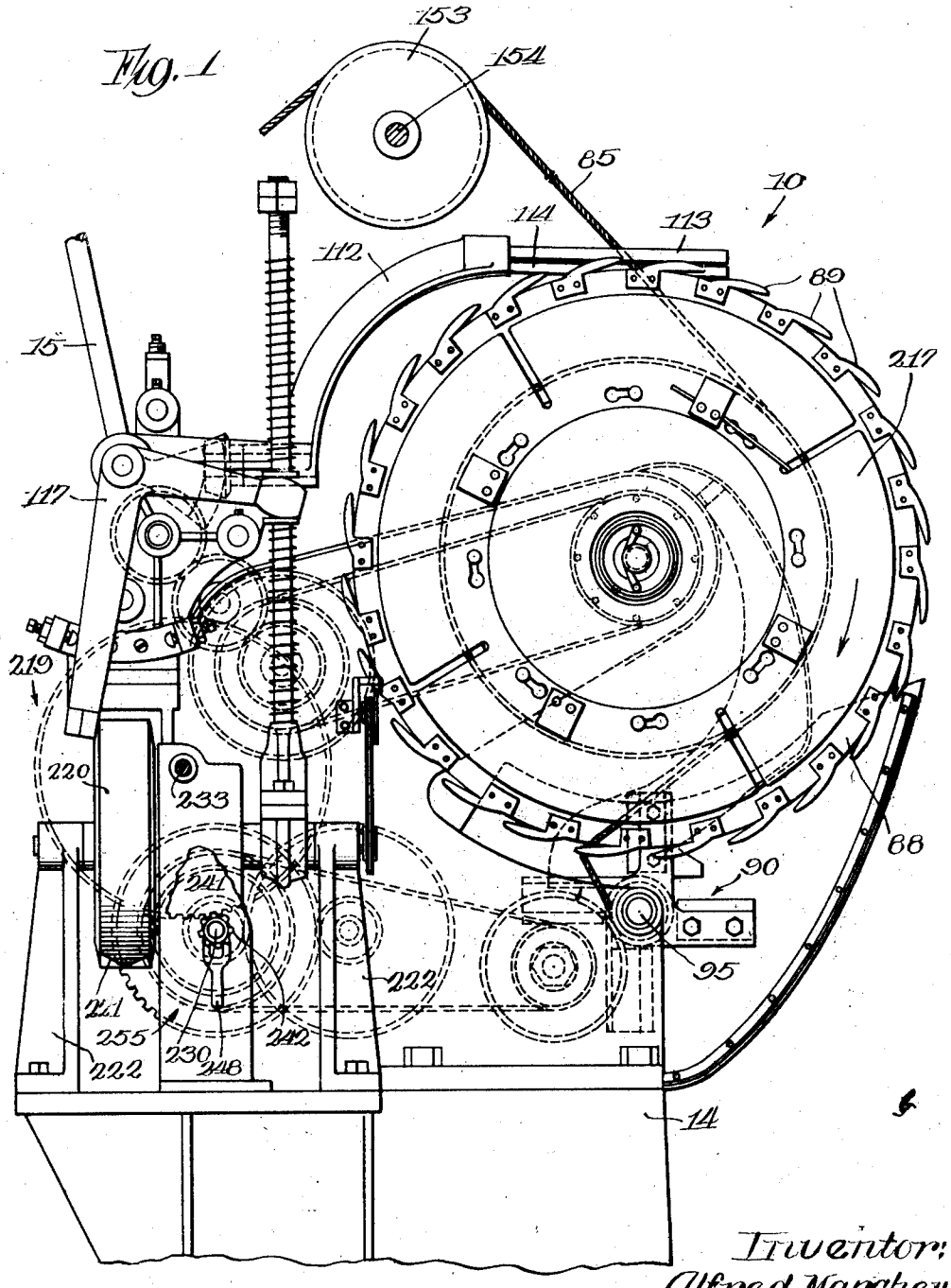
June 12, 1928. 1,672,984

A. MARCHEV

MATERIAL WORKING MECHANISM

Filed Dec. 20, 1924 3 Sheets-Sheet 1

Fig. 1



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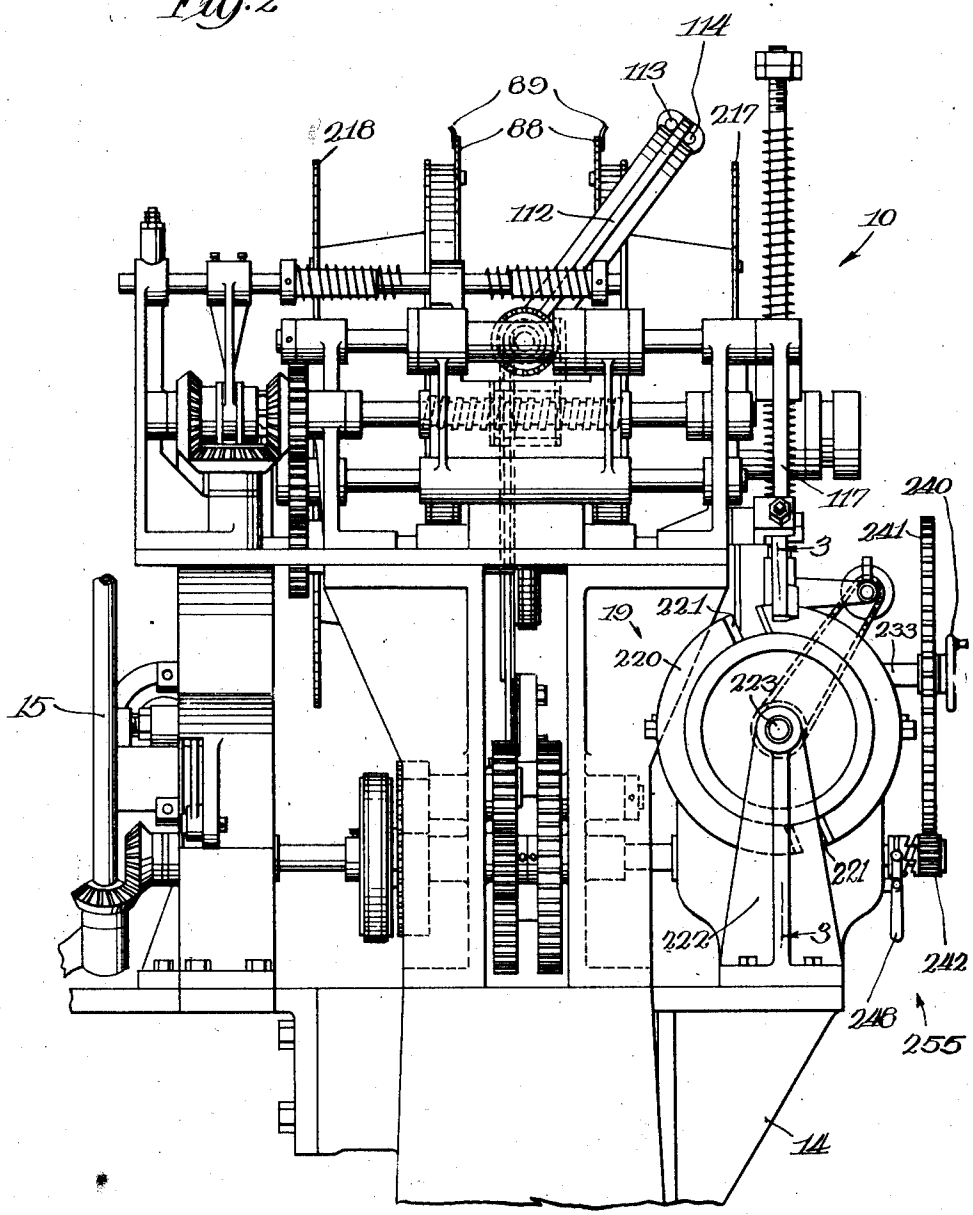
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MATERIAL WORKING MECHANISM

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Fig. 2



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June 12, 1928. 1,672,984

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MATERIAL WORKING MECHANISM

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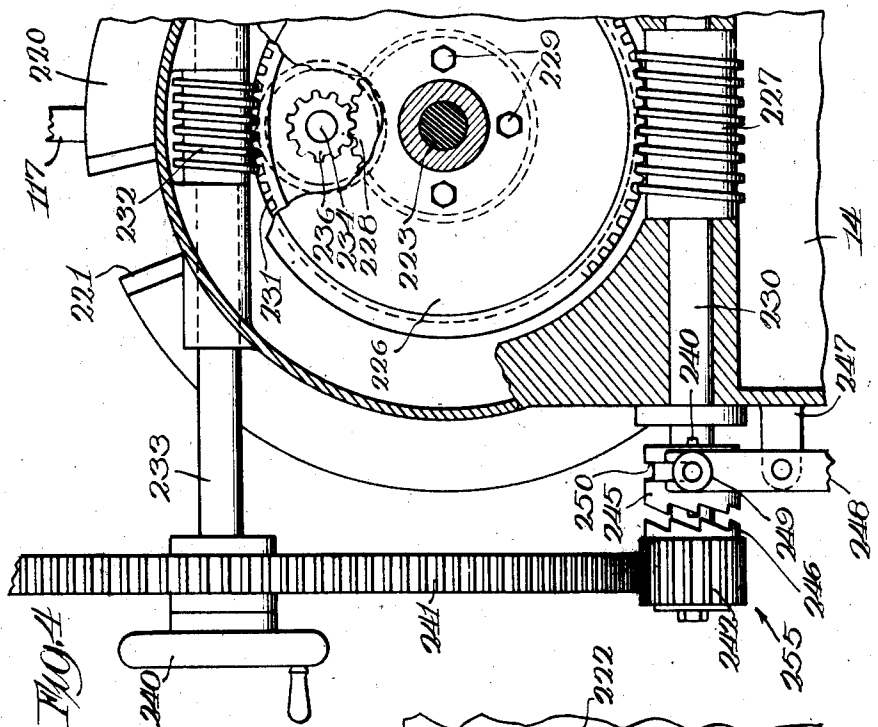


Fig. 4

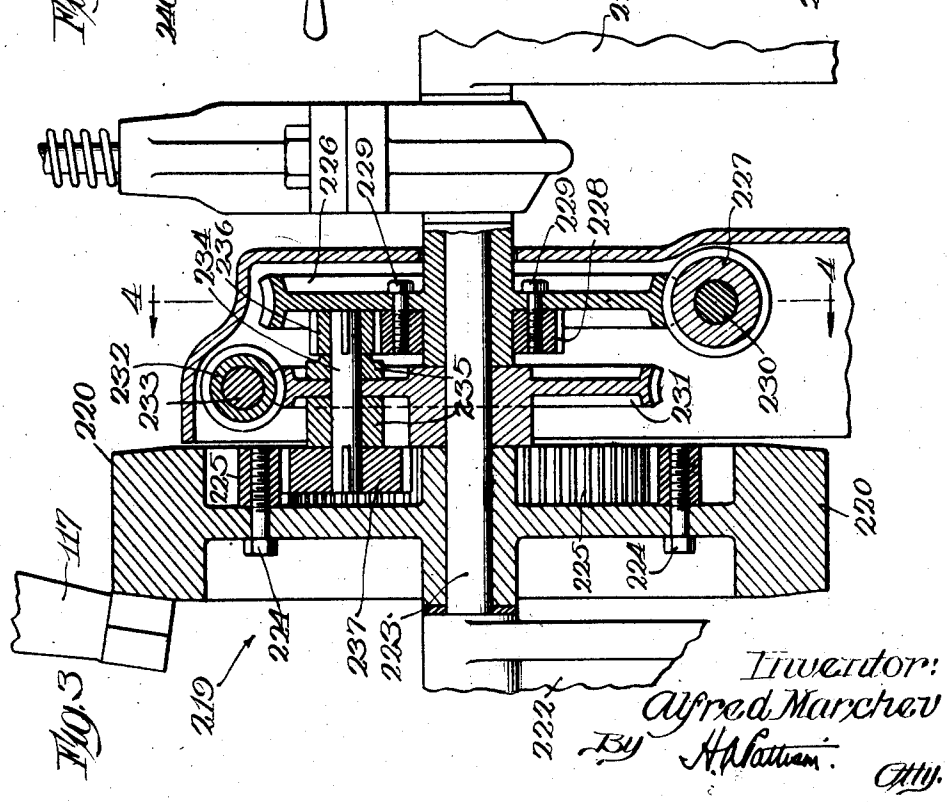


Fig. 3

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Patented June 12, 1928. 1,672,984

UNITED STATES PATENT OFFICE.

ALFRED MARCHEV, OF CICERO, ILLINOIS, ASSIGNOR TO WESTERN ELECTRIC COMPANY, INCORPORATED, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

MATERIAL-WORKING MECHANISM.

Application filed December 20, 1924. Serial No. 757,280.

This invention relates to material working mechanisms, and more particularly to a continuously operating strand reeling mechanism.

A continuously operating strand reeling mechanism to which the invention is especially applicable is disclosed in Patent No. 1,393,286, issued October 11, 1921 to W. F. Hosford.

An object of the invention is to provide in a material working mechanism wherein the material is received in a predetermined length on a reel an improved means for changing the length of material to be received on the take-up reel.

Another object of the invention is to provide in a continuously operating reeling mechanism, wherein material is received upon a plurality of reels successively associated with the supply of material, means to selectively vary the lengths of the association periods.

In accordance with the general features of the invention, a planetary gearing system is provided in a reeling machine which drives a strand transferring and severing mechanism, causing it to function at regular predetermined intervals to operatively associate a reel with the supply and sever from the supply the portion of strand wound on another reel. A manually operated control gear is included in the system of gearing whereby the speed of the timing wheel associated with the strand transferring and severing mechanism may be readily changed while the mechanism is in full operation to vary the lengths of the predetermined intervals between the actuations of the transferring and severing mechanism. The transferring and severing mechanism may also be reset to its starting position by means of this gear should a break occur in the strand, and thus a new reel may be operatively associated with the supply at the end where the break occurs.

Other advantages of the invention will more fully appear from the following detailed description taken in connection with the accompanying drawings, in which

Fig. 1 is a side elevation of a reeling machine of the type disclosed in the hereinbefore mentioned patent and embodying the features of this invention;

Fig. 2 is a fragmentary rear view thereof;

Fig. 3 is an enlarged vertical section taken on the line 3—3 of Fig. 2 of the adjustable control device which comprises the invention, and

Fig. 4 is a section taken on the line 4—4 of Fig. 3 partly broken away to show some of the parts more clearly.

In the drawings in which like reference numerals designate like parts throughout the several views a reeling machine 10 of the type described and illustrated in the hereinbefore mentioned Hosford patent is shown mounted on a base 14. As fully described in the hereinbefore mentioned patent, the various operating elements of the reeling machine 10 are driven by suitable gearing from a shaft 15 which in turn is connected by suitable gearing (not shown) with a shaft 154 carrying a capstan 153, the shaft 154 being driven by any suitable source of power (not shown).

In the reeling machine shown in Fig. 1, a strand 85 is drawn over the capstan 153 and passes between a pair of distributing fingers 113 and 114 mounted on a curved arm 112, to one of a pair of take-up reels 217, 218. When a predetermined amount of strand material has been wound on one of the take-up reels 217, 218 the fingers 113 and 114 serve to transfer the strand from the full reel to an empty reel. At the same time mechanism indicated at 219 causes a rocker arm 117 to rotate in a slot 221 of the timing wheel 220, which movement will shift the curved arm 112 from the full reel to the empty one. In this shifting movement the strand will be caught by one of the fingers 89 of the disk 88 associated with the reel on which the strand has been wound, stretched across the space intervening between the two reels, and then caught by another finger on the disk associated with the empty reel on which the strand is to be wound. As the reels continue to rotate the strand is guided between the two disks 88 into the path of the knives, indicated at 90, which rotate about the shaft 95 at the bottom of the machine.

The strand will therefore be cut by these knives and the oncoming strand will be disconnected from the strand which has been wound on the first reel. The strand will now be wound on the second reel and in the continued rotation of the timing wheel the arm 112 will be shifted from a wound reel to an empty one. It is believed that this brief description of the operation of a con-

tinuously running reeling machine is sufficient, but for a more detailed description of such a mechanism reference may be had to the hereinbefore mentioned patent to Hosford.

In the timing mechanism indicated at 219 (Figs. 3 and 4) the timing wheel 220, which is slotted at 221 to admit the rocker arm 117, is rotatably mounted on a shaft 223 which is supported in brackets 222. Secured to the timing wheel 220 by stud screws 224 is an internal gear 225. A worm gear 226 is also suitably keyed to the shaft 223 and is driven by a worm 227 formed on a shaft 230. A sun gear 228 is secured to the worm gear 226 by stud screws 229. Rotatably mounted on the shaft 223 between the timing wheel 220 and the worm gear 226 is another worm gear 231 which is the control gear and is driven by a control worm 232 formed on a shaft 233. The control worm 232 also serves to lock the control gear 231 when the timing mechanism is functioning in regular predetermined intervals. A shaft 234 is rotatably mounted in bearings 235 which are secured to the control gear 231. Keyed to one end of the shaft 234 is a pinion or planet gear 236, which meshes with and rides around the sun gear 228. Another pinion gear 237 is keyed to the other end of the shaft 234 and meshes with the internal gear 225. It is obvious that when the mechanism indicated at 219 is functioning at regular predetermined intervals the control gear 231 is locked and the internal gear 225 is being driven by the pinion gear 237 which revolves with the pinion gear 236, and in turn the pinion 236 is driven by the sun gear 228 which is secured to the worm gear 226 driven by the worm 227.

Keyed to the end of the shaft 233 is a hand wheel 240 with which the operator controls the mechanism. Also keyed to the shaft 233 is a gear 241 which meshes with a gear 242 rotatably mounted on the shaft 230. A clutch indicated at 255 consists of a ratchet member 245, slidably mounted on a slotted portion 240 of the shaft 230, which may engage a ratchet portion 246 formed integral with the gear 242. Pivotally mounted in a bracket 247 secured to the frame 14 is a shifting lever 248 having a forked end 249 which engages an annular groove 250 formed in the ratchet member 245. The purpose of the clutch 255 will be more fully described hereinafter.

In the operation of the reeling machine indicated at 10, the wire severing timing mechanism shown at 219 functions at regular intervals when predetermined amounts of strand material have been wound on the take-up reels. The control gear 231 is locked and a direct drive exists between the timing wheel 220 and the worm gear 226.

To increase the length of the original predetermined amount of strand material to be wound on the take-up reel before the severing mechanism is actuated and while the machine is in operation, it is necessary to stop or at least decrease the speed of the timing wheel 220. This is done by turning the hand wheel 240 to rotate the control gear 231, which carries the shaft 234 and the pinions 236 and 237, in the same direction as that in which the timing wheel 220 rotates. The pinion gear 236 will rotate around the sun gear 228 and the pinion gear 237 will rotate in the internal gear 225, thereby neutralizing the motion ordinarily imparted to the timing wheel 220 by the worm gear 226 and stopping the rotation of this wheel or reversing its direction of rotation according to the speed imparted to the control gear 231. This will cause the severing mechanism to actuate after more than the original predetermined amount of strand has been wound, thereby permitting a longer coil of strand to be wound.

Should a break occur in the strand the timing wheel 220 can be reset to the starting position in the above described manner and a new reel of strand started at the point of the break.

To continuously wind strand material on the take-up reel the clutch 255 is engaged. The gear 241 is then driven by the shaft 230 and with the gear 242 forms a differential which drives the control gear 231 at a speed that stops the timing wheel 220. To discontinue the above operation the clutch 255 is released allowing the timing wheel 220 to revolve and the severing mechanism to actuate.

To decrease the predetermined length of the coil of strand being wound on the take-up reel the control gear 231 is rotated by the hand wheel 240, in an opposite direction to that in which the timing wheel 220 rotates. This will turn the timing wheel 220 at an additional speed and the wire severing mechanism will actuate before the original predetermined amount of strand has been wound.

What is claimed is:

1. In a material working mechanism, means for withdrawing material from a supply thereof and winding the withdrawn material on a reel, means rendered effective upon the starting of the winding operation to determine the amount of material to be wound, and means operable during the winding operation for rendering the determining means ineffective.

2. In a continuously operating material working mechanism, means for withdrawing material from a supply thereof and winding the withdrawn material on a reel, means operating a predetermined interval after the starting of the winding operation for associating another reel with the strand supply,

and means controlling the associating means and operable during the winding operation to change the length of the interval.

3. In a continuously operating material working mechanism, means for withdrawing material from a supply and winding the withdrawn material on a reel, means for severing the withdrawn material from the supply, measuring means rendered effective simultaneously with the starting of the winding operation for causing the actuation of the severing means when a predetermined amount of material has been wound on the reel, and means for rendering the measuring means ineffective during the winding operation to permit an increased length of strand to be wound.

4. In a continuously operating material working mechanism, means for withdrawing material from a supply and winding the withdrawn material on a reel, means for severing the wound material from the supply, measuring means for controlling the actuation of the severing means when a predetermined amount of material has been wound on the reel, and means to reset said measuring means to a starting position during the operation of the mechanism.

5. In a material working mechanism, means for withdrawing material from a supply thereof and winding the withdrawn material on a reel, means for severing the wound material from the supply, an adjustable mechanism for controlling the severing means comprising a rotatably mounted control gear, a rotatably mounted driven gear, a sun gear secured thereto, a rotatably mounted timing wheel, an internal gear secured thereto, and a pair of pinions mounted in the control gear and meshing with the sun and internal gears, and means associated with the control gear to adjust said adjustable mechanism.

6. In a material working mechanism, means for withdrawing material from a supply thereof and winding the withdrawn material on a reel, means for severing the wound material from the supply, measuring means to control the severing means, a control gear for driving the measuring means during an adjustment thereof, driving means therefor, and means to operatively connect said gear with said driving means.

In witness whereof, I hereunto subscribe my name this 12th day of December A. D., 1924.

ALFRED MARCHEV.