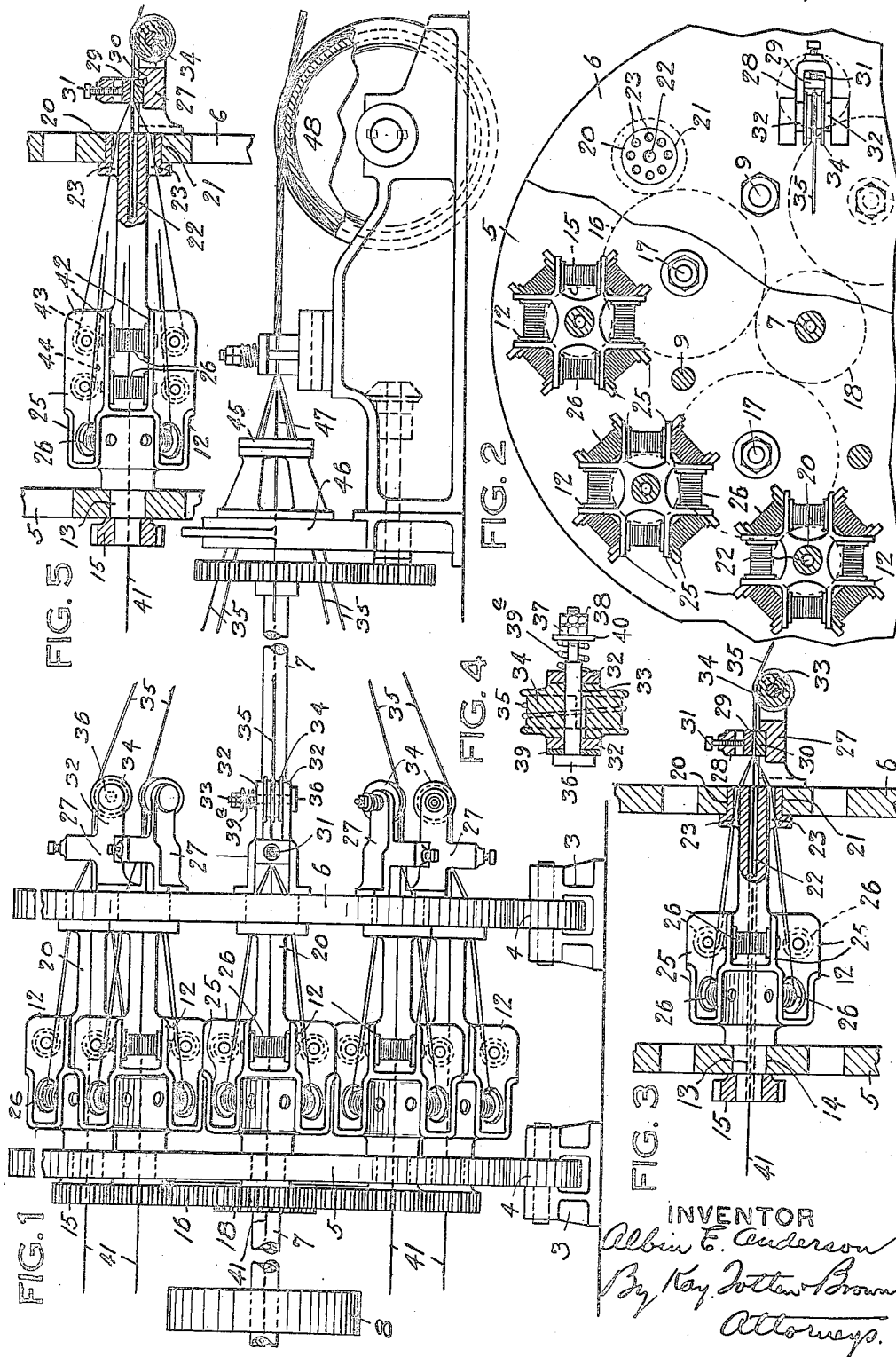


A. E. ANDERSON.
WIRE ROPE MACHINE.
APPLICATION FILED DEC. 2, 1920.

1,422,073.

Patented July 11, 1922.



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UNITED STATES PATENT OFFICE.

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WIRE-ROPE MACHINE.

1,422,073.

Specification of Letters Patent.

Patented July 11, 1922.

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To all whom it may concern:

Be it known that I, ALBIN E. ANDERSON, a citizen of the United States, and resident of Oakmont, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Wire-Rope Machines; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to machines for making wire ropes and cables and it has for its object to provide a machine of the character indicated whereby a large number of wires may be combined to form rope or cable, and whereby the floor space required for the machine may be materially reduced as compared with prior machines for the same purpose.

In my application for Letters Patent filed April 17, 1920, Serial No. 374,597, I have described and claimed a machine of the same general type as that to which my present invention relates. The machine shown in that application consists of a single flier frame carrying a plurality of individual bobbin frames, each bobbin frame operating to form a twisted strand and the several strands from the individual bobbin frames being thereafter combined into a larger cable. The individual bobbin frames shown in my earlier application consist of parallel bars of considerable length between which the several bobbins are journaled. Although this construction provides for a considerable reduction in floor space over machines of the prior art, the machines are still of necessity rather long, especially when making cables composed of a very large number of individual wires.

My present invention aims particularly to secure even greater compactness in the individual bobbin frames by arranging the bobbins circularly around the axis of rotation of each bobbin frame instead of in side-by-side relation. In addition, my invention provides for tensioning the wires and the twisted strands in an improved manner.

A machine constructed in accordance with my invention is shown in the accompanying drawing, in which Fig. 1 is a longitudinal

elevation, with parts broken away for the sake of clearness; Fig. 2 is an end elevation of a portion of one of the flier frames showing the individual bobbin frames in detail and their operating gearing diagrammatically; Fig. 3 is a longitudinal sectional view through one of the individual bobbin frames; Fig. 4 is a sectional view taken axially through one of the tensioning sheaves; and Fig. 5 is a longitudinal sectional view through a modified form of bobbin frame.

Referring to the drawing, the numeral 2 designates a suitable base and 3 designates bearing blocks which support antifriction rollers 4 which serve as a cradle for a flier frame comprising spaced spider-plates 5 and 6. A shaft 7, driven from any suitable source of power through a pulley 8 extends centrally through the spider plates 5 and 6 and is keyed thereto. The plates 5 and 6 are secured together by means of bolt rods 9.

Mounted in the flier frame between the spider-plates 5 and 6 are a series of individual bobbin frames 12, the machine shown being provided with eight of these bobbin frames. Each bobbin frame is mounted to rotate on its own axis and to this end each bobbin frame has a journal 13, as shown in Fig. 3, extending through an opening in the spider-plate 5, and to the outer end of the journal 13 is secured a pinion 15. Each pinion 15 meshes with a gear wheel 16 on a stub shaft 17 secured in the spider plate 5, and all of the gear wheels 16 mesh with a central gear wheel 18 which loosely surrounds the shaft 7 and is held against rotation by any suitable means, not shown.

The inner end of each individual bobbin frame 12 is provided with a trunnion which fits within a bearing 21 in the spider frame 6. The trunnion 20 has a central opening 22 and other openings 23 arranged circularly around the central opening 22, the trunnion thus forming a twister.

Between its ends each bobbin frame is provided with a set of flanges 25 between which are journaled the bobbins 26. As shown in Figs. 2 and 3, the flanges 25 are arranged in two circular sets surrounding the

axis of rotation of the bobbin frame 12, the bobbins in each set being staggered with relation to the bobbins in the other set. The flanges 25 may all be formed in a single casting or they may be pressed from sheet metal or otherwise fabricated. It will be observed that this arrangement wherein the bobbins are arranged circularly around the axis of rotation of the bobbin frame, provides for eight bobbins in the same space, lengthwise of the bobbin frame, which is occupied by two bobbins. The resulting saving in the floor space required by the machine is thus apparent.

Fig. 5 shows a modified form of bobbin frame carrying twelve bobbins instead of eight. In this case the flanges 25 nearest the trunnion or twister 20 are extended as shown at 42 to receive four additional bobbins, and the wires from the bobbins nearest the twister are led off from the tops of the bobbins as shown at 43, while the wires from the bobbins directly below these forward bobbins are led off from the bottoms of the bobbins, as shown at 44. This prevents the two wires from the adjacent bobbins from interfering with each other. For this form of bobbin frame the twister is of course provided with twelve openings instead of eight.

The bobbins 26 carry the wire from which the cable is to be formed. When the machine here described is used as an independent unit the wire from one of the bobbins is led through the central opening 22 in the trunnion 20 forming the core around which the wires from the other bobbins, which are led through the openings 23, are wound by the individual rotation of the bobbin frame produced by the pinion 15 and the gear wheel 16 which rolls upon the stationary gear wheel 18.

Supported upon a bracket 27 adjacent to each of the trunnions 20 is a clamp 28 through which the twisted cable from each individual bobbin frame passes, said clamp consisting of upper and lower clamping members 29 and 30 which are secured together by means of a bolt 31. The bracket 27 is also provided with parallel arms 32 within which is journaled a pin 33 carrying a guiding and tensioning sheave 34 around which the twisted strand or cable 35, coming from the clamp 28, is given a complete turn, as shown in Fig. 4. The pin 33 is provided at one end with a head 36 and is screw-threaded at its other end to receive an adjusting nut 37 and a lock nut 38. A friction disk 39, suitably of leather, is placed between the head 36 and the adjacent bearing, and a spring 39^a is compressed between one of the bearings 32 and a washer 40 adjacent to the adjusting nut 37. By suitably adjusting the tension of the spring 39 the sheave 34 is given a suitable fric-

tional resistance which serves to tension the twisted strand 35.

The flier frame, as described above, may be used as an independent unit or it may be employed as the second section of a cable machine for the purpose of wrapping wires from the bobbins 26 around previously twisted cores or cables 41 which are led through the center of each individual bobbin frame from the left, as shown in Figs. 1 and 3. When thus employed, my improved bobbin frame construction has the advantage that the core strand 41 is not deflected around the bobbins on guide rollers, as in the machine shown in my earlier application mentioned above.

The strands 35, after leaving the sheaves 34, pass to a twister head 45 journaled in a stationary standard 46 where the strands 35 are laid around a core strand 47 which passes through a central passage in the shaft 7. The finished cable passes around a drum 48 and thence to a suitable reel.

The machine which I have shown and described not only saves a great deal of floor space but is greatly condensed in comparison with cable machines of the prior art and the cost of construction is thereby reduced.

I claim as my invention.

1. In a machine for making wire cable, the combination of a rotatable flier frame and a plurality of individually rotatable bobbin frames carried by the said flier frame, each of the said bobbin frames comprising means for carrying a plurality of rotatable bobbins in two parallel sets the axis of the bobbins in each set being arranged on the sides of a polygon around the axis of rotation of the bobbin frame, the bobbins in one set being staggered with respect to the bobbins in the other set.

2. In a machine for making wire cable, the combination of a rotatable flier frame and a plurality of individual bobbin frames carried by the said flier frame, each of the said bobbin frames comprising a plurality of sets of parallel flanges arranged in perpendicular pairs adapted to carry a plurality of sets of bobbins, and means for supporting the bobbins between the said flanges.

3. In a machine for making wire cable, the combination of a rotatable flier frame and a plurality of individual bobbin frames carried by the said flier frame, each of the said bobbin frames comprising an integral member having four pairs of parallel flanges symmetrically arranged around the axis of rotation of the said bobbin frame, each pair of the said flanges being provided with bearings for receiving a bobbin.

4. In a machine for making wire cable, the combination of a rotatable flier frame and a plurality of individual bobbin frames carried by the said flier frame, each of the

said bobbin frames comprising an integral member having four pairs of parallel flanges symmetrically arranged around the axis of rotation of the said bobbin frame, each pair
5 of the said flanges being provided with bearings for receiving a bobbin, and additional flanges projecting forward from the said plate and provided with bearings for sup-

porting bobbins between the bobbins carried by the first mentioned set of flanges.

In testimony whereof, I the said ALBIN E. ANDERSON have hereunto set my hand.
ALBIN E. ANDERSON.

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Witnesses:

ROBT. D. TOTTEN,
JOHN F. WILL.