

July 3, 1951

F. B. ROBERTS

2,558,983

BARREL CLEANING APPARATUS

Filed March 5, 1949

3 Sheets-Sheet 1

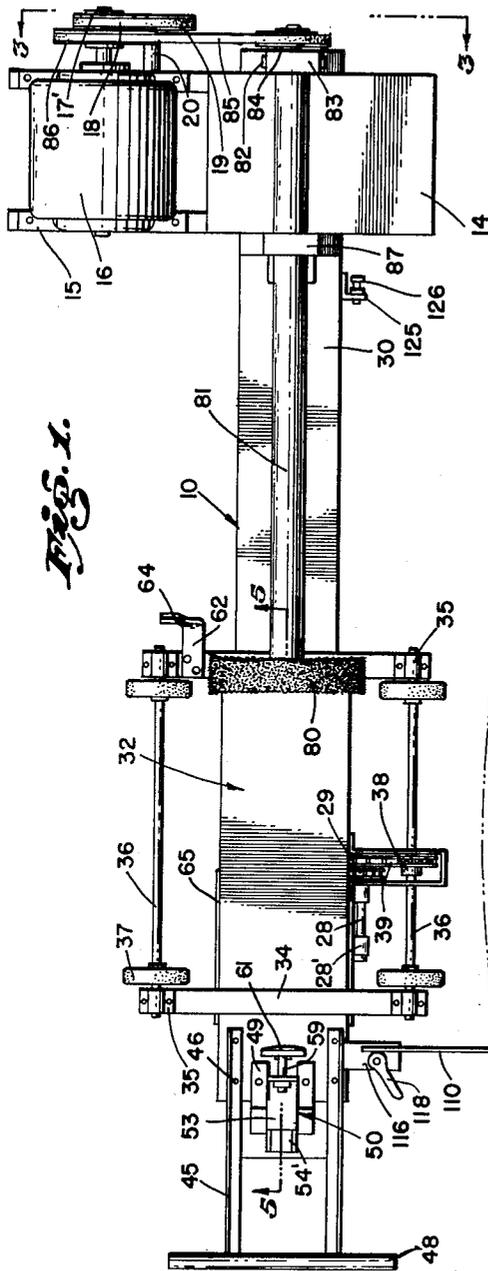
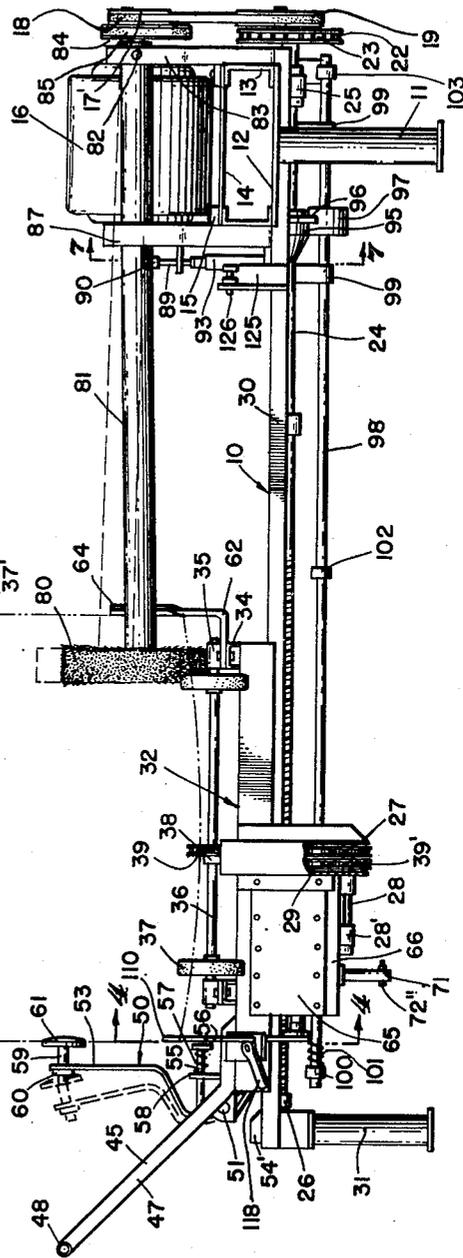


Fig. 1.

Fig. 2.



INVENTOR.
FRANK B. ROBERTS
BY *[Signature]*
ATTORNEY

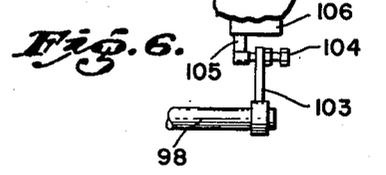
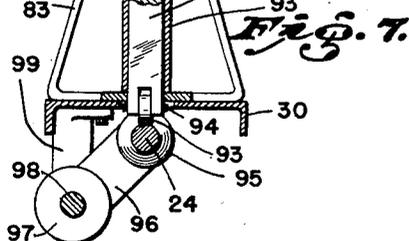
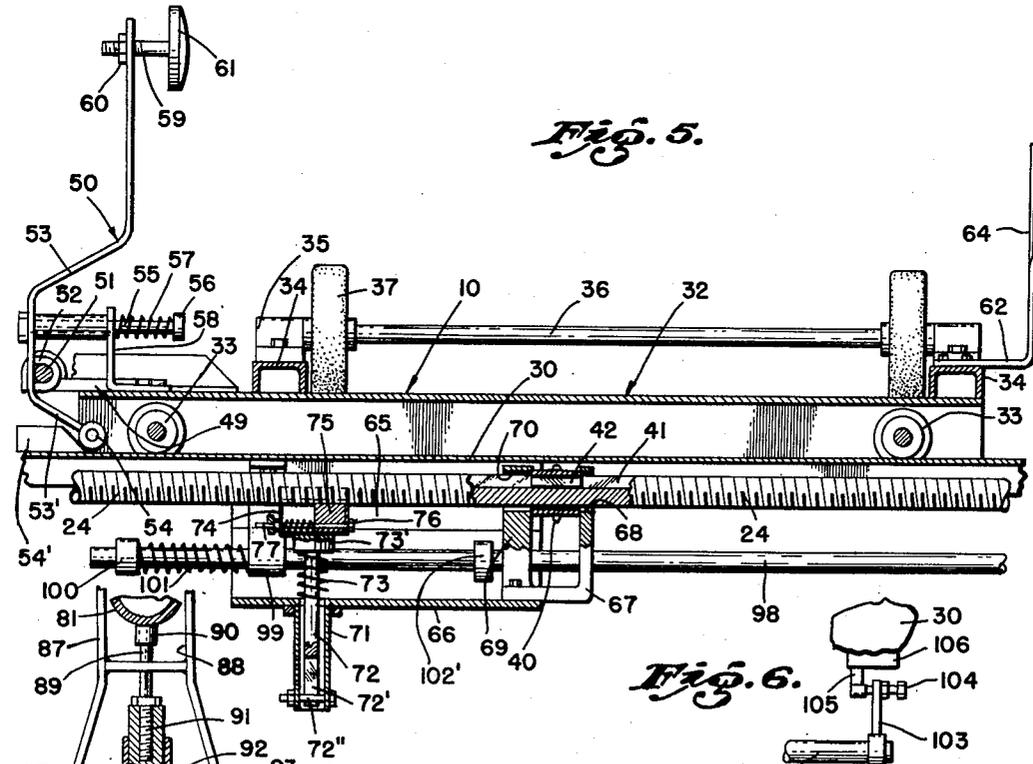
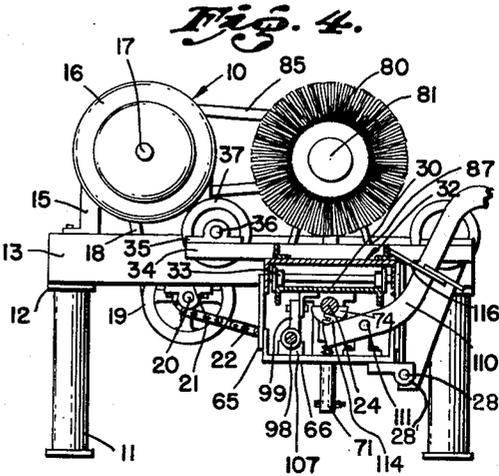
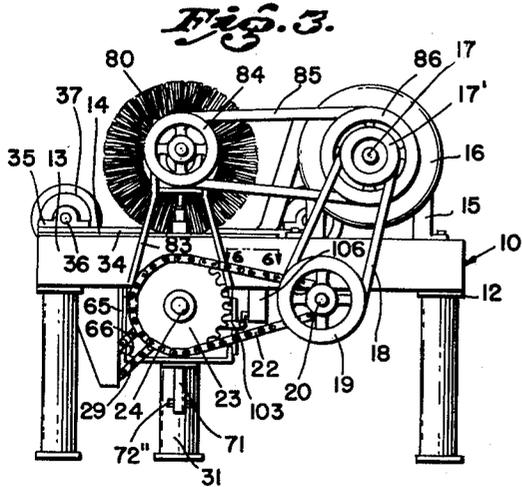
July 3, 1951

F. B. ROBERTS
BARREL CLEANING APPARATUS

2,558,983

Filed March 5, 1949

3 Sheets-Sheet 2



INVENTOR.
FRANK B. ROBERTS
BY
Attorney
ATTORNEY

July 3, 1951

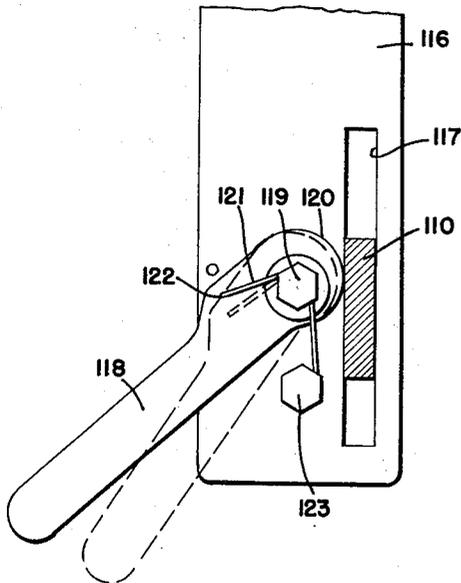
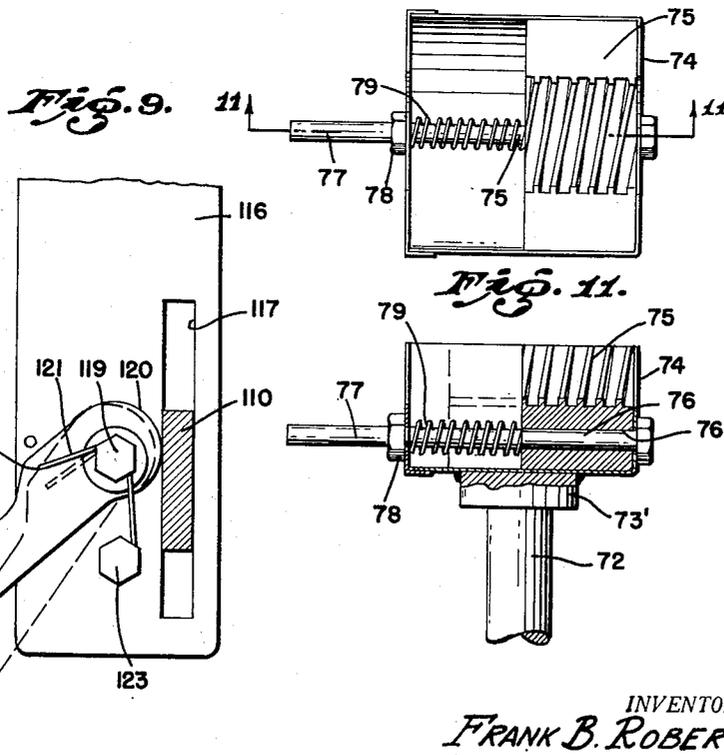
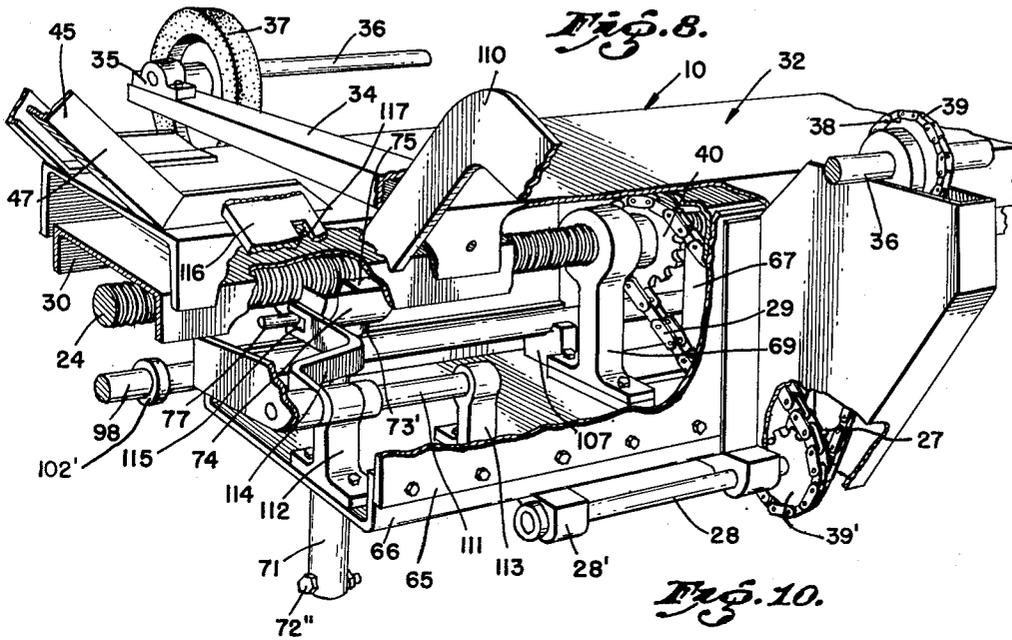
F. B. ROBERTS

2,558,983

BARREL CLEANING APPARATUS

Filed March 5, 1949

3 Sheets-Sheet 3



INVENTOR.
FRANK B. ROBERTS

BY

W. Craig
ATTORNEY

UNITED STATES PATENT OFFICE

2,558,983

BARREL CLEANING APPARATUS

Frank B. Roberts, Anaheim, Calif.

Application March 5, 1949, Serial No. 79,789

15 Claims. (Cl. 15-57)

1

This invention relates to a barrel cleaning apparatus.

The general object of the invention is to provide an improved apparatus for cleaning the interior of a barrel.

A more specific object of the invention is to provide a barrel cleaning apparatus including a rotating brush and wherein novel means is provided for causing the brush to move along the interior of a barrel to clean the inner surface thereof.

A further object of the invention is to provide a barrel cleaning apparatus including novel means for supporting and/or driving a brush of a barrel cleaning apparatus.

An additional object of the invention is to provide a barrel cleaning apparatus with novel means for supporting and advancing a barrel relative to a cleaning brush.

Another object of the invention is to provide a barrel cleaning apparatus including a drive screw and wherein novel means operated by the screw causes the barrel to move relative to a cleaning brush.

Another object of the invention is to provide a means for holding a barrel in position on a barrel cleaning apparatus.

Other objects and advantages of my invention will be apparent from the following description taken in connection with the accompanying drawings, wherein:

Fig. 1 is a top plan view of the barrel cleaning apparatus embodying the features of my invention;

Fig. 2 is a side elevation of the barrel cleaning apparatus;

Fig. 3 is an end view taken along the line 3-3, Fig. 1;

Fig. 4 is a sectional view taken on line 4-4, Fig. 2;

Fig. 5 is a fragmentary section taken on line 5-5, Fig. 1;

Fig. 6 is an enlarged section taken on line 6-6, Fig. 3;

Fig. 7 is an enlarged section taken on line 7-7, Fig. 2;

Fig. 8 is a perspective view with parts broken away, showing the drive and clutch mechanism of my invention;

Fig. 9 is an oblique, elevational view, partly in section, showing the lever lock mechanism;

Fig. 10 is a top plan view of the half nut associated with my clutch mechanism, and

Fig. 11 is a sectional view taken on line 11-11, Fig. 10.

Referring to the drawing by reference characters, I have shown my invention as embodied in a barrel cleaning apparatus which is indicated generally at 10. As shown the apparatus includes a plurality of supporting standards 11 which at one end are arranged in pairs to support a trans-

2

versely extending plate 12 which supports a pair of channels 13. At one end the channels 13 support a bed 14 and at the other end the channels are engaged by the base members 15 of an electric motor 16. The motor 16 is provided with a shaft 17 on which a pulley 17' is mounted. The pulley, through a belt 18, drives a pulley 19 mounted on a shaft 20, which is supported on bearing blocks 21 mounted on the channels 13.

The shaft 20 supports a sprocket 21 engaged by a chain 22. The chain 22 passes over a second sprocket 23 mounted on the end of a feed screw 24, and the construction is such that when the motor 16 operates, the feed screw 24 will be rotated. The feed screw is supported in bearing blocks 25 and 26 mounted on the under side of a base member 30. The base member 30, which is in the nature of an inverted channel, is attached at one end beneath the channels 13 and extends at right angles thereto and is supported remote from the bed 14 by a leg 31.

The base member 30 forms a trackway for a carriage indicated generally at 32. This carriage is provided with flanged wheels 33, which engage the outer edges of the base member 30 so that the carriage may roll reciprocatingly during the barrel cleaning operation. The base member is provided with a pair of transversely arranged inverted channels 34 which are provided with bearings 35 and shafts 36. The shafts 36 support wheels 37 which may be rubber covered and are spaced apart to receive a barrel 37' thereupon. One of the shafts 36 includes a sprocket 38 which receives a chain 39.

The chain 39 passes over a sprocket 27 mounted on a shaft 28 which latter is journaled in bearings 28'. A second chain 29 passes over a sprocket 39' secured to the shaft 28. The chain 29 also passes over a sprocket 40 on the feed screw 24. In order to drive the sprocket the feed screw 24 includes a keyway 41, in which a key 42 on the sprocket 40 slides, and the construction is such that when the feed screw 24 is driven from the motor 16 and is rotated, the sprocket 40 will cause the chain 29 to drive the shaft 28, thus driving the sprocket 27 and the chain 39 to rotate one of the shafts 36 and a pair of the wheels 37 so that the barrel which rests upon the wheels 37 will be rotated.

The carriage 32 in the end remote from the motor 16 includes a pair of angle members 45 which are held in place as by rivets 46. The angle members 45 extend upwardly to 47 and support a transverse handle 48.

The carriage 32 also includes a pair of guides 49, between which a stop lever 50 operates. The stop lever 50 has a pair of yokes 52 thereon which pivotally engage a transverse pin 51. This transverse pin 51 is mounted on a slide member 51' which operates between the guides 49 previously mentioned. The lever 50 includes a depending

3

portion 53', at the lower end of which I arrange a roller 54. This roller 54, when the carriage is at one end of its movement, engages a cam member 54' to rock the lever 50. The lever 50 includes an upwardly directed portion 53.

Mounted on the lever I show a stop member 55 which has a head 56 thereon. The stop member is surrounded by a spring 57 which engages the head 56 and also engages a plate 58 mounted on the carriage 32. As a result the lever 50 is normally urged to the right in Fig. 5. The upper end of the lever 50 includes a rod 59 which threadedly engages the lever and which is held in place by an adjusting lock nut 60. The rod 59 has a rounded barrel engaging head 61 thereon and the construction is such that when the roller 54 is free from engagement with the cam 54', the spring 57 will normally urge the head 61 against the barrel, as shown in full line position in Fig. 2. When the carriage reaches its extreme movement to the left in Fig. 2 the roller 54 will engage the cam member 54' and move the lever 50 to the dotted line position in Fig. 2 so that a barrel may be readily removed.

The carriage 32 at the end remote from the head member 61 includes a bracket 62, which is mounted on the adjacent channel 34. The bracket 62 includes an upwardly directed portion 64 which is adapted to engage the end of the barrel remote from the end engaged by the head member 61.

The carriage 32 includes depending side members 65 which support a lower channel 66. This channel 66 at one end includes an L-shaped bracket 67 which has an aperture 68 receiving the feed screw 24. Adjacent the member 67 the bracket includes an upwardly directed portion 69 which has a hole 70 through which the feed screw extends. The sprocket 40 rotates between the members 67 and 69. The channel 66 has a depending sleeve 71 thereon, through which a pin 72 extends.

The pin 72 is slotted at its lower end as at 72' to slidably receive a belt 72'' which passes through the sleeve 71' to thus limit the downward movement of the pin. A spring 73 surrounds the pin 72 and at its upper end engages a boss 73'. The lower end of the spring 73 engages the channel 66.

Mounted on the upper end of the boss 73' and secured thereto by welding I provide a half nut housing 74, best illustrated in Figs. 10 and 11. The housing 74 is semi-cylindrical and slidably receives a half nut 75. The half nut 75 is slidably retained in position within the housing 74 by sliding engagement with a bolt 76 arranged within a bore 76'.

The bolt 76 has an extension 77 and is held in position by a nut 78. A compression spring 79 surrounds the bolt 76 and at one end engages the inside of the housing 74, the other end being in engagement with the half nut 75.

The barrel cleaning brush is indicated at 80 and is mounted on a shaft 81 which is pivoted on a shaft 82 mounted upon an arm 83. The arm 83 is mounted at the extreme end of the base member 30. The end of the shaft 81 at the right in Figs. 1 and 2 includes a pulley 84 over which a belt 85 passes. The belt 85 also passes over a pulley 86, mounted on the motor shaft 17 previously described, and the construction is such that when the motor 16 operates it will cause the brush 80 to rotate.

An arm 87, similar to the arm 83 and mounted on the base member 30, has a slot 88 which serves as a guide for the shaft 81 as the latter moves

4

about its pivot 92. To move the shaft 81 about the pivot 92 upward to the position shown by the dotted lines of Fig. 2, I provide a push rod 89, having an enlarged end 90. The lower end of the rod 89 is threaded as at 91 to a substantially square slide member 92 arranged within a square housing 93 which is in turn secured to the channel 30.

The lower end of the slide member 92 supports a roller 93 on a pin 94. The roller 93 is adapted to be engaged by a conical cam member 95 slidably mounted on the drive shaft 24. An arm 96, fixed to a boss 97 on a shaft 98, is connected to the cam member 95. The shaft 98 is arranged beneath the channel member 30 and is slidably supported by bearing members 99 secured to the lower side of the channel 30. The end of the shaft 98, adjacent the carriage 32, is provided with a check-member 100 and a cushion spring 101, which latter cushions the stopping action of the carriage. The shaft 98 also includes stop members 102 and 102'. The shaft 98 includes a bracket 103 (Fig. 6), the outer end of which supports an adjustable nut 104 which is adapted to engage a switch lever 105 of a switch 106 mounted on the lower side of the channel 30. Thus when the carriage 32 is moved to its extreme rearward position (to the left in Fig. 5), the shaft 98 by engagement of the stop member 102' with a block 107 fixed to the channel 66 will cause the rod 98 to move to the left, thus moving the conical member 95 and raising the shaft 81 and at the same time actuate the switch 106 to its "off" position.

As the carriage 32 travels toward the motor end of the device, the block 107 will strike the member 102 and move the rod 98 to again actuate the switch 106, this time to "on" position.

So that the carriage 32 may be moved freely along the base 30, I have provided a clutch release mechanism which includes an arm 110, secured to a shaft 111, which is journaled in bearing blocks 112 and 113, which are fixed to the channel 66. The shaft 111 also supports a clutch arm 114 which at its outer end has a slot 115 which is adapted to secure the extension 77 on the bolt 76. The arm 110 passes through a slot 117 in a guide 116 which is secured as by welding to one of the angles 47. The guide has a locking lever 118 pivoted as at 119 thereto. The arm 118 has an eccentric surface 120, adapted to engage and secure the arm 110 in position. The arm 118 is urged toward locked position by a spring 121, arranged about the pivot 119 and having one end secured in a hole 122 in the arm 118, the other end being secured by a bolt 123 in the guide 116. Thus it may be seen that movement of the arm 118 to a position as shown by the dotted lines in Fig. 9 will free the arm 110 and allow it to be moved upwardly, thus rocking the lever 114 downwardly and removing the nut 75 from engagement with the shaft 24.

To provide for a limit stop for the carriage, I have arranged an angle 125, secured to the side of the channel 30. The angle 125 carries an adjustable limit bolt 126, adapted to engage the forward channel 34 on the carriage 32.

The operation of my barrel cleaning apparatus is as follows:

Assuming that the carriage 32 is at its extreme left-hand position: In this position the cam 54' will have engaged the roller 54 and will have rocked the lever 50 so that the barrel engaging member 61 has been moved to its extreme left-hand position; also, the shaft 81 will be in the

5

raised position due to the engagement of the cam surface 95 with the roller 93 so that the latter has raised the push rod 89 and the latter has raised the shaft member 81.

A barrel 37' is then placed on the wheels 37, with the open end position of the barrel engaging the barrel engaging member 64 and with the brush 89 in the barrel. The arm 110 is then rocked and locked by the locking lever 118. The extension 77 is thus moved downwardly, causing the half-nut 75 to be lowered and freed from the feed screw 24. The handle 48 is then pushed towards the motor end of the apparatus, thus advancing the carriage with the barrel thereon until the block 107 on the channel 66 engages the member 102 on the rod 98. Whereupon the handle 48 is further moved until the limit stop bolt 126 is engaged by the forward channel 24 on the carriage 32. This causes the rod 98 to be moved towards the motor end of the apparatus, thereby causing the bracket 103 to be moved to free the switch 105 so that the latter moves to its normal closed position to actuate the motor 16. During this operation of starting the motor the cam member 95 has been moved away from the roller 93 so that the shaft 81 has been lowered, whereby the brush engages the interior of the barrel, as shown in Fig. 2. With the motor now driving the brush while the latter engages the barrel, the operator moves the locking lever 118 to free the arm 110, thus permitting the spring 173 to raise the half-nut to feed screw engaging position. The half-nut 75 thus engages the screw and as the screw rotates the half-nut is moved to the left, for example in Figs. 5 and 11. As the half-nut moves it first compresses the spring 79 until the half-nut is moved along the bolt 76 until the spring is fully compressed. During this initial axial movement of the half-nut the half-nut housing 74 has been at rest and there has therefore been an advancement of the carriage 32. During the dwell, however, the brush has been rotating and the barrel has been turning so that the entire inner end portion of the barrel has been visited by the brush. When the spring 79 has been fully compressed further movement of the half-nut will cause the carriage 74 to be moved, thus moving the brush axially relative to the barrel along the inner surface of the barrel. The operation continues until the spring 101 on the rod 98 is engaged by the engagement thereof with the carriage, whereupon further movement of the carriage moves the rod 98, causing the latter to shift the cam 95 to raise the brush and causing the member 103 to move the switch 105 to open position. At this time the cam 54' has engaged the roller 54, thus rocking the barrel engaging member 61 away from the barrel so that the latter can be removed. The operation is then repeated.

From the foregoing description it will be apparent that I have invented a novel barrel cleaning apparatus which can be economically manufactured and which is highly efficient for its intended use.

Having thus described my invention, I claim:

1. A barrel cleaning apparatus including a carriage, means to mount the carriage for reciprocation, a fixed barrel engaging member at one end portion of said carriage, a barrel holding member pivoted on said carriage at the other end thereof, means to normally urge the holding member to engage a barrel on the carriage, means operable to shift the holding member away from a barrel when the carriage reaches

6

the limit of its movement in one direction, a brush shaft; a pivoted support for the shaft adjacent to one end thereof, a brush mounted at the other end of said shaft, said brush being disposed in the path of travel of a barrel on said carriage, said brush being adapted to move into a barrel as the carriage is advanced, means to rotate the brush, and means to shift the brush shaft about its pivoted support.

2. A barrel cleaning apparatus including a reciprocatingly mounted carriage, means to hold a barrel on the carriage for rotation thereon, means to rotate a barrel engaged by said holding means, a feed screw, means to rotate said feed screw, a half-nut, means to mount the half-nut on the carriage for movement to and from engagement with the feed screw, clutch means on the carriage and operable to shift the half-nut from engaged position to disengaged position, a brush shaft, a pivoted support for said shaft, a brush mounted on said shaft, said brush being disposed in the path of travel of a barrel on said carriage, said brush being adapted to move into a barrel as the carriage is advanced, means to rotate the brush and means to shift the brush shaft about its pivot.

3. A barrel cleaning apparatus including a trackway, a carriage mounted to reciprocate on said trackway, means to hold a barrel on the carriage for rotation thereon, a feed screw, a half-nut, means to mount the half-nut on the carriage for movement to and from engagement with the feed screw, clutch means on the carriage and operable to shift the half-nut from engaged position to disengaged position, a brush shaft, a pivoted support for said shaft, a brush mounted on said shaft, said brush being disposed in the path of travel of a barrel on said carriage, said brush being adapted to move into a barrel as the carriage is advanced, a motor and means driven by said motor to rotate the brush shaft to shift the brush shaft to rotate a barrel held by said holding means and to rotate said feed screw.

4. A barrel cleaning apparatus including a carriage, means mounting the carriage for reciprocation, means to rotate a barrel on said carriage, a feed-screw, a half-nut, means to mount the half-nut on the carriage for movement to and from engagement with the feed screw, clutch means on the carriage and operable to shift the half-nut from engaged position to disengaged position, a brush shaft, a pivoted support for the brush shaft, a brush mounted on the shaft, said brush being disposed in the path of travel of a barrel on said carriage, said brush being adapted to move into a barrel as the carriage is advanced, means to rotate said brush, means to rotate said feed screw when the carriage is at one limit of its travel, said feed screw being pitched to cause the carriage to move towards the other limit of its travel when the feed screw is rotated, means to stop rotation of said feed screw when the carriage reaches the other limit of its movement and means to raise the brush shaft about its pivot when the carriage reaches said other limit of its movement.

5. A barrel cleaning apparatus including a trackway, a carriage mounted to reciprocate on said trackway, means to hold a barrel on the carriage for rotation thereon, a motor, means driven by said motor for rotating a barrel engaged by said holding means, a switch for the motor, means to operate the switch, a feed screw, means

whereby said motor rotates said feed screw, a half-nut, means to mount the half-nut on the carriage for movement to and from engagement with the feed screw, clutch means on the carriage and operable to shift the half-nut from engaged position to disengaged position, a brush shaft, a pivoted support for said shaft adjacent to one end thereof, a brush mounted at the other end of said shaft, said brush being disposed in the path of travel of a barrel on said carriage, said brush being adapted to move into a barrel as the carriage is advanced, means to rotate the brush and means to shift the brush shaft about its pivot.

6. A barrel cleaning apparatus including a trackway, a carriage mounted to reciprocate on said trackway, means to hold a barrel on said carriage, a motor, a switch for the motor, a feed screw, means whereby said motor rotates said feed screw, a half-nut, means to mount the half-nut on the carriage for movement to and from engagement with the feed screw, clutch means on the carriage and operable to shift the half-nut from engaged position to disengaged position, a brush shaft, a pivoted support for the shaft adjacent to one end thereof, a brush mounted at the other end of said shaft, said brush being disposed in the path of travel of a barrel on said carriage, said brush being adapted to move into a barrel as the carriage is advanced, means to rotate the brush and means to shift the brush shaft about its pivot.

7. A barrel cleaning apparatus including a trackway, a carriage mounted to reciprocate on said trackway, means to rotatably hold a barrel on said carriage, means to rotate a barrel held on said carriage, a feed screw, a half-nut, means to mount the half-nut on the carriage for movement to and from engagement with the feed screw, clutch means on the carriage and operable to shift the half-nut from engaged position to disengaged position, a brush shaft, a pivoted support for the shaft adjacent to one end thereof, a brush mounted at the other end of the shaft, said brush being disposed in the path of travel of a barrel on said carriage, said brush being adapted to move into a barrel as the carriage is advanced, means to rotate said brush, means to raise and lower the brush shaft, means to rotate said feed screw when the carriage is at one limit of its travel, said feed screw being pitched to cause the carriage to move upwards the other limit of its travel when the feed screw is rotated, and means to stop rotation of said feed screw.

8. A barrel cleaning apparatus including a trackway, a carriage mounted to reciprocate on said trackway, means to rotatably hold a barrel on said carriage, means to rotate a barrel held on said carriage, a feed screw, a half-nut, means to mount the half-nut on the carriage for movement to and from engagement with the feed screw, clutch means on the carriage and operable to shift the half-nut from engaged position to disengaged position, a brush shaft, a pivoted support for the shaft adjacent to one end thereof, a brush mounted at the other end of the shaft, said brush being disposed in the path of travel of a barrel on said carriage, said brush being adapted to move into a barrel as the carriage is advanced, means to rotate said brush, means to rotate said feed screw when the carriage is at one limit of its travel, means to lower the brush about its pivot when the carriage is at said one limit of its travel, said feed screw being pitched to

cause the carriage to move towards the other limit of its travel when the feed screw is rotated, means to stop rotation of said feed screw when the carriage reaches the other limit of its movement, and means to raise the brush about its pivot when the carriage reaches said other limit of its movement.

9. A barrel cleaning apparatus including a carriage, means mounting the carriage for reciprocation, means to rotate a barrel on said carriage, a brush shaft, a pivoted support for the brush shaft, a brush mounted on the shaft, a feed screw, a half-nut housing, means to mount the half-nut housing on the carriage for movement towards and from the feed screw, a rod on said half-nut housing, the axis of said rod being parallel to the axis of said feed screw, a half-nut in the housing and slidable along the rod, spring means urging the half-nut towards the end of the housing which is nearest to said brush shaft pivot, said half-nut housing being mounted to move towards and from the feed screw to shift the half-nut from engaged position to disengaged position, said brush being disposed in the path of travel of a barrel on said carriage, said brush being adapted to move into a barrel as the carriage is advanced, means to rotate said brush, means to rotate said feed screw when the carriage is at one limit of its travel, said feed screw being pitched to cause the carriage to move towards the other limit of its travel when the feed screw is rotated, means to stop rotation of said feed screw when the carriage reaches the other limit of its movement, and means to raise the brush about its pivot when the carriage reaches said other limit of its movement.

10. A barrel cleaning apparatus including a carriage, means mounting the carriage for reciprocation, means to rotate a barrel on said carriage, a brush shaft, a pivoted support for the brush shaft, a brush mounted on the shaft, a feed screw, a half-nut housing, means to mount the half-nut housing on the carriage for movement towards and from the feed screw, a half-nut slidable in the housing, means urging the half-nut towards the end of the housing which is nearest to said brush shaft pivot, said half-nut housing being mounted to move towards and from the feed screw to shift the half-nut from engaged position to disengaged position, said brush being disposed in the path of travel of a barrel on said carriage, said brush being adapted to move into a barrel as the carriage is advanced, means to rotate said brush, means to shift the brush shaft about its pivot and means to rotate said feed screw.

11. A barrel cleaning apparatus including a trackway, a carriage mounted to reciprocate on said trackway, a fixed barrel engaging member at one end of said carriage, a barrel holding member pivoted on said carriage, means to normally urge the holding member to engage a barrel on the carriage, means operable to shift the holding member away from a barrel when the carriage reaches the limit of its movement in one direction, a motor, a switch for the motor, means to operate the switch, a feed screw, means whereby said motor rotates said feed screw, a half-nut, means to mount the half-nut on the carriage for movement to and from engagement with the feed screw, clutch means on the carriage and operable to shift the half-nut from engaged position to disengaged position, a brush shaft, a pivoted support for the shaft adjacent to one end thereof, a brush mounted at the other end of said

shaft, said brush being disposed in the path of travel of a barrel on said carriage, said brush being adapted to move into a barrel as the carriage is advanced, means to rotate the brush and means to cause the brush shaft to rise and to permit it to fall about its pivot.

12. A barrel cleaning apparatus including a trackway, a carriage mounted to reciprocate on said trackway, means to hold a barrel on said carriage, a motor, a switch for the motor, a feed screw, means whereby said motor rotates said feed screw, a half-nut, means to mount the half-nut on the carriage for movement to and from engagement with the feed screw, clutch means on the carriage and operable to shift the half-nut from engaged position to disengaged position a rod adjacent to said feed screw, means to mount the rod for reciprocation, a brush shaft, a pivoted support for the shaft adjacent to one end thereof, a brush mounted at the other end of said shaft, said brush being disposed in the path of travel of a barrel on said carriage, said brush being adapted to move into a barrel as the carriage is advanced, means to rotate the brush about its pivot, means to raise and lower said brush shaft, means whereby said rod is moved by said carriage when the latter is at one limit of its travel to close said switch and start the motor, and means whereby when the carriage reaches the other limit of its movement said rod will be shifted to open said switch.

13. A barrel cleaning apparatus including a trackway, a carriage mounted to reciprocate on said trackway, means to hold a barrel on said carriage, a motor, a switch for the motor, a feed screw, means whereby said motor rotates said feed screw, a half-nut, means to mount the half-nut on the carriage for movement to and from engagement with the feed screw, clutch means on the carriage and operable to shift the half-nut from engaged position to disengaged position, a rod adjacent to said feed screw, means to mount the rod for reciprocation, a brush shaft, a pivoted support for the brush shaft adjacent to one end thereof, a brush mounted at the other end of said shaft, said brush being disposed in the path of travel of a barrel on said carriage, said brush being adapted to move into a barrel as the carriage is advanced, means to rotate the brush shaft, said brush being normally disposed to fall by gravity about its pivot, means to raise the brush shaft about its pivot, means including a cam member mounted on said rod, and a push member operated by said cam member and engaging said brush shaft, means whereby said rod is moved by said carriage when the latter is at one limit of its travel to close said switch and start the motor and shift said cam member from said push member to free the brush to contact a barrel, and means whereby when the carriage reaches the other limit of its movement said rod will be shifted to open said switch and to raise said brush.

14. A barrel cleaning apparatus including a trackway, a carriage mounted to reciprocate on said trackway, a fixed barrel engaging member at one end of said carriage, a barrel holding member pivoted on said carriage, means to normally urge the holding member to engage a barrel on the carriage, a motor, a switch for the motor, a feed screw, means whereby said motor rotates said feed screw, a half-nut, means to mount the half-nut on the carriage for movement to and from engagement with the feed screw, means to shift the half-nut from engaged position to dis-

engaged position, a rod adjacent to said feed screw, means to mount the rod for reciprocation, a brush shaft, a pivoted support for the brush shaft adjacent to one end thereof, a brush mounted at the other end of said brush shaft, said brush being disposed in the path of travel of a barrel on said carriage, said brush being adapted to move into a barrel as the carriage is advanced, means to rotate the brush shaft, said brush being normally disposed to fall about its pivot by gravity, means to raise the brush shaft about its pivot, said means including a cam member mounted on said rod, and a push member operated by said cam member and engaging said brush shaft, means whereby said rod is moved by said carriage when the latter is at one limit of its travel to close said switch and start the motor and shift said cam member from said push member to free the brush to contact a barrel, and means whereby when the carriage reaches the other limit of its movement said rod will be shifted to open said switch and to raise said brush.

15. A barrel cleaning apparatus including a trackway, a carriage mounted to reciprocate on said trackway, a fixed barrel engaging member at one end of said carriage, a barrel holding member pivoted on said carriage, means to normally urge the holding member to engage a barrel on the carriage, means operable to shift the holding member away from a barrel when the carriage reaches the limit of its movement in one direction, a motor, means driven by said motor to rotate a barrel on said carriage, a switch for the motor, a feed screw, means whereby said motor rotates said feed screw, a half-nut, means to mount the half-nut on the carriage for movement to and from engagement with the feed screw, clutch means on the carriage and operable to shift the half-nut from engaged position to disengaged position, a rod adjacent to said feed screw, means to mount the rod for reciprocation, a brush shaft, a pivoted support for the brush shaft adjacent to one end thereof, a brush mounted at the other end of said brush shaft, said brush being disposed in the path of travel of a barrel on said carriage, said brush being adapted to move into a barrel as the carriage is advanced, means to rotate the brush shaft, said brush being normally disposed to fall by gravity, means to raise the brush shaft about its pivot, said raising means including a cam member mounted on said rod, and a push member operated by said cam member and engaging said brush shaft, means whereby said rod is moved by said carriage when the latter is at the other end limit of its travel to close said switch and start the motor and shift said cam member from said push member to free the brush to contact a barrel, and means whereby when the carriage reaches the said one limit of its movement said rod will be shifted to open said switch and to raise said brush.

FRANK B. ROBERTS.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
502,414	Flower	Aug. 1, 1893
996,864	Kroll	July 4, 1911
999,208	Cluthe	Aug. 1, 1911
1,557,551	Bertone	Oct. 20, 1925