

July 2, 1929.

C. D. McDONALD

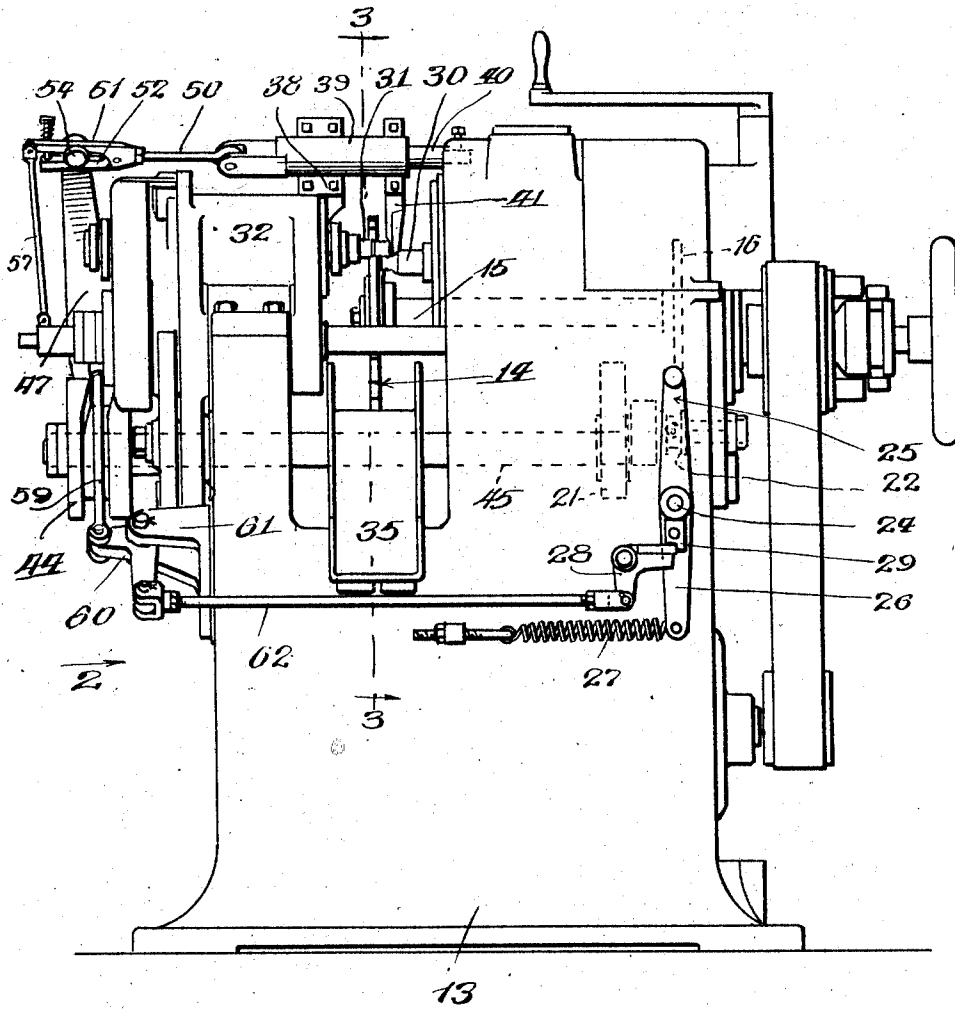
1,719,230

THREAD ROLLING MACHINE

Filed June 21, 1928

4 Sheets-Sheet 1

Fig. 1.



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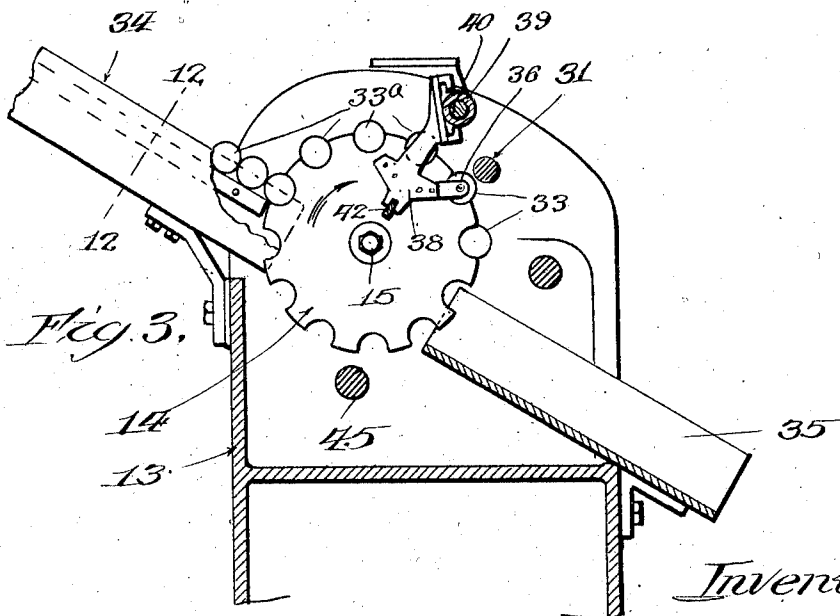
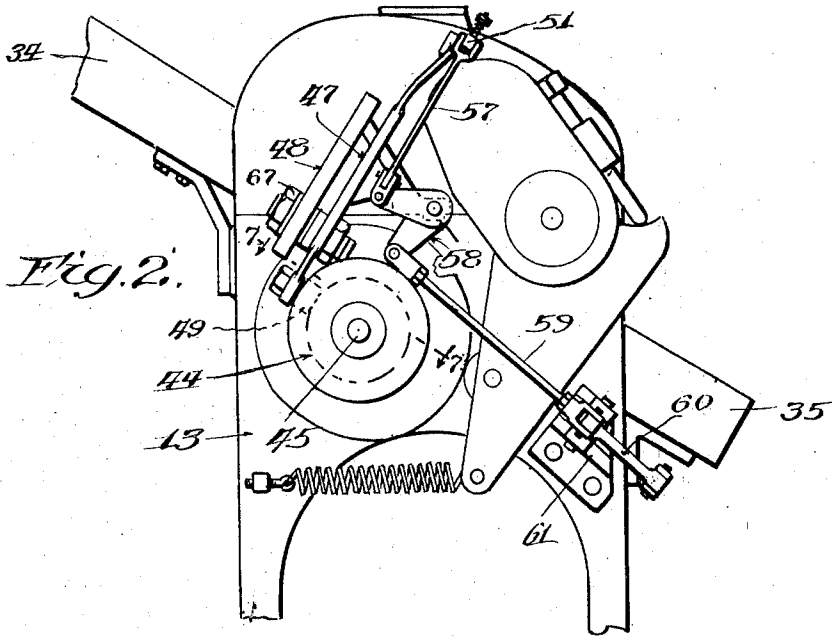
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4 Sheets-Sheet 2



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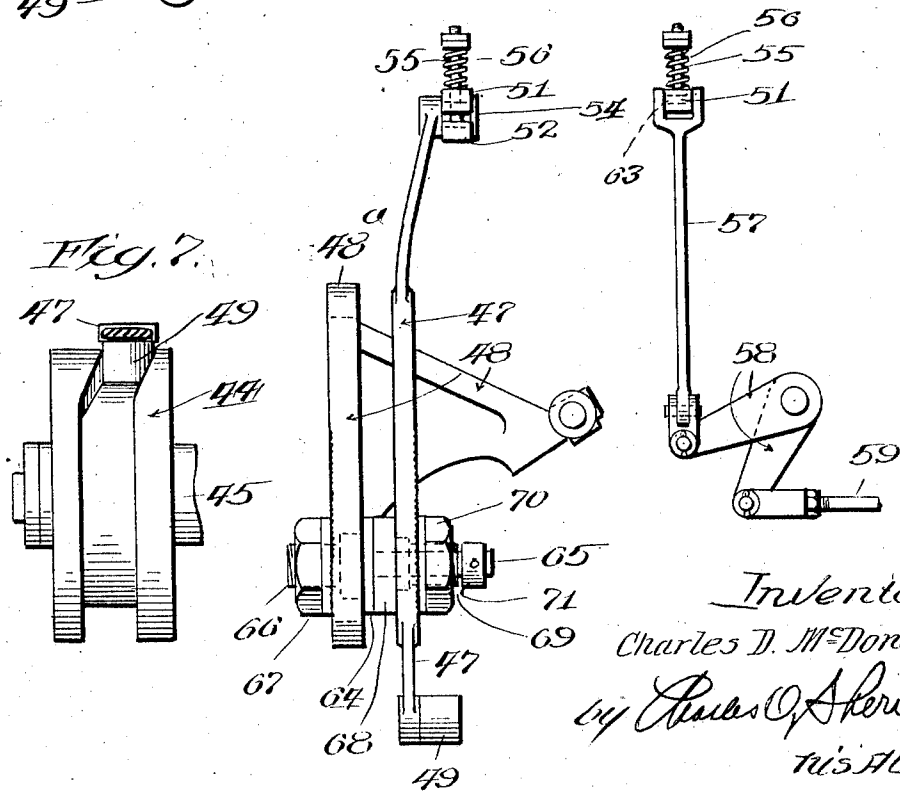
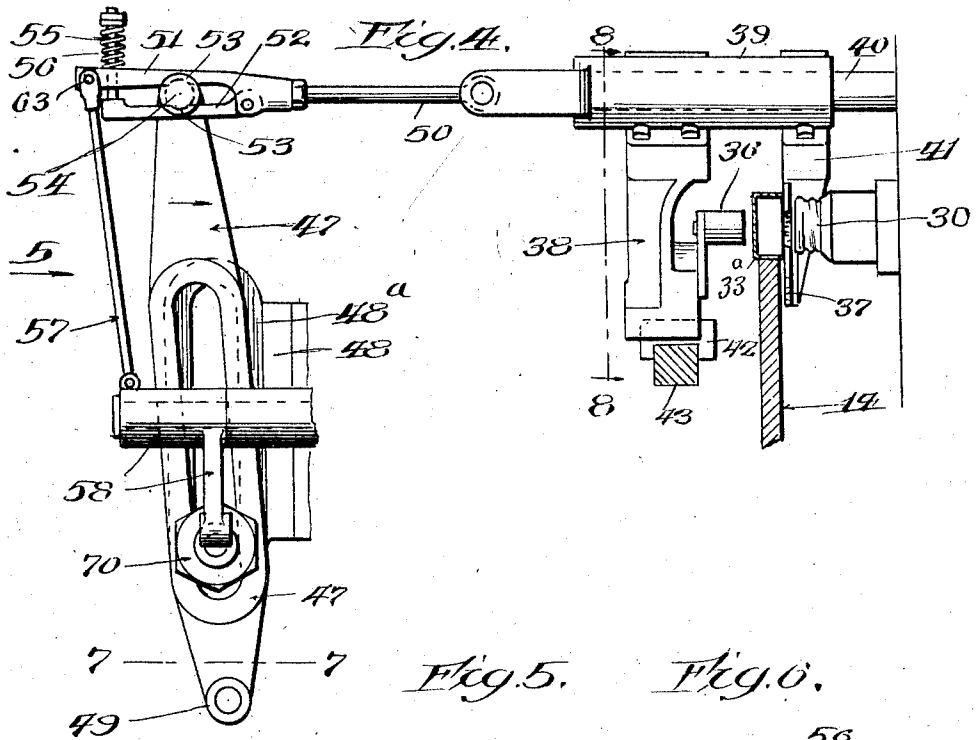
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C. D. McDONALD
THREAD ROLLING MACHINE

1,719,230

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4 Sheets-Sheet 3



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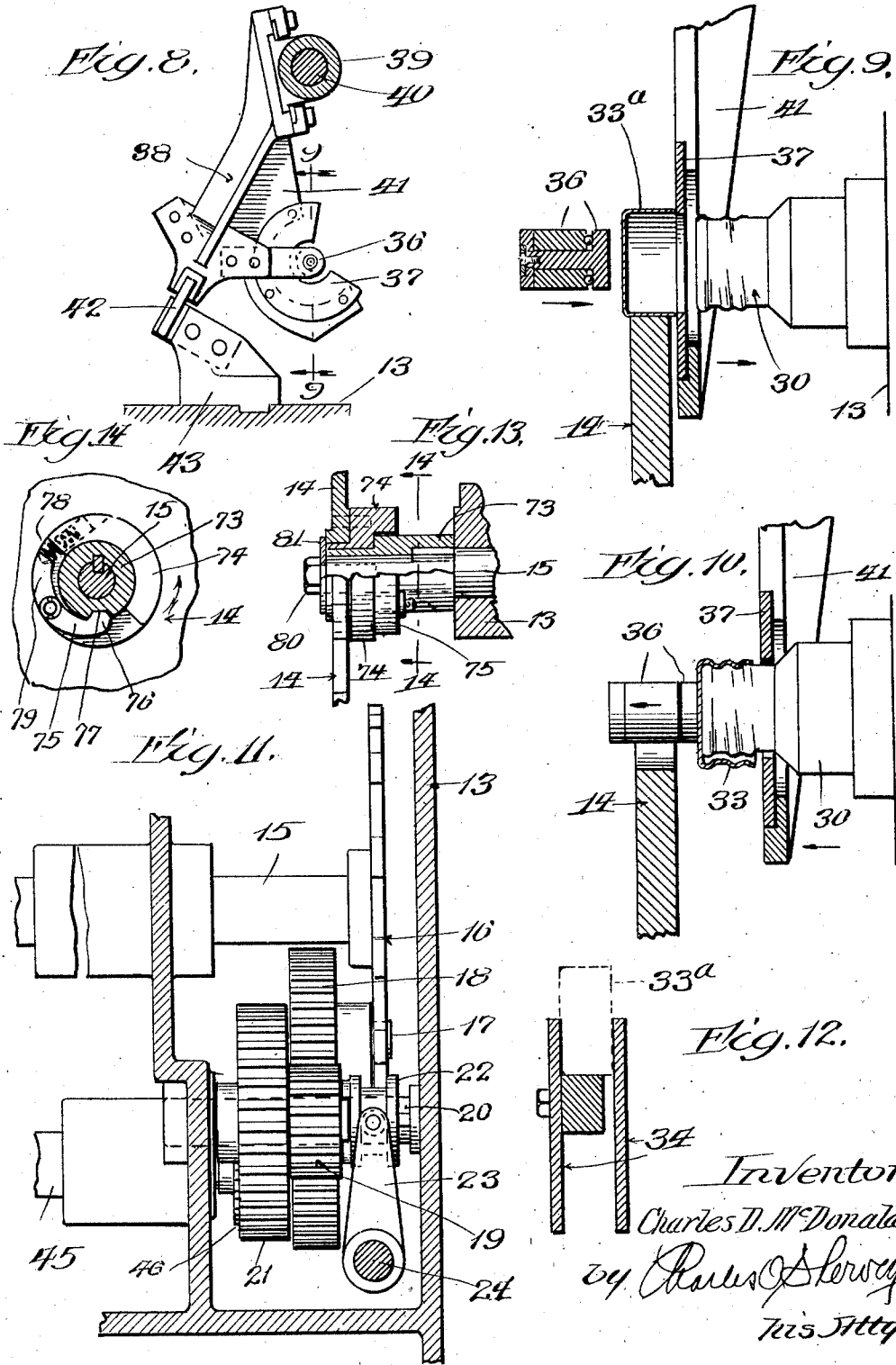
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C. D. McDONALD
THREAD ROLLING MACHINE

1,719,230

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4 Sheets-Sheet 4



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UNITED STATES PATENT OFFICE.

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THREAD-ROLLING MACHINE.

Application filed June 21, 1928. Serial No. 287,326.

This invention relates to thread rolling machines, and one of its objects is to provide novel means for placing the work upon the thread rolling means, or other tool, and discharging it therefrom. Another object is to provide means for automatically stopping the machine in case the work causes an obstruction to the work placing or replacing mechanism.

10 The invention has particular reference to thread rolling machines for rolling knurled portions or threads in covers for cans or jars. Occasionally a cover becomes misplaced in the carrier, which conveys the cover to the knurling and thread rolling tools, with the result that injury is likely to occur to some of the parts of the machine in the act of placing a cover on the thread rolling tool or discharging it therefrom. In accordance with the present invention, an automatically operating release device is provided, which is made effective to stop the machine whenever the mechanism which places the articles upon the thread rolling spindle, or removes it therefrom, meets with resistance sufficient to overcome certain members of the release mechanism.

The invention consists, therefore, in a thread rolling machine having a lever for reciprocating the mechanism which places the work upon the thread rolling spindle, or other tool, and removes it therefrom, said lever having an adjustable fulcrum whereby the length of its stroke may be varied to accommodate articles of various sizes. The invention further consists in automatic release mechanism interposed between said lever and the placing and replacing mechanism and operative connections with the starting mechanism of the machine, whereby the machine is automatically stopped whenever the release mechanism is actuated as a result of said placing and replacing mechanism meeting with an obstruction.

45 The invention further consists in the several novel features of construction, arrangement and combination of parts hereinafter fully set forth and claimed.

The invention is clearly illustrated in the drawings accompanying this specification in which—

Figure 1 is a side elevation of a thread rolling machine embodying a simple form of the present invention;

55 Fig. 2 is an end elevation thereof, partly

broken away, looking in the direction of the arrow 2 in Fig. 1;

Fig. 3 is a fragmental vertical section taken on the line 3—3 of Fig. 1;

Fig. 4 is a detail elevation, partly broken away, of the work placing and replacing mechanism;

Fig. 5 is a detail end elevation of the lever seen in Fig. 4, and certain associated parts, looking in the direction of the arrow 5 in Fig. 4;

Fig. 6 is a detail end elevation of certain members of the lever release mechanism looking in the direction of the arrow 5 in Fig. 4;

Fig. 7 is a view, partly in plan and partly in horizontal section, of the cam block and lever, the line of section being indicated at 7—7 in Figs. 2 and 4;

Fig. 8 is a detail view, partly in end elevation and partly in vertical cross-section, taken on the line 8—8 of Fig. 4;

Fig. 9 is a detail vertical longitudinal section taken on the line 9—9 of Fig. 8;

Fig. 10 is a view similar to Fig. 9, but showing the parts in a different position;

Fig. 11 is a detail vertical cross-section illustrating certain of the transmission gears for the shafts of the machine;

Fig. 12 is a detail cross-section of the delivery chute taken on the line 12—12 of Fig. 3.

Fig. 13 is a detail view, partly in side elevation and partly in vertical longitudinal section, showing the connection between the turret wheel and its shaft; and

Fig. 14 is a vertical cross-section taken on the line 14—14 of Fig. 13.

Referring to said drawings, which illustrate a simple embodiment of the present invention, the reference character 13 designates the main frame of the machine upon which the several operating mechanisms are mounted. A turret wheel 14, having equidistant notches in its periphery for the reception of the work, is provided, and, as shown, said turret wheel is mounted upon a shaft 15 journaled in suitable bearings carried by the frame of the machine and driven in an intermittent or step by step movement, preferably by the usual Geneva movement mechanism comprising the disk 16, and a roller 17, the latter being carried by a gear wheel 18 which meshes with a pinion 19 loosely mounted on a continuously driven shaft 20 of the machine.

Rigidly mounted on the shaft 20 is a continuously rotating gear wheel 21 which is driven from some suitable source of power. Clutch mechanism is provided between the shaft 20 and pinion 19, which clutch mechanism comprises a clutch collar 22 fast on the shaft 20 and having jaws engaging with cooperating jaws on the pinion 19.

A clutch actuating arm 23 engages with the clutch collar 22 and is arranged to clutch and unclutch the pinion 19 from the shaft 20, whereby the operating mechanism of the machine is started and stopped. The clutch arm 23 is mounted upon a rock shaft 24, which is rotatably mounted in the frame of the machine and protrudes from one side thereof, as seen in Fig. 1, and upon said rock shaft 24 is rigidly mounted the starting and stopping hand lever 25 of the machine. By moving the lever 25 in the proper direction, the pinion 19 is thereby connected to the continuously moving shaft 20 and the machine is set into operation, and by moving the lever in the opposite direction, the pinion 19 is unclutched and the mechanism of the machine is stopped.

One arm 26 of the starting lever 25 is connected to a tension spring 27, the other end of which is connected to the press frame, and the tension of said spring is exerted to move the starting lever into its stopping position. A detent or other latch device 28 is mounted upon the frame of the machine and engages with a lug or other shoulder 29 on the arm 26 of the starting lever 25 under normal working conditions of the machine, but is arranged to be disengaged from said lug whenever an abnormal condition arises in the work placing and replacing mechanism. The spring 27 holds the starting lever 25 in engagement with the detent 28, and whenever said detent is released from the starting lever, the spring 27 instantly moves the starting lever into its stopping position, thereby unclutching the pinion 19 from the shaft 20.

The machine is provided with a forming tool such as a knurling or thread rolling spindle 30 journaled in the frame of the machine and driven from the pinion 19 by suitable driving connections (not shown). Co-operating with said spindle 30 is a companion knurling or thread rolling spindle 31 which is mounted in a swinging frame 32 carried by the main frame of the machine. The spindle 31 is also provided with driving connections (not shown) operated from the pinion 19, and means are provided for swinging the swinging frame 32 and thereby moving the spindle 31 into close proximity to the spindle 30, whereby the work is acted upon by the two spindles. Inasmuch as the thread rolling mechanism forms no part of the present invention, the construction and means for operating the

same have not been shown or described in detail.

In the present instance, the invention has been illustrated in connection with a thread rolling machine for rolling a thread upon covers of cans or jars, such a cover being shown at 33 in Fig. 10, and the blank from which the threaded cover is made, being shown at 33^a in Fig. 9. The blanks are fed to the turret wheel 14 through an inclined delivery chute 34 and enter the notches in the turret wheel and are carried by it to and past the thread rolling spindle.

In the form of the invention illustrated, the turret wheel 14 stands in a vertical plane and the blanks 33^a roll down the inclined chute with their hollow sides facing the end of the thread rolling spindle 30. The spindles extend at right angles to the turret wheel, and in the operation of the machine, the turret wheel is intermittently rotated so as to bring its notches one at a time into co-axial alignment with the thread rolling spindle 30, where it remains stationary for a brief interval of time, at which time a blank is moved from the notch (which is in alignment with the spindle) and placed upon the spindle, after which the companion thread rolling spindle is moved into effective engagement with the rim or flange of the blank and the thread or other impression is rolled out by the two spindles.

Thereafter, the swinging thread rolling spindle 31 is retracted and the finished article is stripped from the thread rolling spindle 30 and moved back into the notch in the turret wheel formerly occupied by it. The turret wheel is then moved forward one step and another blank moved into co-axial alignment with the spindle 30 and the same operation performed as before. A discharge chute 35 is provided below and at the side of the turret wheel into which the finished articles fall when they reach a position on the periphery of the turret wheel where they escape by gravity from the notches.

Supported at one side of the turret wheel in co-axial alignment with the thread rolling spindle 30 is a work placing finger 36, which is arranged to push the blanks out of the notches of the turret wheel and place them upon the spindle in position to be operated upon by the two thread rolling spindles. On the other side of the turret wheel is a work replacing plate 37 also arranged in co-axial alignment with the spindle 30, which plate is arranged to move in spaced relation to the work placing finger 36, so that as the finger moves the work upon the spindle, the plate recedes but remains in position to strip the finished work from the spindle and replace it in the notch in the turret wheel when the thread rolling operation has been performed.

The finger 36 is secured to an arm 38 (see

Figs. 4 and 8) which is carried by a sleeve 39 clamped or otherwise secured to the arm 38 and slidably mounted upon a guide rod 40 fixedly secured in the frame of the machine.

5 The rod 40 is parallel with the axes of the spindles 30 and 31 and furnishes a support for the sleeve 39 and parts carried thereby. The work replacing plate 37 is carried by an arm 41 also secured to the sleeve 39. The lower end of the arm 38 is grooved and rides upon a guide bar 42 secured to a bracket 43 mounted on the main frame of the machine.

15 With certain kinds of work, it is necessary for several spindles or tools to operate on the work at different stations along the periphery of the turret wheel, and, for this reason, the arm 38 is arranged to support two or more work placing fingers and work replacing plates. The work replacing plate 37 is formed with a central opening arranged in co-axial alignment with the spindle 30, whereby the plate may move along said spindle, and it is also formed with a notch through which the movable thread rolling spindle may move laterally in engaging the work.

25 Mechanism is provided for reciprocating the placing and replacing members in timed relation to the intermittent movement of the turret wheel, and, as shown, said means comprises, among other mechanisms, a cam block 44 mounted upon a shaft 45 journaled in the bearings contained in the frame of the machine, and having a pinion 46 (see Fig. 11) on one end driven from the pinion 19 through intermediate gears. Associated with the cam block is a lever 47 which is mounted upon a bracket 48 and has a roller 49 on one end, which stands in the cam groove of the cam block 44. The other arm of the lever 47 is connected to the sleeve 39 of the work placing and replacing mechanism by a link 50, pivotally connected to one end of the sleeve 39, and having a releasable connection with the lever 47, whereby in case either one of the work placing or replacing members meets with an obstruction, the lever 47 will be instantly released from its effective connection with the link 50.

50 As shown, the link 50 is provided with a pair of spring-pressed jaws or clamp members 51 and 52 having opposing grooves 53 on their inner edges, in which grooves is held a pin or roller 54 mounted on the upper arm of the lever 47. The jaw or clamp member 51 is rigidly secured to the link 50 and the lower jaw 52 is pivotally connected to the jaw 51, whereby the two jaws may separate under excessive strain thereon.

60 A rod 55 secured to the jaw 52 and extending through the jaw 51, together with a spring 56 interposed between the jaw 51 and a nut upon the end of the rod 55, provides means for clamping the jaws 51 and 52 upon the pin or roller 54. The arrangement of these parts is such that in case either of the work placing

or replacing members meets with an obstruction, thereby arresting movement of the sleeve 39, link 50, and the jaws 51 and 52, the lever, during the remainder of its stroke, moves the pin or roller 54 out of the notches 53, thereby spreading the jaws 51 and 52 apart, and as a result of such lateral movement of the jaw 51, the starting lever 25 is actuated and the machine stopped instantly before any damage can be done to any of the working parts of the thread rolling mechanism or work placing and replacing mechanism.

70 To one end of the jaw 51 is attached one end of a link or connecting rod 57, the other end of which is attached to one arm of a bell-crank lever 58 which is fulcrumed upon the bracket 48. To the other arm of the bell-crank lever 58 is connected one end of a link or connecting rod 59, the other end of which is connected to one arm of a bell-crank lever 60 fulcrumed upon a bracket 61 secured to the frame of the machine. To the other end of the bell-crank lever 60 is connected one end of a link or connecting rod 62, the other end of which is connected to the detent or latch 28. As a preference, the jaw 51 is formed with a notch in its upper edge in which rests a pin 63 carried by the connecting rod 57. This arrangement permits the movement of the jaws 51 and 52 along an arc of a circle without disturbing the connection between the detent 28 and starting lever 25.

80 The bracket 48 is formed with a vertically slotted bracket arm 48^a in which is adjustably mounted a bearing block 64 which is provided with a stud shaft or spindle 65 that forms the fulcrum for the lever 47. The block 64 has a threaded stem 66 which projects through the slot in the bracket arm 48^a and is provided with a nut 67 upon its outer end, whereby the block 64 may be secured in any position of adjustment on the bracket arm 48^a.

100 A companion bearing block 68 is provided for the lever 47, which block is formed with a hollow boss 69 rotatably mounted on the stud shaft or spindle 65 and is provided with a nut 70 threaded upon the boss 69 and adapted to clamp the lever 47 in any position of adjustment upon the bearing block 68. A collar 71 secured upon the stud shaft or spindle 65 holds the bearing block 68 and parts carried thereby upon the stud shaft 65. This arrangement provides means for varying the fulcrum of the lever 47 to thereby vary the throw of the lever. By loosening the nuts 67 and 70, the bearing blocks 64 and 68 may be raised or lowered to change the fulcrum of the lever after which the nuts are screwed up to secure the parts in adjusted position.

115 Occasionally a blank or the finished article becomes jammed between the turret wheel and some other part of the machine, for instance, the thread rolling spindle, which is likely to

cause serious injury to the machine unless the movement of the turret wheel is stopped instantly. It will be understood that there is considerable momentum in the rotating parts in the machine, and although the mechanism of the machine may have been disconnected from the source of power by the release mechanism, there may be sufficient momentum left to carry the turret wheel on a short distance, thereby causing damage in case a blank or finished article is jammed in the turret wheel.

To avoid this contingency, the turret wheel 14 is connected to its shaft 15 by release mechanism which operates to couple the turret wheel to the shaft under ordinary working conditions of the machine, but allows the turret wheel to be disconnected from the shaft in case a jam occurs which tends to arrest movement of the turret wheel. As shown in Figs. 13 and 14, a sleeve 73 is keyed to the turret wheel shaft 15 and the turret wheel 14 has a hub portion 74 which is mounted upon the sleeve and connected thereto by a spring-pressed finger 75, one end 76 of which is held in a notch 77 formed in the sleeve. The spring 78 is seated in a recess formed in the hub portion 74 and bears against the end 79 of the finger. The turret wheel 14 is held on the sleeve by a bolt 80 secured in the shaft 15 and a washer 81, which is interposed between the head of the bolt 80 and the side of the turret wheel.

The spring-pressed finger 75 operatively connects the turret wheel 14 with the shaft 15, whereby the turret wheel is positively rotated by the shaft. The end 76 of the finger which engages in the notch 77 is beveled as seen in Fig. 14, whereby in case the turret wheel meets with an obstruction, as, for instance, if a blank or finished article becomes jammed between the turret wheel and some stationary part, the finger is forced out of the notch 77 against the action of the spring 78, thereby releasing the turret wheel 14 from the shaft 15, and permitting the shaft to rotate, but allowing the turret wheel to remain stationary and thereby to prevent injury to the machine. After the jammed material has been removed, the turret wheel may be operatively connected with its shaft by turning it on the sleeve until the spring-pressed finger 75 engages in the notch 77.

In the operation of the machine, the turret wheel is rotated in an intermittent or step by step manner, thereby bringing one of its notches into coaxial alignment with the thread rolling spindle or other tool 30. The blanks are received in the notches of the turret wheel at the bottom of the chute 34 and conveyed to the tool.

When a blank has been brought into position in co-axial alignment with the tool, the cam block 44 swings the lever 47 in the direction of the arrow thereon (see Fig. 4),

thereby moving the placing and replacing members 36 and 37 toward the right, as viewed in Fig. 4, and, as a consequence, the work placing finger 36 engages the end walls of the blank and moves it out of the notch in the turret wheel and places it upon the tool. Simultaneously therewith the work replacing member 37 recedes and remains in position around the tool and behind the blank. The companion tool is then brought down upon the blank and the knurled edge and thread is rolled upon the blank.

When the tools have finished their work, the cam of the cam block 44 is in position to swing the lever 47 back and the lever is then swung back and the work placing and replacing members returned to their former positions, the work replacing member 37 engaging with the edge of the finished article, stripping it from the tool and replacing it in the notch of the turret wheel. Simultaneously the work placing finger 36 recedes from the article and the turret wheel thereafter is advanced one step, thereby bringing another blank into co-axial alignment with the tool.

In case a blank is misaligned with respect to the tool, or is misplaced in the notch of the turret wheel, or in case any condition arises in which a malformation of the blank takes place, and either the work placing finger 36 or work replacing plate 37 meets with sufficient resistance to overcome the force of the spring 56, the continued movement of the lever 47 forces the pin or roller 54 out of the notches 53 of the jaws 51 and 52 and, as a consequence, spreads said jaws apart, thereby raising the upper jaw, which upward movement of the jaw lifts the link or connecting rod 57 and swings the bell-crank lever 58 as its fulcrum, and the latter swings the bell-crank lever 60 on its fulcrum, through the instrumentality of the link or connecting rod 59, and the bell-crank lever 60 draws the link or connecting rod 62 (see Fig. 1) toward the left as viewed in Fig. 1, thereby swinging the detent 28 upon its fulcrum and releasing it from the starting lever 25, whereupon the spring 27 swings the starting lever into stopping position, thereby unclutching the pinion 19 from the continuously driven shaft 20 and stopping the movement of the working parts of the machine. From the above it will be seen that in case of a malpositioning of the blank in the turret wheel, or in case either the work placing member or the work replacing member meets with abnormal condition of the work, that the operating parts of the machine are instantly stopped, thereby preventing injury to any of its parts.

While the invention has been shown in connection with thread rolling tools, it is to be understood that any suitable tool or tools may be employed for performing work

upon the blank. It is also to be understood that more than one set of tools may be employed in the machine and that the work placing and replacing members may be duplicated for each station at which the tools perform their work.

By the term "work placing member", wherever it occurs in the specification and claims, is meant a device adapted to engage with the blank and force it from the notch of the turret wheel and place it on the tool, and that by the term "work replacing member" is meant a device for engaging with the article, stripping it or removing it from the tool and replacing it in the notch of the turret wheel.

More or less variation of the exact details of construction is possible without departing from the spirit of this invention. I desire, therefore, not to limit myself to the exact form of the construction shown and described, but intend in the following claims to point out all of the invention disclosed herein.

I claim:

1. In a machine of the character described, the combination with a tool, a turret wheel, a turret wheel shaft, and a releasable connection between the turret wheel and turret wheel shaft, of work placing and replacing members, a power shaft, power driven mechanism for driving said turret wheel shaft and operating said work placing and replacing members, a releasable connection for said work placing and replacing members, and means operated by said releasable connection for disconnecting the driven mechanism from the power shaft.

2. In a machine of the character described, the combination with a tool, a turret wheel, a shaft for said turret wheel, and a releasable connection between said turret wheel and shaft, of work placing and replacing members, operating mechanism therefor, power driven mechanism for said shaft, a releasable connection between said work placing and replacing members and the operating mechanism therefor, and mechanism operated by a member of said releasable connection for stopping the operating mechanism of the machine.

3. In a machine of the character described, the combination with a tool, a turret wheel, a shaft for said turret wheel, and a releasable connection between said turret wheel and shaft, of reciprocatory work placing and replacing mechanism having spaced work placing and replacing members, operating mechanism for reciprocating said work placing and replacing mechanism, power driven operating mechanism for said turret wheel shaft, a releasable connection between said placing and replacing mechanism and the operating mechanism therefor, and mechanism operated by a member of said releasable connection for

stopping the operating mechanism of the machine.

4. In a machine of the character described, the combination with a tool and a turret wheel for conveying work to a position in co-axial alignment with the tool, of work placing and replacing members, reciprocatory supporting means for said work placing and replacing members, an oscillatory lever, a link releasably connecting said lever with said supporting means, and a lever oscillating cam co-operating with said lever to reciprocate said work placing and replacing members.

5. In a machine of the character described, the combination with a tool and a turret wheel for conveying work to a position in co-axial alignment with the tool, of work placing and replacing members, reciprocatory supporting means for said work placing and replacing members, operating mechanism for reciprocating said work placing and replacing members, power driven operating mechanism for the machine, and a releasable connection in said operating mechanism for the work placing and replacing members.

6. In a machine of the character described, the combination with a tool and a turret wheel for conveying work to the tool, of work placing and replacing mechanism arranged in co-axial alignment with the tool, an oscillatory operating lever for actuating the work placing and replacing mechanism and releasably connected therewith, and means for oscillating said lever.

7. In a machine of the character described, the combination with a tool and a turret wheel for conveying work to the tool, of work placing and replacing mechanism having two work engaging members, one at each side of the work and arranged in co-axial alignment with the tool, an oscillatory operating lever for actuating said work placing and replacing mechanism, a link releasably connecting said work placing and replacing mechanism and lever, and means for oscillating said lever.

8. In a machine of the character described, the combination with a tool and a turret wheel for conveying work to the tool, of work placing and replacing mechanism having spaced work placing and replacing members arranged in alignment with said tool, operating mechanism for reciprocating said work placing and replacing mechanism, power driven operating mechanism for the machine, a releasable connection between said work placing and replacing mechanism and the operating mechanism therefor, and mechanism operated by a member of said releasable connection for stopping the operating mechanism of the machine.

9. In a machine of the character described, the combination with a tool and a turret wheel for conveying work to a position in co-

axial alignment with the tool, of work placing and replacing mechanism for shifting the work from the turret wheel to the tool and replacing the work on the turret wheel, a drive shaft, driving mechanism for the machine driven thereby and including operating mechanism for the work placing and replacing mechanism, and a releasable connecting member between said operating mechanism and the work placing and replacing mechanism operating under the influence of abnormal resistance to the work placing and replacing mechanism to release the connection between the work placing and replacing mechanism and the operating mechanism therefor.

10. In a machine of the character described, the combination with a tool and a turret wheel for conveying work to a position in co-axial alignment with the tool, of work placing and replacing mechanism for shifting the work from the turret wheel to the tool and replacing the work on the turret wheel, a drive shaft, driving mechanism for the machine driven thereby and including operating mechanism for the work placing and replacing mechanism, a releasable connecting member between said operating mechanism and the work placing and replacing mechanism operating under the influence of abnormal resistance to the work placing and replacing mechanism to release the connection between the work placing and replacing mechanism and the operating mechanism therefor, and mechanism for disconnecting said driving mechanism from said drive shaft, operatively connected with the releasable connecting member.

11. In a machine of the character described, the combination with a tool and a turret wheel for conveying work to a position in co-axial alignment with the tool, of work placing and replacing mechanism for shifting the work from the turret wheel to the tool and replacing the work on the turret wheel, a drive shaft, driving mechanism for the machine driven thereby and including operating mechanism for the work placing and replacing mechanism, a releasable connecting member between said operating mechanism and the work placing and replacing mechanism operating under the influence of abnormal resistance to the work placing and replacing mechanism to release the connection between the work placing and replacing mechanism and the operating mechanism therefor, manually actuated mechanism for disconnecting the drive mechanism of the machine from said drive shaft, and operative connections between said manually actuated mechanism and said releasable connecting member.

12. In a machine of the character described, the combination with a tool and a turret wheel for conveying work to a position in co-axial

alignment with the tool, of work placing and replacing mechanism for shifting the work from the turret wheel to the tool and replacing the work on the turret wheel, a drive shaft, driving mechanism for the machine driven thereby and including operating mechanism for the work placing and replacing mechanism, a releasable connecting member between said operating mechanism and the work placing and replacing mechanism operating under the influence of abnormal resistance to the work placing and replacing mechanism to release the connection between the work placing and replacing mechanism and the operating mechanism therefor, clutch mechanism between said drive shaft and the driving mechanism for the machine, a manually actuated clutch lever, and operative connections between said clutch lever and said releasable connecting member for disengaging said clutch.

13. In a machine of the character described, the combination with a tool and a turret wheel for conveying work to a position in co-axial alignment with the tool, of work placing and replacing mechanism for shifting the work from the turret wheel to the tool and replacing the work on the turret wheel, a drive shaft, driving mechanism for the machine driven thereby and including operating mechanism for the work placing and replacing mechanism, spring-pressed separable jaws connected to said work placing and replacing mechanism, a cam operated lever having a member releasably connected to said jaws and arranged to spread them apart under an abnormal strain thereupon, a starting and stopping lever for the driving mechanism of the machine, and link connections between said starting and stopping lever and one of said jaws.

14. In a machine of the character described, the combination with a thread rolling tool and a turret wheel for conveying work to said tool, of a work placing finger and a work replacing plate co-operating to place the work on the tool and replace it on the turret wheel, a reciprocatory supporting member carrying said finger and plate, separable clamping jaws connected to said supporting member, and a cam operated lever having a member held in releasable clamping engagement with said jaws and arranged to be released from its effective connection with said jaws when the latter are subjected to an abnormal strain.

15. In a machine of the character described, the combination with a thread rolling tool and a turret wheel for conveying work to said tool, of a work placing finger and a work replacing plate co-operating to place the work on the tool and replace it on the turret wheel, a reciprocatory supporting member carrying said finger and plate, separable clamping jaws connected to said sup-

porting member, a cam operated lever having
a member held in releasable clamping en-
gagement with said jaws and arranged to be
released from its effective connection with
5 said jaws when the latter are subjected to an
abnormal strain, a lever operating cam, a
drive shaft, driving mechanism for said cam,
clutch mechanism between said drive shaft
and driving mechanism, and a clutch throw-
ing mechanism operatively connected with 10
one of said clamping jaws and arranged to be
actuated thereby when the cam operated le-
ver is released from its effective connection
with the jaws.

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