5). A pinion 12 on the shaft 11 meshes with a gear 13 on the shaft 14, the last-mentioned shaft carrying a pinion 15 which is adapted to mesh with an internal gear 16 on the revolving head 17 of the work holder to which a cast metal wheel 18 is shown as secured. The shaft 14 is provided with a pinion 19 at its rear end meshing with a gear 20 on a shaft 21 having a pinion 22 meshing with a gear 23 on a shaft 23^a extending into the gear-shift box 23^b and provided with a plurality of pinions thereon (not shown) adapted to be engaged by corresponding gears (not shown) on the feed screw 24, the gear-shift lever being indicated at 23^c. The gear-shift arrangement referred to is of standard construction and requires no detailed description and illustration. The feed screw operates a slide the upper portion whereof is indicated at 25 to which a facing tool-holder, indicated generally at 26, is secured. The slide is made in two parts, the upper part, indicated at 25, being transversely movable on the lower part 27. This lower part is bolted to an extension 28 having a beveled surface 29 engaging beneath a corresponding beveled surface on the bed 1, the part 27 having an extension 30 which engages beneath a shoulder or ledge on the bed 1 (see Fig. 4). The extension 28 is provided with a depending apron 31 having ribs 31^a and a beveled projection 32 provided with a gib 32^a which is adapted to engage a tapered seat 33 projecting outwardly from the bed (see Figs. 4 and 6). The apron 31 carries a shaft 34 having a hand wheel 35 and a pinion 36 which is adapted to engage a rack 37 carried by the bed in order to enable the slide to be adjusted by hand (see Figs. 1 and 4). The upper part of the slide 25 is mounted upon a dovetail projection 27^a on the lower part 27 and is provided with a screw 38 having an operating handle 39 for adjusting the part 25 relatively to the part 27 (see Figs.

2 and 6). A threaded rod 40, carried by the split internally threaded bracket 41 projecting from the upper part 25 of the slide, and a stop 42 on the carriage serve to position the tool-holder 26 with reference to the work. The foregoing parts provide means for driving the tool slide either by hand or by the feed screw 24, means being provided for automatically breaking the driving connection between the feed screw and the slide, as will be pointed out hereinafter.

The feed screw 24 extends through a split nut comprising the upper section 43 and lower section 43ª connected by pins 44 and 44ª respectively to a nut-closing plate 45 (see Figs. 2, 10, 11 and 13). This plate is provided with a hub 46 which is shown at 47 as pinned to a shaft 48. The closing plate is provided with slots 49 each having an inclined portion 49ª adapted to engage the pins 44 and 44ª thereby to close the two nut sections 43 and 43ª about the feed screw by the rotation of said plate. Helical springs 50 mounted in recesses in the nut sections tend to force the said sections apart but are normally prevented from rotating the plate 45 and opening said sections by a lock, which will now be described. The shaft 48 is provided with an operating wheel 48ª and a lever 48ᵇ and has keyed thereto a pawl 51. This pawl coöperates with a ledge or shoulder 52ª on a lock 52 which is pivoted to the apron 31, as indicated at 52ᵇ. The lock (see Fig. 12) is provided with a chamber which receives a spring 53 coöperating with a plunger 54 which is adapted to engage the pawl 51 and normally hold the same against the shoulder 52ª. A roller 55 is also carried by the lock, and this roller is engaged by an abutment which normally prevents rotation of the lock and, under circumstances to be explained hereinafter, automatically rocks the lock on its pivot and disengages the shoulder from the pawl, whereupon the springs 50 open the nut, rotating the plate 45 by the pins 44, 44ª.

56 denotes a rod which is mounted in the ribs 31ª of the apron, said rod having thereon a conical abutment 57 against which the roller 55 normally rests, whereby the abutment serves normally to hold the ledge 52ª in engagement with the pawl. The rod is provided with a collar 58, there being a spring 59 interposed between said collar and the adjacent rib 31ª. As illustrated, the tools which machine the cylindrical face of the article 18 cut from right to left and the left hand end of the rod 56 is provided with means whereby the rod may be actuated to unlock the nut 43, 43ª at the end of the cutting stroke. This means comprises a lever connected to the left hand end of the rod and an adjustable abutment secured to the bed and adapted to be engaged by the lever at the end of the cutting stroke. The lever referred to is indicated at 60 and is pivoted to a bracket 61 secured to the apron 31. The end of the lever opposite the rod 56 is adapted to engage the abutment 62, which may be adjustably secured to the rack 37 by means of a pawl 62ª and a set screw 62ᵇ engaging said pawl (see Figs. 2 and 13). From the construction illustrated and described, it will be apparent that, when the slide which carries the tool-holder 26 has been moved a distance predetermined by the abutment 62, the lever 60 will engage said abutment, thereby causing the conical abutment 57 to rock the lock 52 on its pivot 52ᵇ and disengage the ledge 52ª from the pawl. Thereupon, the springs 50 will open the nut 43, 43ª and break the driving connection between the feed screw and the slide, the pins 44, 44ª moving outwardly in the inclined slots 49 of the closing plate and rocking said plate during this operation. The slide may then be moved by means of the shaft 34, pinion 36 and rack 37 to a position to institute the next stroke, and the nut will then be closed upon the feed screw by means of the closing plate 45 through the head 48ª or the lever handle 48ᵇ on the shaft 48. The rotation of this shaft rotates the plate 45 and drives the nut segments together by the pins 44, 44ª and the inclined portions of the slots 49. The pawl will then be engaged beneath the ledge 52ª and the nut will be locked in its closed position until again opened by the engagement of the lever 60 with the abutment 62. The nut 43, 43ª and the plate 45 are mounted within a recess in the apron 31. This recess is closed by means of a cover plate 62ᶜ, mounted on the hub of the closing plate and fastened to the apron, as indicated at 62ᵈ (see Figs. 3 and 10).

The opposite or rear side of the machine is provided with a slide 63, 64 similar to the slide described in connection with the front of the machine and supported on the bed in like manner. This slide is provided with an apron 64ª having ribs 64ᵇ similar to the parts 31 and 31ª of the slide on the opposite side of the machine (see Figs. 3 and 4), with a power driven feed screw 65 and with a pinion 67 engaging a rack 66 and a hand operating shaft 68 for said pinion which are similar to the feed screw and hand operating means illustrated and described in connection with the front side of the machine. The slide 63, 64 is also preferably provided with a means for automatically breaking the driving connection between the same and the feed screw when the slide shall have been moved a predetermined distance longitudinally of the machine. This means is preferably the same as employed in connection with the feed screw 24, the two-part nut for the feed screw 65 being indicated at 43, 43ª on the drawing and the parts for automatically

opening said nut being designated by the numerals applied to like parts on the front side of the machine. The screw 65 is shown as driven from the internal gear 16 by means of a pinion 69 on the shaft 70 and from the latter by means of a pinion 71 and gears 72, 73 (see Fig. 1). The slide 63, 64 is provided with a tool holder 74 which is adapted to support a tool operating upon the lateral faces of the article 18 as well as tools for machining the cylindrical face of said article. The tool-holder 74 may be provided with two tools 75 adapted to operate on opposite side flanges 18^a of the wheel 18 as well as with a finishing tool 75^a adapted to finish the rough cut made by the tools 26^a, three such roughing tools being shown.

As the machining of the flanges will require less time than is required for the roughing operation performed by the tools 26^a, the tool 75^a may then be employed to finish the cut made by the roughing tools, and the slide 63, 64 may be operated in the same manner as the slide 25, 27.

Because of the operations which are to be performed by the tools of the slide 63, 64, the said slide is provided with an automatically operated feed for the upper portion of the slide while its tools are machining the lateral surfaces or flanges 18^a of the article 18. These features are illustrated more particularly in Figs. 6 to 9 inclusive. By means of a gear shift box 76, operating handle 77 and an ordinary arrangement of change-speed gears within said box (see Fig. 1) a worm shaft 78 is driven at any desired speed from the feed screw 65. The worm 78^a on the worm shaft is shown as meshing with a worm gear 79^a on the shaft 79. The shaft 79 projects through an apron 63^a depending from the upper slide member. 80 denotes a gear loosely mounted on the shaft 79 and adapted to be connected to said shaft by means of a clutch 81 having an operating yoke 82. The gear 80 meshes with a gear 83^a on a feed screw 83 (Figs. 7 and 9) and, when connected to the shaft 79, serves to drive said screw. This screw is threaded into a nut 84 on the carriage so that, by the rotation of the screw, the upper portion 63 of the slide is moved transversely with respect to the axis of the machine. The shaft 83 is provided with a crank lever 83^b whereby it may be rotated when the driving connection between said shaft and the shaft 79 is broken. This connection may be automatically broken by the construction now to be described (see Figs. 1 and 3). The clutch yoke 82 is mounted on a rock shaft 85 journaled in brackets 86. Rigid with the rock shaft is a forked arm 87 the lower end whereof is connected to a rod or bar 88 which slides through a stop collar 89 carried by the bed. A dog 90 which is adjustably secured to the rod or bar 88 is adapted to engage the stop collar when the slide moves a predetermined distance. This rocks the shaft 85 and the clutch yoke 82 to break the driving connection between the gears 80 and 83^a and thus between the shafts 79 and 83. By adjusting the dog 90, the point at which the driving connection will be broken may be varied to suit the circumstances of any particular case.

At the left or rear end of the machine there is shown a clutch yoke 91 coöperating with a collar 92 carrying rods 93 which operate the movable members of a disk clutch (not shown) mounted within the casing 94. By the operation of the clutch collar, the armature shaft of the motor is connected to and disconnected from the pinion 5.

In the operation of the machine, the pinion 5 having been connected to the armature shaft, its motion is transmitted to the revolving head or work holder by said pinion and thence to the article 18 at a speed to be determined by the gears 8 and 10, shaft 14, and pinion 15. Through the gearing 20, 22, 23 and the change-speed gearing in the box or casing 23^b, the feed screw 24 is operated to move the slide 25, 27 and the tool-holder 26 across the cylindrical face of the article 18. By the internal gear 16, the pinion 69, gearing 71—73, and shaft 65, the slide 63, 64 may be operated in like manner. When operated longitudinally of the bed, the tool-holder 74 will preferably be provided with a tool similar to that employed in the tool-holder 26, which will be referred to hereinafter. However, at the start, the driving connection between the shaft 65 and the nut 43, 43^a will be broken and the slide will be operated transversely through the change speed gears within the casing 76 and the shafts 78, 79 and 83, so that the tools 75 may be employed upon the lateral faces of the article 18. After these faces have been machined, the tool 75^a, similar to that carried by the holder 26 will be employed for finishing and the slides on both sides of the machine will be operated longitudinally of the machine; *i. e.*, parallel to the axis of the work holder.

As shown in Figs. 1, 4 and 6, the tools in each holder which operate upon the cylindrical face of the article 18 will be placed in substantially horizontal alinement. With this arrangement, the tools will each cut a spiral path about the article 18, the rate of travel of the slide being such that each tool on the holder 26 will machine one-third of the cylindrical surface of the article, while the tool 75^a will furnish the entire cylindrical surface, the speed of the tool-holders being such that the tools 75 will machine the wheel flanges before the tools 26^a shall have finished the roughing cut. When the tools 26^a and 75^a shall have passed beyond the left hand side of the article, the driving con-

nections between the two feed screws and the slides will be automatically broken and the slides may be returned by hand to initial position to repeat the operation upon the same or a subsequent article. As the tools 75 operate upon the lateral flanges or faces of the article, they will be moved gradually inwardly by the screw shaft 83 as the article revolves, whereby the lateral faces of the article may be machined to an extent to be determined by the adjustment of the dog 90. When the driving connection between the screw 83 and the slide is broken, the slide may then be retracted outwardly by means of the crank handle 83^b, the slide adjusted, and the tool 75^a may then be employed to finish the cylindrical face, the driving connection between the slide and the screw 83 being reëstablished by the clutch 81.

While the machine herein shown and described is particularly applicable to the finishing or machining of cylindrical objects having inwardly projecting lateral faces or flanges, certain features thereof may well be applicable to the machining of articles differing in shape and character from the one shown herein; and hence I do not propose to limit my invention in use to a machine for the particular article shown and described nor to the particular arrangement of parts of the machine so shown and described, except as such limitations may be positively included in the claims or their inclusion may be necessitated by the state of the prior art.

Having thus described my invention, what I claim is:—

1. In an apparatus of the character described, the combination, with a rotatable work holder, of means for driving the same, a tool support on each side of the work holder, means operated by such driving means for moving one of said supports in a direction substantially parallel to the axis of the work holder, means operated by such driving means for operating the other tool support in a direction substantially parallel with the axis of said work holder as well as in a direction transversely of said axis, means for automatically breaking the driving connection between each of said tool holders and the main driving means when the said tool holders shall have been moved a predetermined distance in a direction substantially parallel to the axis of the work holder, and means for automatically breaking the driving connection between the second tool holder and the main driving means when the said tool holder shall have been moved a predetermined distance in a direction transversely of the axis of the work holder.

2. In a machine of the character described, the combination of a tool support, a feed screw, a split nut carried by said tool support and coöperating with said feed screw, means operating to automatically separate the nut sections to break the driving connection between the tool support and the feed screw when the tool support shall have moved a predetermined distance, a feed device for moving said support at substantially right angles to the movement imparted thereto by the feed screw, connections for driving the said device from the feed screw, and means for automatically breaking such connections when the tool support shall have been moved a predetermined distance by the second feed screw.

3. In a machine of the character described, the combination of a tool support, a shaft for driving the same in one direction, means for automatically breaking the driving connection between the tool support and the shaft when the said support shall have been moved a predetermined distance by said shaft, a shaft for driving said tool support in another direction, change-speed gearing interposed between the first and second shafts, a clutch interposed between the change-speed gearing and the second shaft, and means for automatically operating said clutch to break the driving connection between the second shaft and the change-speed gearing when the tool support shall have been moved a predetermined distance by the second shaft.

4. In a machine of the character described, the combination of a tool support, a screw-shaft connected with said support for driving the same in one direction, means for automatically breaking the driving connection between the tool support and the shaft when the said support shall have been moved a predetermined distance by said shaft, a shaft connected with said tool support for driving the same at substantially right angles to the direction imparted thereto by the first mentioned shaft, a clutch cooperating with the second shaft for driving the second shaft from the first shaft, and means for automatically operating said clutch to break the driving connection between the said shafts when the tool support shall have been moved a predetermined distance by the second shaft.

5. In a machine of the character described, the combination, with a tool supporting slide having an apron, of a feed screw, a split nut, a pin projecting from each nut section, a closing plate having inclined slots coöperating with said pins, a shaft on which said plate is mounted, a pawl connected to said shaft, a locking member having a surface adapted to be brought into and out of engagement with said pawl and pivotally mounted on said apron, a rod carried by said apron and having an abutment adapted, when the rod is moved relatively to said apron, to rock the

lock and thereby move the same out of operation relation to said pawl, means adapted to engage the rod to move the abutment in operative relation to the lock when the tool support shall have moved a predetermined distance, and springs operating to separate the sections of the nut to break the driving engagement between the latter and the feed screw.

6. In a machine of the character described, the combination, with a slide, of a feed screw, a split nut, a pin projecting from each nut section, a closing plate having inclined slots coöperating with said pins, a shaft on which said plate is mounted, a pawl connected to said shaft, a pivoted locking member having a surface adapted to be brought into and out of engagement with said pawl, a rod movable with said slide and having an abutment adapted when the rod is moved relatively to said slide, to rock the lock and thereby move the same out of operative relation to said pawl, means adapted to engage the rod to move the abutment in operative relation to the lock when the slide shall have moved a predetermined distance, and means operating to separate the sections of the nut to break the driving engagement between the latter and the feed screw.

7. In a machine of the character described, the combination, with a tool supporting slide having an apron, of a feed screw, a split nut on said slide, a pin projecting from each nut section, a closing plate having inclined slots coöperating with said pins, a shaft on which said plate is mounted, a pawl connected to said shaft, a locking member having a surface adapted to be brought into and out of engagement with said pawl and pivotally mounted on said apron, a rod carried by said apron and having an abutment adapted, when the rod is moved, to rock the lock and thereby move the same out of operative relation to said pawl, a spring normally holding said rod with the abutment out of unlocking relation to said lock, means adapted to operate the rod against the action of said spring and thereby move the abutment in operative unlocking relation to said lock when the tool support shall have moved a predetermined distance, and means operating thereupon automatically to separate the nut sections and thereby break the driving connection between the feed screw and the tool support.

8. In a machine of the character described, the combination, with a tool supporting slide having an apron, of a feed screw, a split nut, a pin projecting from each nut section, a closing plate having inclined slots coöperating with said pins, a shaft on which said plate is mounted, a pawl connected to said shaft, a locking member having a surface adapted to be brought into and out of engagement with said pawl and pivotally mounted on said apron, a rod carried by said apron and having an abutment adapted, when the rod is moved relatively to the apron, to rock the lock and thereby move the same out of operative locking relation to said pawl, means adapted to engage the rod to move the abutment in operative unlocking relation to the lock when the tool support shall have moved a predetermined distance, and springs operating to separate the sections of the nut to break the driving engagement between the latter and the feed screw.

9. In a machine of the character described, the combination with a tool supporting slide, of a feed screw, a split nut, a pin projecting from each nut section, a closing plate having inclined slots coöperating with said pins, a shaft on which said plate is mounted, a pawl connected to said shaft, a locking member having a surface adapted to be brought into and out of engagement with said pawl and pivotally mounted on said slide, a rod carried by said slide and having an abutment adapted, when the rod is moved relatively to the slide, to rock the lock and thereby move the same out of operative locking relation to said pawl, springs operating to separate the sections of the nut to break the driving engagement between the latter and the feed screw, a spring normally holding said rod with the abutment out of operative unlocking relation to said lock, a lever pivoted intermediate of its ends to the apron and having one end connected to said rod, and an adjustable abutment adapted to engage the portion of the lever which is opposite said rod when the tool support shall have been moved a predetermined distance thereby to bring the abutment into operative unlocking relation to said lock.

10. in a machine of the character described, the combination of a bed, a carriage movable therealong, a tool support movable with respect to said carriage, a feed screw, a breakable connection between said feed screw and said carriage and adapted to break the driving connection therebetween when the said carriage shall have been moved a predetermined distance, a feed screw for moving the tool support along said carriage, a driving connection between said screws, means operating automatically to break the driving connection between the said screws when the latter shall have been moved a predetermined distance, and a connection for operating the second screw after the driving connection therewith has been broken.

11. In a machine of the character described, the combination of a bed, a carriage movable therealong, a tool support movable

with respect to said carriage, a feed screw, a breakable driving connection between said screw and said carriage and adapted to break the driving connection therebetween when the said carriage shall have been moved a predetermined distance, a feed screw on said carriage, a driving connection between said screw and said tool support, said driving connection including a shaft driven by the first mentioned feed screw, a gear loosely mounted on the said shaft, a gear on the second feed screw with which the first mentioned gear meshes, a clutch for connecting the first mentioned gear to its shaft, and means controlled by the movement of the tool support along its slide for operating the clutch to break the driving connection between the said shaft and the gear thereon when the tool support shall have moved a predetermined distance.

12. In a machine of the character described, the combination of a bed, a tool support movable along said bed, a tool holder on said support and movable relatively thereto, a feed screw, a breakable connection between said screw and said support and adapted to break the driving connection therebetween when the support shall have been moved a predetermined distance by said screw, a shaft on said support, a driving connection between said shaft and said feed screw, a feed screw mounted in the support and operatively connected with the tool holder, a breakable connection between the said shaft and the second feed screw, and means operative by the movement of the tool holder for automatically breaking such connection when the tool holder shall have moved a predetermined distance on its support.

13. In a machine of the character described, the combination of a bed, a tool support movable therealong, a tool holder mounted on said support and movable relatively thereto, a feed screw for driving said support, a breakable connection between said feed screw and said support, a feed screw mounted in the support and operatively connected with the tool holder, a driving connection between the said feed screws, said connection including a clutch, a clutch yoke, a rock shaft rigid with said yoke, an arm connected with said rock shaft, and a stop on said support adapted to operatively engage said arm thereby to move the clutch to break the connection between the said feed screws.

14. In a machine of the character described, the combination of a bed, a tool support movable therealong, means for driving said tool support along said bed, a breakable connection between said tool support and its driving means, and means for breaking such connection, the last mentioned means comprising an abutment carried by said bed, a rod slidably supported by the tool support and having an abutment adapted normally to close the driving connection between the tool support and its driving means, and a lever connected at one end to said rod and adapted to engage the first mentioned abutment.

15. In a machine of the character described, the combination of a bed, a tool support movable therealong, a feed screw, a split nut on the tool support adapted to be engaged by said feed screw, means tending to open the said nut, a rod slidably mounted on the tool support and having an abutment serving normally to hold the nut closed against the action of such opening means, and means operative by the movement of the tool support for moving the said rod and the abutment thereupon thereby to permit the nut to be opened.

16. In a machine of the character described, the combination of a bed, a tool support movable therealong, a feed screw, a split nut on the tool support, means tending to open the said nut and thereby break the driving connection between the same and the feed screw, a pivoted locking device adapted to hold the nut closed, a roller carried by said device, an abutment normally engaging said roller to hold the said device in operative relation to said nut, a movable abutment coöperating with said roller, and means for moving said abutment in a direction to unlock the said device from the nut when the tool support shall have moved a predetermined distance.

17. In a machine of the character described, the combination of a feed screw, a tool support, a split nut carried by said tool support and coöperating with said screw, a shaft for closing the said nut, a pawl projecting from said shaft, a pivoted locking device having a shoulder adapted to engage said pawl, a spring-pressed plunger in said locking device adapted to hold the pawl against said shoulder, and means operative by the movement of the carriage for rocking the locking device about its pivot thereby to disengage the same from said pawl.

In testimony whereof, I hereunto affix my signature.

MAX J. SIELAFF