April 1, 1930. H. R. MASSINGHAM 1,752,604

MATERIAL FEEDING APPARATUS

Filed Feb. 28, 1927 2 Sheets-Sheet 1

Fig. 2.

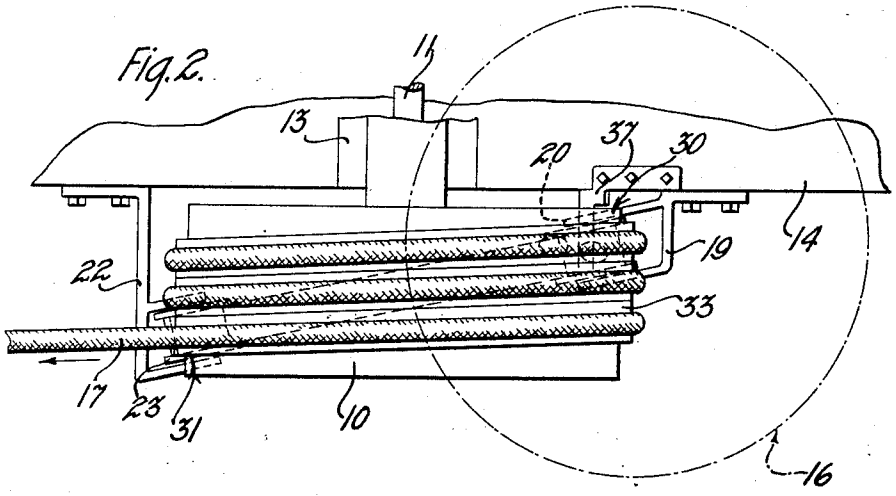


Fig. 1.

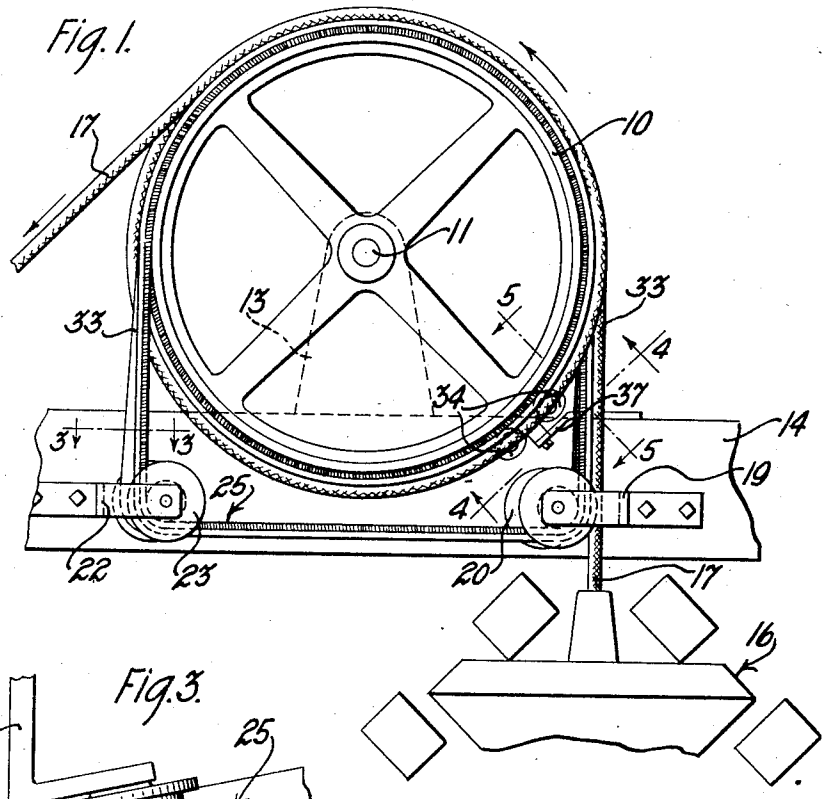
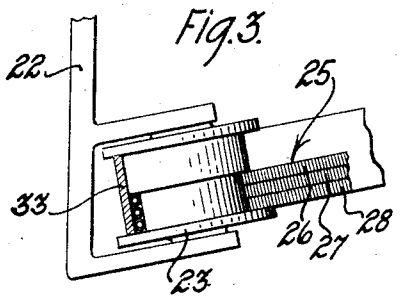


Fig. 3.



Inventor
Henry R. Massingham
by H. A. Tattum
Att'y.

April 1, 1930. H. R. MASSINGHAM 1,752,604

MATERIAL FEEDING APPARATUS

Filed Feb. 28, 1927 2 Sheets-Sheet 2

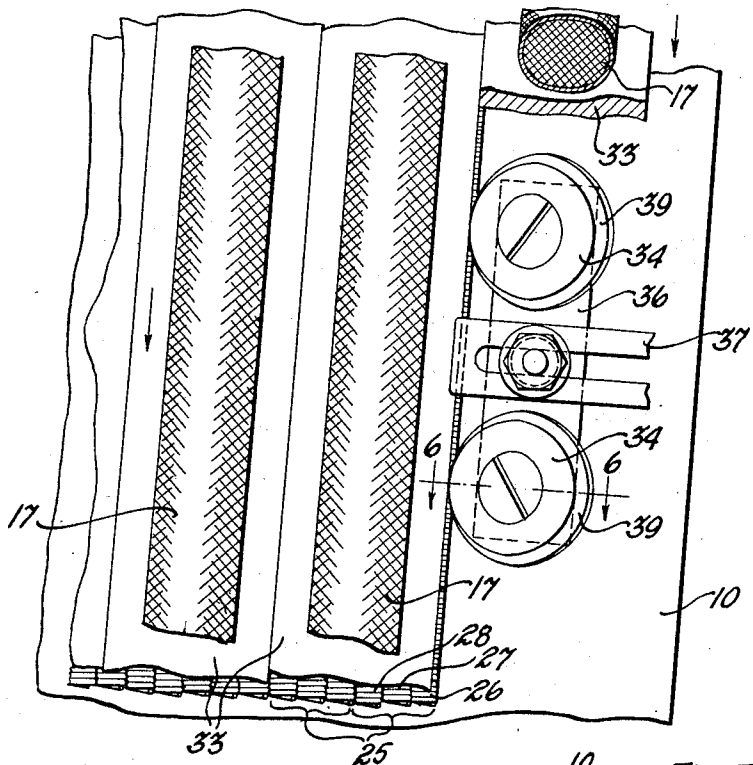


Fig. 4.

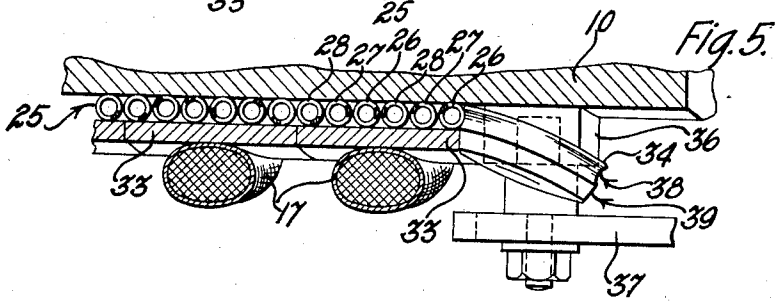
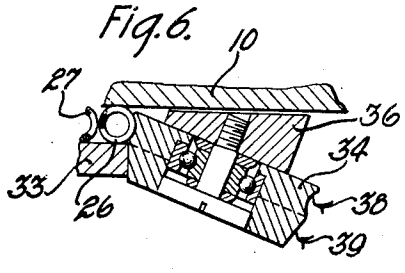


Fig. 5.

Fig. 6.



Inventor
Henry R. Massingham
by H. A. Sattler Att'y.

Patented Apr. 1, 1930 1,752,604

UNITED STATES PATENT OFFICE

HENRY ROGERS MASSINGHAM, OF LA GRANGE, ILLINOIS, ASSIGNOR TO WESTERN ELECTRIC COMPANY, INCORPORATED, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK

MATERIAL-FEEDING APPARATUS

Application filed February 28, 1927. Serial No. 171,584.

This invention relates to material feeding apparatus, and more particularly to apparatus employing a capstan for feeding strand materials in connection with the manufacture of telephone cables and the like.

The primary object of this invention is to provide a simple and durable material feeding apparatus for effectively withdrawing material from a source of supply.

In accordance with the general features of the invention one embodiment thereof which may effectively be employed to withdraw telephone switchboard cables from the head of a braiding machine commonly used to braid fabric cable coverings, includes a suitable capstan. Several turns of an endless conveyor comprising three belts consisting of coiled springs frictionally engage the face of the capstan and a flexible belt similar to the type disclosed in my copending application, Serial No. 145,354, filed October 30, 1926, which frictionally engages and is carried by the three spring belts is adapted to receive a cable from the braiding machine. Fixed roller members engage the spring belts which make a rolling contact with the face of the capstan, thereby causing the associated turns of the flexible belt and cable thereon to be positively and progressively boosted or urged across the capstan in predetermined alignment without any appreciable wear.

These and other objects will be apparent from the following detailed description and the accompanying drawings, wherein

Fig. 1 is a side elevational view of a feeding apparatus representing one embodiment of the invention shown in association with a diagrammatic representation of a braiding head;

Fig. 2 is a plan view of the feeding apparatus disclosed in Fig. 1;

Fig. 3 is an enlarged, detailed, horizontal, sectional view taken on the line 3—3 of Fig. 1;

Fig. 4 is an enlarged, fragmentary, elevational view of the booster rollers and associated capstan as viewed on the line 4—4 of Fig. 1;

Fig. 5 is an enlarged, detailed, sectional view taken transversely of the capstan on the line 5—5 of Fig. 1, and

Fig. 6 is a detailed, sectional view of one of the booster rollers taken on the line 6—6 of Fig. 4.

Referring now to the drawings wherein like numerals have been employed to designate similar parts throughout the various figures, it will be observed that a capstan 10 is provided which is rotatable upon a shaft 11 mounted within a bracket 13 rising from a frame 14 of a suitable braiding machine. A conventional braiding head 16 is shown diagrammatically for purposes of illustration and for clearly disclosing the invention which resides in the means for withdrawing a cable 17 therefrom. Secured to the frame 14 is a bracket 19 which provides a mounting for a guide roller 20 and a similar bracket 22 secured to the frame 14 supports a guide roller 23. These rollers 20 and 23 serve to guide an endless conveyor 25 comprising three coiled spring belts 26, 27, and 28 constructed of steel or other suitable material. Referring to Fig. 3, it will be observed that the combined width of the three spring belts 26, 27, and 28 is approximately one-half the width of the face of the guide rollers 20 and 23 and as the belts are advanced upwardly from the roller 20 they are brought into contact with the rearward portion of the face of the capstan 10, this point of engagement with the capstan being indicated by the numeral 30 (Fig. 2). The belts then make several turns about the face of the capstan and upon reaching the forward portion thereof as indicated by the numeral 31, the belts are directed downwardly and around the guide roller 23. Thus it will be clear that individual convolutions of the spring belts will be adjacent each other as shown in Fig. 5 and will present an uninterrupted group of belts extending across the face of the capstan.

A flexible endless conveyor belt 33 comprised of leather or other suitable material frictionally engages and follows in the path traveled by the spring belts 26, 27, and 28, this flexible belt being approximately twice the width of the combined spring belts. Thus

it will be understood that upon rotation of the capstan 10, the conveyor 25 comprising the individual spring belts and the flexible conveyor belt 33 carried thereby will travel together in the direction of the movement of the face of the capstan.

A pair of booster rollers 34 are rotatably mounted upon a suitable support 36 (Figs. 1 and 4) which is adjustably secured to an arm 37 mounted upon a machine frame 14. These rollers 34 are formed with an arcuate surface 38 (Figs. 5 and 6) which is adapted to engage the spring belt 26 in the position where said belt approaches the completion of its first turn about the capstan and likewise a tapered surface 39 on said rollers engages the edge of the flexible belt 33 at the point where the flexible belt approaches the completion of its first convolution. It will be apparent from the various figures that the booster rollers 34 serve, as their name implies, to boost or urge the individual convolutions of the coiled spring belts 26, 27, and 28 and the flexible belt 33 across the face of the capstan. In this connection it is to be understood that the boosting effect produced by the engagement of the rollers 34 with the rearmost individual spring belt 26 and the engagement of the belt 33 with the coiled spring belts causes all of the individual spring belts to experience or make a rolling contact with the surface of the capstan in a direction transversely thereof. This rolling contact is made in a direction which causes the flexible belt 33 engaging the spring belts to be effectively boosted or urged across the capstan. By employing an endless conveyor, such as the conveyor 25 comprising a plurality of individual spring belts, the combined width of which is approximately one-half the width of the flexible belt 33, it will be clear that upon each revolution of the capstan 10, the belt 33 will be boosted or advanced across the capstan twice the distance through which the spring belts are moved by the roller action of said belts. This fact will be readily understood by referring to Figs. 4 and 5. The portions of the spring belts 26, 27, and 28 nearest the booster rollers 34 in these figures will be carried, upon one rotation of the capstan 10, to the position occupied by the next adjacent group or section of spring belts and during this same revolution the corresponding adjacent portion of the flexible belt 33 will have been shifted to the left twice the distance of the shift experienced by the spring belts. Thus it will be clear that the conveyor belt 33 is effectively urged transversely on the coiled spring belts and the spring belts will make a rolling contact with the capstan 10.

Boosting the convolutions of the flexible belt across the capstan through the rolling action of the adjacent convolutions of the spring belts 26, 27, and 28 materially minimizes the tendency for wear between adjacent edges of the belt 33 and likewise materially reduces the tendency for deleterious wear which would otherwise be occasioned by the booster rollers forcefully engaging the rearward edge of the flexible belt. In other words, the tendency for the spring belts to progressively urge convolutions of the flexible belt transversely of the capstan face reduces the frictional engagement of the rearward edge of the flexible belt 33 with the tapered surface 39 of the booster rollers to a minimum. By employing the described structures the cable 17 which is wrapped around the companion turns of the flexible belt 33 may be withdrawn from the braiding head 16 at a constant speed and each convolution of the cable will follow a predetermined path around the capstan 10 free from any tendency to slip longitudinally or laterally thereof. The individual turns of the cable may thus be carried around the capstan and across the periphery thereof without contact with each other and by reason of the booster action of the rotatable spring belts 26, 27, and 28, the flexible belt supporting the cable may be employed without being subjected to any appreciable deleterious wear.

Although the invention has herein been described and disclosed in connection with one type of capstan for withdrawing telephone cables from a braiding machine, it will be understood that the invention is capable of other applications and is to be limited only by the scope of the appended claims.

What is claimed is:

1. In material feeding apparatus, a driving member, a material receiving conveyor, and supporting means therefor of substantially circular cross-section movable with a face of the driving member in the direction of travel of material associated therewith and making a rolling contact with the face of the member in a direction transverse to the movement thereof.

2. In strand feeding apparatus, a rotatable driving member having a peripheral face, an endless flexible material conveyor driven thereby for making a rolling contact with the peripheral face, and an endless strand receiving conveyor frictionally driven by the flexible conveyor.

3. In strand material feeding apparatus, a rotatable driving member having a peripheral face, and material conveying means of substantially circular cross-section encircling and engaging the peripheral face thereof and movable therewith in the direction of travel of a turn of associated strand material and making a rolling contact with the face of the member in a direction transverse to the movement thereof.

4. In material feeding apparatus, a driving member, a conveyor means movable with a face of the driving member, material receiving means frictionally driven by the conveyor

means, said conveyor means designed for making a rolling contact with the face of the driving member and the material receiving means to move the receiving means laterally across the face of the driving member.

5. In strand material feeding apparatus, a rotatable driving member having a peripheral face, a conveyor means encircling and engaging the peripheral face of the driving means and movable therewith, and means engaging the conveyor means for receiving a turn of strand material, said conveyor means designed for making a rolling contact with the face of the driving member and material receiving means to progressively move associated strand material laterally across the face of the driving means.

6. In strand material feeding apparatus, a rotatable driving member having a peripheral face, an endless flexible material conveyor encircling the member and driven thereby and making a rolling contact transverse of the peripheral face thereof, and a boosting element for causing the conveyor to be moved across the peripheral face of the driving member.

7. In strand material feeding apparatus, a rotatable driving member having a peripheral face, an endless conveyor including a spring belt spirally wrapped about the peripheral face, and a flexible material receiving belt encircling the driving member and frictionally driven by turns of the spring belt.

8. In strand material feeding apparatus, a rotatable driving member having a peripheral face, an endless conveyor including a plurality of spring belts spirally wrapped about the peripheral face, and a flat, flexible material receiving belt encircling the driving member and frictionally driven by turns of the spring belt conveyor, said flexible belt being greater in width than the spring belt conveyor.

9. In strand material feeding apparatus, a cylindrical capstan, an endless conveyor including a plurality of spring belts spirally wrapped about the peripheral face of the capstan, a flat, flexible, material receiving belt frictionally driven by the spring belts, and a roller engaging one of the spring belts for causing the turns of the spring belts to roll across the peripheral face of the capstan during the rotation thereof.

10. In material feeding apparatus, a driving member, a conveyor driven thereby for receiving material, and means intermediate a surface of the driving member and the conveyor for effecting a line contact therewith.

11. In material feeding apparatus, a rotatable driving member having a peripheral face, an endless flexible material receiving conveyor driven thereby, and endless circular coiled springs intermediate the conveyor and the peripheral face to make a line contact therewith.

12. In strand material feeding apparatus, a cylindrical capstan, an endless conveyor including a plurality of spring belts spirally wrapped about the peripheral face of the capstan, a flat flexible material receiving belt frictionally driven by the spring belts, a booster roller engaging one of the spring belts for causing the turns of the spring belts to roll across the peripheral face of the capstan during the rotation thereof, and adjustable means for selectively mounting the roller in any one of a plurality of predetermined relatively fixed positions to produce different desired boosting effects upon the spring belts.

13. In strand material feeding apparatus, a cylindrical capstan, an endless conveyor including a plurality of spring belts spirally wrapped about the peripheral face of the capstan, a flat flexible material receiving belt frictionally driven by the spring belts, and a booster roller having a grooved peripheral portion engaging one of the spring belts for causing the turns of the spring belts to roll across the peripheral face of the capstan during the rotation thereof and a tapered peripheral portion for engaging the edge of the material receiving belt to thereby retain it in the desired position upon the capstan.

In witness whereof, I hereunto subscribe my name this 18th day of February A. D., 1927.

HENRY ROGERS MASSINGHAM.