

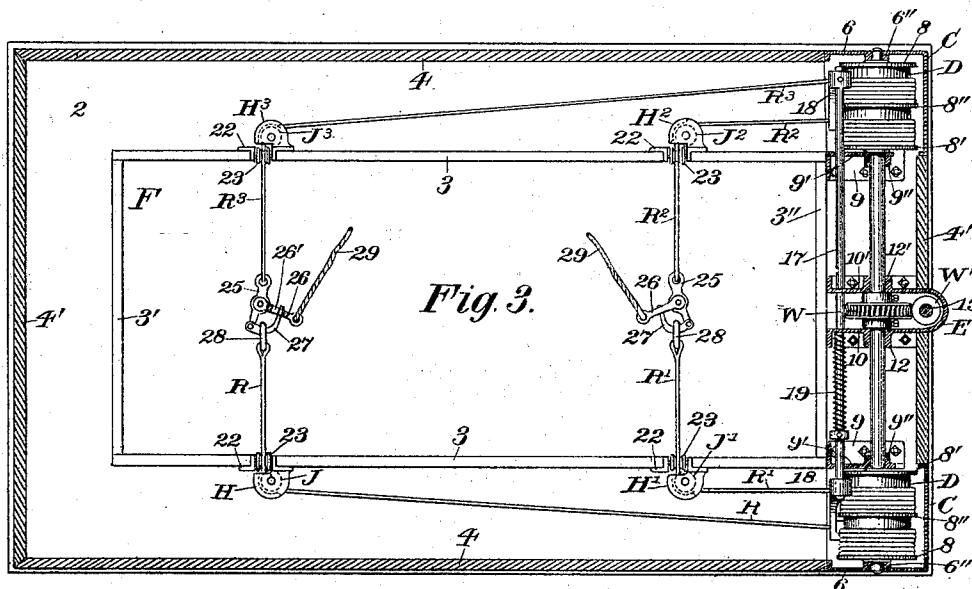
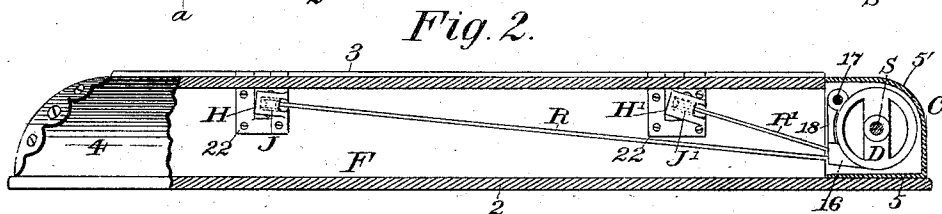
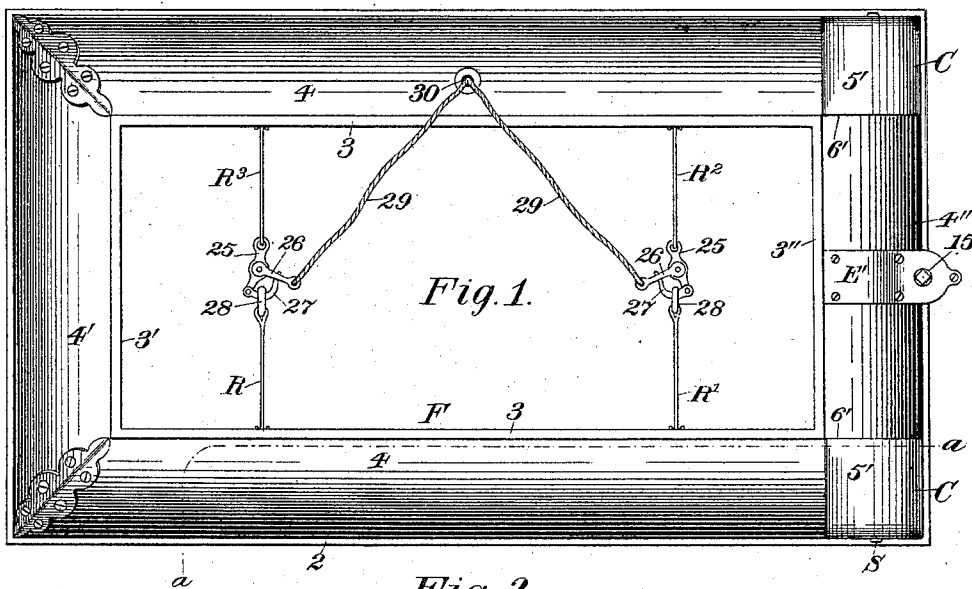
(No Model.)

2 Sheets—Sheet 1.

J. C. STEVENS.
CASKET LOWERING APPARATUS.

No. 537,731.

Patented Apr. 16, 1895.



Witnesses:
J. L. Edwards Jr.
Fred. J. Dole.

Inventor:
John C. Stevens;
By his Attorney,
F. H. Richards.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 4.

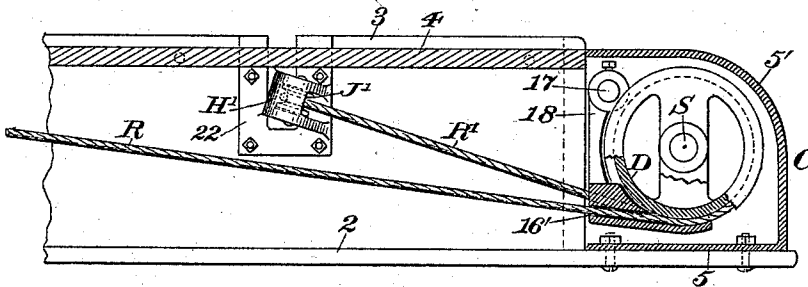


Fig. 6.

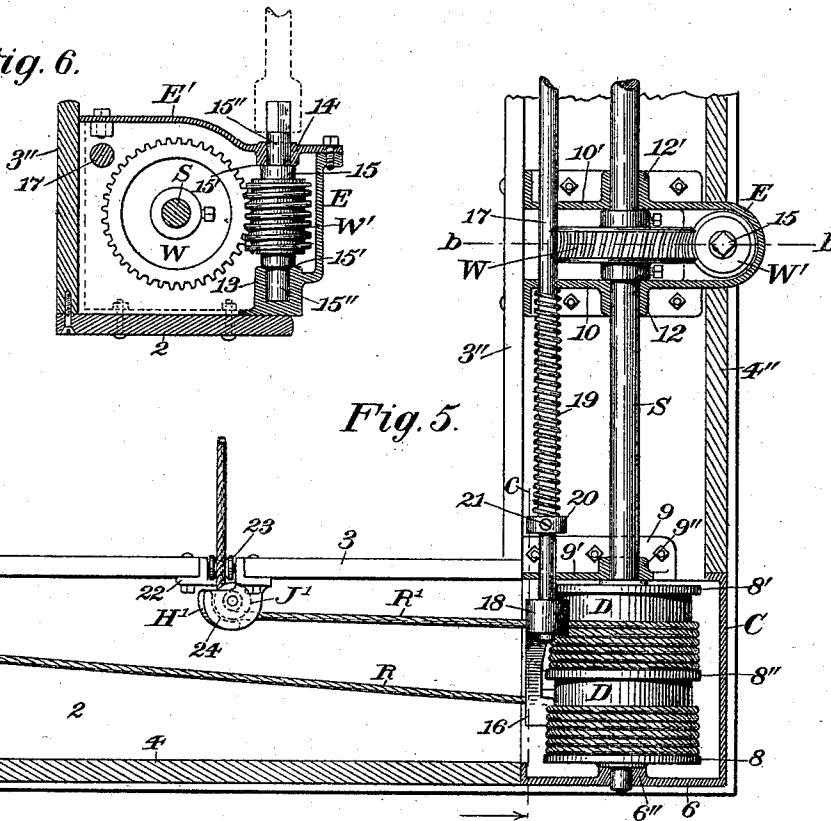


Fig. 5.

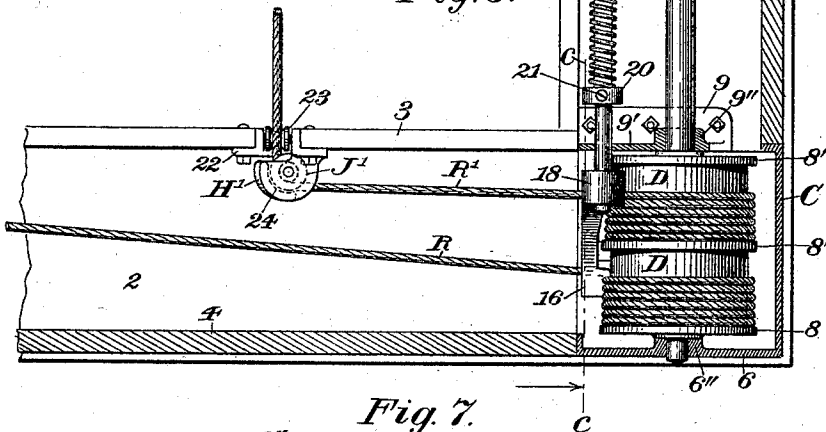
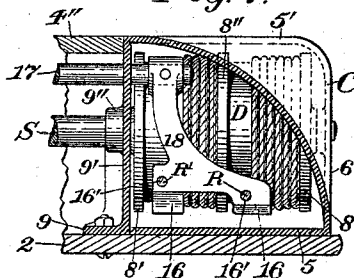


Fig. 7.



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UNITED STATES PATENT OFFICE.

JOHN C. STEVENS, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE
CASKET LOWERING COMPANY, OF SAME PLACE.

CASKET-LOWERING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 537,731, dated April 16, 1895.

Application filed September 11, 1894. Serial No. 522,734. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. STEVENS, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Casket-Lowering Apparatus, of which the following is a specification.

This invention relates to casket-lowering apparatus and has for its object to furnish an improved means of this general character whereby a casket may be lowered smoothly and evenly and positively controlled throughout its descent.

In the drawings accompanying and forming part of this specification, Figure 1 is a plan view of a casket-lowering apparatus constructed in accordance with my invention. Fig. 2 is a vertical longitudinal sectional side elevation of the same, the section being taken in line *a-a*, Fig. 1. Fig. 3 is a horizontal, longitudinal, sectional plan of the same. Fig. 4 is an enlarged sectional view, corresponding to the right-hand portion of Fig. 2, showing one of the rope-guides in section. Fig. 5 is an enlarged sectional view corresponding to a portion of Fig. 3. Fig. 6 is a transverse section taken in line *b-b*, Fig. 5. Fig. 7 is a sectional detail taken in line *c-c*, Fig. 5, looking in the direction of the arrow.

Similar characters designate like parts in all of the figures.

According to my present invention I mount at one end of a suitable open frame, a plurality of rope-carrying drums carried by a common shaft, and provide in connection with said drums means for rotating them simultaneously and thereby paying out the ropes carried thereby with equal rapidity, guides for preventing knotting or kinking of the ropes carried by the drums and for winding and unwinding them smoothly and evenly, and means for automatically and simultaneously controlling all of said guides through the movements of the ropes in winding them upon or paying them out from the drums.

The framework for carrying the several operative details of the winding apparatus is preferably of oblong construction, as herein shown, is designated in a general way by F,

and has a central opening of similar shape. Each of the sides and ends of said frame is shown of a box like structure which, when viewed in cross-section, is preferably of quadrantal form, and in these inclosing casings are carried the operative devices for the winding-drums and the guides for the ropes. Said casings are shown herein as provided with a substantially continuous base, 2, having the perpendicular, inner walls, 3, 3, and 3', 3'', rising therefrom and connected with the outer edges of the frame on three sides thereof by continuous sloping or rounded walls, 4, 4 and 4', and upon the fourth side or end by a similar sloping or rounded wall extending part way across the frame of the apparatus and preferably a distance corresponding to that between the uprights 3, 3. All of this part of the framework is constructed, preferably, of wood, while the corner portions at each side or end of the sloping member or cover 4'' are closed by metallic covers or casings, such as C. Each of said metallic casings is shown herein as a unitary structure, preferably of thin cast-metal, having a base-portion, 5, and an arched or rounded cover, 5', the upper forward edge of which is in perpendicular alignment with the forward lower edge thereof and adapted to abut against the adjacent ends of the parts, 3, 4, and to form therewith continuous surfaces. Said members C are also formed with suitable vertical end-walls, 6 and 6', to completely inclose the end-portions or corners of the frame. Each of the outer uprights 6 is also shown formed with a substantially central bearing, 6'', adapted to form a journal for the opposite ends of a shaft, S. Upon said shaft, and preferably at each end thereof, are mounted rope-winding drums, D, herein shown as four in number, two at each end of the shaft, and preferably connected so that each pair of drums, adapted for carrying two separate ropes or strands, shall form a solid structure having the usual annular flanges, 8 and 8', at opposite ends thereof, and a central annular flange, 8'', adapted to isolate the coils of one rope from those of the other. It will be seen, therefore, that I apply the term "drum" not only to each single drum structure, but also, and primarily, to each one of the drum

faces; as it is obvious that a number of drums or drum faces might be formed upon a common carrier by the provision of suitable spacing flanges or members.

5 The drums will usually be of the ordinary cylindrical type and will be fixedly secured to the winding-shaft S in any suitable manner for revolution therewith. Each pair of drums is also shown as inclosed between the
10 the end-walls, 6, 6, of the frame and the brackets 9, 9, secured to the base 2 of the framework in any suitable manner, as by bolts, and having the uprights, 9', in line with the longitudinal members 3 of the frame. These up-
15 rights are shown as carrying bearings, 9'', in line with the outer bearings 6'' of the frame and adapted to form inner journals for the shaft S whereby a long bearing is obtained at each end thereof.

20 It will be understood, of course, that the metallic casings or covers C will be suitably secured by their bases to the base 2 of the apparatus, as by bolts or screws.

As a means for actuating the winding-shaft
25 S, I have shown said shaft herein as carrying a worm-wheel, W, fixedly secured thereto and disposed centrally thereof. At each side of said worm-wheel a central bearing is provided for said shaft, and these bearings are prefer-
30 ably formed in the vertical members or uprights, 10 and 10', of a casing, E, preferably formed as an integral structure, of cast metal, which casing is secured to the base 2 of the framework and also to the vertical member
35 3'' of the frame and projects through the rounded member 4'' thereof, being centrally-disposed with relation to the two outer longitudinal walls 4, 4, of the apparatus. These bearings, 12 and 12', are centrally-disposed
40 upon said casing in alignment with each other and also with the bearings in the outer casings or covers C.

A cap, E', is shown herein as provided for the casing E, and as secured thereto by means
45 of screws working in corresponding taps in the casing, in the usual manner. The casing and the cover are provided, as shown herein, with bearings, 13 and 14, respectively, disposed beyond the periphery of the worm-
50 wheel W and in vertical alignment with each other. Said bearings are adapted to form journals for a stud, 15, which is adapted to be held in place against vertical movement by the abutment of the shoulders, 15', against
55 the inner ends of said bearings, the reduced end-ports, 15'', of said stud being adapted for rotation in the journals. A worm, W', shown herein as integral with said stud, but which may be separately formed and fixedly
60 secured thereto, is positioned to mesh with the teeth of the worm-wheel W and to thereby rotate said worm-wheel and the drum-shaft S actuated thereby. Said stud may be actuated from any suitable source of power, a simple
65 means for effecting the rotation thereof being a crank, such as shown by dotted lines in Fig. 6.

Each of the drums is shown as provided with an automatically-shiftable rope-carrying guide, 16, adapted for guiding the rope
70 while being wound so that the successive coils thereof will be wound contiguous to one another and in parallel planes. Each of said guides is shown as having a passageway, 16', at the under side thereof and tangentially-
75 disposed with relation to and extending under the periphery of the drum, and having one end thereof in close proximity to the rope-carrying face of said drum, said guide-way being adapted for receiving and guiding its
80 corresponding rope, as R, during the winding and unwinding thereof. As a means for shiftablely supporting the rope-guide in position, with relation to the face of the drum, said guide is preferably in the form of an arm
85 curved at the inner face thereof adjacent to the periphery of the drum, so that the rope cannot pass, and is carried by its other end upon a supporting-rod, 17, which is shown as carried in parallelism with the shaft S. Said
90 rod is also shown as supported in aligned openings or guides in the respective uprights 9', 10, 10' and 9. The rope-guides are shown herein (see Fig. 7) as carried upon the arms of
95 hangers, 18, secured to the ends of the rod, 17, said guides being mounted upon the hangers in pairs, in the present instance, and so spaced that each of the guide-ways 16' corresponds in position with the position of the first coil of the rope controlled thereby, the organization
100 of the several guides with the carrier constituting a multiple rope-guide which co-operates with the several drum-faces.

As a means for holding the several rope-guides under the requisite tension during
105 their shifting movements when winding the respective ropes R, R', R² and R³ upon the drums, or unwinding said ropes therefrom, I have shown the carrying-rod 17 for said guides as provided with a retracting-device, in the
110 form of a spiral spring, 19, surrounding said rod or carrier and bearing at its inner end against the upright or fixed stop 10 and at its outer end against a stop, 20, which is preferably adjustable upon said rod in longitudinal
115 direction by means of a clamping-screw, such as 21. This spring acts to retract or draw all of the rope-guides and the ropes carried thereby simultaneously toward one side
120 of the apparatus, shown in the drawings as the lower side thereof.

In practice each rope, (which term, it will be understood, is intended to cover any flexible connecting means such as a belt, chain or metallic tape,) will usually have one end thereof
125 fixed, in a well-known manner, to the drum, the several ropes being secured at corresponding ends of said several drums or carriers, and the opposite end of the rope will extend around said carrier or drum and through its
130 corresponding guide-way 16' in the guide 16, whence it is carried to a sheave or pulley mounted for rotation in a housing fixedly secured to the inner upright or frame-piece

3 of the apparatus. Four of said sheaves, J, J', J² and J³, are shown herein, one for each of the ropes, and disposed in pairs at successive points upon the inner sides of the frame, the sheaves of each pair being diametrically opposite each other. The corresponding housings for said sheaves or pulleys are designated, respectively, H, H', H² and H³, and are shown as preferably secured in fixed positions upon the outer sides of said frame-pieces 3. These housings are shown herein as formed integral with the U-shaped brackets, 22, which are set into corresponding grooves or slots in the edges of the frame pieces 3 and are secured thereto by suitable fastening devices. Between the vertical arms of these brackets, pulleys or friction-rollers, 23, are shown herein as pivoted for rotation, each of said rollers being set below the upper edge of the corresponding frame-piece 3 and substantially in line with the sheave or pulley mounted in the adjacent housing. Each of the ropes, when it leaves its drum, passes to its particular sheave and around said sheave and over the adjacent roller, through the guide-way in the corresponding bracket 22. In order to prevent the slipping of the rope out of its sheave or pulley, each of said housings is shown as formed with its inner face, which co-acts with the peripheral channel or groove of the sheave, close to the peripheries of the flanges of its sheave or pulley, as clearly shown in Fig. 5, so that the space between the edge of said flanges and the guide-face 24 of the housing is insufficient to permit the slipping of the rope off from the pulley when the ropes are running loosely with no weight upon them. Each set of co-acting sheaves, friction-rollers and guide-ways I term an "angle-guide," and by this term I include any equivalent means for deflecting the ropes and directing said ropes inwardly transversely of the frame.

Each of the ropes, when it passes over its corresponding friction-roller 23, is carried into the central space formed by the inner walls of the frame, and the ends of the opposing pairs of ropes are connected by a suitable detaching-device which may be of any well-known construction, and one form of which is shown herein. In the device illustrated, a link, 25, is fastened to the free end of one of the ropes, and carries at its center and its opposite end two other links, 26 and 27, the former of which is preferably straight and formed with a longitudinal slot, and the latter of which is curved to form a hook, the point of which is adapted to be engaged by said slot, 26', in the straight link. Each of said links 26 and 27 is pivoted to the link 25 for free movement thereon, and the free end of the opposite rope carries a suitable link, 28, which engages said curved arm 27 and is adapted to ride loosely thereon. As shown herein, each pair of ropes is provided with one of said detaching devices, and the opposite free end of each link 26 is attached to

one end of a pull-rope, 29. Both of said ropes preferably pass through a common guide-way, 30, which may be extended through the frame at any convenient point and is preferably centrally disposed.

It will be observed that, when the casket is to be supported by the ropes, the curved link of each detaching device will be engaged by its point in the slot or eye of the co-operating straight link of said device, and that a firm connection is thus secured between the ropes of each oppositely-disposed pair, and that, when the casket has been lowered, a slight pull upon the ropes 29 will sever the connection and permit the carrier ropes to be re-wound upon their respective drums or reels.

In order to provide for the uniform winding of the ropes R, R', R² and R³, upon their respective drums, said ropes should be of such length that when connected as shown in Fig. 3, each drum or reel will carry the same number of turns or coils as the others, and hence in paying out said ropes to their full length the casket would still be maintained in a horizontal position.

In order to obtain an even movement of the casket, during the operation of lowering the same, it is essential that the coils of the ropes shall have been wound smoothly and evenly upon the reels, and to obtain the necessary precision and uniformity of the winding of the coils of said ropes is the object of the guides 16. At the beginning of the operation of winding the ropes said guides will, in consequence of the retractive action of their spring 19, be in position contiguous to the end-flanges of the drums, and the ropes carried by said guides will be in proper position for being wound to form the first coil upon each of the reels. Upon the rotation of said reels by means of the worm and crank, in the direction for winding, the first coil of each series will be wound upon its corresponding drum, after which the rope when it arrives at a point adjacent to the starting point of the first coil will be carried sidewise, together with the guide 16 so that the second coil will be wound upon the drum contiguous to the first coil, the tension exerted upon the rope-guide by the spring 19 insuring a close contact between successive coils and at the same time preventing over-riding of said coils. This operation of the apparatus, it will be obvious, is reversed when unwinding the ropes from their reels, and the guides will be gradually carried back until, if the ropes are entirely unwound, said guides will again lie against the respective flanges 8 and 8' at one side and 8' and 8'' at the opposite side, of the apparatus, as will be evident by reference to Fig. 3. In practice the channels or ways 16' in the guides will be of such length that any kinks or knots in the ropes will be straightened out in passing therethrough and before reaching the drum. Said ways are, as shown, disposed tangentially to the drums at the points of contact of the ropes therewith and

are in line with their respective sheaves or pulleys.

My present improvements constitute a very strong, compact and simple apparatus of the character described, by means of which a casket may be lowered smoothly and evenly and without strain upon the operative parts of the mechanism, and without liability of accident, all features of great importance in apparatus of this class. The arrangement of the carrier drums is of special importance as serving to provide a long bearing for each end of the shaft, whereby the weight of the casket is thoroughly distributed over the journal surfaces, and the drums being all on a single shaft, all connecting gearing, and all liability of breakage of the same are entirely avoided. Also, the character of the combination is such that an effective, and in every way superior apparatus, can be manufactured and kept in order at a relatively low cost.

Having thus described my invention, I claim—

1. In an apparatus of the character described, the combination with a frame, of a winding-shaft journaled therein, means for rotating said shaft, rope-carrying drums rotatively carried by said shaft, a series of rope-guides one for each drum, and a retracting device for automatically maintaining each of said guides in contact with the coil next adjacent to that carried by said guide, substantially as described.

2. In an apparatus of the character described, the combination with a frame, of a winding-shaft journaled therein, means for rotating said shaft, rope-carrying drums rotatively carried by said shaft, a longitudinally-movable carrier adjacent to said drums, a series of rope-guides one for each drum and secured to said carrier, and a spring connected

with said carrier and with the frame and adapted for automatically maintaining each of said guides in contact with the coil next adjacent to that carried by said guide, substantially as described.

3. In an apparatus of the character described, the combination with a frame, of a winding-shaft journaled therein, means for rotating said shaft, rope-carrying drums rotatively carried by said shaft, a longitudinally-movable carrier adjacent to said drums, a series of rope-guides one for each drum and secured to said carrier and having rope-receiving guide-ways contiguous to the winding faces of said drums, and a spring connected with said carrier and with the frame and adapted for automatically maintaining each of said guides in contact with the coil next adjacent to that carried by said guide, substantially as described.

4. In an apparatus of the character described, the combination with a suitable open frame, of a winding-shaft mounted on the frame and having a plurality of drum-faces, means for rotating said shaft, a plurality of ropes secured one to each of said drum-faces and extending out to successive points in the length of the sides of said frame, means at said points for deflecting said ropes transversely of said frame, means for detachably connecting the free ends of the opposite ropes in pairs, a series of rope-guides one for each of said drum-faces, and a retracting device for automatically maintaining each of said guides in contact with the coil next adjacent to that carried by said guide, substantially as described.

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