(No Model.) 3 Sheets—Sheet 1.

W. H. H. SISUM.

MACHINE FOR MAKING WIRE CORDS AND CABLES.

No. 592,453. Patented Oct. 26, 1897.

Fig. 2

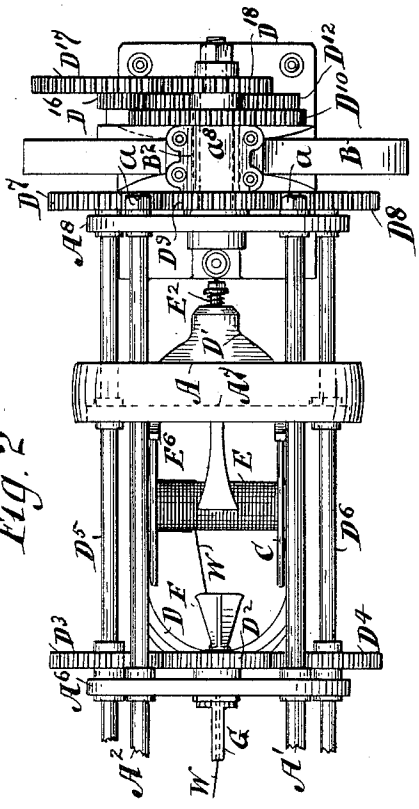


Fig. 1

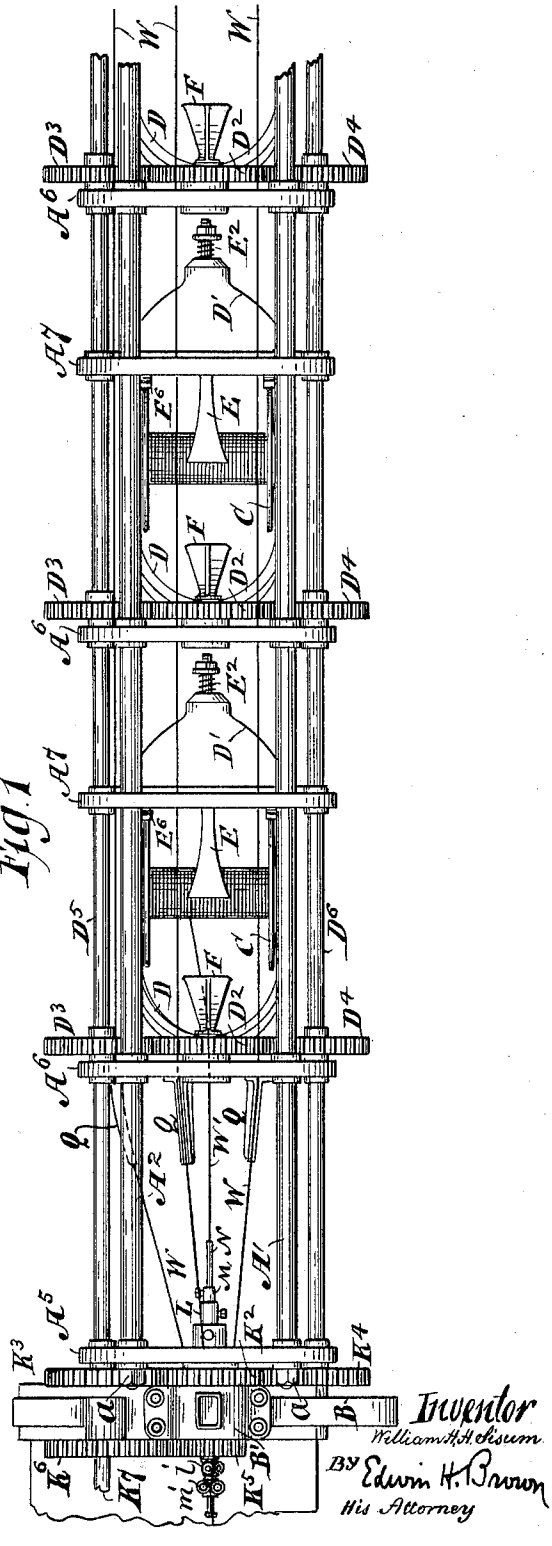
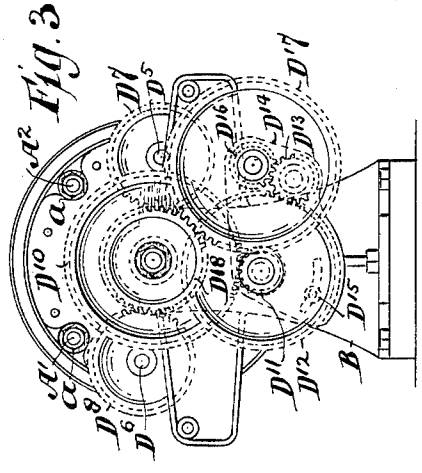


Fig. 3



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Fig. 4

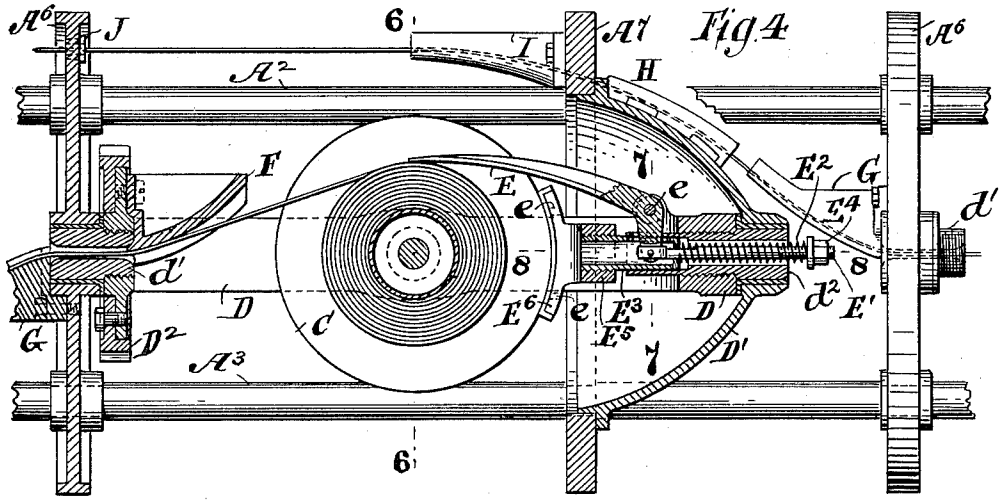


Fig. 5

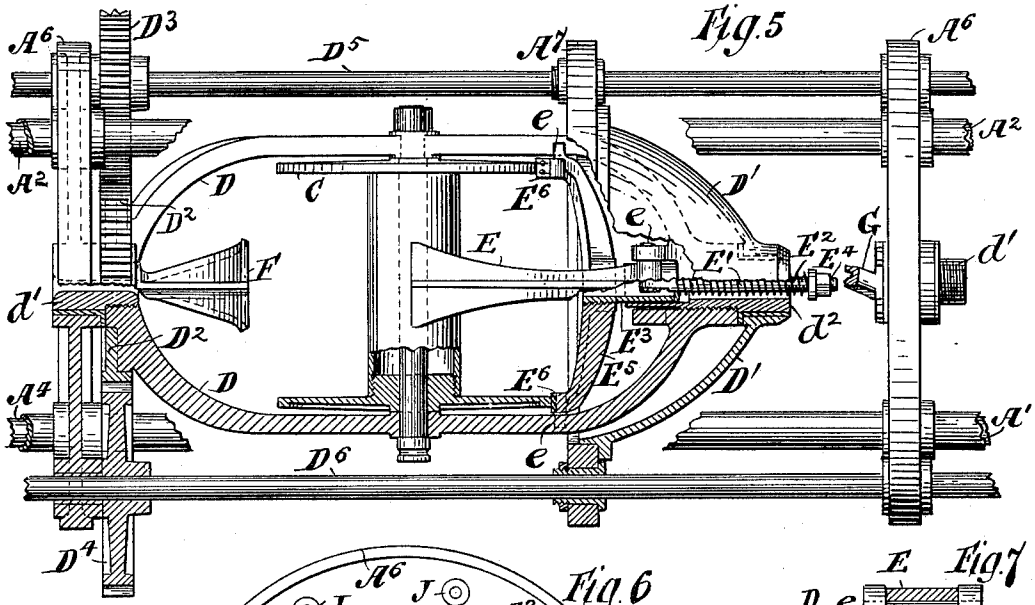


Fig. 6

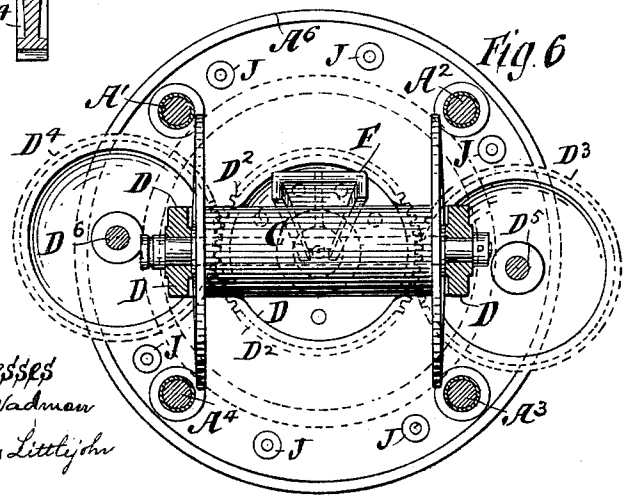


Fig. 7

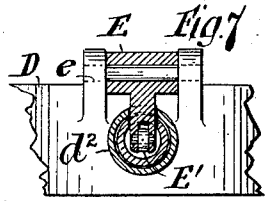
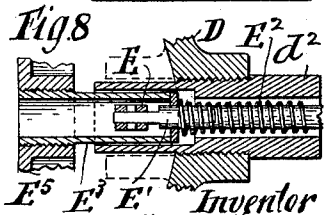


Fig. 8



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(No Model.) 3 Sheets—Sheet 3.

W. H. H. SISUM.

MACHINE FOR MAKING WIRE CORDS AND CABLES.

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Fig. 10

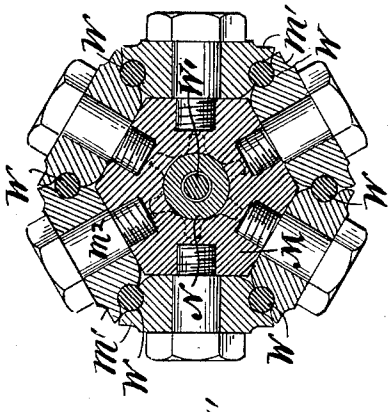
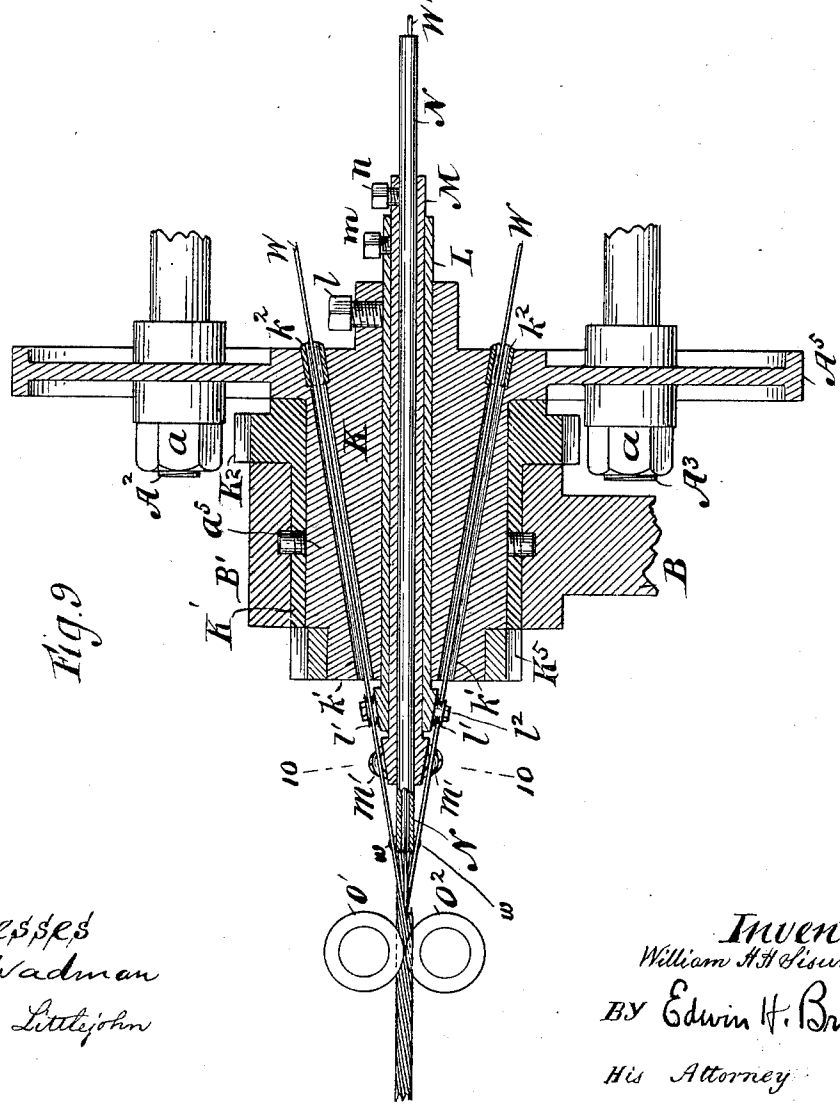


Fig. 9



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UNITED STATES PATENT OFFICE.

WILLIAM H. H. SISUM, OF BELLEVILLE, NEW JERSEY; JOSEPH WILKINSON ADMINISTRATOR OF SAID SISUM, DECEASED.

MACHINE FOR MAKING WIRE CORDS AND CABLES.

SPECIFICATION forming part of Letters Patent No. 592,453, dated October 26, 1897.

Application filed January 24, 1896. Serial No. 576,749. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. H. SISUM, of Belleville, in the county of Essex and State of New Jersey, have invented a certain new and useful Improvement in Machines for Making Wire Cords and Cables, of which the following is a specification.

I will describe a machine embodying my improvement, and then point out the novel features in the claims.

Figure 1 is a plan or top view of a portion of a machine embodying my improvement. Fig. 2 is a similar view of another portion of the machine. Fig. 3 is a rear end elevation. Fig. 4 is a sectional elevation, on a larger scale, of a portion of the machine. Fig. 5 is a sectional plan of the parts illustrated in Fig. 4. Fig. 6 is a transverse section at the plane of the dotted line 6 6, Fig. 4. Fig. 7 is another transverse section at the plane of the dotted line 7 7, Fig. 4. Fig. 8 is a longitudinal section as indicated by the dotted line 8 8, Fig. 4. Fig. 9 is a central longitudinal section of the front end portion of the machine. Fig. 10 is a transverse section as indicated by the dotted line 10 10, Fig. 9.

Similar letters of reference designate corresponding parts in all the figures.

The main frame of the machine is shown as consisting of a number of rods A' A^2 A^3 A^4, connected at intervals by means of rings A^5 A^6 A^7 A^8. The rings A^5 A^8 are at the ends of the frame. Intermediate these rings are rings A^6 A^7. There may be any suitable number of these rings A^6 A^7, according to the number of wires which are to be formed into a cord or according to the number of cords which are to be formed into a cable. In the present instance the machine is intended for winding six wires W around a core W', which may be made of any suitable number of the rings A^6 A^7. To save space, a portion of the machine is broken away in the drawings, and hence some of the rings A^6 A^7 and corresponding parts are omitted. The rods A' A^2 A^3 A^4 pass through holes in the rings A^5 A^6 A^7 A^8. Spacing-pieces consisting of tubes are slipped upon the rods intermediate the different rings A^5 A^6 A^7 A^8, and outside the end rings A^5 A^8 nuts a are applied to screw-threads on the rods. Thus the rings will be held in proper relation to each other and will support the rods transversely. The end rings A^5 A^8 have journals a^5 a^8, which are fitted in bearings B' B^2, that may be supported in any suitable manner—as, for instance, by standards B.

The main frame which I have described is comprised practically of a number of separate frames operating or rotating together, as will hereinafter appear, and these frames or main frame is rotated about the axis of its journals by means of a pulley A, which is fastened to one of the rings A^7 and adapted to receive a belt.

C designates a number of spools, upon which the wires W and core W' are wound. These spools are journaled in frames D, which are severally provided at one end with a tubular journal d', which is fitted to a bearing in an adjacent ring A^6. At the other end each of these frames D is formed with an opening in which is inserted a tubular extension d^2, which is fitted in a bearing formed in a shell D', that is supported in an adjacent ring A^7. Each of the shells D' fits in the inner circumference of a ring A^7 and extends rearwardly therefrom.

On each journal d' is affixed a gear-wheel D^2, which engages with gear-wheels D^3 D^4, affixed to shafts D^5 D^6, that are journaled in the rings A^5 A^6 A^7 A^8. At the rear end the shafts D^5 D^6 have affixed to them gear-wheels D^7 D^8, that engage with a gear-wheel D^9, affixed to a sleeve that surrounds the rear journal a^8 of the main frame A' A^8. The said sleeve has also affixed to it a gear-wheel D^{10}, that meshes with a small gear-wheel D^{11}, affixed to a stud mounted upon the rear standard B. Affixed to the gear-wheel D^{11} is a gear-wheel D^{12}, that engages with a small gear-wheel D^{13}, affixed to a suitable stud that is affixed to a swinging arm D^{14}, which is hung upon the stud on which the gear-wheels D^{11} and D^{12} are mounted and clamped in different positions by means of a slot concentric with said stud and a screw or bolt D^{15} engaging with the rear standard B. With the small gear-wheel D^{13} engages a small gear-wheel

D^{16}, which may be of the same size and then would simply have the function of changing the direction of motion. It is mounted upon a stud affixed to the swinging arm D^{14}. Affixed to this gear-wheel D^{16} is a large gear-wheel D^{17}, that engages with a gear-wheel D^{18}, which is affixed to the rear journal of the main frame and may be of the same size as the gear-wheel D^9. By using the swinging arm D^{14}, I am able to substitute different-sized gear-wheels D^{17} to produce variations of speed.

With each spool C is combined a brake comprising a bell-crank or elbow lever E, fulcrumed at the junction of its arms to a pin *e*, which is fitted to lugs extending from the adjacent frame D. One arm of this lever is longer than the other, and the long arm impinges upon the wire or other material wound upon a spool. The short arm of the lever is pivotally connected to a rod E′, which passes through the tubular extension d^2 of the frame D and has coiled around it a helical spring E^2, bearing at one end against a tubular rod E^3, that is fitted within said tubular extension d^2 of the frame D. The other end of the spring E^2 bears against a nut E^4, which is applied to the outer end of the rod E′, so that by adjusting it the tension of the spring may be varied. The tubular rod E^3 has at the forward end a yoke or cross-piece E^5, at whose extremities are shoes E^6, adapted to bear against the flanges of the opposite spool C. Obviously a single spring E^2, by pressing against the rod E^3, carrying the brake-shoes E^6 and pulling upon the short arm of the lever E, serves to pull both the shoes E^6 and the lever E to the adjacent spool. The yoke or cross-piece E^5 may be kept from turning by having spurs or lugs *e* at its ends for embracing or otherwise engaging with the sides of the adjacent frame D. As each lever E bears upon the wire coiled upon a spool, it will give to the corresponding spring E^2 the greatest tension when the spool is full of wire, and this tension will be reduced as the wire diminishes. The variations in the spring are of course reproduced in brake energy upon the coiled wire and also against the flanges of the spool.

At the forward end of each frame D is affixed a guide F, that extends rearwardly within the frame toward the spool which is mounted therein. This guide as it extends rearward curves in the direction of the length of the machine outwardly from the axial line of the machine. It also flares rearwardly. On that side which is adjacent the axis of the machine it is transversely concaved or it is provided with side flanges. Owing to this construction it is adapted to receive the wire or material passing from any point of an adjacent spool and to guide it properly forward. Leaving the forward end of each guide the wire or other material which passes through the same is directed through the tubular journal *d′*, belonging to the same frame D. Forward of each journal *d′* is a guide G, which is attached to the forward end of a ring A^6. As it extends forward it also extends outwardly or away from the axial line of the machine. It is transversely concave or has side flanges, so as to be trough-shaped. It receives the wire or other material passing through the tubular journal and directs it outwardly. From each guide G the wire or other material passes to a guide H, arranged upon the forward shell D′. The guide H is trough-shaped and is shown as being curved longitudinally in the reverse direction to the curve of the adjacent guide G. From the guide H the wire or other material passes through the next forward ring A^7, and thence into a guide I, attached to the forward side of such ring. There is a set of guides of the kind described for each of the wires or analogous material. The wires or analogous materials after leaving the guides I pass through eyes J, arranged in the forward rings A^6 A^7.

The forward ring A^6 is provided with guides Q for the wires W, and these guides consist of arms grooved longitudinally and bent inwardly or toward the axis of the machine. The wires W after passing through the foremost head A^6 pass along these guides and from there extend into a die-block K. In this die-block K are a number of converging holes *k′*, in whose rear portions are fitted bushings or eyes k^2. The die-block may be made of any suitable material and so may the bushings or eyes k^2. As here shown, the die-block is made integral with the ring A^5 and extends forwardly from it. The journal a^5 for the forward end of the main frame of the machine works in a sleeve K′, arranged upon the die-block and secured within the bearing B′ of the forward standard B. The sleeve K′ has affixed to it a gear-wheel K^2, and with this engage two gear-wheels K^3 K^4, affixed to the shafts D^5 D^6 near the forward standard B.

To the forward end of the die-block is affixed a gear-wheel K^5, and this engages with a gear-wheel K^6 on a shaft K^7 to operate the usual drawing-rollers.

Within the die-block is a sleeve L, which is fastened to it by a screw *l*. Its forward end has a tapering head, and upon this are mounted a number of rollers *l′*. Within the sleeve L is a sleeve M, which is fastened to the sleeve L by means of a set-screw *m*. The forward end of this sleeve M is made in the shape of a tapering head and has a number of rollers *m′* mounted upon it. By making the supports for the rollers *l′ m′* relatively adjustable the rollers *m′* and *l′* may be adjusted relatively to each other in the direction of the length of the die-block and rotarily. The rollers *l′ m′* are grooved peripherally, and those of each set are in close proximity

to each other, so that each two rollers firmly hold a wire W. These rollers l' m' may be fastened in place by radial screws $l^2 m^2$. They are in effect guides made in the form of rollers.

Within the sleeve M is a core-tube N, which is fastened in place by a set-screw n. Through it passes the core W'. The forward end of this tube N is enlarged and radially grooved or notched to form guides w, between which the wires W are received. Beyond the die-block and its appurtenances are rotary dies O' O^2.

In this machine the wires W are precluded by means of their guides from acquiring a spiral form, as they would otherwise do, prior to reaching the die-block, and they are all given a spiral form beyond the die-block just before they come together. The spiral form which they then acquire is only to an extent which will enable them to intertwist without tightly hugging the core. In no case need the spiral be in excess of the elastic limit for any one wire.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a machine for making wire cords or cables, the combination of a die-block having a number of holes, of two sets of guides for the wires located forward of the die-block, two separate supports for said guides, and means whereby a longitudinal adjustment of one of said sets of guides with reference to the die-block may be made, substantially as specified.

2. In a machine for making wire cords or cables, the combination of a die-block having a number of holes, of two sets of guides for the wires located forward of the die-block, two separate supports for said guides, and means whereby a longitudinal adjustment of both of said sets of guides, with reference to the die-block, may be made, substantially as specified.

3. In a machine for making wire cords or cables, the combination with a die-block having a number of holes, of two sets of guides for the wires located forward of the die-block, two separate supports for said guides, and means whereby one of said sets of guides may be adjusted relatively to the other in the direction of the length of the die-block, substantially as specified.

4. In a machine for making wire cords or cables, the combination with a die-block having a number of holes, of two sets of guides for the wires located forward of the die-block, two separate supports for said guides, and means whereby one of said sets of guides may be adjusted relatively to the die-block both lengthwise of the die-block and rotarily, substantially as specified.

5. In a machine for making wire cords or cables, the combination with a die-block having a number of holes, of two sets of guides for the wires located forward of the die-block, two separate supports for said guides, and means whereby one of said sets of guides may be adjusted relatively to the other set of guides lengthwise of the die-block and rotarily, substantially as specified.

6. In a machine for making wire cords or cables, the combination with a die-block having a number of holes, of two sets of guides for the wires located forward of the die-block, one of said sets of guides being adjustable lengthwise of the die-block, and a core-tube having its end extended forward of the two said sets of guides, and having itself guides for the other wires, and means whereby the said core-tube may be adjusted longitudinally with reference to the die-block, substantially as specified.

7. In a machine for making wire cords or cables, the combination with a die-block having a number of holes, of two sets of guides for the wires located forward of the die-block, one of said sets of guides being adjustable lengthwise of the die-block, and a core-tube having its end extended forward of the two said sets of guides, and having itself guides for the other wires, and means whereby the said core-tube may be adjusted rotarily, substantially as specified.

8. In a machine for making wire cords or cables, the combination of a rotating frame provided at one end with a tubular journal, and at the other end with a tubular extension, a spool carried in said frame, a brake device bearing against the windings on the spool, and means located in said tubular extension for diminishing the pressure of said brake as the wire is paid off from the spool, substantially as described.

9. In a machine for making wire cords or cables, the combination of a rotary frame provided at one end with a tubular journal, and at the other end with a tubular extension, the ring A^6, having a bearing receiving said journal, a curved wire guide leading inward to the journal from the side of the frame on one side of the ring, and a similar guide leading outwardly from the journal on the other side of the ring, a spool in each frame, a brake device bearing against the windings on the spool, and means located in said tubular extension for automatically regulating the pressure of said brake device, substantially as described.

10. In a machine for making wire cords or cables, the combination of a rotary frame provided at one end with a tubular journal, and at the other end with a tubular extension, a spool carried in said frame, a brake device having shoes pressing against the flanges of the spool, and means located in said tubular extension for regulating said brake device, substantially as described.

11. In a machine for making wire cords or cables, the combination of a rotary frame

provided at one end with a tubular journal, and at the other end with a tubular extension, a spool in each frame, a brake device having an arm and shoes bearing respectively on the windings on the spool and the spool-flanges, and means located in said tubular extension for regulating said brake device, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM H. H. SISUM.

Witnesses:
W. LAIRD GOLDSBOROUGH,
W. A. PAULING.