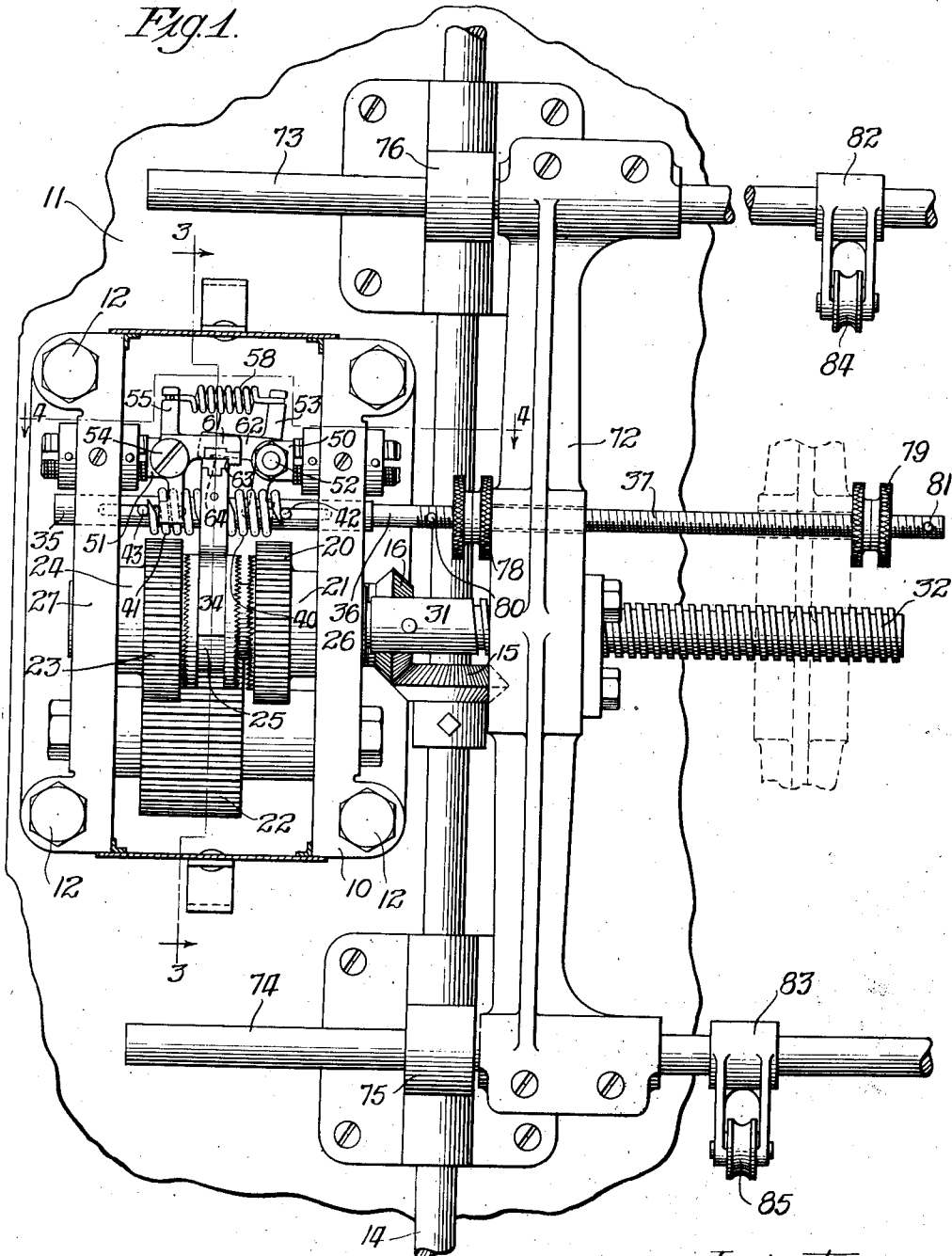


J. B. KENDALL.
 REVERSING MECHANISM.
 APPLICATION FILED FEB. 12, 1917.

1,338,086.

Patented Apr. 27, 1920.
 3 SHEETS—SHEET 1.

Fig. 1.



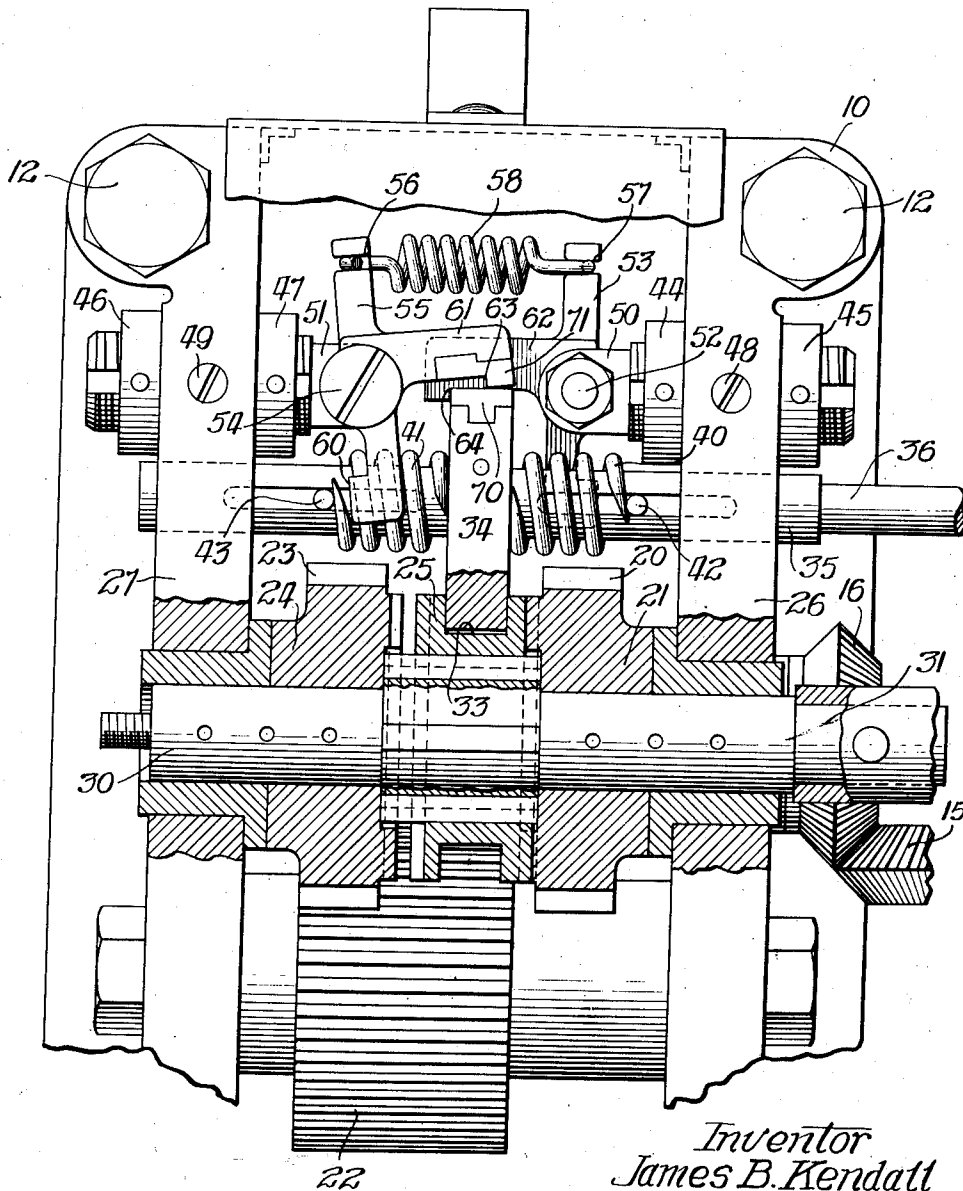
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Fig. 2.



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 3 SHEETS—SHEET 3.

Fig. 3.

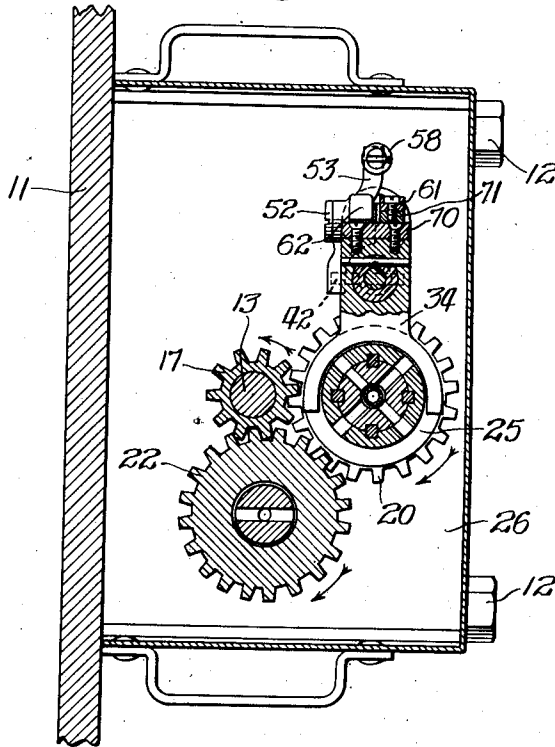
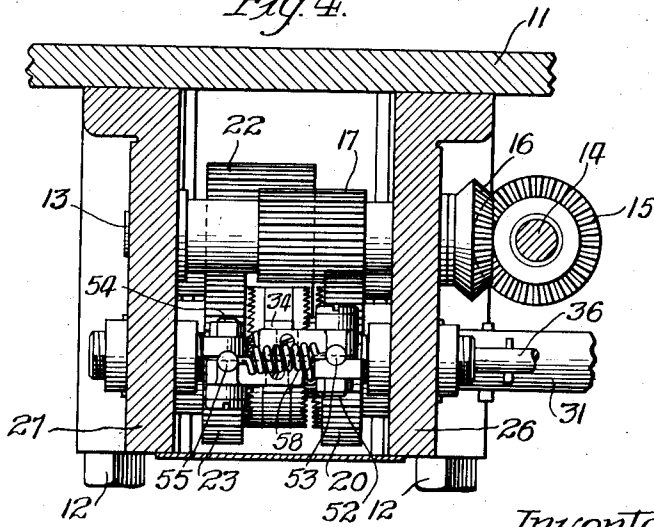


Fig. 4.



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UNITED STATES PATENT OFFICE.

JAMES B. KENDALL, OF CHICAGO, ILLINOIS, ASSIGNOR TO WESTERN ELECTRIC COMPANY, INCORPORATED, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

REVERSING MECHANISM.

1,338,086.

Specification of Letters Patent.

Patented Apr. 27, 1920.

Application filed February 12, 1917. Serial No. 148,214.

To all whom it may concern:

Be it known that I, JAMES B. KENDALL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Reversing Mechanism, of which the following is a full, clear, concise, and exact description.

This invention relates to a reversing mechanism, and more particularly to an automatically controlled reversing mechanism.

The object of this invention in general is to provide means in connection with such mechanism for positively and accurately controlling the reversing movement.

In accordance with the general features of this invention there is provided a reciprocally operated clutch member adapted to be acted upon by springs in which energy is alternately stored and released and which is controlled as to its period of reversal by a pair of catch members or triggers which are adapted to alternately engage and disengage said reciprocally operated member.

Other features of invention reside in the details of construction and the combination of the parts for bringing about the cooperation and functioning of the various elements.

The invention is illustrated in the accompanying drawings in which:

Figure 1 is a front elevation of the reversing mechanism with the cover of its inclosing chamber removed and in combination with the preferred form of mechanism with which it is used;

Fig. 2 is an enlarged front elevation partly in section of the reversing mechanism;

Fig. 3 is a section on the line 3—3 of Fig. 1 looking in the direction of the arrows, and

Fig. 4 is a section on the line 4—4 of Fig. 1 looking in the direction of the arrows.

In its preferred form the invention is used in combination with a wire, string, or yarn feeding device in which the reversing mechanism functions to reciprocate this device to feed said wire, string, or yarn onto spools or reels in substantially even layers. The utility of the invention is not restricted to this particular application, however, but

is well adapted for use wherever the moment of reversal as well as the positive action thereof is essential, and it can consequently be very beneficially applied to the operation of grinding machines, shapers, planers, and the like.

In the preferred form and application of the invention, as illustrated in Fig. 1, the housing 10 containing the operating elements of the reversing mechanism is secured to the frame 11 of a wire reeling machine by means of suitable bolts such as 12. Power is transmitted to the driving shaft 13 of the reversing mechanism by a shaft 14 which may be driven in any suitable manner, preferably by an electric motor. Secured to the shaft 14 is the bevel gear 15 which meshes with the bevel gear 16 rigidly secured to the driving shaft 13 of the reversing mechanism. The driving shaft 13 carries a gear wheel 17 which meshes with the gear 20 integral with one of the driving members 21 of the clutch mechanism and likewise meshes with the idler 22 which is in turn in mesh with the gear wheel 23 integral with the second driving member 24 of the clutch mechanism. Since the clutch member 21 and the idler gear 22 are both directly driven from the gear 17 mounted on the driving shaft 13, the clutch member 21 and the idler gear 22 will rotate in the same direction, as indicated by the arrows in Fig. 3, and since the idler 22 is in mesh with the gear wheel 23 of the second driving member of the clutch mechanism, the clutch member 24 will rotate in a direction opposite to that of the clutch member 21. The clutch members 21 and 24 are each equipped with an annular band of engaging teeth arranged to engage and lock either of said clutch members to the driven member 25 of the clutch mechanism equipped with a similar annular band of engaging teeth on each face thereof.

The driving members 21 and 24 of the clutch mechanism are suitably journaled in the side walls 26 and 27 of the inclosing housing of the reversing mechanism and are fitted with a hollow core which carries the sleeve 30 which in turn carries the shaft 31, to which is secured the threaded projecting spindle 32. The driven member 25 of the clutch mechanism is slidably secured

to the shaft 31. The driven member 25 is fitted with the annular groove 33 which carries the driving link 34 of the reversing mechanism, the link 34 being reciprocated to and fro by suitable means hereinafter to be described to move the driving member 25 into engagement with either one of the driving members 21 and 24 of the clutch mechanism.

Fitted in the side walls 26 and 27 of the inclosing housing of the reversing mechanism is a sleeve 35 which carries a spindle 36 which is fitted at one end with a threaded portion 37 projecting out beyond the housing. The sleeve 35 acts as a supporting means for the link 34 and carries on its outer surface on either side of said link a spiral spring 40 and 41 respectively which function as an energy storing means to actuate said mechanism. One end of each of the springs 40 and 41 is pressed against one of the side walls of the link 34; the other end of each of said springs contacts with the operating pins 42 and 43 respectively carried by the spindle 36. The springs 40 and 41 are of such a length that they will conveniently fit into the space between the side wall of the link 34 and the operating pins 42 and 43 when they are in their normal position without any compression of said springs. However, when the spindle 36 is moved to the right, the operating pin 43 will compress the spiral spring 41 against the side wall of the link 34; and when the spindle 36 is moved to the left the operating pin 42 will likewise compress the spring 40 against the other side wall of the link 34.

Mounted in the side walls 26 and 27 respectively by means of the nuts 44 and 45, and 46 and 47 respectively and the holding screws 48 and 49 respectively are the trigger holding studs 50 and 51 respectively. The stud 50 carries a spindle or shaft 52 on which is loosely pivoted the trigger 53, and the stud 51 carries the shaft 54 on which is loosely pivoted the trigger 55. Each of these triggers carries a vertically positioned arm, the upper end of each of which is fitted with the notches 56 and 57 respectively which carry the spiral spring 58 normally held in tension between these two arms and thus tending to pull these arms toward one another. The lower end of each of these vertical arms is fitted with a shoulder such as 60 so positioned as to be in the path of the operating pins 42 and 43 when the spindle 36 is reciprocating to and fro. The triggers 53 and 55 are also fitted with horizontally projecting arms 61 and 62, each of which carry at their forward ends the right angled shoulders 63 and 64 respectively. These shoulders are adapted to snap over the side faces of the link 34 as it is reciprocated to and fro, the shoulder 64 engaging the left face of the link 34 when said link is moved to the right

under the action of the spiral spring 41 which is put under compression by the operating pin 43, due to the movement of the spindle 36, and the shoulder 63 engaging the right face of the link 34 when said link is moved to the left under the action of the spring 40. In the drawings Fig. 1 shows the shoulder 63 in engagement with the right face of the link 34, the horizontal arm 62 of the trigger 53 riding on the top face of said link; whereas Fig. 2 shows the triggers 53 and 55 in the reverse position. When the operating pin 43 is moved to the right to put the spring 41 under compression it likewise moves into the path of the shoulder 60 of the trigger 55; which consequently rotates about the shaft 54, thereby putting the trigger 55 under additional tension. The trigger 55 will rotate about its shaft until the shoulder 63 is released from the side of the link 34, at which moment the spring 41 which has been put under considerable compression will throw the link 34 to the right, and as the spring 58 has been put under tension, due to the movement of the trigger 55, the upper end of the trigger 53 will be pulled forward to rotate said trigger about its shaft 52 and thus catch the left face of the link 34 with the shoulder 64 of said trigger. This movement of the link 34 will disengage the driven member 25 from the clutch member 24 and engage it with the clutch member 21, thereby reversing the direction of rotation of the shaft 31 and the associated projecting screw 32.

Subsequently when the spindle 36 is moved to the left the spring 40 will be put under compression and the hereinbefore described operation of the triggers 53 and 55 will be reversed, the trigger 53 releasing the link 34 and the shoulder 63 of the trigger 55 snapping into position to hold the link 34 in its extreme left position and thereby engaging the teeth of the driving member 24 and the driven member 25 of the clutch. To prevent wear on the upper portion of the link 34 and the holding portion of the horizontal arms of the triggers, the link 34 is fitted with the hardened steel cap 70 and the triggers with the hardened steel inset such as 71 which carries the shoulders 63 and 64.

A bracket 72 which is rigidly secured to the rods 73 and 74 loosely mounted in the bearings 75 and 76 secured to the frame of the machine 11 carries a threaded sleeve which meshes with the threads 32 of the shaft 31. Since the threaded portion 32 of the shaft 31 is rotated with either the clutch member 21 or 24, the bracket 72 will be moved to and fro on said threaded portion; its movement to the right or left depending upon whether the driven member of the clutch mechanism 25 is in engagement with the driving member 21 or 24. The threaded portion 37 of the spindle 36 carries the ad-

justment nuts 78 and 79, these nuts serving to regulate the length of the reciprocating stroke of the bracket 72. When the bracket 72 is moved to its extreme right position, as shown by the broken lines in Fig. 1, it will engage the adjustment nut 79. Further movement to the right of the bracket 72, due to the rotation of the threaded portion 32 of the shaft 31, will carry the adjustment nut 79 with it and also the spindle 36, and this movement will cause the compression of the spring 41 and the subsequent release of the link 34 by the trigger 55 and the engagement of said link by the trigger 53, as hereinbefore described. This action will shift the clutch and reverse the direction of rotation of the shaft 32 which in turn will reverse the movement of the bracket 72 which will then move to the left and engage the adjustment nut 78. Engagement of the adjustment nut 78 by the bracket 72 will release the link 34 from the trigger 53 and will cause the trigger 55 to engage said link. This will again reverse the movement of the bracket 72 and this action will be repeated continuously as the bracket 72 reciprocates between the adjustment nuts 78 and 79.

The threaded portion 37 of the spindle 36 is fitted with pins 80 and 81 which are provided as a safety device to prevent movement of the adjustment screws 78 and 79 beyond the length of the threaded portion 32 of the shaft 31, thereby insuring against the possibility of moving these nuts to a position beyond the length of said thread and causing jamming between the brackets 72 and the unthreaded portion of the shaft 31. As the bracket 72 reciprocates to and fro it carries with it the rods 73 and 74, on which are mounted a plurality of brackets such as 82 and 83 which carry the rotatable pulleys 84 and 85, over which the wire, thread, or yarn is carried to the spools or reels and which, due to their reciprocation, feed said wire, thread, or yarn to said spools

or reels in the space between the side walls thereof in substantially smooth, even layers.

The invention is obviously not limited to the specific embodiment herein illustrated and described, but is capable of many variations and other applications without departing from the spirit and scope thereof, as pointed out in the following claims.

What is claimed is:

1. In combination, a driving member, a reversible clutch mechanism therefor including a reciprocally operated member, a reciprocally operated rod, springs controlled thereby and adapted to engage opposite sides of said reciprocally operated member to change its position at the instant of reversal, a pair of trigger members adapted to separately engage said reciprocally operated member to retain it against movement until the moment of reversal, and means carried by said reciprocally operated rod to control the engagement and disengagement of said triggers with said reciprocally operated member.

2. In combination, a driving member, a reversible clutch mechanism therefor including a reciprocally operated member, a second reciprocally operated member slidable within said first reciprocally operated member, springs mounted around said first reciprocally operated member and adapted to engage opposite sides of a central portion thereof to change its position at the instant of reversal, a pair of trigger members adapted to separately engage said first reciprocally operated member to retain it against movement until the moment of reversal, and means carried by said second reciprocally operated member to control the engagement and disengagement of said triggers with said first reciprocally operated member.

In witness whereof, I hereunto subscribe my name this 29th day of Jan., A. D. 1917.

JAMES B. KENDALL.